

A COMMUNITY SURVEY OF ANOMALOUS EXPERIENCES: CORRELATIONAL ANALYSIS OF EVOLUTIONARY HYPOTHESES

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ABSTRACT: A questionnaire, administered to a predominantly African-American sample in Northeastern North Carolina ($N = 965$), surveyed incidence of anomalous experience, psychological symptoms, psychological variables related to shamanism, scales pertaining to psychological well-being, and demographic variables. Multidimensional scaling analysis allowed evaluation of hypotheses drawn from sheep, goat, and “black-sheep” theories. Sheep theories predict that paranormal experiences provide direct survival advantages, derived from psi. Goat theories argue that psi does not exist; anomalous experiences are associated with psychopathology and provide no direct evolutionary benefit. A “black sheep” theory has sheep and goat elements; it portrays a psychosis-spirituality continuum, with benefits derived from spirituality; psi may exist but does not provide direct evolutionary benefits sufficient to overcome psychopathological costs. Within the black sheep paradigm, the ritual healing theory argues that shamanic variables and associated genotypes facilitated coping skills and hypnotic/placebo effects. Study findings provide mixed support for sheep and goat hypotheses but fully support black sheep hypotheses.

Keywords: dissociation, psychosis, schizotypy, hypnosis, ritual healing, shamanism

Anomalous experiences have been defined as uncommon or irregular events “believed to deviate from ordinary experience or from the usually accepted explanations of reality” (Cardena, Lynn, & Krippner, 2000, p. 4). Such episodes include extrasensory perceptions, psychokinesis, out-of-body experiences, near-death experiences, and anomalous healing.

Research indicates a relationship between anomalous experience and psychosis, with schizotypy as a mediating variable (Clarke, 2010; Dagnall, Munley, Parker, & Drinkwater, 2010; Kelley, 2011; McClenon, 2011, 2012; McCreery & Claridge, 2002; Schumaker, 1990, 1995). Schizotypy is a psychological construct describing a continuum of personality characteristics and experiences related to psychosis, and in particular schizophrenia. Schizotypy has been defined as consisting of unusual experiences, cognitive disorganization, introverted anhedonia, and impulsive nonconformity (Chapman, Chapman, & Kwapil, 1995; Claridge, 1997; Claridge et al., 1996; Claridge & Beech, 1975; Goulding, 2004). Although some researchers argue that schizotypy is not a unified, homogeneous concept, evidence indicates that it has the same genetic basis as schizophrenia and is predictive, to a degree, of schizophrenia onset (Chapman & Chapman, 1987; Chapman, Chapman, Kwapil, Eckblad, & Zinser, 1994; Jang, Woodward, Lang, Honer, & Livesley, 2005; Lenzenweger, 2010). Variables such as magical ideation and unusual experience (a category that includes psi experiences) are particularly correlated with onset probability (Chapman et al., 1994).

The ongoing incidence of psychosis is regarded as an evolutionary paradox since the disorder has genetic basis coupled with survival disadvantages (Brüne, 2004; Keller & Miller, 2006; McClenon, 2011; Pearlson & Folley, 2008; Polimeni & Reiss, 2003). How can schizophrenia genes, conferring disadvantages, persist in all societies over many centuries? Although mainstream evolutionary theories ignore paranormal experiences, explanations linking psychosis with psi have been shaped by attitudes toward the paranormal: (a) Sheep theories argue that psi experiences provide survival advantages beyond placebo effects, sufficient to overcome the evolutionary disadvantages of psychosis. (b) Goat theories deny the existence of psi. They argue that religion/spirituality is delusional and that psychopathological processes explain paranormal experiences. (c) Black sheep theories have elements drawn from both sheep and goat theories. They argue that psi has insufficient benefits to have evolutionary impact but anomalous experiences have shaped spirituality and religiosity, which confer survival advantages.

Sheep Theories

Sheep theories assume that some percentage of anomalous experiences involve psi. These episodes affect reality or provide information contributing to experiencers’ survival and fertility (Kelley, 2011).

Decades of parapsychological research, coupled with field studies, indicate that psi is real and sometimes beneficial. Twin studies indicate that ESP has genetic basis (Nash & Buzby, 1965). Cross-cultural studies of waking ESP, paranormal dreams, apparitions, out-of-body experiences, and spiritual healing reveal structural commonalities, implying genetic basis (McClenon, 1997a, 1997b, 2000, 2002a, 2002b). Evidence derived from analysis of 130 Scottish families implies that “second sight” is hereditary (Cohn, 1999). Folklore and anthropological accounts from all over the world describe paranormal benefits from magical, spiritual, and religious practices (Long, 1977; Thompson, 1955–1958).

Within the evolutionary psychology literature, the sheep argument would be considered a *balance* theory. Balance theorists argue that psychosis alleles confer advantages sufficient to counteract costs; some suggest that creativity and shamanism, linked to psychosis, provide these benefits (Nelson & Rawlings, 2010; Nettle, 2001; 2006; Polimeni & Riess, 2003; Stevens & Price, 2000). If psychosis is coupled with psi, the paranormal benefits could be sufficient to overcome the costs of psychosis (Kelley, 2011). Although balance theory is subject to criticism (Keller & Miller, 2006), schizophrenia alleles, whose functions are not yet known, have increased in frequency in the past, a finding that implies evolutionary benefits (Crispi, Summer, & Dorus, 2007).

Community survey findings support sheep arguments by showing relationships between anomalous experience and psychological well-being (Greeley, 1975, 1987; Kennedy & Kanthamani, 1995; Palmer & Braud, 2002). An emerging psychotherapy paradigm focuses on links between spirituality and mental well-being. Studies indicate that schizotypal experiences, when coupled with cognitive organization and adaptive religious beliefs, contribute to psychological health (Boden & Berenbaum, 2004; Goulding, 2004, 2005; McCreery & Claridge, 1995, 1996, 2002; Nelson & Rawlings, 2010; Schofield & Claridge, 2007). According to Darwin’s paradigm, evolutionary benefits tend to generate positive affect and psychological health whereas disadvantages produce negative affect and psychopathology. As a result, sheep theorists would argue that psi tends to be linked to psychological health.

Freud (1933) and Palmer (2011) provide alternate, parallel sheep theories. They suggest that telepathy could be a primitive means of communication replaced by language, one still available to people regressed to preverbal states. If this theory is true, ESP alleles should exist in humans but be more prevalent in certain animals. This theory has a “black sheep” quality in that it implies that psi does not provide many benefits to modern humans; it has a sheep element in that it argues that some animals still derive benefits from psi.

Sheep theories could be verified by locating psi alleles (gene forms). The search for specific alleles entails defining target phenotypes (observed variables) with sufficient precision that genotypes (corresponding genes) can be identified. Once candidate alleles are located, researchers can determine their specific actions, a process labeled “reverse phenotyping” (Schulze & McMahan, 2004). This allows more precise definitions of the phenotypes. If psi alleles were found, researchers could determine if these alleles had experienced positive or negative selection, testing the Freud/Palmer theory.

One method would be to gather DNA samples from families exhibiting high rates of anomalous experience. Researchers could then compare individual DNA from those reporting many experiences to those with no perceptions. Although one study found no linkage between paranormal belief and a dopaminergic gene (COMT), parallel theory-based studies could prove fruitful (Raz, Hines, Fossella, & Castro, 2008).

Selective breeding programs reveal associated phenotypes, a strategy that would help locate alleles. In a famous study, silver foxes were chosen for friendliness toward people and breed over 35 generations (Trut, 1999). Resulting tame foxes differed markedly from their wild relatives with regard to development, coat color, body features, and head shape. Breeding studies selecting for animal hypnotizability (tonic immobility) in rats and chickens demonstrated trait heritability and associated emotionality (Gordon, 1974).

If animal psi exists and has genetic basis, breeding studies selecting for psi performance should help locate psi alleles. Unfortunately, “taken as a whole, the evidence from animal psi research points to a psi effect that is small, not easily replicable, subject to fluctuations and decline effects, and whose source is largely unclear” (Dutton & Williams, 2009, p. 58). Even with these obstacles, success or failure to locate psi alleles has bearing on sheep theory; failure to find alleles reduces faith in the theory. An alternative study

design could have dog owners repeatedly breed pets thought to exhibit psi. Even if psi does not exist, this experiment could generate dogs with unusual phenotypes (perhaps parallel to popular conceptions of psi). Knowledge of these phenotypes could lead to alternate metaphors for exceptional human capacities.

Sheep hypotheses can be tested through multidimensional scaling analysis of community survey data. This method generates “maps” of variables with distance between variable clusters representing degree of correlation. Sheep theorists predict, and have found, that anomalous experiences are correlated with psychological well-being. Because psi’s benefits are thought to be greater than the evolutionary costs of psychosis, psi experiences are predicted to be more correlated with psychological well-being than with mental disorder (Sheep Hypothesis 1). Most sheep theorists believe that psi differs from psychopathology; multidimensional analysis should reveal psi experience clusters as separate from psychopathology clusters (Sheep Hypothesis 2).

An alternate, minority sheep position argues that psi is real but shares many alleles with mental disorder. Theorists note that schizotypy is defined in a way that includes psi experience. According to this argument, multidimensional scaling analysis should reveal psi experience variables within psychopathology clusters. This theory is weakened by the failure to locate alleles. If psi’s benefits are greater than psychopathology costs, modern gene-hunting methods should have located the beneficial alleles (Keller & Miller, 2006, but see Crispi, Summer, & Dorus, 2007).

Goat Theory

Skeptics argue that paranormal beliefs and experiences are rooted in human nature, yet products of cognitive dysfunction (Alcock, 1995; Alcock & Otis, 1980; Reed, 1988; for reviews see Irwin, 2009; Kelley, 2010). Although many goat theories are so vague that they cannot be tested, Schumaker (1990, 1995) provides a goat theory subject to empirical evaluation. He regards paranormal beliefs as equivalent to religious beliefs, since both involve delusional dissociation. He argues that paranormal/religious beliefs protect against excessive exposure to reality, and, as a result, confer psychological health. Anomalous experiences, such as ESP, tend to be pathological since they may deviate from socially accepted collective religious delusions (1990, p. 87). Schumaker (1990, p. vii) argues that paranormal belief, humankind’s strongest drive, “is taking us down the road to self-extinction.” As do many goat theorists, he believes that religion, although beneficial, has so many negative effects that it should be replaced by skeptical rationality (Dennett, 2006).

Goat theories tend to attribute anomalous experiences to specific cognitive dysfunctions. ESP, for example, indicates a deficiency of critical or cognitive ability (Alcock & Otis, 1980; Blackmore & Troscianko, 1985; Musch & Ehrenberg, 2002; see Irwin, 2009 for a critique). Out-of-body experiences result from malfunction of the mechanisms by which a person feels “in body” (Blackmore, 1982). Goat theories remove the need for paranormal explanations by hypothesizing that specific anomalous experiences are caused by corresponding physiological dysfunctions. OBEs, for example, are linked to schizophrenia due to abnormality of the angular gyrus (Powell, 2009, p. 114).

Goat hypotheses can be tested through multidimensional scaling analysis of community survey data. Each anomalous experience form should be most correlated with symptoms related to the psychopathological process producing it (Goat Hypothesis 1). Hypothesized relationships could have clinical applications since people reporting a particular anomalous experience might be at risk of the corresponding disorder. This argument allows two testable hypotheses regarding anomalous experience and pathology.

Sleep paralysis (involuntary immobility upon awakening) is often associated with hallucinations of demons, witches, or other spiritual forces. It “appears to be caused by a dysrhythmia of the sleep/wake cycle, controlled in part by adrenergic mechanisms” (Bell, Hildreth, Jenkins, & Garter, 1988, p. 289). Sleep paralysis may be governed by the same mechanisms producing anxiety, panic attacks, and hypertension (high blood pressure, HBP). African-Americans have a disproportionate incidence of sleep paralysis, HBP, stress, and panic attacks, suggesting shared alleles affecting anxiety. As a result, sleep paralysis may be predictive of HBP or anxiety disorders within a subset of African-Americans (Bell et al., 1988). Surveys asking about sleep paralysis might help identify of people at risk for HBP or anxiety disorder, allowing preventive treatment (Bennett, et al., 2004; James, 1994; James, Hartnett, & Kalsbeck, 1983). Studies contributing to

identifying at-risk individuals could be extremely fruitful since HBP contributes to reduced life expectancy among African-Americans (Wang & Wang, 2004). Sleep paralysis is hypothesized to be clinically predictive of, and highly correlated with, HBP and anxiety disorder symptoms (Goat Hypothesis 1a).

In parallel fashion, apparitions, ESP, OBEs, and NDEs have been found correlated with schizotypy. Goat theory argues that these correlations are due to psi's equivalence to pathology. The theory hypothesizes that anomalous experiences are more correlated with schizotypy symptoms than with nonpathological predictive variables (Goat Hypothesis 1b). Identification of correlational variable clusters linked to psychosis (endophenotypes) could facilitate locating psychosis alleles (McClenon, 2011; Pearlson & Folley, 2008, p. 730). This line of research could contribute to the search for psychosis alleles and the development of better methods for identifying at-risk individuals.

According to Schumaker's argument, psi experiences should be more correlated with pathological symptoms than with psychological well-being, since only accepted religions confer psychological health (Goat Hypothesis 2, opposing Sheep Hypothesis 1). Anomalous experiences should be more correlated with pathological symptoms than with religious experiences (Goat Hypothesis 3). This hypothesis coincides with studies indicating that belief in religious phenomena is generally not correlated with belief in paranormal phenomena (Rice, 2003). Religious experience should be more correlated with psychological well-being than with anomalous experience, thought equivalent to pathology (Goat Hypothesis 4). Multidimensional scaling should reveal anomalous experience clusters as within pathological symptom correlational clouds, since specific experiences are derived from specific pathologies (Goat Hypothesis 5, opposite of Sheep Hypothesis 2).

Black Sheep Theories

Black sheep theories use both sheep and goat arguments. These theories link anomalous experiences with both psychopathology and mental well-being and tend to be sympathetic to the field of parapsychology (Berenbaum, Kerns, & Raghavan, 2000). An emerging clinical paradigm portrays psychosis and spirituality as a continuum with some anomalous experiences linked to "healthy psychosis" (Clarke, 2010). Schizotypy, when associated with cognitive organization and adaptive religious beliefs, is associated with mental well-being (Goulding, 2005; McCreery & Claridge, 1995, 1996, 2002). Clinicians, using this approach, help clients determine "what is real and what is not" while avoiding the stigma of mental disorder (Clarke, 2010). Jackson (2010) notes that childhood trauma often results in psychopathology while benign psychosis is linked to positive childhoods. Anomalous experiences (suggesting benign psychosis) facilitate creative "paradigm shifting processes" contributing to psychological health (Jackson, 2010, Kennedy & Kanthamani, 1995).

The ritual healing theory allows testable black sheep hypotheses. This theory argues that anomalous experiences generate beliefs in spirits, souls, life after death, and magical abilities, the ideological foundations of shamanism (McClenon, 1997a, 2002a, 2011, 2012). Shamanic rituals provide evolutionary benefits due to hypnotic and placebo effects. As a result, shamanism, practiced over many millennia, selected for genotypes allowing modern forms of spirituality. Selected phenotypes (hypnotic capacity, absorption, dissociation, transliminality), allowing shamanism, became prevalent. Incidences of these phenotypes are correlated with anomalous experiences generating shamanic beliefs (McClenon, 1997a, 2002a, 2011). This theory portrays a continuum of experiences labeled as psychotic, schizotypal, anomalous, shamanic, and mystical—with increasing probability of benefit associated with shamanic and mystical perceptions (McClenon, 2011).

Folklore and anthropological and clinical evidence support this theory. Folklore studies indicate that universal forms of anomalous experience provide a basis for recurring folk religious beliefs (Hufford, 1982; McClenon, 1991, 1994, 1997a, 1997b, 2002a, 2002b, 2005). Paleolithic cave paintings, indicating shamanic altered states of consciousness, date back more than 30,000 years, sufficient time for shamanism to have evolutionary impacts (Lewis-Williams, 2002). During this time, the pace of evolutionary change has accelerated (Cochran & Harpending, 2009). Shamanic treatments involve hypnosis, a strategy proven effective for treating mild psychological disorders, childbirth complications, burns, blood loss following injury, and physiological processes beyond conscious control (Barber, 1984; Fromm & Nash,

1992; McClenon, 1994, 2002a, 2002b). Such treatments would have evolutionary impact; hypnotizability, absorption, and religiosity are correlated and have genetic basis (Duke, 1969; Levin, Wickramasekera, & Hershberg, 1998; Morgan, 1973; Ott, Reiter, Henning, & Vaitl, 2005; Waller, Kojetin, Bouchard, Lykken, & Tellegen, 1990).

The ritual healing theory was evaluated through content analysis of 1,215 anomalous experience narratives. Findings supported theory hypotheses (McClenon, 2002b). The evidence also implied that hypothetical psi genes provide insufficient benefits to overcome their evolutionary costs.

Ritual healing hypotheses can be tested through multidimensional scaling analysis of community survey data. Many genes are regulated (switched on or off) by the effects of small carbon-based molecules governed by environmental factors. Alleles related to shamanism are hypothesized to be “switched on” by childhood stress/trauma and environmental conditioning, the same factors governing risk of psychosis. This argument coincides with findings presented by Rabeyron and Watt (2010). According to the ritual healing theory, anomalous experiences, absorption, related psychological variables (shamanic variables), and childhood difficulty should all be intercorrelated (Black Sheep Hypothesis 1). The ritual healing theory predicts that variables related to shamanism should be more correlated with schizotypy, anomalous experience, and childhood difficulty than are other variables regarded predictive (family income, life satisfaction, coping style, hostility; Black Sheep Hypothesis 2). Black sheep theory predicts that anomalous experience variables should be close, but not within, the psychological symptom cloud, as portrayed through multidimensional scaling. Like sheep theory, black sheep theory argues that psi is not equivalent to psychopathology (Black Sheep Hypothesis 3; equivalent to Sheep Hypothesis 2, opposite Goat Hypothesis 5).

Multidimensional Scaling Analysis of Psychological Symptoms

Mirowsky and Ross (1989) mapped 4,095 correlations of 81 psychological symptoms among 463 respondents in random sample surveys of El Paso, Texas, and Juarez, Mexico. Questionnaire items were regarded as well accepted survey measures of psychological distress. Multidimensional scaling analysis gives each variable a random location point and then adjusts each point in relation to its correlations with all other points. The points are shuffled until they best fit the correlations of each variable to every other variable. This method creates a kind of “map” of variables, showing clusters of variables with distance between variables representing degree of correlation.

Mirowsky and Ross (1989) used multidimensional scaling to evaluate hypotheses regarding relationships among psychological variables. A galaxy hypothesis suggested that psychological symptoms are clustered in distinct diagnostic categories. A nebula hypothesis predicted that symptoms are randomly distributed, not clustered by type. A spectrum hypothesis predicted that cluster types would overlap, shading into each other.

Study findings supported the spectrum hypothesis; diagnostic symptom groups were not discrete, but arrayed in a spectrum of overlapping clusters, arranged like a color wheel with ends connected (Mirowsky & Ross, 1989). Mirowsky (1990) argued that this pattern indicated a flaw in the Diagnostic and Statistical Manual (DSM) paradigm since the correlational map revealed no logical means for demarcating diagnostic categories. He suggested that DSM creators were like Renaissance witch hunters who made lists of signs defining witchcraft and achieved validity by demonstrating reliability among themselves. This argument coincides with the hypothesis that diagnostic categories represent reified concepts rather than valid diagnoses (Hyman, 2010) and that the search for schizophrenia alleles will be extremely frustrating, perhaps fruitless (Keller & Miller, 2006).

A fundamental question guided the present study design: How would multidimensional scaling portray the relationships among anomalous experience variables and Mirowsky and Ross’s (1989) psychological symptoms? Previous community surveys of anomalous experiences indicate that perception types are correlated with each other, suggesting a distinct, galaxy configuration (Palmer, 1979; Cardeña, Lynn, & Krippner, 2000). Sheep and black sheep theories predict a galaxy configuration (Sheep Hypothesis 2, Black Sheep Hypothesis 3) while goat theory predicts a spectrum pattern (Goat Hypothesis 5). A pilot community survey allows testing the two sheep hypotheses, five goat hypotheses, and three black sheep hypotheses using the SPSS ALSCAL program.

Method

Questionnaires

A 193-item self-administrated questionnaire was designed to evaluate the relationships between anomalous experiences, psychological symptoms, variables related to shamanism, and demographic variables and scales often correlated with mental disorder. The questionnaire measured: frequency of anomalous experience; psychological symptoms; Tellegen Absorption Scale; selected Transliminality, Boundary, and Dissociation Scale items; family income; blood pressure scale; Satisfaction With Life Scale; stress, childhood, and adolescence difficulty questions; John Henry Active Coping Scale; Hostility Questionnaire.

Frequency of anomalous experiences. Anomalous experience questions were derived from previous study findings. Between 1988 and 1997, Introduction to Anthropology undergraduate students at a predominately African-American college in North Carolina asked friends, relatives, and neighbors, "If you have had an extremely unusual experience, would you describe it?" The 1,446 respondents provided 1,578 anomalous experience accounts. These experiences were reliably classified into the following categories: apparitions (34.4%), paranormal dreams (9.6%), psychokinesis (PK; 9.0%), spiritual healings (6.1%), rootlore (experiences resulting from rituals derived, in part, from African occult traditions, McClenon, 2005; 5.0%), sleep paralysis (4.7%), waking ESP (4.3%), synchronistic events (3.2%), miscellaneous paranormal events (2.4%), occult events (associated with performances such as fortune telling or Ouija boards, 2.3%), out-of-body/near-death experiences (1.9%), and unidentified flying objects (1.7%). Other stories, deemed unusual by respondents but not regarded as anomalous, included folklore and religious experiences (6.9%), normal dreams (5.0%), and oral histories (3.7%; McClenon, 1994, 2002a, 2002b). Most rootlore and occult experience accounts could be classified within apparition, waking ESP, or PK categories.

Questionnaire items were designed to measure frequency of the 11 most common experiential forms. Respondents were asked, "How often have you had the following experience?" and provided the list: (a) apparition (perceiving something through sight, sound, or touch that you later found was not completely real), (b) waking ESP (perceiving something using a "sixth sense"), (c) paranormal dream (having a dream that you later found reflected actual events), (d) out-of-body experience (having the feeling that you were out of your body), (e) near-death experience (unusual perceptions during a time you thought you were close to death), (f) psychokinesis (perceiving that an object moved magically), (g) sleep paralysis (waking from sleep and finding that you could not move), (h) spiritual healing (being healed through a method not verified by modern medicine), (i) UFO (unidentified flying object in the sky), (j) other type of extremely unusual experience, (k) religious experience. Respondents were provided three frequency choices: "never," "once or twice," or "more often."

Psychological symptoms. Mirowsky and Ross (1991) surveyed 91 psychological symptoms falling into seven diagnostic categories, many with subscales. Respondents were asked, "How often in the past 12 months have you" [and then provided a phrase specifying a symptom]. Response choices were "never," "almost never," "sometimes," "fairly often," and "often." The present study omitted questions requiring a professional interviewer. An additional OCD item (OCD3) was devised and added, based on the wording on page 462 of the DSM IV-TR (American Psychiatric Association, 2000). As a result, the study questionnaire included 88 self-administered symptom questions associated with 11 diagnostic categories (see Appendix).

Among psychological symptoms, 12 items measure the diagnostic category *schizophrenia*. Ten items (Schizo1 to Schizo10) ask about schizotypy experiences and 2 items (Schizo11 and Schizo12) pertain to cognitive disorganization. This diagnostic category is labeled *schizotypy* in the present report, even though the scale does not contain items asking about introverted anhedonia or impulsive nonconformity, variables typically included on schizotypy scales (Claridge & Beech, 1995; Chapman, Chapman, & Kwapil, 1995).

Tellegen Absorption Scale (Absorp). The 34-item Tellegen Absorption Scale (TAS) measures openness to absorbing and self-altering experiences (Tellegen & Atkinson, 1974; Cronbach $\alpha = .84$).

Although measurement of absorption is influenced by context, many studies have found TAS to be correlated with hypnotic suggestibility (Heap, Brown, & Oakley, 2004).

Transliminality (Translim), Boundary (Boundary), and Dissociation (Dissoc) scales. The 29-item Transliminality Scale was designed to measure tendency for psychological material to cross thresholds into or out of consciousness (Lange, Thalbourne, Houran, & Storm, 2000; Thalbourne & Delin, 1994; $\alpha = .87$). The 146-item Boundary Questionnaire was designed to quantify cognitive boundaries; people with thin boundaries are thought to slide easily from one feeling to another and to be more vulnerable and open to new ideas (Hartmann, 1991; $\alpha = .84$). The 28-item Dissociative Experience Scale was designed to quantify propensity for dissociative experiences (Carlson, et al., 1993; Bernstein & Putnam, 1986; $\alpha = .92$).

In order to select questionnaire items reflecting hypnotic suggestibility, the Harvard Group Scale of Hypnotic Susceptibility, Form A (Shor & Orne, 1962) was administered to 154 undergraduate students. Transliminality, Boundary, and Dissociation scales were administered to these students on alternate occasions. The 15 questionnaire items most correlated with Harvard Group Scale scores were selected for use on the study questionnaire (4 transliminality items, 4 dissociation items, 7 boundary items; see Appendix).

Income and blood pressure questions (Income and HBP). The study used Centers for Disease Control (2008 and previous years) survey questions regarding annual household income (ordinal scale). Annual household income and socioeconomic status, at birth, are predictive of psychosis incidence (Werner, Malaspina, & Rabinowitz, 2007). The sum of three CDC standardized ordinal-scale questions regarding high blood pressure (HBP) generated the HBP scale.

Satisfaction With Life Scale (Satisfac). The 5-item Satisfaction With Life Scale measures global life satisfaction. It indicates psychological well-being and has been found to be strongly negatively correlated with clinical measures of distress (Pavot & Diener, 1993; mean $\alpha = .78$). See Appendix for questionnaire items.

Stress, childhood, and adolescence difficulty questions. Respondents were asked to evaluate the sentence: "I feel that my life is more stressful than that of most people" (Stress). Two items, taken from Hartmann's (1991) Boundary Questionnaire, were also included: "I feel that I had a difficult and complicated childhood" (DifChild) and "I feel I had a difficult and complicated adolescence (DifAdol). Response choices were "never," "rarely," "generally," and "often."

John Henry Active Coping Scale (JHS). The John Henry Active Coping Scale consists of 12 statements evaluated by the respondent from 1 to 5 as "completely false" to "completely true" (Ford, Hill, Butler, & Havstad, 2002; α varied from .66 to .80). This scale predicts propensity for high blood pressure in some populations, particularly lower socioeconomic status (SES) African-Americans, and is correlated with a wide array of health status outcomes (Bennett et al., 2004; James, 1994; James, Hartnett, & Kalsbeck, 1983).

Hostility Questionnaire (Anger). The Hostility Questionnaire is a 46-item scale subdivided into cynicism, anger, and aggression subscales, predictive of both psychological health and physical mortality (Williams & Williams, 1994, pp. 5–11; $\alpha = .66$). Twelve items, regarded as indicative of mental health and found in pilot studies to be correlated with high blood pressure (HBP), were selected for use on the study questionnaire.

Questionnaire Administration

As part of class projects, anthropology students at a predominately African-American college in North Carolina were trained to administer an approved Institutional Review Board (IRB) consent form and the study questionnaire. They recruited friends, family members, and neighbors to participate in this study. After signing the consent form, participants privately completed the questionnaire, sealed it in a provided envelope, and returned it to the student. The student then interviewed the respondent regarding unusual and stressful experiences using questions designed to evaluate validity of anomalous experience items. The student transcribed the interview and assigned the data an anonymous code number.

Results**Sample Characteristics**

Respondent demographics reflect the composition of students administering the questionnaire during the study period (2001–2006). Of 965 respondents providing information, 73% were African-American and 69% were female. Mean age was 33 years. These demographics correspond with those of the student interviewers and the predominantly African-American community surrounding the college campus.

Estimated median annual family income was \$27,372. On average, African-Americans reported less annual family income (estimated median = \$23,022) than did Caucasians (estimated median = \$41,557; $\chi^2(4, N = 890) = 56.1, p < .001$; African-Americans earned 66% of Caucasian income). During the study period, median annual family income in the USA varied from \$49,455 to \$50,255 (2007 dollars), with African-American families earning, on average, 62% of non-Hispanic White family earnings. These values imply that the sample median family income was in the bottom quartile of the American population. Among those providing information, 13.5% were students and 40.1% were unemployed.

The sample was drawn from a predominantly African-American area of North Carolina with high poverty rate (over 20%), little economic growth, high unemployment, and problems with mental health care services. Sociological status is inversely correlated with mental health. In general, African-Americans are about 3 times more likely to be diagnosed with schizophrenia than are White Americans, a tendency only partially reduced by controlling for socioeconomic status at birth (Bresnahan et al., 2007).

Relatively high percentages of respondents reported specific anomalous experiences “once or twice” or “more often”: apparitions (40%), paranormal dreams (66%), waking ESP (21%), OBE (29%), NDE (14%), PK (34%), sleep paralysis (35%), spiritual healing (35%), UFO (10%), other (22%), religious experience (23%). These frequencies coincide, in general, with those reported by Greeley (1987) in a national USA sample and McClenon (1994, 2002a) in random samples of three USA colleges. Rates of anomalous experience reported by students at the predominantly African-American college were equivalent to those reported at two predominantly Caucasian colleges (except for sleep paralysis, which is reported more frequently among African-Americans).

Differences regarding gender and ethnicity produced 12 statistically significant *t* values ($p < .01$). African-Americans, compared to Caucasians, reported greater incidence of sleep paralysis, $t(905) = 3.5, p < .001$; spiritual healing, $t(894) = 3.6, p < .001$, schizotypy, $t(858) = 2.7, p < .007$; paranoia, $t(861) = 5.9, p < .001$; lower incidence of UFO experiences, $t(899) = 3.9, p < .001$; absorption, $t(776) = 2.7, p < .007$; and difficult adolescence, $t(896) = -5.7, p < .001$. Females reported higher rates of depression-mood, $t(796) = 2.7, p < .006$; anxiety-mood, $t(857) = 3.1, p < .002$; and phobia, $t(882) = 2.6, p < .009$; but fewer alcohol problems $t(875) = 3.6, p < .001$, and lower family income, $t(766) = 4.5, p < .001$.

Family income was negatively, but slightly, correlated with schizotypy symptoms, $r(903) = -.16, p < .001$. Controlling for income rendered the schizotypy/ethnicity relationship nonsignificant (both chi square and multiple regression analysis; $p > .05$). In general, the literature indicates that socioeconomic status is inversely correlated with mental disorder (Hudson, 2005).

Multidimensional Scaling**Analysis of Hypotheses**

Figure 1 portrays the diagnostic categories as a spectrum of overlapping clusters, arranged like a “color wheel” with ends connected—replicating Mirowsky and Ross (1989). This configuration supports their spectrum hypothesis (McClenon, 2012).

Schizotypy symptoms are scattered in the upper-right quadrant of this wheel with anomalous experience variables arrayed above them. Psi-related experiences (apparitions, ESP, NDE, “Other” anomalous experiences, PK) are close to schizotypy symptom variables but not within the symptom cloud, a galaxy pattern (supporting Sheep Hypothesis 2, Goat Hypothesis 1b, Black Sheep Hypothesis 3; failing to

ESP, OBE, and PK. The configuration fits the ritual healing theory, which suggests that childhood difficulty switches on alleles governing shamanic variables which, in turn, trigger anomalous experiences. The configuration supports Black Sheep Hypotheses 1.

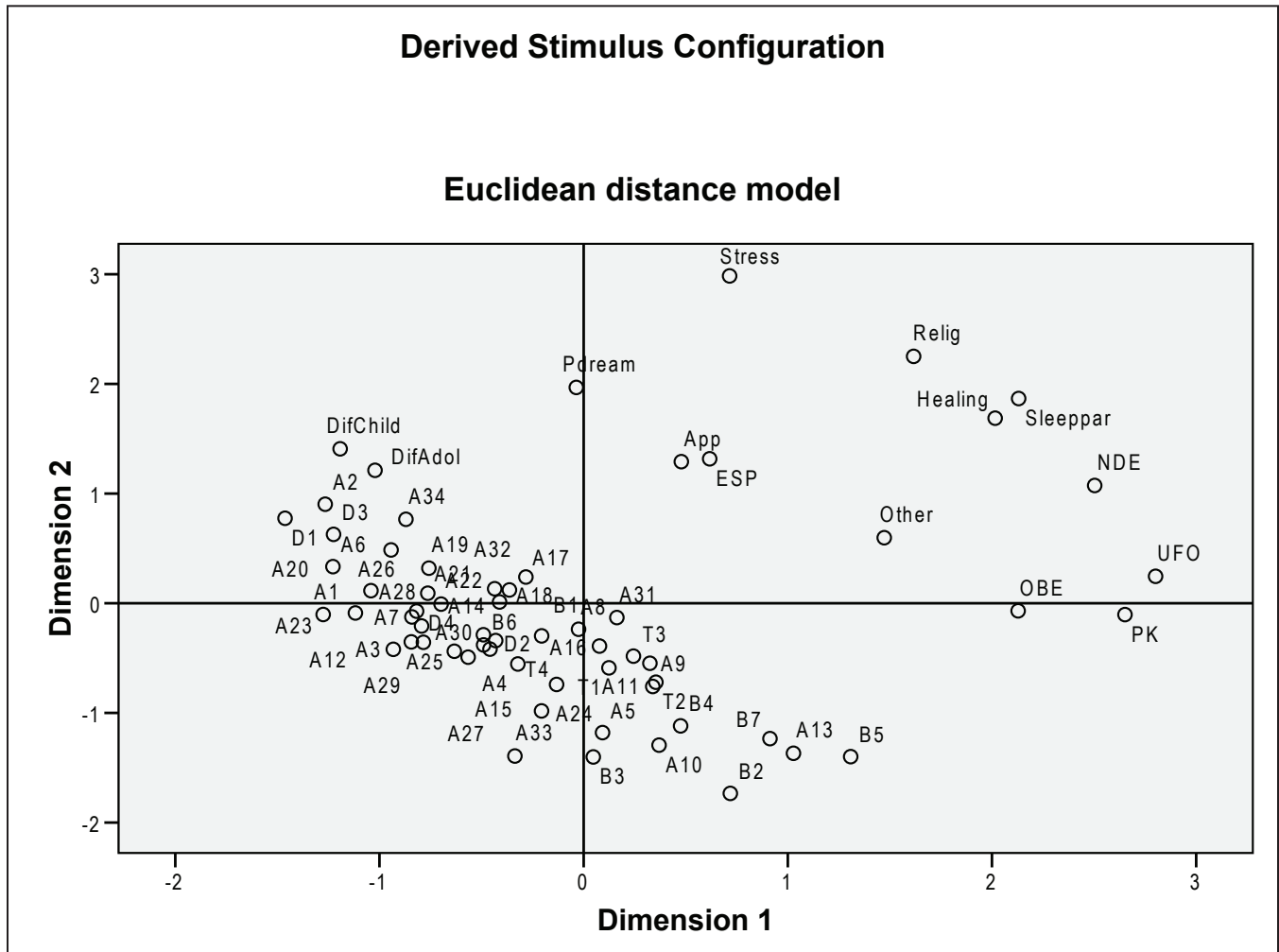


Figure 2. Anomalous experience variables and psychological variables.

Figure 3 portrays relationships between diagnostic categories, anomalous experience variables and scales regarded as related to mental health. The John Henry Scale ($\alpha = .883$) is in the upper left quadrant; Satisfaction Scale ($\alpha = .87$) in the lower left quadrant; Anger Scale ($\alpha = -.10$) is in the lower left and right quadrants. These scales are arranged in clusters to the left of the mental disorder diagnostic cluster (generally upper right quadrant). The Anger Scale failed to achieve an acceptable level of internal consistency, revealing a very loose cluster. The anomalous experience variables are close to or within the diagnostic and shamanic variable clusters, made up of Dissociation, Boundary, Transliminality, and Absorption Scales (supporting Goat Hypothesis 2).

As predicted by Black Sheep Hypotheses 1, Pearson correlations were significant ($p < .001$, N varying from 784 to 933) between schizotypy (Schizo) and App (.36), ESP (.32), Pdream (.31), OBE (.39), NDE (.36), PK (.39), Sleeppar (.27), Other (.40), Healing (.32), UFO (.18), Relig (.28), DifChild (.28); as well as DifAdol (.30), Stress (.16), Absorption (.54), Boundary (.55), Translim (.51), and Dissoc (.50).

The figure suggests that, as specified by the ritual healing theory, diagnostic categories, psychological variables, and anomalous experience variables are affected by childhood and adolescent difficulty. Other variables (John Henry Scale, Life Satisfaction, Anger) are not as closely correlated with psychological symptoms or anomalous experience. Anomalous experience variables are more correlated with diagnostic categories than with scales thought to be correlated, Life Satisfaction (Sat1–Sat5) and the Anger Scale

(Anger1–Anger12). This pattern refutes Sheep Hypothesis 1, supports Goat Hypothesis 2, and supports Black Sheep Hypothesis 2.

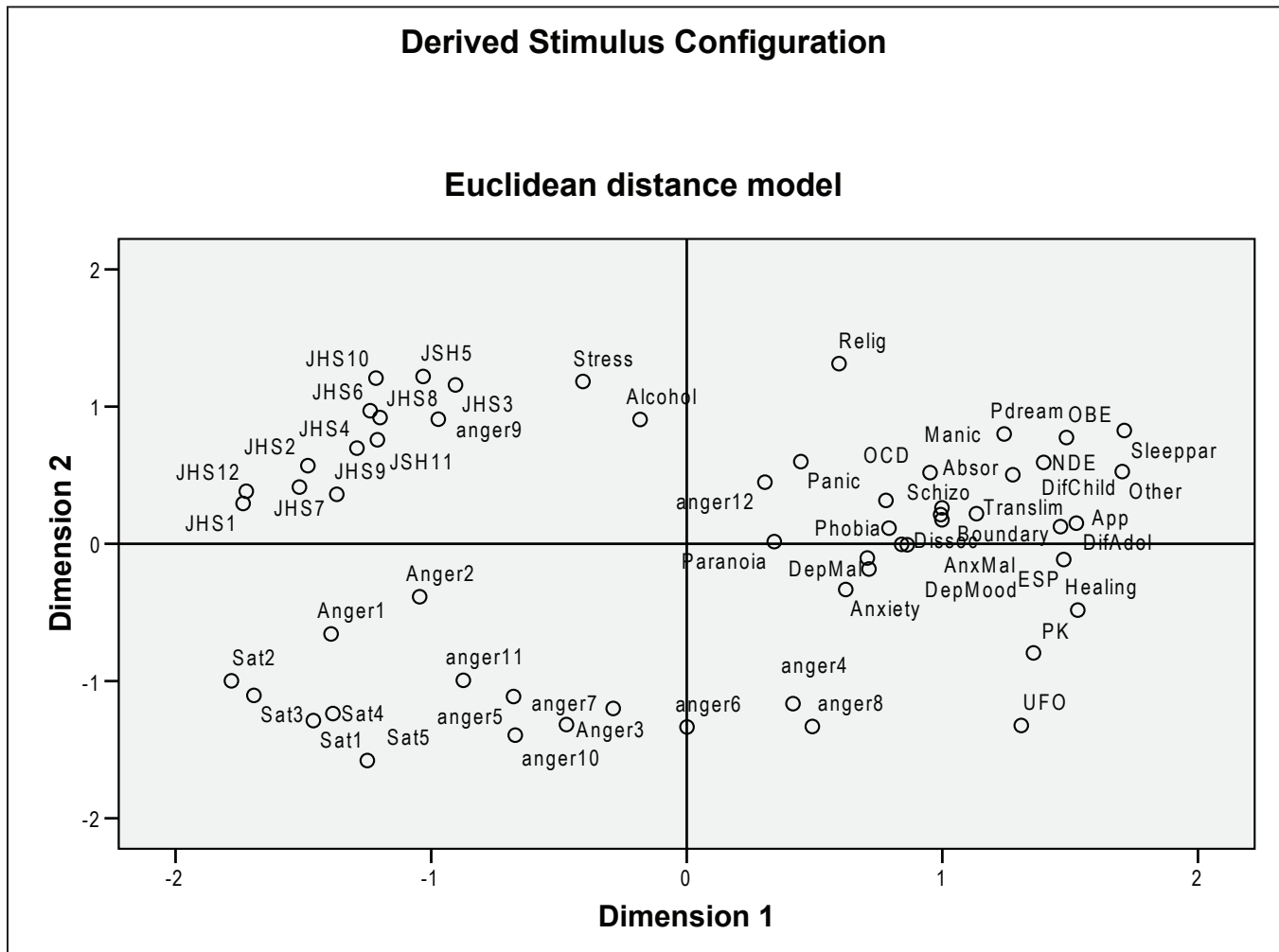


Figure 3. Multidimensional scaling of diagnostic variables, variables related to shamanism, anomalous experience variables, John Henry Scale (JHS), Hostility Scale (Anger), and Satisfaction With Life Scale (Sat).

Religious experiences (Relig) are not more correlated with Life Satisfaction (Sat1-Sat5) than are other anomalous experiences, refuting Goat Hypothesis 4. Sleep paralysis (Sleeppar) is not as correlated with panic or anxiety disorders as are other variables, refuting Goat Hypothesis 1a.

Figure 4 includes variables found predictive of mental disorder in the literature: income, ethnic ID (Ethnicid, coded as African-American or Caucasian/White), gender, age, high blood pressure (HBP), satisfaction with life (Satisfac), John Henry Scale (JHS), and Anger Scale (Anger). Also shown are diagnostic scales and anomalous experience variables. The figure portrays a variable cloud that includes alcohol, paranoia, difficult adolescence, difficult childhood, anxiety-mood, phobia, panic disorder, depression-mood, OCD, anxiety-mal (anxiety-malaise), schizotypy, manic behavior (lower right quadrant with Schizo in the upper right quadrant). The anomalous experience variables form a very loose cloud about the diagnosis cloud (upper right quadrant with UFO and PK in the upper left quadrant). The paranormal experiences variables are less correlated with satisfaction with life than are the diagnostic variables (refuting Sheep Hypothesis 1 and supporting Goat Hypothesis 2).

Sleep paralysis (Sleeppar) was not highly correlated with high blood pressure (HBP) and variables such as Panic or Phobia (refuting Goat Hypothesis 1a). As noted previously, religious experience (Relig)

is not more correlated with the Satisfaction With Life Scale (Satisfac) than are the anomalous experience variables (refuting Goat Hypothesis 4).

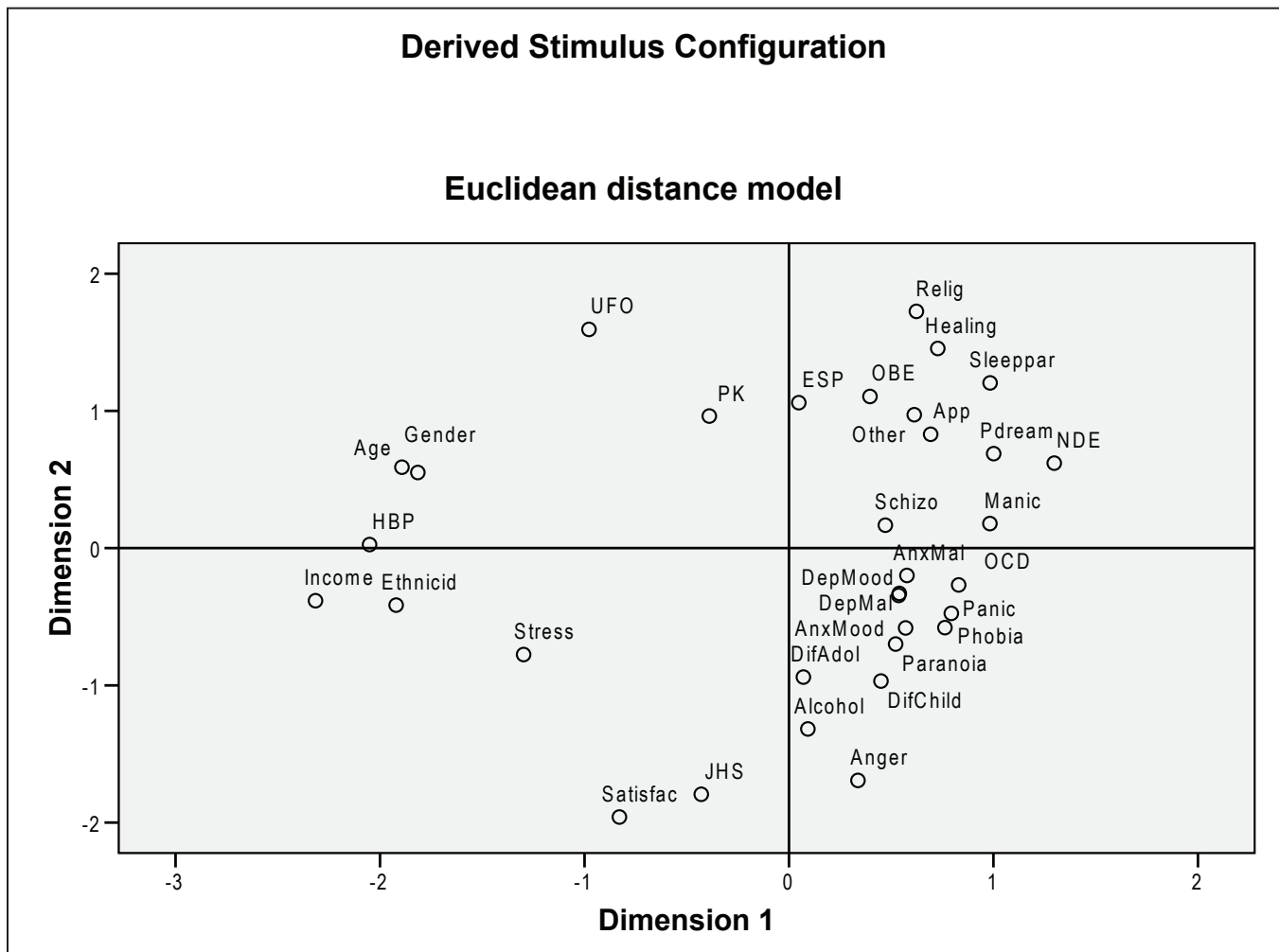


Figure 4. Multidimensional analysis of diagnostic variables, childhood/adolescent difficulty, anomalous experience variables, and other scales.

Figure 5 portrays multidimensional scaling for schizotypal experiences, shamanic variables, anomalous experience variables, stress, and childhood/adolescent difficulty. The figure reveals a galaxy pattern with schizotypy as a loose cloud (schizo11 and schizo12 are outside of the cloud); shamanic variables form another cloud (upper right quadrant, but extending into the upper left and lower right quadrants). The anomalous experience variables form a very loose cloud or perhaps two clouds (lower left quadrant with App, ESP, Pdream in the lower right quadrant). This configuration reveals schizotypy, anomalous experience, and shamanic variables as distinct entities (supporting Sheep Hypothesis 2 and Black Sheep Hypothesis 3, refuting Goat Hypothesis 5). PK, very close to the schizotypy cloud, is an exception.

Although some schizotypy symptoms refer directly to anomalous experiences (Schizo2—auditory hallucinations; Schizo3—visual hallucinations; Schizo3—visions), the Schizo12 symptom “had useless thoughts that kept running through your mind” was most correlated with apparitions (App), ESP, and paranormal dreams (Pdream). This study portrays unexpected correlations between the disorganized aspects of schizotypy and anomalous experience.

Regression analysis reveals scales predictive of schizotypy. A BTD scale was created by summing Boundary, Transliminality, and Dissociation items ($\alpha = .81$). An anomalous experience scale was created by summing anomalous experiences ($\alpha = .80$). Schizotypy was highly correlated with BTD ($R = .59$, $N =$

814) and anomalous experience ($R = .60$, $N = 864$). With schizotypal experience as the dependent variable, the BTD Scale and Unusual Experience Scale explained almost half of schizotypal variance ($R = .69$, $R^2 = .47$, Adj. $R^2 = .47$, S.E. = 4.71). People with difficult childhoods, anomalous experiences, and shamanic propensities are likely to report schizotypal symptoms.

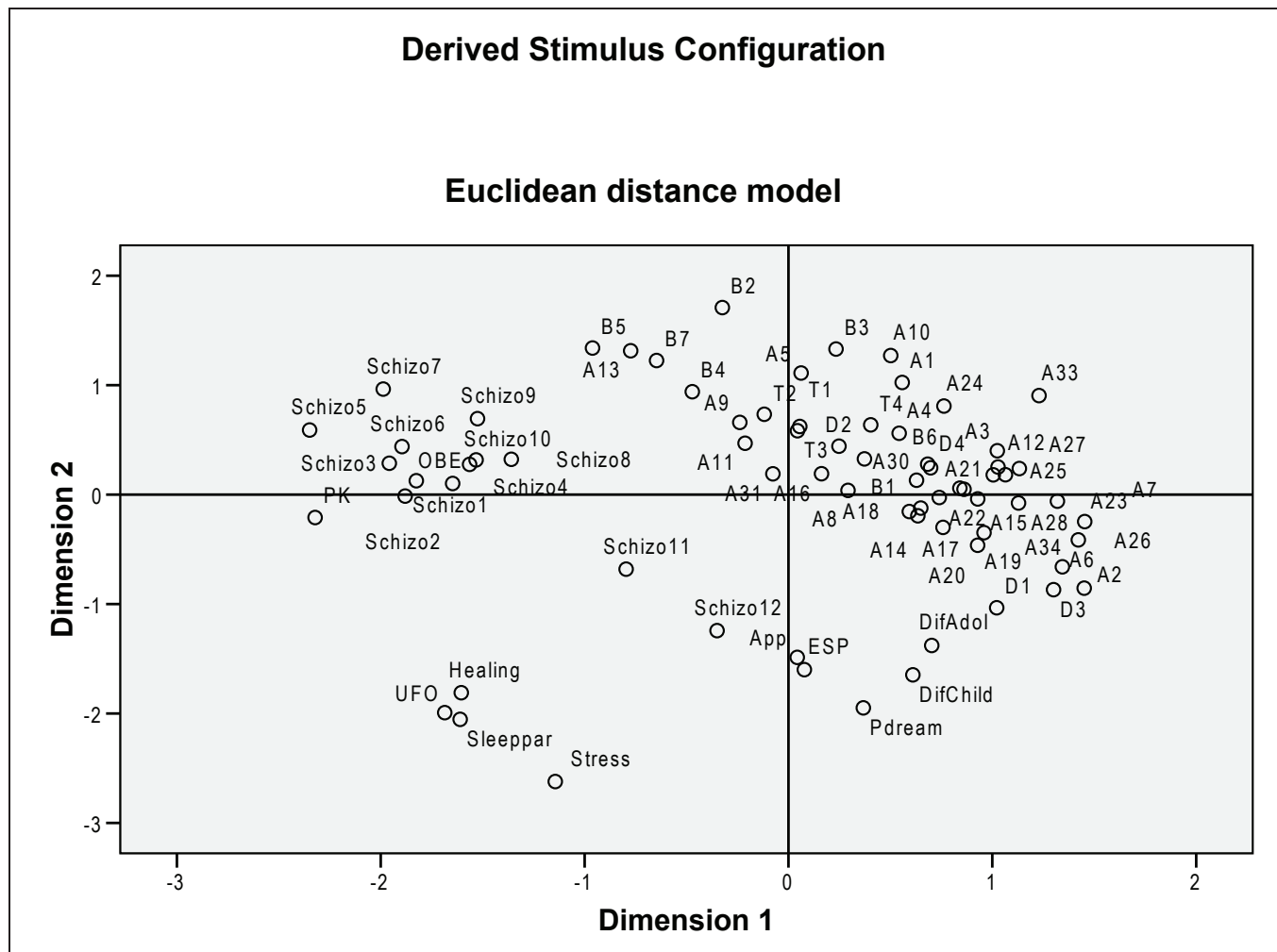


Figure 5. Schizotypal experience, psychological variables, anomalous experience variables, stress variables.

Discussion

This study replicated Mirowsky and Ross's (1989) findings that mental disorder symptoms do not cluster in ways that allow clear demarcations (McClenon, 2012). This finding coincides with criticisms of the DSM paradigm and suggests that diagnostic categories, such as schizophrenia, do not reflect underlying genetic structures (Adriaens, 2008).

Study findings allow evaluation of sheep, goat, and black-sheep hypotheses. Sheep Hypothesis 1 and Goat Hypotheses 4 and 5 were not supported. Sheep Hypothesis 2 and Goat Hypotheses 2 and 3 were supported. Goat Hypothesis 1b regarding schizotypy-anomalous experience correlations was supported but Goat Hypothesis 1a regarding sleep paralysis was not supported. All three black sheep hypotheses were supported. In summary, 50% of sheep hypotheses, 50% of goat hypotheses, and 100% of black sheep hypotheses were supported.

Black sheep findings coincide with the idea that spirituality works as a coping strategy (Pargament, 1997). Spirituality ameliorates the effects of stress, regardless of religious affiliation, with benefits derived from reducing negative affect (Kim & Seidlitz, 2002). Spirituality and core spiritual experiences have a

buffering quality, powerful enough to reduce medical symptoms (Kass, Friedman, Leserman, Zuttermeister, & Benson, 1991).

These findings support an anthropological paradigm suggesting that shamanic ritual can reduce psychosis incidence (McClenon, 2002a; Winkelman, 2010). Although religion is connected with psychosis, shamanism has characteristics that may prevent psychosis. Shamanic traditions describe training programs that help at-risk people increase their cognitive organization. People reporting difficult childhoods, anomalous experiences, and shamanic characteristics could benefit from ritual training designed to increase cognitive integration.

Study Hypotheses and Genetics Research

The study plan was devised in 2000 with the hope of contributing to genetics research. Multidimensional scaling of community survey data can reveal variable clusters correlated with psychosis, suggesting associated phenotypes with underlying alleles. With adequate definition of phenotypes, genetics researchers can locate these alleles (Lenzenweger, 2010).

Unfortunately, progress toward finding psychosis alleles has been disappointing (Wade, 2009). Keller and Miller (2006) provide a theory explaining this outcome. They suggest that, rather than derived from specific alleles, many mental disorders originate with random mutations. They argue that cognition has “added on” characteristics since modules developing during early eras of human evolution affect modules evolving during later stages. According to their theory, mutations disrupting “upstream” modules can result in a cascade of failures, impacting “downstream” modules. The diagnostic symptoms of psychosis, for example, may reflect cascade failures within the upstream/downstream cognition structure rather than specific psychosis alleles. Although harmful mutations are eventually eliminated by evolutionary costs, new mutations continually trigger similar cascade failures due to the physiology of consciousness. This theory explains “the data on mental disorder prevalence rates, fitness costs, the likely rarity of susceptibility alleles, the increased risks of mental disorders with brain trauma, inbreeding, and paternal age” (Keller & Miller, 2006, p. 385).

Keller and Miller’s (2006) theory explains balance theory failures. If sheep theory is valid, modern gene hunting methods should have found underlying psi/psychosis alleles. If Schumaker’s goat theory is correct, psi incidence should have declined over time. Neither theory’s predictions have been supported.

Black sheep theory combines sheep and goat arguments. It suggests that psi is real but spontaneous incidence is correlated with psychological symptoms, childhood difficulty, and shamanic variables. This theory suggests that, even if few psychosis alleles exist, shamanic alleles can be located. A gene influencing absorption has already been found (Ott, Reiter, Henning, & Vaitl, 2005).

Black sheep theories acknowledge religion’s benefits as well as dysfunctions. Although psychosis/spirituality has evolutionary costs, spirituality and associated anomalous experiences generate folk beliefs and coping skills. These experiences provide a basis for shamanism.

Shamanism involves controlling anomalous cognitive skills. Humans vary in their control over these capacities. Although most people have no control over spontaneous perceptions, some elicit hypnotic, out-of-body experiences. This capacity, coupled with trance performance, allows shamanism.

Group experiences shape folk beliefs. Haunting, poltergeist, and possession experiences can be influenced by ritual. Small groups (sitter, prayer, spiritualist, cults, sects) experience collective anomalous events, affected by belief. Shamans achieve sufficient cognitive discipline that they can provide trance performances, generating placebo and hypnotic benefits.

Shamanism and its modern variations create innovative folk beliefs regarding group problems. Black sheep theory argues that psi’s power is derived from associated beliefs rather than direct evolutionary benefits or contribution to scientific progress.

Although religious and scientific elites feel threatened by innovation, shamanic alleles insure that future people will find ways of thinking that fit their needs. Rather than leading to humanity’s extinction (Schumaker, 1990, p. 87), the black sheep theory predicts that these alleles will contribute to therapeutic processes. As noted by Plato, the forms of madness labeled spirituality “will prevail with the wise, though not with the learned” (Harvey, 1996, p. 120).

Study Limitations

Exploratory methodology allows many possibilities for bias. These include self-reporting of psychological symptoms and variables, selection of participants by student interviewers, use of single-item measures for various variables, and ordinal levels of measurement of most variables. The degree that present findings can be generalized is unclear. The study population differs markedly from random national USA samples.

Multidimensional scaling does not identify causal or spurious relationships. Large sample size limits the applicability of tests of statistical significance. Ordinal level data limits usefulness of multiple regression analysis. As with any theory-based study, a variety of alternate explanations exist for correlative findings. Verifications of hypotheses do not prove a theory's validity but provide guidance for future studies.

Correlations among variables might be attributed, in part, to parallel response biases and the tendency for some people to choose extreme responses. Alternate ordering of questionnaire items might affect correlational results. Although previous researchers acknowledge similar methodological problems, they report recurring patterns within their data, similar to those found in the present study (Mirowsky & Ross (1989; Palmer, 1979; Rabeyon & Watt, 2010). These patterns increase our faith in methodological validity.

Correlations among psychological variables may differ among cultures. Correlations between anxiety and depression, depression and irritability, and anxiety and irritability varied widely in data from Denmark, India, Colombia, Nigeria, England, Russia, Czechoslovakia, Taiwan, and USA and between New York African-Americans and New York Caucasians (Leff, 1981, pp. 47–49). Studies seeking to define psychological phenotypes require replication among multiple ethnic groups.

Conclusions

Incidence of psychological symptoms, variables related to shamanism, propensity for anomalous experience, and childhood/adolescent difficulty were significantly correlated. Correlational patterns could be explained as the result of childhood difficulty triggering alleles related to both psychopathologies and shamanic variables. Although alternative explanations exist, findings are in harmony with the idea that shamanism, practiced for many millennia, shaped phenotypes related to hypnotic and placebo treatment.

If studies of other ethnic groups replicate these findings, this line of research could have practical applications. Schizotypal individuals reporting frequent anomalous experiences and revealing shamanic phenotypes could benefit from programs designed to increase their cognitive self-control through spiritual practice.

Studies of this type can shed light on the spirituality/psychosis relationship. Anomalous experiences seemingly contribute to genetically-based systems that alleviate the effects of stress and trauma.

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Abstracts in Other Languages

French

UNE ENQUÊTE COMMUNAUTAIRE SUR LES EXPERIENCES ANOMALES : ANALYSE DE CORRELATION DES HYPOTHESES EVOLUTIONNISTES

RESUME : Un questionnaire, administré à un échantillon à prédominance afro-américaine dans le Nord-Est de la Caroline du Nord (N = 965), a sondé l'incidence des expériences anormales, des symptômes psychologiques, des variables psychologiques liées au chamanisme, au bien-être psychologique et à des variables démographiques. Une analyse d'échelle multidimensionnelle a permis une évaluation des hypothèses dérivées des théories du mouton, de la chèvre et du « mouton noir ». Les théories du mouton prédisent que les expériences paranormales fournissent des avantages directs en termes de survie, grâce au psi. Les théories de la chèvre affirment que le psi n'existe pas ; les expériences anormales sont associées avec la psychopathologie et ne fournissent aucun bénéfice direct pour l'évolution. Une théorie du « mouton noir » possède des éléments des moutons et des chèvres ; elle décrit un continuum de la psychose à la spiritualité, avec des bénéfices dérivés de la spiritualité ; le psi pourrait exister mais ne pas fournir des bénéfices évolutifs directs suffisant pour surmonter les coûts psychopathologiques. Au sein du paradigme du mouton noir, la théorie de la guérison rituelle affirme que des variables chamaniques et les génotypes associés facilitent les aptitudes à faire face et les effets hypnotiques / placebo. Les résultats de cette étude fournissent un soutien mitigé pour les hypothèses du mouton et de la chèvre mais un soutien total aux hypothèses du mouton noir.

Spanish

UNA ENCUESTA COMUNITARIA SOBRE EXPERIENCIAS ANÓMALAS: UN ANÁLISIS CORRELACIONAL DE HIPÓTESIS EVOLUTIVAS

RESUMEN: Un cuestionario, administrado a una muestra predominantemente afro-americana en el noreste de Carolina del Norte (N = 965) investigó la incidencia de experiencias anómalas, síntomas psicológicos, variables psicológicas relacionadas con el chamanismo, escalas relacionadas con el bienestar psicológico, y variables demográficas. Un análisis multidimensional de escalas permitió evaluar hipótesis extraídas de teorías de ovejas, cabras, y “ovejas negras”. La teoría de ovejas predice que las experiencias paranormales proporcionan ventajas de supervivencia directas, derivadas de psi. La teoría de cabras argumenta que psi no existe; las experiencias anómalas están asociadas con psicopatología y no proporcionan ningún beneficio evolutivo directo. La teoría “ovejas negras” tiene elementos ovinos y caprinos, postulando un continuo psicosis-espiritualidad, con beneficios derivados de la espiritualidad; es posible que psi exista pero no proporciona beneficios evolutivos directos suficientes para superar los costos psicopatológicos. Dentro del paradigma ovejas negras, la teoría de la curación ritual postula que las variables

chamánicas y sus genotipos asociados facilitan habilidades de afrontamiento y efectos hipnóticos/placebo. Los resultados del estudio proporcionan apoyo mixto para las hipótesis ovina y caprina, pero son totalmente compatibles con la hipótesis de ovejas negras.

German

EINE GEMEINDE-UMFRAGE ZU ANOMALEN ERFAHRUNGEN: KORRELATIONSANALYSE EVOLUTIONÄRER HYPOTHESEN

ZUSAMMENFASSUNG: Ein Fragebogen wurde unter einer Stichprobe von vorwiegend Afro-Amerikanern im nordöstlichen North Carolina ($N = 965$) verteilt zur Erfassung der Häufigkeit von anomaler Erfahrung, psychologischen Symptomen, psychologischen Variablen in Bezug auf Schamanismus, Skalen zum psychologischen Wohlbefinden und demographischen Variablen. Mit Hilfe einer multidimensionalen Skalierungsanalyse wurden Hypothesen überprüft, die sich auf sheep-, goat- und "black-sheep"-Theorien bezogen. Sheep-Theorien sagen voraus, dass paranormale Erfahrungen einen direkten Überlebensvorteil bieten, der sich von Psi ableiten lässt. Goat-Theorien zufolge gibt es kein Psi; anomale Erfahrungen hängen mit Psychopathologischem zusammen und bieten keinen direkten evolutionären Gewinn. Eine "black sheep"-Theorie vereinigt sheep- und goat-Elemente; sie umfasst ein Kontinuum von der Psychose bis zur Spiritualität., wobei mit Spiritualität Vorteile verknüpft sind; Psi kann es möglicherweise geben, bietet aber keine direkten evolutionäre Vorteile, die psychopathologische Nachteile aufwiegen könnten. Innerhalb des black sheep-Paradigmas nimmt die Theorie der rituellen Heilung an, dass schamanistische Variablen und dazugehörige Genotypen den Umgang mit Fähigkeiten und hypnotische oder Placebo-Effekte begünstigen. Die Studienergebnisse fallen für die sheep- und goat-Hypothesen unterschiedlich gut aus, unterstützen jedoch die black sheep-Hypothese völlig.

APPENDIX

Questionnaire Items and Scales

Psychiatric Symptoms Categorized by Psychiatric Diagnosis

Schizophrenia/Schizotypy (Schizo)

- S1: Felt that your mind was dominated by forces beyond your control
- S2: Heard voices without knowing where they came from
- S3: Seen things or animals or people around you that others did not see
- S4: Had visions or seen things other people say they cannot see
- S5: Felt that you were possessed by a spirit or devil
- S6: Felt you had special powers
- S7: Felt that you did not exist at all, that you were dead, dissolved
- S8: Seemed to hear your thoughts spoken aloud - almost as if someone standing nearby could hear them
- S9: Felt that your unspoken thoughts were being broadcast or transmitted, so that everyone knew what you were thinking
- S10: Felt afraid that you might do something seriously wrong against your own will
- S11: Had unusual thoughts that kept bothering you
- S12: Had useless thoughts that kept running through your mind

Paranoia (Paranoia)

- P1: Felt it was safer to trust no one
- P2: Believed you were being plotted against
- P3: Been sure that everyone was against you
- P4: Felt that people were saying all kinds of things about you behind your back
- P5: Felt you had enemies who really wished to do you harm
- P6: Been very suspicious, didn't trust anybody

Depression-Mood (DepMood)

- DM1: Thought about taking your own life
- DM2: Wondered if anything was worthwhile anymore
- DM3: Felt that nothing turned out for you the way you wanted it to
- DM4: Felt that you deserved to be punished
- DM5: Felt that others would be better off if you were dead
- DM6: Felt that you have done something evil or wrong
- DM7: Wished you were dead
- DM8: Felt very bad or worthless
- DM9: Blamed yourself for something that went wrong
- DM10: Felt completely hopeless about everything
- DM11: Felt lonely
- DM12: Felt like crying
- DM13: Felt guilty about things you did or did not do
- DM14: Felt useless
- DM15: Lost your temper
- DM16: Been in low spirits
- DM17: Brooded over unpleasant thoughts or feelings
- DM18: Just didn't care what happened to you
- DM19: Been moody and unhappy
- DM20: Felt completely helpless

Manic (Manic)

- Manic1: Had times when exciting new ideas and schemes occurred to you one after another
- Manic2: Became so excited that your thoughts raced ahead faster than you could speak them
- Manic3: Felt so great (excited, talkative or active) that it was difficult to concentrate

Depression-malaise (DepMal)

- DMal1: Became very quiet and didn't talk to anyone
- DMal3: Shown no interest in anything or anybody
- DMal4: Had trouble concentrating or keeping your mind on what you were doing
- DMal5: Kept losing your train of thought
- DMal6: Felt that your mind did not work as well as it used to
- DMal7: Had periods of feeling blue or depressed that interfered with your daily activity
- DMal8: Had periods of days or weeks when you couldn't take care of things because you couldn't "get going"
- DMal9: Felt confused: had troubled thinking
- DMal10: Got angry and afterward felt uncomfortable, like getting headaches, stomach pains, cold sweats and things like that
- DMal11: Began having trouble remembering things
- DMal12: Had trouble staying asleep
- DMal13: Had trouble with waking up too early and not being able to fall asleep again
- DMal14: Had trouble with oversleeping: that is, sleeping past the time you wanted to get up
- DMal15: Troubled by feeling tired all the time
- DMal16: Been bothered by nightmares
- DMal17: Had poor appetite
- DMal18: Felt weak all over
- DMal19: Experienced any weight loss of 10 lbs. (5 kg) or more over the past year, without going on special diets

Anxiety-mood (AnxMood)

- AM1: Worried a lot about little things

- AM2: Felt anxious about something or someone
- AM3: Were easily irritated
- AM4: Been bothered by being irritable, fidgety, or tense
- AM5: I am a person who is the worrying type

Panic (Panic)

- Panic1: Felt afraid to leave the house because you were afraid something might happen to it
- Panic2: Been afraid to be in closed places
- Panic3: Feared something terrible would happen to you
- Panic4: Had special fears that kept bothering you
- Panic5: Feared being robbed, attacked, or physically injured

Anxiety-malaise (AnxMal)

- AMal1: Had trouble with your muscles twitching or jumping
- AMal2: Had trouble falling asleep
- AMal3: Had cold sweats
- AMal4: Had dizziness
- AMal5: Had shortness of breath when you were not exercising or working hard
- AMal6: Had your hands tremble
- AMal7: Had your heart beating hard when you were not exercising or working hard
- AMal8: Suddenly feel hot all over
- AM1 (Anxiety-behavior): Had periods of such great restlessness that you could not sit in a chair for very long

Anxiety-Obsessive (OCD)

- OCD1: Had to repeat an act over and over again though it is hard to explain to others why you did it
- OCD2: Found yourself doing the same things over and over again to be sure they were right
- OCD3: Spent more than an hour day focusing on persistent anxieties that *do not* involve real life problems but are products of your mind

Alcoholism (Alcohol)

- Alcohol1: Missed work or been late to work because of drinking
- Alcohol2: Had arguments with your family because of your drinking
- Alcohol3: Had trouble with your health because of drinking

Phobia (Phobia)

- Phobia 1 Had a sudden feeling, not based on a real cause, of intense apprehension, fearfulness or terror
- Phobia 2: Felt you must avoid certain places or situations from which escape might be difficult or embarrassing
- Phobia 3: Had an unreasonable fear, not associated with a real cause, regarding snakes, dogs, insects, or other animals
- Phobia 4: Had an unreasonable fear, not associated with a real cause, regarding heights, storms, lightning, or water

Selected Transliminality Scale Items (Translim)

- T1. At time I perform certain little rituals to ward off negative influences.
- T2. I have experienced an altered state of consciousness in which I felt that I became cosmically enlightened.
- T3. I have experienced an altered state of consciousness which I believe utterly transformed (in a positive manner) the way I looked at myself.
- T4. I sometimes have a feeling of gaining or losing energy when certain people look at me or touch me.

Selected Dissociative Experience Scale Items (Dissoc)

- D1. I find that sometimes I am listening to someone talk and I suddenly realize that I did not hear part or all of what was said.
- D2. I have become so involved in a fantasy or daydream that it feels as though it were really happening to me.
- D3. I have found that I am able to ignore pain.
- D4. I find that I sometimes sit staring off into space, thinking of nothing, and am not aware of the passage of time.

Selected Boundary Questionnaire Items (Boundary)

- B1. I can visualize something so vividly that it is just as though it is happening right in front of me.
- B2. I have dreams and daydreams or nightmares in which I see isolated body parts – arms, legs, heads, and so on.
- B3. In my dreams, people sometimes merge into each other or become other people.
- B4. I believe I am influenced by forces which no one can understand.
- B5. I think I would be a good fortune teller or a medium.
- B6. When I recall a conversation or a piece of music, I hear it just as though it were happening there again right in front of me.
- B7. I can see fields of energy around people.

Satisfaction With Life Scale (Satisfac)

1. In most ways my life is close to my ideal
2. The conditions of my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life,
5. If I could live my life over, I would change almost nothing.