

PSYCHIC AND SPIRITUAL EXPERIENCES, HEALTH, WELL-BEING, AND MEANING IN LIFE

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ABSTRACT: This screening survey of college students found that 59% of the 105 respondents indicated that they had experienced a psychic and/or transcendent/spiritual experience. Those reporting these anomalous experiences tended to have a greater overall sense of meaning in life. Among different factors that can give meaning and purpose to life, expressing artistic creativity and observing spiritual beliefs were positively related to reports of anomalous experiences, whereas obtaining wealth was negatively related. The survey also confirmed that scales for absorption and temporal lobe symptoms correlate positively with each other and with reports of anomalous experiences. The pattern of correlations among well-being measures, anomalous experiences, and other variables was consistent with previous studies with college students but was different from previous results with nonstudent adults. Research on the relationship between religion and mental health has found similar positive relationships for adult populations and mixed results for college students.

Very few respondents considered their anomalous experiences detrimental, and 91 % of those reporting transcendent experiences and 46% of those reporting psychic experiences considered them valuable.

If anomalous experiences generally have beneficial effects, the relationships between these experiences and health measures may become more positive over time. This hypothesis appears consistent with the limited available data and offers great research potential.

Investigators in the rapidly growing field of mind-body medicine are encountering findings that suggest that an attitude of openness to paranormal experiences may be conducive to health and well-being. For example, Joan Borysenko, cofounder of the Mind/Body Clinic at Harvard Medical School, reports that an encounter with an apparently psychic person in an airport, followed by a series of past-life regression experiences, helped her overcome a serious psychological problem that extensive therapy had failed to resolve (Borysenko, 1993). She notes that her experiences do not provide scientific evidence for the reality of past lives, but they do provide evidence that anomalous experiences can help

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some people overcome difficult psychological problems. Likewise, heart disease researcher Dean Ornish believes that “opening your heart” to “experience a higher force” is an important component of his program for reversing heart disease (Ornish, 1990, ch. 9). Although Ornish discusses Byrd’s (1988) study of the apparent paranormal effect of prayer on heart patients, his primary focus is that this attitude of openness reduces adverse physiological reactions to stressful situations. Here, too, tangible benefits are found without the need to resolve the issue of the reality of the “higher forces.”

The parapsychological literature provides surprisingly little information on the relation between parapsychological experiences and health measures. Research to date has focused on belief in paranormal phenomena (reviewed by Irwin, 1993) rather than on the effects of psi experiences. Further, the available research focuses on the extremes of the belief/disbelief polarity, whereas the mind-body approaches noted in the previous paragraph suggest that attitudes of “don’t know” or “doesn’t matter” may be more interesting for health research. Several researchers, particularly White (1990) and Blackmore (1988), have called for increased research on the effects of paranormal experiences on peoples’ lives. Milton (1992) reported a small initial inquiry into this topic.

The study reported here is the initial step of a larger project to investigate the effects that psi and other unusual experiences have on people’s lives, particularly on their health and well-being. This first step was a screening survey intended (a) to collect some basic cross-sectional information about anomalous experiences and health-related measures, and (b) to find people for further investigation.

Before describing the study, we will briefly summarize various health-related measures that may be unfamiliar to parapsychologists, along with relevant findings from the literature on anomalous experiences. The definitions and questionnaires used to measure psychic, paranormal, mystical, and related experiences have varied widely in previous research, with the terms *paranormal* and *mystical* often including both psychic and mystical/spiritual experiences. The small number of relevant studies prevents meaningful comparisons of different questionnaires. When possible in the following summary, we report research findings for psychic experiences and mystical experiences separately. The mystical experiences category includes experiences described as mystical, spiritual, religious, or transcendent.

All of the following studies that report relationships between psychic or mystical experiences and other measures are based on cross-sectional correlations using self-reports of previous experiences. The longitudinal

research that would allow more useful and convincing understanding has not been done.

BACKGROUND AND LITERATURE REVIEW

Well-Being

Well-being is the basis for quality-of-life measures that are becoming widely used in health research (Spilker, 1990; Stewart & Ware, 1992). Well-being includes a cognitive component (life satisfaction) and an emotional component (positive affect) and is a global assessment of all aspects of a person's life (Diener, 1984). Unfortunately, researchers use inconsistent terminology in well-being research. Some investigators emphasize the cognitive component (life satisfaction) and others emphasize the affective component. Some researchers include the absence of negative affect in their definition of well-being; others include only the presence of positive affect. Numerous questionnaires are available to measure well-being and quality of life.

The studies that investigated well-being measures and psi experiences have found that people with psi experiences are in the normal range of well-being and have a tendency to report more extreme positive and negative feelings than others. Greeley (1975) reported a national survey of 1,460 people that included the Bradburn Affect Scale, which has scales for positive and negative affect as well as the balance of the two (which Bradburn calls well-being). Psychic experiences were positively correlated with both positive and negative affect separately, but were not correlated with the balance. Haraldsson and Houtkooper (1991) reported an identical pattern in a representative survey of 18,607 people in 13 countries that also included the Bradburn Affect Scale. Using the Tellegen Differential Personality Questionnaire, Nelson (1990) also found that people with psychic experiences scored higher on both the positive and negative affectivity personality factors than those without psychic experiences.¹ Gabbard and Twemlow (1984) administered a well-being scale (from the Profiles of Adaption to Life questionnaire) to people reporting out-of-body experiences (OBEs) as well as to five control groups. They concluded that people reporting OBEs were "average healthy Americans."

People reporting mystical experiences also tend to report more positive feelings than others, but, contrary to the findings with psychic

¹Positive and negative affectivity on the Differential Personality Questionnaire are higher order personality factors that are related to and differentiate the mood states of positive and negative affect, and are independent of each other (Tellegen, 1982).

experiences, not more negative feelings. Greeley (1975) found that mystical experiences were positively related to positive affect, but negatively related to negative affect on the Bradburn Scale. Likewise, Nelson (1990) found that mystical experiences were associated with positive affect, but also with less negative affect than psychic experiences were. Consistent with these results, both Greeley (1975) and Hay and Morisy (1978) found that the balance of positive and negative affect (well-being) on the Bradburn scale correlated positively with mystical experiences. Greeley (1975) also found that life satisfaction correlated positively with mystical experiences, and Kass, Friedman, Leserman, Zuttermeister, and Benson (1991) found that spiritual experiences and beliefs were positively correlated with life purpose and satisfaction. A positive relation between positive affect and mystical experience may not be surprising, given that intense positive affect is often considered one of the defining characteristics of mystical experience (Noble, 1987; Spilka, Hood, & Gorsuch, 1985, p. 176).

On the other hand, Thalbourne and Delin (1994) proposed that reports of mystical experiences would correlate with past, but not necessarily current or recent, states of depression. This hypothesis was based on biographical accounts that initial mystical experiences may be followed by a period of depression. They reported that mystical experiences correlated with past depressive and manic-depressive experiences in a sample of college students, and with past manic-depressive experiences in samples of patients recovered from schizophrenia or manic-depression. However, they also note that because they did not ascertain whether the mystical or depression experiences occurred first, the causal mechanisms for the correlations are uncertain.

In general, the relationship between positive and negative affect measures depends on the details of the questions. Diener (1984) concluded from his literature review that, across persons, positive and negative affect during a period of time are: (a) positively correlated when measured with scales that assess intensity of affective state without considering the frequency or duration of the states; (b) negatively correlated when measured with scales that assess amount of time in positive and negative affective states without considering the intensity of the states; and (c) unrelated when measured with scales that assess average positive and negative affect (considering both intensity and time), and when measured with older scales such as the Bradburn Affect Scale, which are ambiguous or mixed on the intensity/time dimensions. The Bradburn Affect Scale simply asks if a certain feeling occurred in the past few weeks, without specifying how intense or how often the feeling occurred. More recent well-being scales usually include the time dimension.

Meaning in Life

Several investigators propose that meaning in life plays an important role in protecting against adverse health effects from stress, as well as providing direction and fulfillment in life (e.g., Antonovsky, 1987; Kobasa, 1979; Wortman, Silver, & Kessler, 1993). The term meaning in life indicates that a person is committed to a concept, framework, or set of values that (a) makes life understandable, (b) offers goals to attain, and (c) provides fulfillment (Battista & Almond, 1973). Meaning-in-life scales include the Purpose in Life test (Crumbaugh & Maholick, 1964), the Sense of Coherence Scale (Antonovsky, 1987), and the Life Regard Index (Battista & Almond, 1973). These scales strongly correlate with well-being for adults (rs of about .50 to .75) (Zika & Chamberlain, 1992).

The question of why people have high or low meaning in life has rarely been investigated. The scales used to measure the degree of self-reported meaning in life do not ask what factors make life meaningful. Also, low meaning in life may be due to not finding a concept, framework, or set of values, or it may be due to not attaining the goals that offer fulfillment or life satisfaction. This distinction has been recognized but rarely investigated (Battista & Almond, 1973; Dufton & Perlman, 1986). The possibility that people choose a meaning in life with unrealistic goals that lead to low life satisfaction particularly merits investigation.

Wortman, Silver, and Kessler (1993) suggest that the system of beliefs, assumptions, and expectations that provide a sense of coherence and meaning may explain the great variability in how people adjust to personal tragedies. Some individuals adjust quickly and others never adjust. Most people try to find meaning for a personal tragedy. A few examples from this diverse literature include cancer patients (Taylor, 1983), parents of children with cancer (Chodoff, Friedman, & Hamburg, 1964), paralyzed accident victims (Bulman & Wortman, 1977), and adults who experienced incest as children (Silver, Boon, & Stones, 1983).

Near-death experiences are well known to increase a person's sense of meaning in life (Gallup, 1982; Greyson & Stevenson, 1980; Ring, 1984).² Although Ring (1984) notes that other types of paranormal or anomalous experiences can sometimes have similar effects, meaning in life has received very little attention for other types of anomalous experiences. Life meaning or purpose has been found to be positively related

²One of the referees of the present paper suggested that a new book by Atwater (1994) contains relevant information on the aftereffects of near-death experiences. However, we were not able to obtain a copy in time for inclusion in this discussion.

to spiritual experiences and beliefs (Kass et al., 1991) and peak experiences (Wuthnow, 1978).

Self-Rated Health

A person's simple subjective rating of his or her overall health generally predicts future health and survival about as well as or better than a physician's evaluation. This outcome has been found in numerous studies (e.g., Idler & Kasl, 1991; Kaplan & Camacho, 1983). The average correlation between well-being and self-rated health was .35 for 158 studies in a meta-analysis by Okun, Stock, Haring, and Witter (1984). We know of no studies of paranormal or mystical experiences that included a self-rated health item.

Healthy Lifestyle

A person's health is greatly affected by lifestyle factors including nutrition, exercise, stress management, and social support. Health and wellness programs are increasingly becoming integrated lifestyle programs (e.g., Ornish, 1990).

Gabbard and Twemlow (1984) included the lifestyle factors alcohol/drug abuse and interpersonal relationships in their OBE survey and concluded that the OBE group was consistent with normal Americans.

Temporal Lobe Dysfunction and Absorption

Several studies have found that paranormal or mystical experiences were correlated with possible symptoms of temporal lobe dysfunction (reviewed in Neppe, 1990). Neppe (1983) and Persinger (1983, 1984) developed and used questionnaires based on symptoms associated with temporal lobe epilepsy or with direct stimulation of the temporal lobes during surgery. Persinger found correlations of .50 to .72 between number of paranormal or religious experiences and his temporal lobe symptoms scale (Persinger, 1984; Persinger & Makarec, 1987; Persinger & Valliant, 1985). Neppe (1990) concluded that temporal lobe functioning may be one of several cerebral mechanisms for mediating paranormal experiences.

Persinger and Makarec (1987) found that Persinger's temporal lobe symptoms scale correlated negatively with well-being (two groups with $r = -.60$ and $-.50$),³ which is surprising given the studies noted above that

³Well-being was measured with the California Psychological Inventory. This scale "consists primarily of denials of various physical and mental symptoms" (Megargee, 1972, p. 53) and also reflects differences in adjustment.

generally found either positive or zero correlations between anomalous experiences and well-being measures (depending on the type of experience and definition of well-being). The reasons for these seemingly disparate results need further investigation. Persinger and Makarec also reported that the temporal lobe symptoms scale correlates positively with anxiety and with several unfavorable scales on the MMPI. In a later report, Persinger and Makarec (1993) suggest that mild elevations of the temporal lobe symptoms may be “associated with benign or even desirable (creative) consequences” (p. 42), but moderate to severe elevations may indicate the need for clinical treatment.

Absorption is a closely related construct that consistently correlates with paranormal and mystical experiences. In developing this construct and scale, Tellegen focused on a person’s tendency to have episodes of total attention devoted to imagination or imaginative enhancement of experience (Tellegen & Atkinson, 1974; reviewed in Roche & McConkey, 1990). Positive correlations between absorption and self-reported psychic experiences were reported by Nadon and Kihlstrom (1987, $r = .51$), Glicksohn (1990, $r = .25$); and Irwin (1985, p. 290). Absorption was significantly higher for OBE experiencers in several studies by Irwin (1985, pp. 281-284) and a study by Myers, Austrin, Grisso, and Nickeson (1983), but not in two other studies (Gabbard & Twemlow, 1984; Spanos & Moretti, 1988). Gabbard and Twemlow (1984) found significantly higher absorption scores for near-death experiencers than for other OBE experiencers. Combined mystical and psychic experiences correlated about $r = .6$ with absorption in Nelson’s (1989) study.⁴ The correlations between mystical experiences and absorption were .53 for Spanos and Moretti (1988) and .46 for deGroot, Gwynn, and Spanos (1988). The construct fantasy-proneness is closely related to, and perhaps indistinguishable from, absorption (Rhue & Lynn, 1989). Wilson and Barber (1983), who developed the construct, reported that the overwhelming majority of high fantasy-prone individuals reported paranormal experiences.

Temporal lobe symptom and absorption scales are closely related. The measurement scales for both constructs use relatively similar experiences of imagination or fantasy. Temporal lobe symptoms have been found to correlate $r = .59$ with absorption (Spanos, Arango, & deGroot, 1993) and $r = .64$ with fantasy-proneness (Persinger & DeSano, 1986).

Absorption and temporal lobe symptoms both appear to be highly susceptible to, and possibly dominated by, experimental demand characteristics or experimenter expectations. Although many studies

⁴The correlation for Nelson (1989) was estimated from the ANOVA results using the method described in Friedman (1968).

have found absorption significantly related to hypnotizability (reviewed in Roche & McConkey, 1990), recent research indicates that this relationship depends on the subject's knowing that the experimenters are interested in this hypothesis (Council, Kirsch, & Hafner, 1986; Drake, Nash, & Cawood, 1991; Spanos, Arango, & deGroot, 1993). Likewise, although Persinger and DeSano (1986) reported that temporal lobe symptoms correlated with hypnotizability, Spanos, Arango, and deGroot (1993) found a nonsignificant correlation when subjects did not know that the experimenters were interested in this hypothesis. Note that in the study by Spanos, Arango, and deGroot, for both absorption and temporal lobe symptoms: (a) significant correlations with hypnotizability measures were found in a condition with demand characteristics (r s of .31 to .51), (b) nonsignificant correlations were found in a condition without the demand characteristics, (c) the difference between conditions was statistically significant, and (d) the demand characteristics must have influenced responses on the absorption and temporal lobes symptoms scales because the hypnotizability test was given prior to recruiting and randomizing subjects to one of the two demand characteristics conditions for these scales. These results obviously have significant implications for any research with these scales.

Bidirectional Causation and Nonlinear Effects

Health research in general is complicated by bidirectional or reciprocal causation between health and various types of experiences. For example, exercise affects health, but health status affects exercise capacity. Likewise, physical health can affect psychological well-being, but psychological well-being can affect physical health. Prolonged or chronic stress may depress a person's sense of well-being, which then leads to more adverse physical reactions to the stress, which further depresses the sense of well-being, and so on.

The usual results of this bidirectional causation are that (a) experiences are beneficial or benign in a certain range of intensity and duration but detrimental outside that range, and (b) the range of acceptable intensity depends on individual differences and changes as a result of adaption or conditioning. For example, Wortman, Sheedy, Gluhoski, and Kessler (1990) concluded that people who are the most successful at coping with day-to-day challenges often become the most devastated when a personal tragedy overwhelms their coping mechanisms. These types of nonlinear effects are the norm in health research. Even relaxation and meditation can be practiced to excess (Carrington, 1993).

Research on the effects of anomalous experiences must recognize the likelihood of both beneficial and detrimental effects that vary with

experience. An enthusiast who focuses only on the beneficial effects and a skeptic who focuses only on the detrimental effects would both be remiss. Researchers must ultimately look beyond simple summary statistics such as means and correlation coefficients to investigate the full range of effects.

METHOD

Questionnaire

A major design parameter for this screening study was to use a short questionnaire—which required that short scales be used for the various constructs. Because we were primarily interested in identifying relatively large effects in this study, the low reliability of short scales was not a major limitation. Of course, with low reliability, the observed correlations can be expected to underestimate the actual relationship between constructs. The full Life Experiences questionnaire used in this study is provided in the Appendix to this paper.

Well-being/Mental health. The 5-item mental health screening test from the Medical Outcomes Study was used to measure well-being (Berwick et al., 1991; Stewart, Ware, Sherbourne, & Wells, 1992). This scale focuses on positive and negative affect and only indirectly considers life satisfaction. We followed the terminology of the scale developers in calling the overall scale a mental health scale. (They refer to the positive affect subscale as well-being.) This scale has two positive affect items and three negative affect items, which make separate subscales. To make an equal number of positive and negative items in our questionnaire, we added the item that had the next highest factor loading for positive affect in the larger inventory from which the five items were derived (Veit & Ware, 1983). This is the first item in Part A of our Life Experiences Questionnaire in the Appendix.

We followed the established scoring method that assigns the lowest numerical value to the most healthy response for each item. Negative items are reverse scored, so that low scores indicate better health. Each of the six response options is given an integer number from 1 to 6. The overall mental health score is obtained by adding all six items. Positive affect and negative affect scores are obtained by adding the scores for the three relevant items in each subscale.

Because the items ask how much time the respondent had various feelings, the positive and negative affect subscales are correlated—unlike the Bradburn and Tellegen scales mentioned in the introduction.

Also, because the negative affect items are reverse scored, the correlation between positive and negative affect is positive.

Self-rated health. We included a basic self-rated health question taken from Ware and Sherbourne (1992) that asked the person to rate his or her general health (Question 3 in Part A of the questionnaire). The five response options were scored as integers from 1 (for *excellent*) to 5 (for *poor*). Consistent with the mental health scale above, low scores indicated better health.

Healthy lifestyle. Five lifestyle questions were used to make a simple healthy lifestyle scale. We developed these questions because we found no suitably short lifestyle scale in the literature. The lifestyle items are Questions 6 through 10 in the Appendix. Each question was scored with a 1 for the more healthy response and 2 for the less healthy response. The four response options in Question 10 were scored by combining the top two and bottom two options. Question 9, on being angry or very irritated on most days, is based on the recent thinking that hostility is the “toxic” component of type A behavior (Booth-Kewley & Friedman, 1987; Williams, 1993).

Meaning in life. Question 11 in Part A is a basic, global meaning-in-life item similar to those used on multi-item questionnaires. The four response options were scored as integers with 1 for “very much” meaning and 4 for “no” meaning. This scoring gives a positive correlation between higher meaning in life and better health scores. In an extension of the usual meaning-in-life inquiry, Question 12 asked if the respondent was satisfied with his or her meaning in life. This item was scored 1 for *satisfied* and 2 for *not satisfied*.

Question 2 contains 10 items that are factors that could contribute to a person’s sense of meaning in life. This further extension of the meaning-in-life issue was developed for this project on the basis of categories of values and meaning discussed by Reker and Wong (1988) in their review. We found no existing questionnaire that addressed the issue of what gives a person a sense of meaning in life. The items include *obtain wealth, express artistic or literary creativity, and observe spiritual or religious beliefs*, and were scored as integers with 1 for *extremely important purpose of life* to 5 for *not at all a purpose of life*.

Transcendent and psychic experiences. Questions 13 and 16 asked if the respondent had had transcendent and psychic experiences (coded 1 for *yes* and 2 for *no*). Following each of these questions, the respondent answered one of two questions that asked for a global evaluation of how the experience affected the respondent or would affect the respondent if s/he had not had an experience. The five response options ranged from *Very valuable* to *Very disruptive*.

Temporal lobe symptoms. Seven of the items in Part B of the questionnaire are from Persinger's temporal lobe symptoms scale. We used only part of the items from the scale because of space limitations, and because we were concerned that the unusual experiences in Persinger's scale, and particularly the buffer items, would establish strong demand characteristics that we expect psychic and transcendent experiences to be associated with bizarre and possibly disturbing perceptual and sensory experiences. Using a correlation matrix provided by Persinger⁵ for 1,211 cases for the full scale, we used stepwise multiple regression to select the 7 items that gave the best prediction of the full 16 items ($r = .92$). For the 1,211 cases, Cronbach's alpha reliability was .73 for the full scale and .65 for the 7-item short scale. The temporal lobe items are Questions 3, 5, 8, 12, 14, 17, and 20 on Part B of the questionnaire. Following Persinger, we took the percentage of the 7 items that were marked *T* (true) and assigned this as the temporal lobe score. The temporal lobe score was set to a missing value if more than one item was missing. When used for correlations, the temporal lobe symptoms scores were made negative to be consistent with the other scales and to give a positive correlation between more temporal lobe symptoms and better health.

Question 5 asked if the respondent had ever been diagnosed with epileptic symptoms. Because no one answered *yes*, this question will not be discussed further.

Absorption. The remaining 14 items in Part B of the questionnaire are from the 37-item Tellegen and Atkinson (1974) absorption scale. The items were selected using stepwise multiple regression on 315 cases that had previously been collected as part of parapsychological experiments. The 315 cases consisted of 232 American high school students, 13 American technical school students, and 70 female college students at an English-speaking college in India. For all cases, the absorption scale was given in a group setting after a talk on parapsychology and an ESP test. The 14 items predicted the score for the full 37 items, with $r = .94$. For the 315 cases, Cronbach's alpha was .86 for the full scale and .73 for the 14-item short scale. The overall absorption score was the percentage of the 14 items marked *T*, which allows easy comparison with other results but differs from the usual method of just counting the number of items marked *T*. The absorption score was set to a missing value if more than two items were missing. When used with correlations, the absorption score was set negative to be consistent with the other scales and to give a positive correlation between more absorption and better health.

⁵ We wish to express our appreciation to Dr. Michael Persinger for providing us with the correlation matrix from his research.

Subjects

The questionnaires were mailed to 500 Duke University students whose names were obtained by randomly selecting a page, column, and line from the student directory. Foreign students and graduate students were included. The package included an addressed, postage-paid return envelope.

Hypotheses and Data Analysis

For the planned analyses, psychic and transcendent experiences were combined into one binary variable called anomalous experiences (coded as 1 if the respondent reported a psychic and/or transcendent experience and 2 if both experience questions were marked *no*). The hypotheses for this study were divided into three categories: *confirmatory hypotheses*, *planned exploratory hypotheses*, and *post hoc analyses*.

Three *confirmatory* hypotheses were based on findings from previous research. These hypotheses were: (a) Absorption would correlate with anomalous experiences; (b) temporal lobe symptoms would correlate with anomalous experiences; and (c) absorption would correlate with temporal lobe symptoms. The significance level was set at .05 two-tailed for these analyses, without correction for multiple analyses. As noted above, scores for temporal lobe symptoms and absorption were made negative for these correlations to be consistent with the scoring system used for the experiences and health related measures.

Four *planned exploratory* analyses were based on hypotheses that did not have a clear precedent from previous research (given our knowledge of the literature at that time). These hypotheses were that anomalous experiences would correlate with (a) mental health (well-being), (b) self-reported health, (c) healthy lifestyle, and (d) meaning in life. The significance level was set at .01 two-tailed for these analyses to adjust for multiple analyses.

Post hoc analyses investigated a variety of effects that may give suggestions for future research. These analyses included (a) examining the psychic and transcendent experiences separately, (b) investigating the effects of the different categories of meaning in life, and (c) examining the relationships between various other measures. The post hoc analyses used two-tailed tests and are reported without correction for multiple analyses.

Pearson correlations were used for statistical analyses because they give a useful effect size measure as well as statistical significance. Randomization tests with 10,000 permutations (Edgington, 1987) were done for the key correlations to verify that skewed distributions and the discrete nature of the data did not distort the results. The randomization tests gave significance levels very close to the usual Pearson correlation results that are reported here. The data were entered by two different people, and the discrepancies were resolved before analyses were carried out.

RESULTS

Completed questionnaires were received from 105 respondents by the cutoff date. This return rate of 21% limits the generalizability of the results. However, if we recognize that the study population consists of students who are sufficiently motivated to fill out the questionnaire, the data allow comparisons between those who report experiences and those who do not report experiences. As discussed later, the use of college students is probably a greater limitation for generalizing the results than the fact that only a subset of students responded.

The respondents were 54% female. The mean age was 23 and ranged from 17 to 47, with 43% aged 20 or less and 90% aged 30 or less. Ethnic origin or race was 85% white, 7% black, and 7% Asian.

Of the 105 respondents, 62 (59%) reported one or both types of anomalous experiences and 43 (41%) reported neither. Of the 62 respondents reporting anomalous experiences, 18 respondents reported only a psychic experience, 19 reported only a transcendent experience, and 25 reported both types. Thus, 41% of all respondents reported psychic experiences and 42% reported transcendent experiences.

The 41 % of respondents reporting psychic experiences is lower than the 50% to 60% found in other surveys of U.S. college students (McClenon, 1993; Palmer, 1979). Although these differences may be due to different survey methods, they do suggest that the present sample is not strongly biased by those with experiences. The 42% of students reporting a transcendent experience compares with 35% reported by Palmer (1979) and 36% by Myers et al. (1983) for a relatively similar question with U.S. college students.

The mean temporal lobe score was 32% of the items marked true, which is consistent with the values reported by Persinger and Makarec (1987) for the full scale with college students. The mean absorption score was 51% of items marked true, whereas previous studies that reported mean scores found over 60% (and sometimes over 70%) of the

items on the full scale marked true for American or Canadian college students (Council, Kirsch, & Hafner, 1986; deGroot, Gwynn, & Spanos, 1988; Drake, Nash, & Cawood, 1991; Myers et al., 1983)⁶ and 54% to 60% of the items marked true for Australian college students (Irwin, 1985). Cronbach's alpha reliability was .59 for temporal lobe symptoms, .70 for absorption, and .79 for the mental health scale.

Planned Analyses

All three planned confirmatory analyses were significant, as shown in Table 1. The correlation between anomalous experiences and absorption ($r = .44$) is consistent with the findings from previous studies. Likewise, the correlation between absorption and temporal lobe symptoms ($r = .52$) is close to the value ($r = .59$) reported by Spanos, Arango, and deGroot (1993). The correlation between temporal lobe symptoms and anomalous experiences ($r = .35$) was lower than the values of .50 to .72 reported by Persinger. This difference could be due to a variety of factors including experimental demand characteristics as well as his use of the full temporal lobe symptoms scale and a multiple item scale for paranormal experiences.

TABLE I
PEARSON CORRELATION COEFFICIENTS AND PROBABILITY VALUES FOR
THE SEVEN PLANNED ANALYSES

| Variable 1 | Variable 2 | r | Probability |
|------------------------|-----------------------|------|-------------|
| Temporal Lobe Symptoms | Anomalous Experiences | .35 | .0003 |
| Absorption | Anomalous Experiences | .44 | .0000 |
| Temporal Lobe Symptoms | Absorption | .52 | .0000 |
| Mental Health | Anomalous Experiences | -.11 | <i>ns</i> |
| Self-Reported Health | Anomalous Experiences | -.07 | <i>ns</i> |
| Healthy Lifestyle | Anomalous Experiences | -.09 | <i>ns</i> |
| Meaning in Life | Anomalous Experiences | .31 | .001 |

Note. For the probability values, *vindicates* probability greater than .10 and .0000 indicates less than .0001. The number of observations with nonmissing values is 104 or 105 for all cells.

As shown in Table 1, of the four planned exploratory analyses, only meaning in life was significantly correlated with reporting an anomalous

⁶Some of these reports do not indicate whether the 34-item or 37-item form of the absorption scale was used. However, in these cases the percentage of items marked true is above 60 percent using either 34 or 37 as the divisor.

experience ($r = .31$). Respondents reporting experiences tended to have a greater sense of meaning in life.

Post Hoc Analyses

The correlation matrix for the main variables and each type of experience is shown in Table 2. In evaluating these results, it may be useful to remember that these correlations can be expected to underestimate the true relationships between variables because of the low reliability of the short scales used in this questionnaire. Key points from Table 2 include:

1. Psychic and transcendent experiences separately were significantly correlated with absorption, temporal lobe symptoms, and meaning in life.
2. Both the temporal lobe symptoms and absorption scores tended to be negatively correlated with the health measures (poorer health scores with more absorption and more temporal lobe symptoms). The strongest correlations were with negative affect. The correlations were slightly but consistently higher for temporal lobe symptoms than for absorption.
3. The three experience indicators were not correlated with the health measures, with the exception that persons reporting psychic experiences tended to report less healthy lifestyles ($r = -.26$, $p = .009$). In particular, positive and negative affect were not correlated with psychic or transcendent experiences.
4. Consistent with previous research, reports of transcendent and psychic experiences were positively correlated.
5. The various health related measures tended to have moderate intercorrelations as expected. In particular, meaning in life was positively correlated with self-rated health and positive affect.

The correlations in Table 2 remained significant and generally changed only slightly when the items that might be paranormal experiences were removed from the temporal lobe symptoms and absorption scales. (These items were Question 17 for the temporal lobe symptoms and Questions 4, 10, and 16 for absorption.)

The sex of the respondent was not related to any of the three experience indicators or to absorption or temporal lobe symptoms. Males did tend to report better mental health ($r = .24$, $p = .01$), more positive affect ($r = .24$, $p = .01$), and more interest in obtaining status and recognition ($r = .24$, $p = .01$) than females.

Of the different factors potentially giving life meaning, obtaining wealth was negatively related to anomalous experiences, while

Table 2
CORRELATION MATRIX FOR POST HOC ANALYSIS

| | Positive Affect | Negative Affect | Self-Rated Health | Healthy Lifestyle | Meaning in Life | Temporal Lobe | Absorption | Transcend. Experience | Psychic Experience | Anomalous Experience |
|-----------------------|--------------------|--------------------|----------------------|----------------------|--------------------|------------------|--------------|--------------------------|-----------------------|-------------------------|
| Mental Health | .87 .0000 | .82 .0000 | .30 .002 | .35 .0003 | .14 | -.28 .004 | -.20 .04 | -.05 | -.08 | -.11 |
| Positive Affect | | .43 .0000 | .38 .0001 | .26 .008 | .19 .05 | -.11 | -.04 | -.05 | .01 | -.03 |
| Negative Affect | | | .10 | .32 .0009 | .05 | -.39 .0000 | -.32 .001 | -.04 | -.16 | -.16 |
| Self-Rated Health | | | | .46 .0000 | .29 .003 | -.20 .04 | -.16 | -.09 | -.08 | -.07 |
| Healthy Lifestyle | | | | | .06 | -.36 .0002 | -.22 .02 | -.06 | -.26 .009 | -.09 |
| Meaning in Life | | | | | | -.08 | .20 .04 | .27 .006 | .27 .005 | .31 .001 |
| Temporal Lobe | | | | | | | .52 .0000 | .24 .01 | .29 .002 | .35 .0003 |
| Absorption | | | | | | | | .37 .0001 | .34 .0004 | .44 .0000 |
| Transcend. Experience | | | | | | | | | .27 .005 | .71 .0000 |
| Psychic Experience | | | | | | | | | | .69 .0000 |

Note: The top number in each cell is the Pearson correlation coefficient. The bottom number is the probability level, or it is left blank if the probability is greater than .10. Shaded cells are the planned analyses. Negative affect is reverse scored so it has the same direction as the other health-related measures. Negative correlations between health measures and temporal lobe symptoms and absorption means the respondents with higher temporal lobe systems or absorption had poorer health scores. The number of observations with nonmissing values is 102 to 105 for all cells.

Table 3
PEARSON CORRELATIONS BETWEEN THREE CATEGORIES OF PURPOSES IN LIFE AND SELECTED VARIABLES

| | Express Artistic Creativity | Observe Spiritual Beliefs | Obtain Wealth |
|------------------------------|-----------------------------|---------------------------|----------------|
| Anomalous Experience | .20 (.04) | .36 (.0002) | -.22 (.02) |
| Transcendent Experience | .08 | .58 (.0000) | -.22 (.02) |
| Psychic Experience | .20 (.04) | .12 | -.23 (.02) |
| Temporal Lobe Symptoms | .31 (.001) | -.02 | .06 |
| Absorption | .41 (.0000) | .22 (.03) | -.19 (.06) |
| Mental Health | -.19 (.05) | .07 | .16 |
| Self-Rated Health | -.35 (.0003) | .09 | .16 |
| Healthy Lifestyle | -.22 (.03) | .21 (.03) | .03 |
| Service to Others (Altruism) | .36 (.0002) | .26 (.007) | -.05 |
| Social Causes | .22 (.03) | .25 (.01) | -.18 (.06) |
| Enjoy Pleasure | .11 | -.02 | .22 (-.02) |
| Obtain Status | .05 | -.20 (.04) | .56 (.0000) |

Note. These three categories of purpose in life (express artistic creativity, observe spiritual beliefs, and obtain wealth) were the only categories that were significantly related to the anomalous experiences variable. The *p* values are in parentheses. The probability value is given below each correlation. The number of observations with nonmissing values is 102 to 105 for all correlations.

expressing artistic creativity and observing spiritual beliefs were positively related with experiences. The pattern of correlations for these factors is shown in Table 3. Respondents who placed importance on expressing artistic creativity tended to report (a) more psychic experiences, (b) higher

absorption and temporal lobe symptoms, (c) poorer health scores, and (d) an interest in helping others. Respondents who placed importance on observing spiritual or religious beliefs tended to report (a) substantially more transcendent experiences, (b) higher absorption, but not temporal lobe symptoms, (c) a healthy lifestyle, (d) an interest in helping others, and (e) low interest in obtaining status. Those interested in obtaining wealth tended to report (a) fewer psychic and transcendent experiences, (b) more interest in enjoying pleasure, (c) a strong interest in obtaining status and recognition, and (d) suggestively low scores on absorption and on interest in altruism.

Of the 10 possible factors giving life meaning, only interest in observing spiritual or religious beliefs was significantly correlated with the global meaning-in-life question ($r = .34, p = .0003$). Similarly, those satisfied with their current meaning in life tended to have more meaning in life ($r = .47, p < .0001$) and to place more importance on observing spiritual beliefs ($r = .20, p = .04$) than those who wanted more meaning in life. However, another analysis suggested that global meaning in life may be related to the diversity of factors giving life meaning. Respondents reporting more global meaning in life tended to rate a larger number of the 10 factors as important or extremely important ($r = .20, p = .04$).

In the present data, older respondents reported more meaning in life ($r = .29, p = .003$), which suggests that this population may be at a stage of developing meaning in life. Age was not significantly correlated with any variable other than meaning in life.

As shown in Table 4, 91% of those reporting transcendent experiences and 46% of those reporting psychic experiences considered the experiences valuable or very valuable. A slight majority (51%) of those reporting psychic experiences said the experience had no effect. Only 2% (one person) reported a transcendent or psychic experience to be detrimental. However, there are hints of fear of psi among some people who reported no experiences. Of those without psychic experiences, 15% thought a psychic experience would be detrimental, 6% thought it would have no effect, 35% did not know how it would affect them, and 44% thought it would be valuable.

For those reporting transcendent experiences, the reported value of the experiences was negatively correlated with interest in obtaining wealth ($r = -.48, p = .001$) and status ($r = -.53, p = .0003$). For those reporting psychic experiences, the reported value of the experiences was positively correlated with absorption ($r = .32, p = .04$) and self-rated health ($r = .34, p = .03$).

Table 4
EFFECT OF A TRANSCENDENT OR PSYCHIC EXPERIENCE

| | | Valuable or Very Valuable | No Effect | Detrimental or Very Detrimental | Don't Know |
|----------------------------|-----|---------------------------------|--------------|---------------------------------------|------------|
| Transcendent Experience | Yes | 91% (39) | 7% (3) | 2% (1) | |
| | No | 72% (43) | 2% (1) | 5% (3) | 22% (13) |
| Psychic Experience | Yes | 46% (20) | 51% (22) | 2% (1) | |
| | No | 44% (27) | 6% (4) | 15% (9) | 35% (22) |

Note. The rows indicate whether the respondents did or did not have the indicated type of experience. The columns indicate how the respondent rated the effect of the experience. The respondents without experiences rated how they thought it would affect them if they had such an experience. The percentage for the total in the row is given, with the actual counts in parentheses. "Don't know" was not an option for those with experiences.

DISCUSSION AND CONCLUSIONS

This screening survey confirmed previous findings that absorption and temporal lobe symptoms correlate positively with each other and with reports of psychic and transcendent/spiritual experiences. These results occurred even with the lower reliability of the short scales used in the present study. As discussed later in this section, these results must be interpreted cautiously.

This survey also found significant, positive correlations between overall meaning in life and psychic and/or transcendent experiences. Meaning in life is increasingly recognized as an important factor in well-being and health (Antonovsky, 1987; Kobasa, 1979; Zika & Chamberlain, 1992). In the present study, those who reported less meaning in life tended to wish they had a greater sense of meaning in life. Inferences about why the correlations between meaning in life and anomalous experiences occurred in the present study must await further research. The anomalous experiences could contribute to a person's sense of meaning in life, as has been reported for near-death experiences (Gallup, 1982; Greyson & Stevenson, 1980; Ring, 1984), or meaning in life could create a psychological set conducive to anomalous experiences. The causal path also could be bidirectional and mutually reinforcing. Or, of course, the two factors may not be causally related. The present screening study is the first step of a larger project to investigate this and other questions about the effects of anomalous experiences.

One of the more interesting post hoc findings was that reports of anomalous experiences were negatively correlated with obtaining wealth as an important life purpose, and positively correlated with expressing artistic creativity and observing spiritual or religious beliefs. These three purposes of life or values each had its own characteristic pattern of correlations with other variables. The picture that emerges is that those who had expressing artistic creativity as an important purpose of life tended to report psychic experiences, high absorption and temporal lobe symptoms, lower health scores on all measures, and high value for altruism and social causes. Those who had observing spiritual beliefs as an important purpose in life tended to report transcendent experiences, high absorption (but not temporal lobe symptoms), healthy lifestyles, high value for altruism and social causes, and low value on obtaining social status and recognition. Those who had obtaining wealth as an important purpose in life tended to report few psychic or transcendent experiences, high value on enjoying pleasure, and very high value on obtaining status and recognition.

These findings indicate (a) that the relationships between health-related factors and anomalous experiences may vary with type of experience, and (b) that different life values or purposes may play an important role in these relationships. This conclusion is also supported by (a) our data showing that transcendent experiences were considered valuable by 91% of experiencers, compared to only 46% for psychic experiences, and (b) the previous research that found psychic experiences correlated positively with both positive and negative affect, whereas mystical experiences correlated positively with positive affect but not with negative affect (Greeley, 1975; Nelson, 1990).

The present study found no hint of positive correlations between anomalous experiences and positive affect or other well-being measures that have been found in several studies noted in the introduction. The present data do confirm the negative relationship between temporal lobe symptoms and well-being reported by Persinger and Makarec (1987) and extend it to absorption. However, these negative correlations also seem inconsistent with the overall impression from the studies noted in the introduction. Further, the absence of correlations between anomalous experiences and mental health suggests that the aspects of absorption and temporal lobe symptoms related to well-being are different from the aspects related to anomalous experiences. Likewise, although healthy lifestyle was negatively correlated with psychic experiences and with both temporal lobe symptoms and absorption, it was positively correlated with other health measures that showed no hint of correlation with psychic experiences.

Two factors in particular may underlie these inconsistent results. The inconsistencies may be due in part to the use of college students in the

present study and in the studies by Persinger. By comparison, the studies finding positive correlations between anomalous experiences and positive affect affect all investigated populations that were predominantly adults older than college students. Consideration of the issue of college students versus adults older than college students was inspired by similar findings in research on the relationship between religion and mental health. In reviews of this large body of literature, Koenig (1990) and Gartner, Larson, and Allen (1991) found that studies reporting negative relationships between religious observance and mental health used college students for subjects, but studies with adults consistently found positive relationships. Gartner, Larson, and Allen also noted that the studies finding negative relationships tended to use paper-and-pencil personality tests, whereas the studies finding positive relationships used "real life behavioral events which can be reliably observed and measured and which are unambiguous in their significance" (p. 6).

The college students versus older adults issue is also a factor with the absorption and temporal lobe symptoms scales. Roche and McConkey (1990) pointed out that most research on absorption has been with college students and may have limited generalizability to adults. Likewise, most research with Persinger's temporal lobe symptoms scale has been with college students.

Experimental demand characteristics are another factor that may contribute to the inconsistent results. As reviewed in the introduction, recent studies have shown that absorption and temporal lobe symptoms are highly susceptible to or dominated by experimental demand characteristics or experimenter expectations. This may be related to the issue of college students versus adults because the great majority of the research with absorption and temporal lobe symptoms has been carried out with college students.

The evidence for poor signal-to-noise ratios for reports of anomalous experiences also raises the possibility that these reports may be susceptible to experimental demand characteristics. Greeley (1975, p. 79) found that 35% of his sample answered yes to his mystical-experience question, but only 3% reported "authentic" experiences that included at least three of the traditional characteristics of a mystical experience. In very similar results, Thomas and Cooper (1978) found that 34% of a college student sample reported a mystical experience, but only 2% described a "classical" mystical experience. Schmeidler (1964) found that 81% of the college student subjects in an ESP experiment reported a previous spontaneous ESP experience, but only 12% reported experiences she considered were probably psi. Likewise, 44% of a high school student sample reported psi experiences, but only 15% reported experiences classified as probable psi (Haight,

1979). Although these findings of poor validity for self-reported anomalous experiences do not provide direct evidence for experimental demand characteristics, they do suggest that these questions have substantial uncertainty or ambiguity for respondents, which may provide fertile opportunity for demand characteristics to operate.

Given these findings, those who draw conclusions from research with college students on absorption, temporal lobe symptoms, or anomalous experiences have a particular burden to show that the results (a) are not due to experimental demand characteristics, and (b) generalize to nonstudent adult populations. It is not clear that any convincing conclusions can be drawn from the existing research, including the present study, on the relationships between anomalous experiences and temporal lobe symptoms or absorption.

The similarity of the findings reported here to previous studies with college students suggests that the low reliability of the short scales and the low return rate in this study did not greatly distort the results. Further research is needed to confirm this suggestion and to explore several other issues.

Suggestions for Further Research.

Three topics or hypotheses in particular need further research.

1. *Reliability of reports of experiences.* Whenever possible in studies of anomalous experiences, information about specific experiences should be obtained to verify that they actually fit the designated category. The hypothesis that a small minority of people actually have anomalous experiences but that they are overshadowed by a larger group who, for various reasons, tend to give favorable responses on questionnaires appears consistent with available data—particularly with the findings that the majority of self-reported anomalous experiences were probably misclassified and also with the prominent role of demand characteristics in absorption and temporal lobe symptoms research. This issue has important implications for the field of parapsychology. In fact, the “replication problem” in parapsychology is interwoven with the assumption that psi abilities are widely distributed in the population. It may be time to critically reevaluate this assumption, considering both the reliability of anomalous experience surveys and the possibility of psi-mediated experimenter effects in experimental research.

2. *Research with adults.* Research with adults on the relationships among different types of anomalous experiences and health related measures, including meaning in life factors, would be particularly valuable at this time.

3. *Changing relationships.* If anomalous experiences have beneficial effects on people’s lives, then we might expect that the relationships between

health measures and anomalous experiences would change over time. Persons with problems could be susceptible to anomalous experiences, resulting in initially low or even negative correlations with health measures. However, as the problems were resolved, the correlations would shift in the positive direction. Findings that are consistent with this concept include: (a) Reports by several researchers that anomalous experiences or interest in the paranormal may sometimes be related to childhood trauma or difficulties (Greeley, 1975; Irwin, 1992; Ring, 1992; Wilson & Barber, 1983); (b) the evidence suggesting more positive relationships between anomalous experiences and health related factors for adults than for college students; and (c) the generally positive self-reported effect of anomalous experiences, and lack of detrimental effects, found in the present study as well as in previous studies (Gabbard & Twemlow, 1984; Milton, 1992; Richards, 1991). The hypothesis that anomalous experiences generally have positive impacts on a person's life appears to offer great opportunities for research.

APPENDIX

LIFE EXPERIENCES QUESTIONNAIRE

PART A

Date Today ____/____/____

Please answer the following questions about your values, feelings and experiences. Keep in mind that no answer is right or wrong.

1. How much of the time during the past month ...

| | All of the Time | Most of the Time | A Good Bit of the Time | Some of the Time | A Little of the Time | None of the Time |
|---|--------------------------------|---------------------------------|---------------------------------------|---------------------------------|-------------------------------------|---------------------------------|
| have you felt cheerful, lighthearted? | [] | [] | [] | [] | [] | [] |
| have you been a very nervous person? | [] | [] | [] | [] | [] | [] |
| have you felt so down in the dumps nothing could cheer you up? | [] | [] | [] | [] | [] | [] |
| have you felt calm and peaceful? | [] | [] | [] | [] | [] | [] |
| have you felt downhearted and blue? | [] | [] | [] | [] | [] | [] |
| have you been a happy person? | [] | [] | [] | [] | [] | [] |

2. To what extent do the following values and motivations give your life meaning and purpose?

| | Not at all a Purpose of Life | Minor Purpose of Life | Moderate Purpose of Life | Important Purpose of Life | Extremely Important Purpose of Life |
|---|------------------------------------|-----------------------------|--------------------------------|---------------------------------|--|
| provide for my family's needs | [] | [] | [] | [] | [] |
| enjoy pleasure and leisure activities | [] | [] | [] | [] | [] |
| maintain close relationships with loved ones | [] | [] | [] | [] | [] |
| provide service to others (altruism) | [] | [] | [] | [] | [] |
| express artistic or literary creativity . . . | [] | [] | [] | [] | [] |
| achieve personal growth and understanding | [] | [] | [] | [] | [] |
| observe spiritual or religious beliefs . . . | [] | [] | [] | [] | [] |
| obtain wealth | [] | [] | [] | [] | [] |
| obtain status and recognition | [] | [] | [] | [] | [] |
| work on social or humanitarian causes . . | [] | [] | [] | [] | [] |
| other _____ | [] | [] | [] | [] | [] |

3. In general, would you say your health is: excellent very good good fair poor

4. What is your: Sex _____ Age _____ Ethnic Group or Race _____

5. Have you ever been diagnosed as having epileptic symptoms? Yes No

If Yes, was it temporal lobe? Yes Other

6. Do you exercise regularly? Yes No

7. Do you normally watch your diet and eat low fat foods? Yes No

8. Do you smoke? Yes No

9. Do people make you angry or very irritated on most days? Yes No

10. Are you overweight? Very Overweight Moderately Slightly Not Overweight

11. Have you found purpose and meaning for your life? Very Much Moderately Slightly No

12. Do you wish you had a greater sense of meaning and purpose for your life?

am satisfied with the meaning and purpose wish I had more meaning and purpose

13. Have you ever had a transcendent or spiritual experience (overwhelming feeling of peace and unity with the entire creation, or profound inner sense of Divine presence)? Yes No

14. If you answered YES to question 13, what effect did the experience(s) have on your life?

- very disruptive, detrimental
- somewhat disruptive, detrimental
- no effect or negligible effect
- somewhat valuable, enhanced understanding, appreciation of life
- very valuable, enhanced understanding, appreciation of life

15. If you answered NO to question 13, how do you think it would affect you to have such an experience?

- very disruptive, detrimental
- somewhat disruptive, detrimental
- no effect or negligible effect
- somewhat valuable, enhanced understanding, appreciation of life
- very valuable, enhanced understanding, appreciation of life
- don't know

16. Have you ever had a psychic experience (ESP, precognition, telepathy, or mind over matter) or out of body experience? Yes No

17. If you answered YES to question 16, what effect did the experience(s) have on your life?

- very disruptive, detrimental
- somewhat disruptive, detrimental
- no effect or negligible effect
- somewhat valuable, enhanced understanding, appreciation of life
- very valuable, enhanced understanding, appreciation of life

18. If you answered NO to question 16, how do you think it would affect you to have such an experience?

- very disruptive, detrimental
- somewhat disruptive, detrimental
- no effect or negligible effect
- somewhat valuable, enhanced understanding, appreciation of life
- very valuable, enhanced understanding, appreciation of life
- don't know

PART B

Directions: Please circle **T** or **F** for each item according to whether the statement is true or false for you. If in doubt about exactly what a question means, just use your best judgment and common sense.

1. **T F** While watching a movie, a TV show, or a play, I may become so involved that I forget myself and my surroundings and experience the story as if it were real and as if I were taking part in it.
2. **T F** Sometimes thoughts and images come to me without the slightest effort on my part.
3. **T F** There have been times when I have stared at an object and it appeared to become larger and larger.
4. **T F** I often know what someone is going to say before he or she says it.
5. **T F** While sitting quietly, I have had uplifting sensations as if I were driving quickly over a rolling road.
6. **T F** If I wish, I can imagine that my body is so heavy that I could not move it if I wanted to.
7. **T F** The crackle and flames of a wood fire stimulate my imagination.

8. **T F** Sometimes in the early morning hours between midnight and 4:00 a.m., my experiences are very meaningful.
9. **T F** Different colors have distinctive and special meanings for me.
10. **T F** I sometimes "step outside" my usual self and experience an entirely different state of being.
11. **T F** Things that might seem meaningless to others often make sense to me.
12. **T F** At least once a month, I experience intense smells that do not have an obvious source.
13. **T F** Certain pieces of music remind me of pictures or moving patterns of color.
14. **T F** I often feel as if things are not real.
15. **T F** The sound of a voice can be so fascinating to me that I can just go on listening to it.
16. **T F** At times I somehow feel the presence of someone who is not physically there.
17. **T F** I have had experiences when I felt as if I were somewhere else.
18. **T F** I find that different odors have different colors.
19. **T F** I often have "physical memories"; for example, after I've been swimming I may still feel like I'm in the water.
20. **T F** I have dreams of floating or flying through the air at least once a year.
21. **T F** I can be deeply moved by a sunset.

If you would be interested in participating in further research or would like personal feedback about the results of this questionnaire, please provide your name and address below, and check the appropriate box(es). Those who participate in further research will have an opportunity to tour our laboratory and ask questions about these kinds of experiences and research, as well as contribute to an interesting and important area of knowledge. All information provided as part of further research will be kept confidential.

Name _____ Address _____

City _____ State _____ Zip _____ Phone (Optional) _____

Please provide feedback.

I'm interested in participating in research.

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