

# THE JOURNAL OF THE AMERICAN SOCIETY FOR PSYCHICAL RESEARCH

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VOLUME 87

JANUARY ∞ 1993

NUMBER 1

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## **Belief in the Paranormal: A Review of the Empirical Literature**

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**ABSTRACT:** Both parapsychologists and skeptics have interests in investigating the nature of belief in the paranormal, albeit with somewhat different objectives in mind. Despite substantial variation across studies in the definition of the scope of paranormal belief, some degree of order can be imposed on the empirical literature by taking due account of the multidimensionality of paranormal belief. In this light, correlates of paranormal belief are surveyed in the domains of demographic variables, other beliefs and activities, cognitive variables, and personality. Particular emphasis is given to the need for a theory of the psychodynamic functions served by paranormal belief.

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According to Gallup poll data (Sobal & Emmons, 1982), the majority of the American population believes in one or more paranormal phenomena. The nature and the functions of these beliefs have been the subject of considerable speculation and empirical investigation by parapsychologists and skeptics alike, but as yet an explicit consensus view has failed to emerge. The objective of this paper is to review the relevant empirical literature in an endeavor to systematize the data and thereby facilitate further research on the topic.

The term paranormal refers to hypothesized processes that in principle are “physically impossible” or outside the realm of human capabilities as presently conceived by conventional scientists (Thalbourne, 1982). In the present context, however, the authenticity of paranormal processes is not at issue. Whether or not psi processes actually exist, many people *believe* in phenomena such as ESP and PK. The scientific study of these paranor-

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<sup>1</sup> The author acknowledges with gratitude Michael Thalbourne’s constructive and incisive comments on the first draft of this paper. Preparation of the paper was supported by a much appreciated grant from the Parapsychology Foundation, Inc.

mal beliefs is legitimate irrespective of the ultimate resolution of the debate on the reality of the paranormal.

Within the general terms of the above delineation of paranormality, there nevertheless remains a good deal of variation among researchers in what they take to be the scope of paranormal belief, ranging from narrow to all-encompassing. This variation is reflected in the currently available measures of paranormal belief. At the narrow end of the spectrum, one of the most basic operationalizations of paranormal belief is by way of the assessment of belief in ESP. Measures designed with this purpose often are termed “sheep-goat scales” because they originally were devised as a means of selecting as experimental participants people who had a strong conviction in the existence of ESP (sheep) and others who rejected any belief in ESP (goats). Commonly used sheep-goat scales are those of Bhadra (1966), Haraldsson (Thalbourne & Haraldsson, 1980), and Thalbourne (Thalbourne, 1981; Thalbourne & Haraldsson, 1980). Thalbourne’s current Australian Sheep-Goat Scale comprises 15 forced-choice (True/Uncertain/False) items, 11 of which address belief in and personal experience of ESP in general and of telepathy and precognition in particular; another two items concern belief in life after death and in contact with spirits of the dead, and two others (used only in the setting of an experimental psi test) concern beliefs about the possibility of eliciting ESP in the laboratory.

Other measures of paranormal belief survey a greater range of parapsychological claims than ESP alone. Sheils and Berg’s (1977) questionnaire has five forced-choice (Agree/Uncertain/Disagree) statements expressing belief in telepathy, PK, precognition, astral projection (out-of-body experience), and psychic healing.

At the broader end of the belief spectrum are researchers who deem the paranormal to encompass not only parapsychological claims but all manner of magical, superstitious; religious, supernatural, occult, and other notions such as UFOs, astrology, déjà vu, the Loch Ness monster, angels, the unluckiness of walking under a ladder, haunted houses, communication with plants, witches, levitation, palmistry, voodoo, graphology, and reincarnation. It is debatable whether each of these beliefs falls within the purview of the paranormal as I have defined it above, but researchers interpret or apply the concept of paranormality in somewhat different ways. Inventories marked by this very broad perspective include Tobacyk’s Paranormal Belief Scale, or PBS (Tobacyk, 1988; Tobacyk & Milford, 1983), the Belief in the Paranormal Scale of Jones, Russell, and Nickel (1977), Otis and Alcock’s (1982) Extraordinary Belief Inventory, the Supernaturalism Scale of Randall and Desrosiers (1980), and the set of items used in the survey by Sobal and Emmons (1982). By way of illustration, responses to the 26 items of Tobacyk’s PBS are made on a 7-point Likert scale ranging from *strongly disagree* through *uncertain* to *strongly agree*; scores then are derived for the full scale and for seven separate

subscales that Tobacyk names traditional religious belief, psi belief, witchcraft, superstition, spiritualism, extraordinary life forms, and precognition.<sup>2</sup>

By use of these diverse measures, it has been possible to investigate empirically the bases of paranormal belief. This issue is of substantial interest, both to parapsychologists and to skeptics. For example, belief in ESP is reported to affect performance in laboratory ESP tasks: Believers tend to yield above-chance scores in these tasks, whereas disbelievers seemingly use ESP to obtain below-chance scores in a self-contradictory endeavor to demonstrate that psi does not exist (Lovitts, 1981; Palmer, 1971; Schmeidler & McConnell, 1958). Because of the intrinsic prospect of improved control of experimental ESP performance, this so-called sheep-goat effect has been the principal focus of much of the parapsychological investigation of paranormal belief. But the study of paranormal belief bears on other issues too.

An understanding of the bases of these beliefs might help to account for the experience encountered by many parapsychologists of mental conflict over the evidence they obtain in support of the existence of paranormal processes (Inglis, 1986; McConnell & Clark, 1980). Additionally, research on belief, and thence disbelief, in the paranormal may throw some light on the belligerence of the response of many critics to parapsychology (Irwin, 1989). Indeed, McClenon (1982) reports that among members of the American Association for the Advancement of Science, the level of disbelief in ESP is statistically related to the view that parapsychological research is not a legitimate scientific undertaking. From the skeptical viewpoint, paranormal belief also may be a factor in people's misinterpretation of normal events as paranormal occurrences (Ayeroff & Abelson, 1976; Benassi, Sweeney, & Drevno, 1979; Jones & Russell, 1980; Singer & Benassi, 1981) and in the selective discounting of information not compatible with a paranormal interpretation (Russell & Jones, 1980; Singer & Benassi, 1981). There has even been a proposal to use the level of paranormal belief in the general population as an index of social dislocation and of the inadequacy of the U.S.'s program of science education (Singer & Benassi, 1981). Thus, advancements in the scientific understanding of paranormal beliefs potentially could have some wide-ranging implications. In any event, the nature of paranormal belief should be of interest in its own right to any professional student of human behavior. Before considering the results of empirical research on paranormal belief, some preliminary comments are appropriate on methodological matters.

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<sup>2</sup>Tobacyk's labels for some of the PBS subscales are contentious and potentially misleading. Michael Thalbourne (personal communication, September 9, 1991) suggests that the "psi belief" subscale actually is a measure of belief in PK and that the "spiritualism" subscale might better have been named "mind-body dualism."

## GENERAL METHODOLOGICAL ISSUES

One methodological issue that arises in this field of research concerns the dimensions of paranormal belief. As noted above, the designated scope of paranormal belief varies substantially across the available assessment instruments. There nevertheless is a tendency for some researchers to assume that all the questionnaires on paranormal belief are essentially measuring the same thing; in other words, there may be an assumption, often implicit, of the unidimensionality of paranormal belief. A rather insidious form of this assumption occurs when an author makes a bald statement about a feature of paranormal belief and then documents the claim with a parenthetical reference to a finding on superstitious beliefs, for example. The implication is that what is known about one instance of paranormal belief necessarily applies to them all. This type of gratuitous assumption is most common among skeptical commentators who act as if belief in ESP, belief in God, and belief in the unluckiness of the number 13 all are tarred with the same brush.

One must be careful, therefore, to avoid taking at face value any sweeping generalization about paranormal belief that is founded on data for a limited range of these beliefs. Several factorial analyses suggest that paranormal belief is in fact multidimensional. Admittedly, as yet there is limited agreement on the number, identity, and orthogonality of the underlying dimensions. A small study by Sullivan (1982) reported two factors, one of "general superstitious belief" that encompassed ESP, astrology, UFOs, hauntings, biorhythms, and Tarot readings and the other an "orthogonal religious factor" reflecting items on God, evolution, and spirit possession. Three underlying factors were noted by Sobal and Emmons (1982), namely, belief in psychic phenomena, religious beliefs, and belief in the existence of "other beings" such as the Loch Ness monster and ghosts. Clarke (1991) also identified three independent dimensions more or less equivalent to those of Sobal and Emmons: traditional religious belief, psi-related belief, and belief in extraordinary life forms. Other studies suggest even greater differentiation of paranormal beliefs. Factor analyses by Tobacyk (1988; Tobacyk & Milford, 1983) yielded seven independent dimensions: traditional religious belief, psi belief, witchcraft, spiritualism, superstition, extraordinary life forms, and precognition. An Australian survey by Grimmer and White (1990) produced seven factors that they named popular science, obscure unbelief, traditional religion, alternative treatments, paratherapies, functional psi, and structural psi. Jones, Russell, and Nickel (1977) identified eight factors; one major factor pertained to supernaturalism and occultism and another to psychic phenomena, but otherwise individual factors seemed too heterogeneous to be characterized with any confidence, and in any event, they each accounted for small portions of the total variance.

The disagreement between different factor analyses should be considered in light of the fact that the number of factors to emerge from these

analyses does depend in part on the range of items included in the research instrument. To take a simplistic example, a factor of religious paranormal belief probably would be apparent only if the investigator had seen fit to add a number of questions on religious belief to the initial pool of potential test items. Readers who object to the designation of socially condoned traditional religious beliefs as “paranormal” will at least have the satisfaction of noting the frequency with which religious beliefs are differentiated from other factors in the above analyses. Be that as it may, under the broadest interpretation of the scope of paranormal belief, the domain nevertheless does emerge as multidimensional. Notwithstanding the fact of positive intercorrelations between such factors, the multidimensionality of paranormal belief indicates that a correlate reported for global paranormal belief might not necessarily apply for each factorial dimension of the domain. In this light, all possible effort should be made to be precise in specifying the facets of paranormal belief that have any nominated characteristic. Many empirical reports in the literature unfortunately are formulated as findings on undifferentiated paranormal belief.

In seeking to draw generalizations about global or specific paranormal beliefs, some cognizance might also be taken of the era in which the research was undertaken. For example, a good deal of research into superstitious beliefs was conducted in the period between World Wars I and II (e.g., Dudycha, 1933; Emme, 1940; Gilliland, 1930; Ter Keurst, 1939; Wagner, 1928). But the level and pattern of adherence to paranormal beliefs in a given society may change over time (Kennedy, 1939; Levitt, 1952; Randall, 1990; Tupper & Williams, 1986), and it is therefore uncertain that the correlates of superstitiousness identified in the early research still are applicable.

A further methodological difficulty in studying paranormal belief is that the data may depend to some degree on the context of their measurement. For example, there are indications that the format of the survey questionnaire can influence respondents’ acknowledgment of some of their paranormal beliefs. According to Gray (1990a), respondents give lower estimates of the extent of their paranormal belief when anomalous phenomena in which they believe are merely to be checked on a list than when they are asked to indicate the degree of belief in each phenomenon in turn. Schmeidler (1985, p. 2) and Grey (1988) similarly remark that inclusion or exclusion of a “don’t know” or “uncertain” response option can substantially affect the level of paranormal belief evidenced by a questionnaire. That is, if respondents are prevented from checking an agnostic option, they have to declare either a belief or a disbelief, and thus the evident level of belief or disbelief can be inflated.

Attitudes of the investigator or test administrator are another pertinent contextual factor. In two studies, Layton and Turnbull (1975) found participants’ ESP belief scores varied with the experimenter’s expressed attitude toward the evidence for ESP. Much the same effect was obtained by Crandall (1985). Further, Fishbein and Raven (1967) note their measure of

belief in ESP could be manipulated differentially by prior presentation to subjects of an article promoting either the existence of phenomena explainable only in terms of ESP or the methodological inadequacy of ESP experiments. These studies suggest that the measurement of paranormal belief can be subject to the demand characteristics of the test situation. It is not that such interventions necessarily change participants' paranormal beliefs, but rather that there is an effect on the participants' preparedness to admit to the beliefs (Irwin, 1985). Such manipulations might not be explicit nor even intentional. Indeed, the operation of unintended experimenter effects may help to account for some occasional disparities between results obtained on paranormal belief by parapsychologists and those reported by skeptics (Irwin, 1991b).

The influence of a skeptical perspective on research into paranormal belief might be felt in another important respect. Much of the skeptical research on the topic seems to have had the implicit objective of demonstrating that believers in the paranormal are grossly deficient in intelligence, personality, education, and social standing. This underlying motivation is evidenced most clearly in the skeptics' selection of variables to correlate with level of paranormal belief. Although any statistically significant data thus generated may still be very informative, the net effect of the skeptical orientation may be to bias the collective empirical literature in a negative direction. It can be argued, of course, that if believers are highly intelligent, well-educated, well-adjusted people from stable social environments, even the skeptics' data would surely testify to this. But the fact remains that there has been a relative neglect of research into paranormal believers' potential positive attributes such as creativity and empathy, for example.

A review of the principal factors that seem to bear upon the level of the individual's belief in the paranormal follows. Demographic variables, other belief systems, cognitive variables, and dimensions of personality are reviewed in turn. It should be noted that in this review, I have adopted in most instances a policy of citing null results only when these form a substantial proportion of the available data on a given relationship. Null results are of course useful in the collective estimation of the extent of a relationship, but they are not informative for the determination of the direction of the relationship. This review is concerned not with a meta-analysis of each specific relationship in the literature, but rather with the presence of consistencies and patterns in reported relationships.

#### DEMOGRAPHIC CORRELATES

Interest in demographic correlates of paranormal belief has been prompted primarily by the *social marginality hypothesis*. According to Bainbridge (1978) and Wuthnow (1976), people most susceptible to paranormal belief are members of socially marginal groups, that is, groups such as the poorly educated or the unemployed that possess characteristics or roles that rank low among dominant social values. The deprivation and

alienation associated with marginal status in society is held to encourage such people to appeal to magical and religious beliefs, presumably because these beliefs bring various compensations to the lives of their adherents. Under the social marginality hypothesis, the demographic correlates of paranormal belief should be those that represent indices of social marginality.

### Age

With the major exception of traditional religious beliefs, most paranormal beliefs appear to be stronger in young adults than in elderly people. Indeed, Emmons and Sobal (1981, p. 52) report age to be the strongest of all demographic correlates of paranormal belief. A negative relationship between ESP belief and age has been found in American (Emmons & Sobal, 1981; Randall, 1990; Tobacyk, Pritchett, & Mitchell, 1988), New Zealand (Clarke, 1991) and English (Blackmore, 1984) samples, although it was not significant in Haraldsson's (1981) Icelandic survey. Emmons and Sobal (1981), Randall (1990), and Tobacyk, Pritchett, and Mitchell (1988) all report belief in witchcraft to fall across age groups, and the same trend is noted for belief in spiritualism (Tobacyk, Pritchett, & Mitchell, 1988), ghosts (Clarke, 1991; Emmons & Sobal, 1981), extraordinary life forms such as the Loch Ness monster (Emmons & Sobal, 1981; Tobacyk, Pritchett & Mitchell, 1988), and astrology (Emmons & Sobal, 1981; Randall, 1990). A negative relationship between age and the incidence of superstitious beliefs has been reported by Blachowski (1937), Dudycha (1933), Jahoda (1970), and Tobacyk, Pritchett and Mitchell (1988), although the relationship in the study by Blum and Blum (1974) was non-significantly negative.

On the other hand, there seems to be no relationship between age and beliefs in UFOs, faith healing, and plant consciousness (Randall, 1990), although the incidence of these beliefs evidently is low in all age groups.

Traditional religious belief may be a major exception to the general trend of a decline in the incidence of paranormal beliefs across groups of increasing age. Tobacyk, Pritchett, and Mitchell (1988) and Emmons and Sobal (1981) found no significant age-related differences in religious belief, and other studies have actually noted an *increase* in religiosity among the elderly (e.g., Christopher, Fearon, McCoy & Nobbe, 1971; McAllister, 1988; Moberg, 1972).

In seeking to assign meaning to the reported negative correlations between age and most paranormal beliefs, it should be noted that all of the research cited above was cross-sectional rather than longitudinal in design. This makes the interpretation of the correlational data somewhat uncertain; although the data might well testify to the effects of aging or developmental processes on adherence to paranormal beliefs, they could also reflect generational differences.

In any event, the predominant negative relationship between age and

paranormal belief seems at odds with the social marginality hypothesis (Emmons & Sobal, 1981). Youthfulness is highly valued in Western society, and the aged thereby constitute a socially marginal group. Under the social marginality hypothesis, elderly people should be relatively prone to paranormal belief, yet for most facets of this belief the reverse is the case.

### *Gender*

The endorsement of most, but certainly not all, paranormal beliefs is stronger among women than among men. Higher scores by women on global measures of paranormal belief are reported by Irwin (1985), McGarry and Newberry (1981), Randall (1990), Randall and Desrosiers (1980), and Tobacyk and Milford (1983), although no difference between the sexes was found by Jones et al. (1977).

Turning now to specific dimensions of paranormal belief, women usually show stronger belief than men in ESP, especially telepathy and precognition (Clarke, 1991; Emmons & Sobal, 1981; Gray, 1990b; Haraldsson, 1981, 1985a; Irwin, 1985; Kennedy, 1939; Thalbourne, 1981; Tobacyk & Milford, 1983). Women also show stronger belief in superstitions (Blum, 1976; Blum & Blum, 1974; Emme, 1940; Scheidt, 1973), astrology (Clarke, 1991; Emmons & Sobal, 1981; Fichten & Sunerton, 1983; Gray, 1990b; Grey, 1988; Salter & Routledge, 1971; Wuthnow, 1976; Za'rour, 1972), hauntings (Haraldsson, 1985a), psychic healing (Gray, 1990b), reincarnation (Gray, 1990b), and traditional religious concepts (Black, 1990; Emmons & Sobal, 1981; Hay & Morisy, 1978; Tobacyk & Milford, 1983).

This general trend nevertheless is reversed for some other dimensions. Thus, men show relatively stronger belief in UFOs (Clarke, 1991; Gray, 1990b) and in extraordinary life forms such as the Loch Ness monster (Tobacyk & Milford, 1983; Tobacyk & Pirttila-Backman, 1992).

Belief in witchcraft generally does not vary with gender (Emmons & Sobal, 1981; Haraldsson, 1985a; Tobacyk & Milford, 1983), although Salter and Routledge (1971) and Tobacyk and Pirttila-Backman (1992) do report belief in witchcraft to be higher among men than women.

Giving due acknowledgment to the extent that being a woman continues to be socially devalued, these data still offer at best only partial support for the social marginality hypothesis of paranormal belief. Clearly, the hypothesis would have to be modified in order to accommodate the evidence that the strength of some paranormal beliefs is actually higher among men than among women. The apparent sex differences in endorsement of paranormal beliefs presumably reflect sexual stereotypes of some sort, but the nature of these has not yet been determined. Scheidt (1973) speculates that the different level of paranormal belief across the sexes is essentially a product of more basic differences in attitudes to science and religion, that is, males have been socialized to take more interest in and to be better informed about scientific matters than about religious issues (Zusne &



Jones, 1982, p. 186). Other sex-linked characteristics, such as the structural location of women in society (de Vaus & McAllister, 1987), nevertheless are worthy of further scrutiny in this context.

### *Socioeconomic Status*

Few investigations have been made of the variable of socioeconomic status in relation to paranormal belief, possibly because of the difficulty of its measurement and the perceived intrusiveness of questions used as indices. Shells and Berg (1977) report that socioeconomic status was not related to global paranormal belief in a sample of university students. The socioeconomic status was assessed, however, in terms of the standing of the participant's *father* on income, education, and occupation.

In the analysis by Emmons and Sobal (1981), unemployment was used as one indication of social marginality. The variable of unemployment, of course, is also an important aspect of socioeconomic status. Paranormal beliefs found by Emmons and Sobal to correlate with unemployment included those relating to ESP and its individual forms, extraordinary life forms, ghosts, and angels, but only for the last of these was the relationship positive. That is, in most instances unemployed people showed relatively low paranormal belief. This trend is contrary to the social marginality hypothesis.

Few other studies have examined individual dimensions of paranormal belief in this context. Some of the older surveys (Lundeen & Caldwell, 1930; Ter Keurst, 1939) found superstitious beliefs to be stronger in geographical regions of low socioeconomic status. A similar relationship may apply for traditional religious belief, at least in America (Zusne & Jones, 1982), although the reverse may be the case in Britain (M. A. Thalbourne, personal communication, September 9, 1991). Wuthnow (1976) also reports that belief in astrology is stronger in people who are unable to work or who are looking for a job, but in the study by Emmons and Sobal (1981) the correlation between astrological belief and unemployment was not significant. The significant data for religion, superstitions, and astrology nevertheless are consistent with the social marginality hypothesis. This contrasts with the results, cited above, for belief in phenomena of a more parapsychological kind.

### *Ethnicity and Culture*

Ethnic background has been included in some investigations of paranormal belief because of the socially marginal status accorded to some ethnic groups within a given society. In America this variable usually has been scored in terms of whether or not the participant is black. Emmons and Sobal (1981) found belief in ESP and in all its individual forms to be *lower* among blacks than among other ethnic groups in the general population, but in a survey of university students, Tobacyk, Miller, Murphy,

and Mitchell (1988) observed blacks to have a higher belief in precognition than did whites. Again, Murphy and Lester (1976) report no dependence of ESP belief upon the ethnic background of college students. Complex interactions may be operating here between ethnicity, geographic region, and educational level. Although these effects warrant further study, the factor of ethnicity when taken in isolation does not look to be particularly promising for the assessment of the social marginality account of ESP belief.

Tobacyk, Miller, Murphy, and Mitchell (1988) note further that in their sample of university students, blacks showed stronger belief than whites in spiritualism, superstitions, and witchcraft, whereas white students had a higher level of traditional religious belief. Emmons and Sobal (1981) and Tobacyk, Miller, Murphy, and Mitchell (1988) each report belief in extraordinary life forms to be stronger among whites than among blacks. Therefore in terms of ethnicity within the United States, the social marginality hypothesis evidently does not apply uniformly across the different dimensions of paranormal belief.

One study examined ethnic differences in paranormal belief outside the American context. Otis and Kuo (1984) surveyed Singapore university students and found Chinese, Indian, and Malay students to differ mainly in regard to religious beliefs, with the Chinese participants generally showing greater skepticism.

Some studies of paranormal belief have been made between cultures or national groups. Several of these studies have used Tobacyk's (1988) Paranormal Belief Scale as the measure and Louisiana university students as the standard referent group. In comparison to the Louisiana group, university students in Finland are reported to yield lower belief scores for traditional religious concepts, witchcraft, and superstitions, but they had higher scores for belief in extraordinary life forms (Tobacyk & Pirttila-Backman, 1992). A sample of Polish university students had lower traditional religious belief, witchcraft, and superstition scores and higher psi belief scores (Tobacyk, in press). Students at a British liberal arts college scored lower in traditional religious belief, superstitions, extraordinary life forms, and precognition, and higher in spiritualist belief (Davies, 1988). Australian university students had lower traditional religious belief and stronger belief in spiritualism and precognition (Irwin, 1991a).

In a study using a different questionnaire Otis and Kuo (1984) compared paranormal beliefs among university students in Singapore to those of Canadian students. The Singapore sample showed a substantially higher level of global paranormal belief. This crosscultural difference was most marked for groups of items related to religious concepts and to spiritualist phenomena, although differences also were evident for individual items concerning extraordinary life forms and precognition. McClenon (1990) also reports college students in the Republic of China to have a higher level of belief in ESP than do their American counterparts. Finally, on the basis of separate national surveys, Haraldsson (1985a) reports level of belief in

telepathy to be 73% in both Britain and Iceland and that in Sweden to be slightly lower at 66%.

These data at least offer testimony to the fact that the level of paranormal belief in an individual is in part a function of that person's broader cultural environment. For example, there may be some variation in the extent to which a given paranormal belief is integrated into the mainstream culture of the individual's place of residence, and this in turn may influence the likelihood of the individual's endorsement of that belief. As the above data suggest, religious belief is much more an integral part of mainstream culture in America than it is in many other countries. Additionally, there may be characteristics of a culture that prompt its members to embrace paranormal beliefs that have a marginal rather than mainstream standing. For example, in seeking to account for paranormal beliefs of Polish students, Tobacyk (in press) points to the high level of social control and the constant conflict between worldviews (e.g., atheistic and materialistic Communist policies vs. the principles of the Roman Catholic Church) that existed at the time in Poland. The causes of crosscultural differences in paranormal belief nevertheless are likely to be extremely complex and often subtle.

#### *Other Demographic Variables*

Political orientation seems unrelated to belief in ESP, psi phenomena in general, and other basic parapsychological concepts (Alcock, 1975; Haraldsson, 1981; Sheils & Berg, 1977).

Marital status may be a pertinent demographic variable for study, given that divorced and separated people sometimes are seen to have marginal status in society. Emmons and Sobal (1981) found married people to have relatively strong religious beliefs but also comparatively low levels of belief in ESP and its different forms, astrology, witchcraft, and extraordinary life forms. Wuthnow (1976) similarly found divorced and separated people to have substantially higher belief in astrology than did the married, widowed, or respondents who had never married. Although the data base still is quite small, marital status is one facet of social marginality that does provide reasonably consistent evidence for the social marginality hypothesis of paranormal belief. But even here, religious belief seems an exception to the trend.

Other factors such as education and religiosity usually are regarded as demographic variables, but they are addressed elsewhere in the paper.

In summary, following the arguments of sociologists, the variables of age, gender, socioeconomic status, ethnicity, and marital status have each been considered as an index of social marginality. The review of the empirical literature has failed to find a single dimension of paranormal belief showing a pattern of correlations with these indices that is invariably consistent with the social marginality hypothesis. Perhaps a complex com-

bination of the indices would provide a basis for future research into the issue, but at present it is fair to say the social marginality hypothesis of paranormal belief (when taken in isolation) does not satisfactorily accommodate the available evidence. The identified demographic correlates therefore remain as data to be taken into account in the formulation of an effective theory of paranormal belief.

#### ASSOCIATED BELIEFS AND ACTIVITIES

Research on beliefs and activities associated with paranormal belief has a bearing on the *worldview hypothesis*, among other things. According to Zusne and Jones (1982), belief in the paranormal is simply one facet of a broader worldview, a view that is characterized by a highly subjective and esoteric perspective on humanity, life, and the world at large. For example, events may be interpreted more in terms of intangible mental and metaphysical processes than in relation to observable or physical factors. Under Zusne and Jones's hypothesis, paranormal belief should tend to be found in conjunction with other beliefs and activities that share the subjective and esoteric orientation. The evidence on this point is surveyed next.

#### *Involvement in the Paranormal*

One type of behavior expected to have an association with paranormal belief is involvement in psychic activities of various sorts. Rather surprisingly, this issue has been poorly researched, possibly because the association may be so predictable as to be uninteresting. There is nevertheless a significant issue here, namely: Are paranormal beliefs purely intellectual concepts, or do these beliefs have attitudinal implications for the individual's behavior?

There are indications in the literature that a high (or a moderate to high) level of global paranormal belief may prompt the individual to (a) seek entertainment (e.g., a movie) that has a paranormal theme (Otis, 1979), (b) read about paranormal or psychic phenomena (Irwin, 1985; Sheils & Berg, 1977), (c) participate in courses on parapsychology or on psychic development (McGarry & Newberry, 1981; Neppe, 1981; Roney-Dougal, 1984), (d) interpret anomalous experiences as paranormal (Ayeroff & Abelson, 1976; Benassi, Sweeney, & Drevno, 1979; Jones & Russell, 1980; Singer & Benassi, 1981), (e) claim to have parapsychological experiences (Glicksohn, 1990; Haight, 1979; Irwin, 1985; McClenon, 1982; Murphy & Lester, 1976; Polzella, Popp, & Hinsman, 1975; Sheils & Berg, 1977), (f) use mind-expanding drugs or other techniques to induce an altered state of consciousness (Roney-Dougal, 1984), or (g) practice as a medium or psychic (McGarry & Newberry, 1981). There is evidence, however, that people who give psychic readings do form a distinct subgroup of paranormal believers (McGarry & Newberry, 1981); some types

of paranormal involvement thus might not be typical of believers as a whole. More systematic research of the issue nevertheless is warranted. For example, the association between paranormal belief and paranormal involvement may well be bidirectional or circular, with beliefs encouraging involvement and with involvement serving to reinforce beliefs.

If paranormal belief can have implications for the individual's behavior in relation to psychical matters, it is legitimate to consider whether these attitudinal aspects of paranormal belief extend to other domains of behavior.

### *Religious Beliefs and Practices*

To the extent that some researchers have actually defined belief in traditional religious concepts as a paranormal belief, it may seem somewhat redundant to inquire as to whether paranormal beliefs are associated with religious beliefs. On the other hand, the association between religious and nonreligious paranormal beliefs certainly is pertinent to the worldview hypothesis, and therefore it will be addressed.

Some studies have sought to relate paranormal belief to religiosity, that is, the strength of religious attitudes in a nonsectarian sense. The trends to date generally are positive, but by no means uniformly so. According to Haraldsson (1981), ESP belief is statistically dependent on religiosity, although this was not confirmed by Clarke (1991) or Irwin (1985). Tobacyk and Milford (1983) found a significant positive relationship between belief in precognition and religiosity (as indexed by their Traditional Religious Belief subscale). Irwin (1985) reported global belief in a broader range of parapsychological phenomena (including telepathy, precognition, PK, astral projection, and psychic healing) to correlate positively with religiosity, but this relationship was not significant in the survey by Alcock (1975). According to Clarke (1991), religiosity correlates positively with belief in psychic healing and negatively with UFO belief. Finally, Tobacyk and Milford (1983) observed religiosity to correlate positively with belief in witchcraft, negatively with spiritualism, and nonsignificantly with superstitiousness and belief in extraordinary life forms.

Another variable in this domain to have been investigated is religious affiliation, that is, the specific religion or denomination with which the individual identifies. At least within the range of religions and denominations thus far canvassed, religious affiliation appears to have no bearing on paranormal belief. Thus, religious affiliation has been reported to have no significant correlation with either global paranormal belief (Jones et al., 1977) or ESP belief (Murphy & Lester, 1976). Sheils and Berg (1977) claimed a relationship between belief in a broad range of parapsychological phenomena and religious orthodoxy, but Thalbourne's (1981) reanalysis of their data indicated the result was not statistically significant.

The association of paranormal belief with religion can be explored not

only in relation to beliefs but also to behaviors. That is, do religious practices vary with paranormal belief? Haraldsson (1981) found ESP belief among Icelanders to correlate positively with praying, attendance at religious gatherings, and reading about religious matters. Similar results were obtained for an American sample by Thalbourne (1984). Church attendance is the most common religious practice to be surveyed in this context. Church attendance is reported to have no relationship with global paranormal belief (Jones et al., 1977) and belief in various parapsychological phenomena (Alcock, 1975; Sheils & Berg, 1977), but Wuthnow (1976) found a negative relationship between church attendance and belief in astrology.

In summary, some data suggest a positive relationship between paranormal belief and aspects of religious belief and practice, and to this extent there is a degree of support for the worldview hypothesis. There nevertheless remains a need for further empirical investigation. Additionally, there are reports of *negative* relationships between religious variables and a few specific paranormal beliefs; these suggest that the worldview hypothesis by no means is universally applicable.

#### *Other Beliefs and Attitudes*

There are some additional indications that paranormal belief is associated with rather subjective notions of the ways in which the world functions. One respect in which this may be the case is in regard to the human world. The very nature of the dimensions of paranormal belief suggest that paranormal believers see themselves as more than mere physical or biological structures. This impression is borne out by some empirical work. Stanovich (1989) reports ESP belief to correlate positively with a dualist (mind/body) philosophy of human nature. Paranormal believers' conviction in nonphysical dimensions of human existence is instantiated also in relation to the issue of their postmortem fate; ESP belief (Haraldsson, 1981) and global belief in the paranormal (Irwin, 1985) are positively correlated with belief in life after death. The hypothesis of believers' immersion in subjective aspects of life is supported further by reported associations between the level of belief in ESP or broader parapsychological phenomena and both an inclination to interpret dreams (Haraldsson, 1981; Irwin, 1985; Thalbourne, 1984) and to be self-reflective or to devote attention to subjective experience more generally (Davies, 1985; Glicksohn, 1990).

The subjective worldview may be evident in other domains too. McGarry and Newberry (1981) report that students who endorse paranormal beliefs perceive the world as unpredictable, difficult or problem-laden, and unjust. Believers also may be readier than skeptics to amend their notions of the world's operation purely on the basis of their subjective interpretations of events (Delpech, 1957).

Paranormal believers' general tendency to adopt a subjective worldview

does not necessarily mean that they reject the value of contributions made by those who promote an objective worldview. Thus, people who believe in the paranormal neither distrust nor reject science (Otis & Alcock, 1982), do not show distinctive attitudes to the scientific investigation of ESP (Johnson & Jones, 1984; but cf. McClenon, 1982), and do not hold negative feelings about modern technological society (Schouten, 1983).

In an endeavor to test directly the worldview hypothesis, Zusne and Jones (1982, pp. 192-194) developed the World-View scale. This questionnaire comprises items reflecting either a subjective or an objective view of the universe and human behavior. Global belief in the paranormal was observed to be greatest for people scoring high in subjectivism on the World-View scale.

There is therefore, diverse evidence in general support of the worldview hypothesis. However, although most of the available data bear upon global paranormal belief rather than on specific dimensions of belief, these empirical data certainly are informative and should be taken into account by any comprehensive theory of paranormal belief. But the worldview hypothesis does not seem sufficient in itself. Granted the tendency of paranormal believers toward subjectivism, there remains a need for more fundamental determinants of paranormal belief to be ascertained. That is, what styles of cognitive processes and of personality underlie paranormal beliefs and this broader subjectivist belief system alike?

Additionally, there are some types of belief associated with paranormal belief that it is insufficient to characterize merely as "subjective." The beliefs in question relate to the extent to which life is regarded as subject to the control of the individual. Two principal lines of research are pertinent to this issue. The first explores the notion that paranormal believers may have unwarranted beliefs about the extent to which they are unable to influence their own feelings and perceptions of life events. Study of this notion has relied on the Irrational Belief Scale, a measure of respondents' inclination to hold beliefs identified by Ellis (1962) as common but nonetheless irrational assumptions about the unavoidability of external influences upon their feelings and behavior. Scores on this scale have been found to correlate positively with superstitious and spiritualist beliefs (Tobacyk & Milford, 1983). Again, this finding certainly is consistent with the idea that some paranormal beliefs may be part of a broader perspective in which the human world is interpreted on very subjective bases. But the data also signal the potential significance of the individual's specific beliefs about control.

The second line of research on attitudes toward control among paranormal believers concerns the more fundamental dimension of locus of control, which refers to people's disposition to believe their fate either to be in their own hands or to be the consequence of external factors beyond their personal control. Those who believe personal outcomes are contingent largely on their own behavior and attributes are said to have an *internal* locus of control. People with *external* locus of control, on the other hand,

believe personal outcomes are governed predominantly by other powerful individuals and institutions, luck, chance, and so on.

Although there may be some variation across cultures (Davies & Kirkby, 1985; Tobacyk, in press) and for individuals who perform as mediums or psychics (McGarry & Newberry, 1981), the general trend is for paranormal belief to be associated with an external locus of control. This relationship has been documented in regard to global paranormal belief (Irwin, 1986; Jones et al., 1977; Randall & Desrosiers, 1980; Tobacyk & Milford, 1983) and to specific beliefs in ESP (Irwin, 1986; Polzella et al., 1975), precognition (Irwin, 1986; Tobacyk, in press), witchcraft (Tobacyk, in press; Tobacyk, Nagot, & Miller, 1988), superstitions (Davies & Kirkby, 1985; Irwin, 1986; Jahoda, 1970; Scheidt, 1973; Tobacyk, in press; Tobacyk, Nagot, & Miller, 1988), spiritualism (Davies & Kirkby, 1985; Tobacyk, in press), and extraordinary life forms (Tobacyk & Milford, 1983). Paranormal believers of various sorts, therefore, are inclined to maintain that they are especially vulnerable to external forces beyond their control. This theme will emerge also in subsequent sections of the paper that address styles of thinking and personality factors in paranormal belief.

In conclusion, the worldview hypothesis has been valuable in drawing attention to the subjective perspective of some beliefs associated with paranormal belief. There nevertheless remains a need to take due account of other facets of associated beliefs, particularly their pertinence to the issue of control over life events, and to examine the more fundamental matter of the personality dynamics that might be served by these various belief systems.

#### COGNITIVE CORRELATES

There is no rigid distinction between cognitive variables and personality variables, and certainly the status of either of these categories in any given individual has implications for the other. But the intended emphasis of this section is on thought processes that may be differentially characteristic of paranormal believers. Subsequently, broader aspects of believers' personality profiles are addressed.

Many skeptical researchers have had a particular interest in the nature of cognitive processes associated with paranormal belief. The hypothesis underlying this interest usually is not formalized, but for convenience of exposition it will here be referred to as the *cognitive deficits hypothesis*. Under this collective view, the believer in the paranormal is held variously to be illogical, irrational, credulous, uncritical, and foolish. Alcock (1981, pp. 48-53), for example, depicts paranormal believers as credulous, dogmatic, and generally inept in basic intellectual skills. A substantial body of skeptical research therefore has been devoted to the empirical specification of hypothesized cognitive deficits associated with paranormal belief.



### *Educational Attainment*

One potential index of cognitive functioning is educational attainment. A few studies have examined the relationship between paranormal belief and marks obtained in academic work. The grades of college students were found to correlate negatively with global paranormal belief and with belief in ESP, precognition, and psi generally (Messer & Griggs, 1989). Also using a college student population, a negative correlation between grade point average and both superstitiousness and belief in spiritualism has also been reported (Tobacyk, 1984). In a sample of high school students, on the other hand, grade point average correlated *positively* with both belief in psi and traditional religious belief (Tobacyk, Miller, & Jones, 1984). Further research is warranted into interactions between paranormal beliefs, grades, and developmental stage.

A more convenient index of educational attainment is the familiar demographic variable concerning the highest level of education completed by the individual. The relationship between this index and the level of paranormal belief nevertheless has proved to be inconsistent. Tobacyk et al. (1984) unexpectedly found that global paranormal belief was related positively to educational attainment. The relationship for ESP or psi belief is positive in some studies (Emmons & Sobal, 1981; Haraldsson, 1985a, p. 149; Tobacyk et al., 1984) and negative in others (Gray, 1987; Haraldsson, 1985a, p. 149; Otis & Alcock, 1982; Pasachoff, Cohen, & Pasachoff, 1970). Educational attainment seems to correlate positively with belief in witchcraft (Emmons & Sobal, 1981; Tobacyk et al., 1984) and negatively with belief in spiritualism (Otis & Alcock, 1982), superstitions (Blum & Blum, 1974; Wuthnow, 1976), astrology, and UFOs (Salter & Routledge, 1971). Data for traditional religious belief (Christopher, Fearon, McCoy, & Nobbe, 1971; Emmons & Sobal, 1981; Otis & Alcock, 1982) and for extraordinary life forms (Emmons & Sobal, 1981; Otis & Alcock, 1982; Tobacyk et al., 1984) are mixed.

The variability of these results may be due in part to differences in methodology. Some investigators have surveyed the highest level of education among members of the general adult population, some have surveyed groups of students at different stages of their education, and others have sought comparisons among samples of the general public, students, and professional academics. In any event, educational attainment is surely a very crude measure of cognitive functioning, and depending on the context of its measurement it could be confounded with age, socioeconomic status, generational differences, developmental level, social roles associated with particular vocations, and exposure to forms of social indoctrination other than education.

### *Scientific and Other Specialist Education*

A few researchers have endeavored to relate paranormal belief more specifically to the amount of scientific education the individual has had.

Singer and Benassi (1981) even go so far as to suggest that the population level of paranormal belief can be used as an index of the inadequacy of the program of science education in the U.S. In these studies, the typical experimental design has been to examine paranormal belief in university and college students across the field of the student's major. Two studies (Otis & Alcock, 1982; Padgett, Benassi, & Singer, 1981), however, surveyed paranormal beliefs of professors in different disciplines.

Salter and Routledge's (1971) study of global paranormal belief yielded the unanticipated result that students enrolled in the natural or biological sciences had greater belief in the paranormal than did students of the humanities. In other investigations of specific paranormal beliefs, this finding is reversed. That is, in comparison to the humanities, study of the sciences is associated with lower belief in ESP (Happs, 1987; Padgett et al., 1981), parapsychological phenomena (Otis & Alcock, 1982), psychic healing (Gray & Mill, 1990), UFOs (Happs, 1987), superstitions (Za'rour, 1972), astrology (Gray & Mill, 1990), spiritualism, and traditional religious belief (Otis & Alcock, 1982).

Although other explanations can be generated, the implication from these studies is that exposure to the principles of scientific thinking will reduce the level of paranormal belief (e.g., Valentine, 1936). Commentators such as Dudycha (1933), however, caution against any expectation that a general program of scientific education will generalize substantially to paranormal belief. That is, for education to have a major impact on the level of paranormal belief, the educational program may have to be geared specifically to the paranormal.

The empirical literature offers a good deal of support for this case. Various skeptically oriented courses explicitly debunking the paranormal are reported to have reduced the strength of all manner of paranormal beliefs (Banziger, 1983; Emme, 1940; Gray, 1984, 1985, 1987; McBurney, 1976; Tobacyk, 1983a). A course more sympathetic to the scientific scrutiny of parapsychological claims, on the other hand, was found by Irwin (1990b) to influence paranormal beliefs differentially, there being a slight enhancement of belief in PK but a fall in belief in superstitions, extraordinary life forms, witchcraft, and one traditional religious concept (the Devil).

On balance, therefore, it remains unclear whether observed associations between education and paranormal belief may be ascribed to a cognitive aptitude for "critical thinking," or on the other hand, to the individual's exposure to information (in the guise of "real facts"), or to some combination of both. Once again, it seems that educational variables are simply too ambiguous to serve as reliable indices of cognitive functioning. Although the impact of educational programs on paranormal belief is a pertinent if intrinsically problematic issue, the available empirical data are unsatisfactory grounds for an assessment of the cognitive deficits hypothesis.

*Intelligence and Reasoning Skills*

An immediately obvious means of testing the cognitive deficits hypothesis is the investigation of a relationship between paranormal belief and intelligence (IQ). For reasons that remain opaque there is a dearth of research into this relationship. Several of the early studies of superstition (e.g., Emme, 1940; Zapf, 1945) found paranormal belief to correlate negatively with IQ, and more recently, Killen, Wildman, and Wildman (1974) confirmed those results. But other dimensions of paranormal belief evidently have not been pursued in this context. One pertinent study of global paranormal belief was undertaken by Jones et al. (1977). To their expressed surprise, these researchers found a *positive* correlation between intelligence and global paranormal belief. Although further research clearly is warranted, the finding by Jones et al. would appear to stand as a significant challenge to the cognitive deficits hypothesis, perhaps all the more so because of the investigators' skeptical background.

Greater attention has been given to a link between paranormal belief and reasoning skills. By use of a Critical Thinking Appraisal Scale, Alcock and Otis (1980) observed believers in psi phenomena to have poorer critical thinking ability than did a group of nonbelievers. Gray and Mill (1990) used fictitious abstracts of flawed scientific studies to assess critical abilities, and they found a negative correlation between performance on this measure and the level of paranormal belief. Polzella, Popp, and Hinsman (1975) report ESP believers to be less successful in assessing the validity of three-term syllogisms than nonbelievers. Under a similar experimental procedure, Wierzbicki (1985) found a relationship between global paranormal belief and errors in syllogistic reasoning.

Tobacyk and Milford (1983) nevertheless caution that uncritical thinking might not be characteristic of all dimensions of paranormal belief. Only two of the seven dimensions of their Paranormal Belief Scale correlated significantly with a measure of uncritical inference; thus, traditional religious believers tended to be relatively critical in drawing inferences, and believers in spiritualism were uncritical.

A further potential limitation of the above studies is that in every instance the research was conducted by publicly professed skeptics. It is feasible that the relatively critical thinkers in these samples were aware of the investigators' skeptical attitude toward the paranormal and took this as a cue to be reticent about their own paranormal beliefs. That is, the observed relationships between paranormal belief and reasoning skills may have been generated as an unintentional experimenter effect, the suppression of paranormal beliefs among insightful participants. Some support for this interpretation is provided by a study of Irwin (1991b) conducted in a setting in which the investigator is generally recognized as one who adopts an evenhanded approach to parapsychological claims and who is not intent on debunking the paranormal. In this setting, all but one dimension of

paranormal belief was found to be unrelated to reasoning skills; only strong religious beliefs were associated with relatively poor reasoning skills. Even the latter correlation may have been an artifact of reticence. Within the Australian population from which Irwin's sample was drawn, there is a common attitude that "clever" people are not religiously inclined. The sole significant relationship in Irwin's study, therefore, could still have been due to some critical thinkers' failure to acknowledge their religious beliefs rather than to cognitive deficits among believers.

On these grounds it is suggested that research into paranormal believers' intelligence and reasoning skills has not yielded unequivocal support for the cognitive deficits hypothesis. On the contrary, some findings even raise substantial doubts about the general validity of the hypothesis.

### *Creativity and Imagination*

It is appropriate now to move on from the theme of deficits and to look at cognitive correlates in a broader sense. For example, there have been suggestions (e.g., Krippner, 1962; Murphy, 1963) that parapsychological phenomena are associated with the creative personality. Perhaps, then, the cognitive domain of creativity has some significance for paranormal belief.

As noted earlier, correlates that are potentially complimentary to paranormal believers have received scant consideration, particularly from skeptical investigators. There nevertheless are some empirical indications that characteristics associated with the creative personality correlate with paranormal belief. Moon (1975) reports ESP belief to be higher in artists than in nonartists, which might be attributable to the factor of creativity. Other investigators have made a more direct test of the association by relating paranormal belief to standardized measures of creativity. Joesting and Joesting (1969) established a positive correlation between belief in ESP and creativity, and Davis, Peterson and Farley (1974) report a similar result for belief in psi. Further support is offered by observed relationships between paranormal belief and a close correlate of creativity known as sensation seeking, a measure of an individual's need for stimulation and variety of experience. Sensation seeking has been found to correlate positively with belief in psi (Davis et al., 1974; Tobacyk & Milford, 1983) and spiritualist belief (Tobacyk & Milford, 1983).

At least for one or two dimensions of paranormal belief, therefore, creativity is a pertinent factor. Again, this result does not support the cognitive deficits hypothesis, although the implacable skeptic might seek to interpret it in terms of suggested associations between creativity and psychopathology, which are addressed later.

In any event, the evidence for the relationship between paranormal belief's relationship with creativity raises the slightly broader question of whether paranormal believers tend to have a relatively active imagination. Thus, believers' inclination to devote attention to their subjective experience (Davies, 1985; Glicksohn, 1990) already has been noted, and Bain-

bridge (1978, p. 43) reports that some paranormal believers concede "it is good to live in a fantasy world every now and then." One index of the tendency to fantasize is hypnotic susceptibility; people with a strong fantasy life are not only creative but are also extremely susceptible to hypnosis (Lynn & Rhue, 1988; Wilson & Barber, 1983). In this light, it is interesting to note that hypnotic susceptibility has been found to correlate positively with global paranormal belief (Haraldsson, 1985b; Nadon, Laurence, & Perry, 1987) and with the individual dimensions of belief in psi (Wagner & Ratzeburg, 1987), precognition, witchcraft, and spiritualism (Haraldsson, 1985b). These results suggest that paranormal belief is linked to a cognitive style of fantasizing.

More direct scrutiny of this view is provided by measures of a personality construct known as fantasy proneness. Fantasy proneness entails a propensity to fantasize a large part of the time and to be deeply absorbed in or fully experience what is being fantasized (Lynn & Rhue, 1988). Two studies (Irwin, 1990a, 1991a) have established that fantasy proneness correlates positively with global paranormal belief and with belief in traditional religious concepts, psi, witchcraft, spiritualism, extraordinary life forms, and precognition. The only dimension not to correlate significantly with fantasy proneness is superstitiousness, and because many participants give the lowest possible rating to each of the superstition items, the lack of a relationship with fantasy proneness may be an artifact of the limited variability of superstitiousness scores in the samples.

The association between paranormal belief and fantasy proneness is of interest not only in its own right but also in relation to the issue of the origins and functions of paranormal belief. Fantasy proneness seems to emerge partly as a result of physical abuse and other trauma during childhood. It is possible, therefore, that childhood trauma is an important factor in explaining an individual's fundamental openness to paranormal belief. At this point the emphasis is tending to shift more clearly toward the personality domain, and so it is timely now to address the latter.

#### PERSONALITY CORRELATES

It is virtually a psychological axiom that beliefs are held because they serve significant psychodynamic needs of the individual. According to Taylor and Brown (1988), beliefs can achieve this function whether they are grounded in objective reality or are intrinsically illusory, and thus parapsychologists and skeptics alike are interested in the functions served by paranormal beliefs.

The general view that paranormal beliefs are needs-serving will be termed the *psychodynamic functions hypothesis*. Skeptics usually take this hypothesis to mean that paranormal believers in some respects are psychologically deviant, and although this is not a necessary implication of the psychodynamic functions hypothesis, the personality correlates of paranormal belief clearly are data to be taken into account in this regard.

Research into these correlates is reasonably substantial. The empirical literature nonetheless is in need of some systematization, and the following survey is offered as an attempt toward that end.

### *Social Dimensions of Personality*

One major facet of personality concerns the quality of the individual's interpersonal or social behavior. To the extent that some paranormal beliefs are socially deviant, it might be expected that these beliefs would correlate with social dimensions of personality. The fundamental personality factor of extraversion does not appear to be related either to global paranormal belief (Windholz & Diamant, 1974) or to most of its component dimensions (Lester, Thinschmidt, & Trautman, 1987), although Thalbourne and others (Thalbourne, 1981; Thalbourne, Beloff, Delanoy, & Jungkuntz, 1983; Thalbourne & Haraldsson, 1980) report a tendency for ESP believers to be slightly extraverted. This suggests that the paranormal believer certainly is not inclined to be more socially withdrawn than the nonbeliever. On the other hand, Tobacyk (1985c; Tobacyk & Pirttila-Backman, 1992) reports global paranormal belief and belief in psi, witchcraft, superstitions, spiritualism, extraordinary life forms, and precognition to be positively correlated with a measure of social alienation. This characterization of the paranormal believer is supported by evidence concerning social interest, that is, the capacity to transcend the limits of the self and to relate to the needs of other people. Thus Tobacyk (1983b, in press) found negative correlations between social interest and belief in psi, witchcraft, superstition, spiritualism, extraordinary life forms, and precognition; the only dimension to correlate positively with social interest was traditional religious belief. This does not seem to be founded on any lack of trust in other people (McBeath & Thalbourne, 1985; Tobacyk, 1983b) nor on authoritarian tendencies (Randall, 1991). Rather, it appears to testify to a greater devotion of interest to the self than to other people. That is, with the exception of traditionally religious people, paranormal believers generally have low social motivation (Davis et al., 1974). The lack of social interest is allied with low social anxiety; although paranormal belief is independent of the tendency to respond in socially desirable ways (Tobacyk, 1985b), it is related to a lack of fear of social ridicule (Davies, 1985).

The research in relation to social aspects of personality, therefore, has yielded a reasonably coherent psychological profile. Nonreligious paranormal believers may present as normally outgoing individuals, but perhaps they are inclined to be more interested in the world of their own subjective experience than in the needs of other people. If this almost psychopathic characterization seems somewhat exaggerated, at least it signals the importance of addressing more specifically the psychological adjustment of paranormal believers.

*Psychological Adjustment*

One aspect of psychological adjustment is the individual's perception of the self. Tobacyk and Milford (1983) studied the discrepancy between perceptions of the actual self and the ideal self in relation to paranormal belief, but the only dimension of belief to correlate with this measure was traditional religious belief. That is, religious people saw their actual and ideal selves to be more closely matched than did nonreligious people. Other groups of paranormal believers therefore do not appear to be marked by any lack of self-esteem. Similarly, no dimensions of paranormal belief are found to be associated with a failure of identity achievement (Tobacyk, 1985a). On the other hand, some paranormal believers may have a grandiose sense of their own importance and uniqueness. Tobacyk and Mitchell (1987) report positive correlations between a measure of narcissism and belief in psi, witchcraft, spiritualism, and precognition. Far from lacking self-esteem and a sense of identity, these paranormal believers may well be preoccupied with fantasies of unlimited power and success (Tobacyk & Mitchell, 1987). The significance of a sense of control once again is indicated.

As a group, paranormal believers do not present as anxious people. Neither global paranormal belief nor its individual dimensions correlate with trait anxiety (Jones et al., 1977; Tobacyk, 1982). Neuroticism, however, may be a significant correlate. A direct relationship has been found between neuroticism and both global paranormal belief (Waugh, cited by Marks, 1986; Windholz & Diamant, 1974) and belief in astrology (Fichten & Sunerton, 1983), although Polzella et al. (1975) failed to find such a relationship for ESP belief.

Paranormal believers appear to be relatively reluctant to change their beliefs (Waugh, cited by Marks, 1986), a finding that might be taken as indicative of at least rigidity or dogmatism. A few dimensions of paranormal belief do correlate positively with dogmatism, particularly belief in psi (Alcock & Otis, 1980) and witchcraft, and to a lesser extent, traditional religious concepts (Tobacyk & Milford, 1983). Some writers (e.g., Zusne & Jones, 1982) view these findings as consistent with the notion that some paranormal believers have poor psychological adjustment.

Individuals' attitudes to death have received some study in this context. Traditional religious believers appear to have a relatively clear conceptual understanding of death's relationship with other aspects of their life, although the latter variable evidently has no bearing on other dimensions of paranormal belief (Tobacyk, 1983c; Tobacyk & Milford, 1983; Tobacyk & Pirttila-Backman, 1992). At an emotional level, however, attitudes to death are significant. A measure of the extent to which death and its implications are disturbing is reported to correlate positively with virtually all nonreligious dimensions of paranormal belief. That is, death concerns are relatively substantial among believers in psi, witchcraft, superstitions, extraordinary life forms, and precognition (Tobacyk, 1983c; Tobacyk &

Pirttila-Backman, 1992). Perhaps the intrinsic uncontrollability of death looms large in the minds of nonreligious paranormal believers.

Few other explicit assessments of the general psychological adjustment of paranormal believers have been undertaken. There are, of course, frequent clinical observations of paranormal beliefs among psychologically disturbed patients (Greyson, 1977), but the issue demands empirical investigation in a more general population. Some of the older studies (e.g., Maller & Lundeen, 1934; Ter Keurst, 1939; Zapf, 1945) found a negative relationship between adjustment and superstitiousness, but more recent data do not confirm this (Irwin, 1991a; Tobacyk & Milford, 1983). Schumaker (1987) claims to have shown that global paranormal belief is associated with *superior* psychological adjustment, but he appears to have misrepresented his data by interpreting his index of psychological adjustment as a direct measure when in fact it was inverse (see Irwin, 1991a); that is, Schumaker's results indicate an inverse relationship between these beliefs and adjustment. In a replication of Schumaker's procedure, Irwin (1991a) found that global paranormal belief and belief in witchcraft correlated negatively with psychological adjustment.

Greater scrutiny has been given to the status of paranormal believers and nonbelievers on magical ideation, an index of schizotypy or proneness to schizophrenia. Although Windholz and Diamant (1974) observed that global paranormal belief was associated with schizoid thought patterns and behavior, recent interest in this issue was instigated largely by Eckblad and Chapman's (1983) inclusion of items on parapsychological phenomena in their Magical Ideation Scale. The implication was that the interpretation of personal experience in terms of paranormal belief was symptomatic of schizotypy. In an investigation of this notion, Thalbourne (1985) found an independent measure of ESP belief was correlated with magical ideation scores whether or not the parapsychological items were retained in Eckblad and Chapman's scale. In an extension of this study, Anderson (1988) found that ESP belief and global paranormal belief correlated positively with magical ideation (with or without the parapsychological items), as well as with a measure of schizotypy distinct from magical ideation. Anderson's results admittedly may have uncertain generality; his sample comprised trance mediums (to represent extreme paranormal believers) and nonmediums matched for age and gender. According to Williams (1989), magical ideation (with and without the parapsychological items) correlates positively with global paranormal belief and with belief in traditional religious concepts, psi, witchcraft, superstition, spiritualism, extraordinary life forms, and precognition. With the exception of traditional religious belief, Williams also confirmed these results using a different index of schizotypy. Much the same pattern of correlations was found by Tobacyk and Wilkinson (1990) with the (complete) Magical Ideation Scale, although the correlation for traditional religious belief was negative for men and nonsignificant for women. (The disparity of results for religious belief may reflect differences in religious conservatism between the Louisiana



population sampled by Tobacyk and Wilkinson and the Australian population sampled by Williams; see also Irwin, 1991b.)

There is, therefore, a clear association between a wide range of paranormal beliefs and proneness to psychosis. Many skeptics presumably would rest their case at this point; people who believe in the paranormal are simply "crazy." But two major objections may be raised to a conclusion formulated in these terms.

First, there may be some identifiable subgroups of paranormal believers to whom the conclusion does not apply. In a follow-up to her original survey, Williams found that although members of an Australian psychical research group and a sample of schizotypes had similar paranormal beliefs, the former group had much the same schizotypy scores as a control group from the general population (Williams & Irwin, 1991). Compared to the schizotypes, the psychical research group also tended to assign more significance to personal responsibility for life events than to the role of chance. In other words, the psychical researchers may have been attracted to paranormal beliefs because of a worldview distinct from that of schizotypes. Psychical research group members and others actively involved in the paranormal, of course, are not representative of paranormal believers as a whole (McGarry & Newberry, 1981), but Williams' findings indicate a more appropriate depiction of the magical ideation research is that the attraction of paranormal beliefs for many (*but not all*) people might be illuminated by the variable of schizotypy, or more generally, psychological maladjustment.

A second and perhaps more critical objection may be posed. That paranormal believers tend to be psychologically maladjusted is more an observation to be explained than a sufficient explanation in itself. Given that paranormal beliefs have some attraction for relatively maladjusted (and other) people, under the psychodynamic functions hypothesis the question still remains as to the *functions* served for these people by paranormal beliefs. It is in such terms that an effective theory of paranormal belief should be couched. I therefore now turn more explicitly to the topic of origins and functions.

### *Personality and the Functions of Paranormal Belief*

In a rather superficial sense, it is legitimate to maintain that the origin of paranormal beliefs lies in the individual's culture. Certainly it is the case that paranormal beliefs almost inevitably reflect their cultural context. For example, presumably few paranormal believers in American society would claim that the ritual insertion of small quartz crystals under their skin will endow them with special spiritual powers, but men initiated into some Australian aboriginal tribes cherish this belief (Cowan, 1989).

On the other hand, surely it is more reasonable to argue that culture is responsible not for paranormal belief per se but rather for the specific *forms* that the beliefs might well take. That is, membership of various cultural

groups and subgroups will govern the characteristics of paranormal beliefs embraced by the individual. Thus, paranormal beliefs may be modeled on examples provided by significant others (e.g., parents; see Emme, 1940) or by persuasive people who make a living from the promotion of such beliefs (Zusne & Jones, 1982, pp. 195-198). Similarly, mere exposure to paranormal concepts through the media (Singer & Benassi, 1981) and normal social interaction may provide an unpremeditated conceptual framework within which, in the absence of any familiar alternatives, the individual unwittingly interprets subsequent personal encounters with anomalous events as paranormal phenomena. Some correlates of individual dimensions of paranormal belief thus may reflect the operation of cultural and subcultural factors. But as Schumaker (1990) remarks, for these cultural influences to be effective the individual must be intrinsically susceptible to them. The form of paranormal beliefs may have cultural origins, but the origins of susceptibility to the beliefs must be sought in the psychodynamic domain.

A clue to the psychodynamic origins might be found by examining possible psychological functions served by paranormal beliefs. Speculation on the underlying functions of paranormal belief has been undertaken principally by skeptics. Alcock (1981, p. 40), Frank (1977, pp. 556-557), Marks and Kammann (1980, p. 156), Schumaker (1990), Singer and Benassi (1981, p. 50), and Zusne and Jones (1982, p. 210) all advocate the significance in this context of a basic human psychological need for a sense of understanding of life events. An assurance of order and meaning in the physical and social world is thought to be essential for emotional security and psychological adjustment. Traumatic events and anomalous experiences, however, pose a potential threat to a state of assurance, in essence because they can be taken to imply the world sometimes is uncertain, chaotic, and beyond the individual's understanding and mastery. By incorporating a system of paranormal beliefs, the individual has a cognitive framework for effectively structuring many events and experiences in life so that they appear comprehensible and thereby able to be mastered, at least intellectually. Under this view, paranormal belief constitutes a cognitive bias through which reality may be filtered without threatening the individual's sense of emotional security. In essence, the way in which paranormal beliefs achieve this effect is by creating an "illusion of control" (Langer, 1975) over events that are anomalous or are in reality not controllable by the individual.

Two studies have attempted to investigate the hypothesis that a psychological function of paranormal belief is the creation of an illusion of control. In a novel experiment, Blackmore and Troscianko (1985) asked experimental participants to estimate the degree of control they had over the outcome of a computer-generated coin-tossing task. In half the trials, control over the outcome was possible through adept timing of the response to stop the coin spinning; in the remaining trials, this strategy for control

could not be exercised. Under both conditions, subjects who believed in ESP felt they were exercising greater control over the outcome than did nonbelievers, yet the two types of participant did not score any differently on the coin-tossing task itself. This is consistent with the "illusion of control" hypothesis, although other explanations could be constructed. For example, ESP believers may have thought they could influence the outcome of the computer task by parapsychological means. Estimates of the degree of control over the task thus may have been an index of the belief that psi could be utilized in this situation, and hence the observed statistical relationship between these estimates and belief in ESP might well have been expected.

A second study of the hypothesis was performed more recently by Irwin (1992). It was proposed that paranormal believers' underlying need for control over their world might be expressed in the domain of interpersonal behavior. Psychology students were asked to use the FIRO-B scale (Schutz, 1978) to provide an independent estimate of a close friend's expression of control in behavior toward other people. These estimates of the need for interpersonal control were found to correlate positively with the friends' global paranormal belief scores. When the students' friends completed the FIRO-B scale themselves, however, this correlation was not significant. This may have been due to a lack of openness in the individuals' representations of their own interpersonal behavior, but it may also be interpreted as a suggestion that the need for control operates outside the individual's awareness. In any event, there are indications here that paranormal believers do have a need for a sense of control over their world. The psychodynamic functions hypothesis is both supported and made more explicit by these findings.

In searching for the origins of paranormal belief, therefore, it is pertinent to ask what may have prompted this need for control among paranormal believers. As noted, nearly all dimensions of paranormal belief are correlated with the personality construct of fantasy proneness, and one of the major factors associated with the development of fantasy proneness is a history of traumatic childhood experiences, particularly physical abuse (Lynn & Rhue, 1988; Wilson & Barber, 1983). On these grounds, it is proposed that childhood trauma constitutes one of the origins of paranormal belief.

This hypothesis is supported by data reported by Irwin (1992). In a sample of university students, global paranormal belief correlated positively with the extent of intrafamilial physical abuse during childhood; the correlation with a collective index of childhood trauma also was positive, although in this case the significance level was borderline. Further, it seems the need for control might be sustained by the occurrence of unpredictable events even after childhood. Jones et al. (1977) report a positive relationship between global paranormal belief and the frequency of unpredictable changes during the past year in the lives of the student partici-

pants. Thalbourne (personal communication, September 9, 1991) remarks that *any* acute and severe suffering might lead a person's thoughts toward the paranormal.

The factors of childhood trauma, need for control, fantasy proneness, and illusion of control over life events therefore are proposed to be central to the foundation and maintenance of paranormal belief. Further research on this issue nevertheless is called for, especially in the following respects. First, it is not certain that these four variables are pertinent to each and every dimension of paranormal belief. Second, there is a need for more precise identification of the ways in which the four variables interact with specific social and cultural contexts to yield the observed pattern of paranormal beliefs in any given individual. Third, there are other known antecedents to fantasy proneness that may have to be taken into account. Children's fantasy proneness can be fostered by parental encouragement (Lynn & Rhue, 1988), and the development of paranormal belief therefore should be investigated also in relation to these more positive aspects of the family setting than just the level of physical abuse.

#### A SUGGESTED INTEGRATION

A general model designed to accommodate many of these diverse observations is presented in Figure 1. The model is a slight modification of one I have already proposed (Irwin, 1992). It incorporates the principal factors identified in this review of paranormal belief. The construct of fantasy proneness is accorded key status in the model. In many cases, the developmental foundation of fantasy proneness is the encouragement by parents and other significant figures of imaginative activities in the child. Fantasy proneness may be instigated also by traumatic childhood experiences, particularly physical abuse, which fosters a strong need for a sense of control. This heightened need for control tends to make more salient the occurrence of anomalous and uncontrollable events in the individual's life. The operation of fantasy proneness is held to lead to the endorsement of paranormal beliefs because these beliefs offer an illusion of control (even if only that of intellectual mastery) over anomalous and essentially uncontrollable life events.<sup>3</sup> The facilitation of paranormal beliefs by fantasy proneness nevertheless is mediated by the individual's cultural and social environment; that is, the actual form of paranormal belief embraced by the individual (e.g., the choice between traditional religion and New Age concepts) will substantially depend on models provided by parents, peers, teachers, the media, and professional apostles of paranormal beliefs. A mutually supportive interaction is set up between paranormal beliefs and

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<sup>3</sup> It is possible, of course, that some people achieve a sense of control without appealing to paranormal beliefs; that is, paranormal belief may be one of various avenues for responding to the need for control.

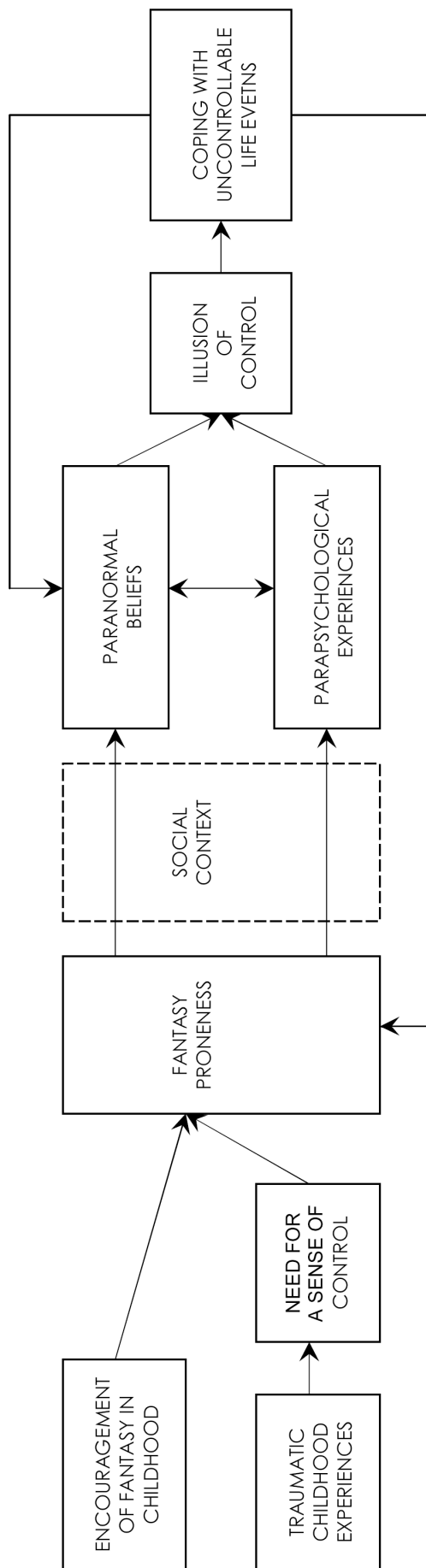


Fig. Amodel of origins and functions of paranormal belief.

personal parapsychological experiences<sup>4</sup> (Snow & Machalek, 1982); thus, belief encourages the interpretation of anomalous experiences as paranormal, and personal encounters with seemingly paranormal processes further buttress paranormal beliefs. The model additionally posits two other feedback loops. When a paranormal belief provides the individual with a sense of coping with an otherwise uncontrollable event, the attenuation of feelings of helplessness may reinforce the paranormal belief and possibly also the underlying inclination to fantasize.

The major classes of identified correlates of paranormal belief may bear upon various elements of the model. Demographic variables may tap facets of the social context, the likelihood of childhood trauma, and the occurrence of uncontrollable events in the individual's current life. The subjectivism of beliefs commonly associated with paranormal belief may be a reflection of fantasy proneness; that is, paranormal believers may have a comparatively subjective view of the world because of their fantasy proneness. Paranormal believers' evident belief in an external locus of control may index the salience for these people of uncontrollable life events, and thus their appeal to paranormal beliefs may be in part an attempt to engender an assurance that at least some life events either might be subject to direct (paranormal) intervention or can be mastered at an intellectual level. Cognitive correlates related to education, reasoning skills, and creativity may variously index aspects of the domains of social context and fantasy proneness. Personality correlates of paranormal belief likewise may reflect the factors of childhood trauma, fantasy proneness, and to some extent the social context.

There clearly is much empirical work yet to be done on this topic. The formulation of the above model is intended to be not so much a definitive statement on the nature of paranormal belief but rather a means of providing impetus and direction for future research efforts. Further investigation might consider the efficacy and the detailed operation of the model for individual dimensions of paranormal belief. The scope of paranormal belief also calls for closer scrutiny. For example, given the breadth of some of the proposed conceptions of paranormal belief, it would be legitimate to explore the religiouslike belief of scientism<sup>5</sup> in this context. The skeptical view that "irrational" paranormal beliefs can be eliminated by a sound program of science education (e.g., Singer & Benassi, 1981) might then be recast in terms of the displacement of one set of paranormal beliefs by another. In any event, the prevalence of paranormal beliefs in our society

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<sup>4</sup> "Personal parapsychological experience" designates an experience that appears to the experient to involve paranormal processes. The experient, of course, cannot demonstrate that psi was in fact involved in a personal experience, and thus the distinction between personal parapsychological experiences based on psi and those not based on psi is dubious and certainly not pertinent to the model presented here.

<sup>5</sup> Scientism is the belief that all questions can be resolved through the application of the methods of science.

and the evident impact of these beliefs upon the individual's life signal the importance of pursuing a better understanding of the functions and origins of paranormal belief.

## REFERENCES

- ALCOCK, J. E. (1975). *Some Correlates of Extraordinary Belief*. Paper presented at the 36th Annual Meeting of the Canadian Psychological Association, Quebec.
- ALCOCK, J. E. (1981). *Parapsychology: Science or Magic? A Psychological Perspective*. Elmsford, NY: Pergamon Press.
- ALCOCK, J. E., & OTIS, L. P. (1980). Critical thinking and belief in the paranormal. *Psychological Reports*, 46, 479-482.
- ANDERSON, J. (1988). *Trance Mediums and Schizophrenics: A Psychological Assessment and P300 Analysis*. Unpublished master's thesis, University of New England, Armidale, Australia.
- AYEROFF, F., & ABELSON, R. P. (1976). ESP and ESB: Belief in personal success at mental telepathy. *Journal of Personality and Social Psychology*, 34, 240-247.
- BAINBRIDGE, W. S. (1978). Chariots of the gullible. *Skeptical Inquirer*, 3(2), 33-48.
- BANZIGER, G. (1983). Normalizing the paranormal: Short-term and long-term change in belief in the paranormal among older learners during a short course. *Teaching of Psychology*, 10, 212-214.
- BENASSI, V. A., SWEENEY, P. D., & DREVNO, G. E. (1979). Mind over matter: Perceived success at psychokinesis. *Journal of Personality and Social Psychology*, 37, 1377-1386.
- BHADRA, B. H. (1966). The relationship of test scores to belief in ESP. *Journal of Parapsychology*, 30, 1-17.
- BLACHOWSKI, S. (1937). The magical behavior of children in relation to school. *American Journal of Psychology*, 50, 347-361.
- BLACK, A. W. (1990). The sociology of religion in Australia. *Sociological Analysis*, 51 (Supplement), 27-41.
- BLACKMORE, S. J. (1984). A postal survey of OBEs and other experiences. *Journal of the Society for Psychical Research*, 52, 225-244.
- BLACKMORE, S. [J.], & TROSCIANKO, T. (1985). Belief in the paranormal: Probability judgements, illusory control, and the "chance baseline shift." *British Journal of Psychology*, 76, 459-468.
- BLUM, S. H. (1976). Some aspects of belief in prevailing superstitions. *Psychological Reports*, 38, 579-582.
- BLUM, S. H. & BLUM, L. H. (1974). Do's and don't's: An informal study of some prevailing superstitions. *Psychological Reports*, 35, 567-571.
- CHRISTOPHER, S., FEARON, J., MCCOY, J., & NOBBE, C. (1971). Social deprivation and religiosity. *Journal for the Scientific Study of Religion*, 10, 385-392.

- CLARKE, D. (1991). Belief in the paranormal: A New Zealand survey. *Journal of the Society for Psychological Research*, 57, 412-425.
- COWAN, J. (1989). *Mysteries of the Dreaming: The Spiritual Life of Australian Aborigines*. Bridport, UK: Prism Press.
- CRANDALL, J. E. (1985). Effects of favorable and unfavorable conditions on the psi-missing displacement effect. *Journal of the American Society for Psychological Research*, 79, 27-38.
- DAVIES, M. F. (1985). Self-consciousness and paranormal belief. *Perceptual and Motor Skills*, 60, 484-486.
- DAVIES, M. F. (1988). Paranormal beliefs in British and southern USA college students. *Psychological Reports*, 62, 163-166.
- DAVIES, M. F., & KIRKBY, H. E. (1985). Multidimensionality of the relationship between perceived control and belief in the paranormal: Spheres of control and types of paranormal phenomena. *Personality and Individual Differences*, 6, 661-663.
- DAVIS, G. A., PETERSON, J. M. & FARLEY, F. H. (1974). Attitudes, motivation, sensation seeking, and belief in ESP as predictors of real creative behavior. *Journal of Creative Behavior*, 8, 31-39.
- DELPECH, L. (1957). Preliminary study of attitudes. In *Proceedings of Four Conferences of Parapsychological Studies* (pp. 143-144). New York: Parapsychology Foundation.
- DE VAUS, D., & MCALLISTER, I. (1987). Gender differences in religion: A test of the structural location theory. *American Sociological Review*, 52, 472-481.
- DUDYCHA, G. J. (1933). The superstitious beliefs of college students. *Journal of Abnormal and Social Psychology*, 27, 457-464.
- ECKBLAD, M., & CHAPMAN, L. J. (1983). Magical ideation as an indicator of schizotypy. *Journal of Consulting and Clinical Psychology*, 51, 215-225.
- ELLIS, A. (1962). *Reason and Emotion in Psychotherapy*. New York: Lyle Stuart.
- EMME, E. E. (1940). Modification and origin of certain beliefs in superstition among 96 college students. *Journal of Psychology*, 10, 279-291.
- EMMONS, C. F., & SOBAL, J. (1981). Paranormal beliefs: Testing the marginality hypothesis. *Sociological Focus*, 14, 49-56.
- FICHTEN, C. S., & SUNERTON, B. (1983). Popular horoscopes and the "Barnum effect." *Journal of Psychology*, 114, 123-134.
- FISHBEIN, M., & RAVEN, B. H. (1967). The AB scales: An operational definition of belief and attitude. In M. Fishbein (Ed.), *Readings in Attitude Theory and Measurement* (pp. 183-189). New York: Wiley.
- FRANK, J. D. (1977). Nature and functions of belief systems: Humanism and transcendental religion. *American Psychologist*, 32, 555-559.
- GILLILAND, A. R. (1930). A study of the superstitions of college students. *Journal of Abnormal and Social Psychology*, 24, 472-479.
- GLICKSOHN, J. (1990). Belief in the paranormal and subjective paranormal experience. *Personality and Individual Differences*, 11, 675-683.



- GRAY, T. (1984). University course reduces belief in paranormal. *Skeptical Inquirer*, 8, 247-251.
- GRAY, T. (1985). Changing unsubstantiated belief: Testing the ignorance hypothesis. *Canadian Journal of Behavioural Science*, 17, 263-270.
- GRAY, T. (1987). Educational experience and belief in paranormal phenomena. In F. B. Harrold & R. A. Eve (Eds.), *Cult Archaeology and Creationism: Understanding Pseudoscientific Beliefs about the Past* (pp. 21-33). Iowa City: University of Iowa Press.
- GRAY, T. (1990a). Questionnaire format and item content affect level of belief in both scientifically unsubstantiated and substantiated phenomena. *Canadian Journal of Behavioural Science*, 22, 173-180.
- GRAY, T. (1990b). Gender differences in belief in scientifically unsubstantiated phenomena. *Canadian Journal of Behavioural Science*, 22, 181-190.
- GRAY, T., & MILL, D. (1990). Critical abilities, graduate education (Biology vs. English), and belief in unsubstantiated phenomena. *Canadian Journal of Behavioural Science*, 22, 162-172.
- GREY, W. (1988). Australia's credulity rating: Bad or worse? *The Skeptic* (Australia), 8(4), 35.
- GREYSON, B. (1977). Telepathy in mental illness: Deluge or delusion? *Journal of Nervous and Mental Disease*, 165, 184-200.
- GRIMMER, M. R., & WHITE, K. D. (1990). The structure of paranormal beliefs among Australian psychology students. *Journal of Psychology*, 124, 357-370.
- HAIGHT, J. (1979). Spontaneous psi cases: A survey and preliminary study of ESP, attitude, and personality relationships. *Journal of Parapsychology*, 43, 179-204.
- HAPPS, J. C. (1987). Conceptual conflict over pseudoscience: A case study involving teacher trainees and their belief in water divining. *The Skeptic* (Australia), 7(2), 21-28.
- HARALDSSON, E. (1981). Some determinants of belief in psychical phenomena. *Journal of the American Society for Psychical Research*, 75, 297-309.
- HARALDSSON, E. (1985a). Representative national surveys of psychic phenomena: Iceland, Great Britain, Sweden, USA and Gallup's multinational survey. *Journal of the Society for Psychical Research*, 53, 145-158.
- HARALDSSON, E. (1985b). Interrogative suggestibility and its relationship with personality, perceptual defensiveness and extraordinary beliefs. *Personality and Individual Differences*, 6, 765-767.
- HAY, D., & MORISY, A. (1978). Reports of ecstatic, paranormal, or religious experience in Great Britain and the United States: A comparison of trends. *Journal for the Scientific Study of Religion*, 17, 255-268.
- INGLIS, B. (1986). Retrocognitive dissonance. *Theta*, 13/14(1), 4-9.
- IRWIN, H. J. (1985). A study of the measurement and the correlates of

- paranormal belief. *Journal of the American Society for Psychological Research*, 79, 301-326.
- IRWIN, H. J. (1986). The relationship between locus of control and belief in the paranormal. *Parapsychological Journal of South Africa*, 7, 1-23.
- IRWIN, H. J. (1989). On paranormal disbelief: The psychology of the sceptic. In G. K. Zollschan, J. F. Schumaker, & G. F. Walsh (Eds.), *Exploring the Paranormal: Perspectives on Belief and Experience* (pp. 305-312). Bridport, UK: Prism Press.
- IRWIN, H. J. (1990a). Fantasy proneness and paranormal beliefs. *Psychological Reports*, 66, 655-658.
- IRWIN, H. J. (1990b). Parapsychology courses and students' belief in the paranormal. *Journal of the Society for Psychological Research*, 56, 266-272.
- IRWIN, H. J. (1991a). A study of paranormal belief, psychological adjustment, and fantasy proneness. *Journal of the American Society for Psychological Research*, 85, 317-331.
- IRWIN, H. J. (1991b). The reasoning skills of paranormal believers. *Journal of Parapsychology*, 55, 281-300.
- IRWIN, H. J. (1992). Origins and functions of paranormal belief: The role of childhood trauma and interpersonal control. *Journal of the American Society for Psychological Research*, 86, 199-208.
- JAHODA, G. (1970). Supernatural beliefs and changing cognitive structures among Ghanaian university students. *Journal of Cross-Cultural Psychology*, 1, 115-130.
- JOESTING, J., & JOESTING, R. (1969). Torrance's Creative Motivation Inventory and its relationship to several personality variables. *Psychological Reports*, 24, 30.
- JOHNSON, R. D., & JONES, C. H. (1984). Attitudes toward the existence and scientific investigation of extrasensory perception. *Journal of Psychology*, 117, 19-22.
- JONES, W. H., & RUSSELL, D. (1980). The selective processing of belief disconfirming information. *European Journal of Social Psychology*, 10, 309-312.
- JONES, W. H., RUSSELL, D. W., & NICKEL, T. W. (1977). Belief in the Paranormal Scale: An objective instrument to measure belief in magical phenomena and causes. *Journal Supplement Abstract Service, Catalog of Selected Documents in Psychology*, 7, 100 (MS 1577)
- KENNEDY, J. L. (1939). Changes in attitude toward "telepathy" and "clairvoyance" during a 25-year period [Summary]. *Psychological Bulletin*, 36, 649-650.
- KILLEN, P., WILDMAN, R. W., & WILDMAN, R. W. II. (1974). Superstitiousness and intelligence. *Psychological Reports*, 34, 1158.
- KRIPPNER, S. (1962). Creativity and psychic phenomena. *Indian Journal of Parapsychology*, 4, 1-20.
- LANGER, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology*, 32, 311-328.

- LAYTON, B. D., & TURNBULL, B. (1975). Belief, evaluation, and performance on an ESP task. *Journal of Experimental Social Psychology, 11*, 166-179.
- LESTER, D., THINSCHMIDT, J. S., & TRAUTMAN, L. A. (1987). Paranormal belief and Jungian dimensions of personality. *Psychological Reports, 61*, 182.
- LEVITT, E. E. (1952). Superstitions: Twenty-five years ago and today. *American Journal of Psychology, 65*, 443-449.
- LOVITTS, B. E. (1981). The sheep-goat effect turned upside down. *Journal of Parapsychology, 45*, 293-309
- LUNDEEN, G. E., & CALDWELL, O. W. (1930). A study of unfounded beliefs among high-school seniors. *Journal of Educational Research, 22*, 257-273
- LYNN, S. J., & RHUE, J. W. (1988). Fantasy proneness: Hypnosis, developmental antecedents, and psychopathology. *American Psychologist, 43*, 35-44
- MALLER, J. B. , & LUNDEEN, G. E. (1934) Superstition and emotional maladjustment. *Journal of Educational Research, 27*, 592-617.
- MARKS, D. F. (1986). Investigating the paranormal. *Nature, 320*, 119-124.
- MARKS, D., & KAMMANN, R. (1980). *The Psychology of the Psychic*. Buffalo, NY: Prometheus Books.
- MCALLISTER, I. (1988). Religious change and secularization: The transmission of religious values in Australia. *Sociological Analysis, 49*, 249-263.
- MCBEATH, M. K., & THALBOURNE, M. A. (1985, February). *Type A personality and its relationship to belief in psi*. Paper presented at the 12th Annual Conference of the Southeastern Regional Parapsychological Association, Duke University, Durham, NC.
- MCBURNEY, D. H. (1976). ESP in the psychology curriculum. *Teaching of Psychology, 3*, 66-69.
- MCCLENON, J. (1982). A survey of elite scientists: Their attitudes toward ESP and parapsychology. *Journal of Parapsychology, 46*, 127-152.
- MCCLENON, J. (1990). Chinese and American anomalous experiences: The role of religiosity. *Sociological Analysis, 51*, 53-67.
- MCCONNELL, R. A., & CLARK, T. K. (1980). Training, belief, and mental conflict within the Parapsychological Association. *Journal of Parapsychology, 44*, 245-268.
- MCGARRY, J. J., & NEWSERRY, B. H. (1981). Beliefs in paranormal phenomena and locus of control: A field study. *Journal of Personality and Social Psychology, 41*, 725-736.
- MESSER, W. S., & GRIGCS, R. A. (1989). Student belief and involvement in the paranormal and performance in introductory psychology. *Teaching of Psychology, 16*, 187-191.
- MOBERG, D. O. (1972). Religion and the aging family. *Family Coordinator, 21*, 47-60.

- MOON, M. L. (1975). Artists contrasted with non-artists concerning belief in ESP: A poll. *Journal of the American Society for Psychological Research*, 69, 161-166.
- MURPHY, G. (1963). Creativity and its relation to extrasensory perception. *Journal of the American Society for Psychological Research*, 57, 203-214.
- MURPHY, K., & LESTER, D. (1976). A search for correlates of belief in ESP. *Psychological Reports*, 38, 82.
- NADON, R., LAURENCE, J., & PERRY, C. (1987). Multiple predictors of hypnotic susceptibility. *Journal of Personality and Social Psychology*, 53, 948-960.
- NEPPE, V. M. (1981). A study of the incidence of subjective paranormal experience. *Parapsychological Journal of South Africa*, 2(1), 15-37.
- OTIS, L. (1979). Selective exposure to the film *Close Encounters*. *Journal of Psychology*, 101, 293-295.
- OTIS, L. P., & ALCOCK, J. E. (1982). Factors affecting extraordinary belief. *Journal of Social Psychology*, 118, 77-85.
- OTIS, L. P., & KUO, E. C. Y. (1984). Extraordinary beliefs among students in Singapore and Canada. *Journal of Psychology*, 116, 215-226.
- PADGETT, V. R., BENASSI, V. A., & SINGER, B. F. (1981). Belief in ESP among psychologists. In K. Frazier (Ed.), *Paranormal Borderlands of Science* (pp. 66-67). Buffalo, NY: Prometheus Books.
- PALMER, J. (1971). Scoring in ESP tests as a function of belief in ESP. Part I. The sheep-goat effect. *Journal of the American Society for Psychological Research*, 65, 373-408.
- PASACHOFF, J. M., COHEN, R. J., & PASACHOFF, N. W. (1970). Belief in the supernatural among Harvard and West African university students. *Nature*, 227, 971-972.
- POLZELLA, D. J., POPP, R. J., & HINSMAN, M. C. (1975). *ESP?* Paper presented at a meeting of the American Psychological Association, Chicago.
- RANDALL, T. M. (1990). Belief in the paranormal declines: 1977-1987. *Psychological Reports*, 66, 1347-1351.
- RANDALL, T. M. (1991). *Is supernaturalism a part of authoritarianism?* *Psychological Reports*, 68, 685-686.
- RANDALL, T. M., & DESROSIERS, M. (1980). Measurement of supernatural belief: Sex differences and locus of control. *Journal of Personality Assessment*, 44, 493-498.
- RONEY-DOUGAL, S. (1984). "Occult" conference questionnaire. *Journal of the Society for Psychological Research*, 52, 379-382.
- RUSSELL, D., & JONES, W. H. (1980). When superstition fails: Reactions to disconfirmation of paranormal beliefs. *Personality and Social Psychology Bulletin*, 6, 83-88.
- SALTER, C. A., & ROUTLEDGE, L. M. (1971). Supernatural beliefs among graduate students at the University of Pennsylvania. *Nature*, 232, 278-279.

- SCHEIDT, R. J. (1973). Belief in supernatural phenomena and locus of control. *Psychological Reports*, 32, 1159-1162.
- SCHMEIDLER, G. R. (1985). Belief and disbelief in psi. *Parapsychology Review* 16(1), 1-4.
- SCHMEIDLER, G. R., & MCCONNELL, R. A. (1958). *ESP and Personality Patterns*. New Haven: Yale University Press.
- SCHOUTEN, S. A. (1983). Attitude about technology and belief in ESP. *Psychological Reports*, 53, 358.
- SCHUMAKER, J. F. (1987). Mental health, belief deficit compensation, and paranormal belief. *Journal of Psychology*, 121, 451-457.
- SCHUMAKER, J. F. (1990). *Wings of Illusion: The Origin, Nature and Future of Paranormal Belief*. Buffalo, NY: Prometheus Books.
- SCHUTZ, W. C. (1978). *FIRO Awareness Scales Manual*. Palo Alto, CA: Consulting Psychologists Press.
- SHEILS, D., & BERG, P. (1977). A research note on sociological variables related to belief in psychic phenomena. *Wisconsin Sociologist*, 14, 24-31.
- SINGER, B., & BENASSI, V. A. (1981). Occult beliefs. *American Scientist*, 69, 49-55.
- SNOW, D. A., & MACHALEK, R. (1982). On the presumed fragility of unconventional beliefs. *Journal for the Scientific Study of Religion*, 21, 15-26.
- SOBAL, J., & EMMONS, C. F. (1982). Patterns of belief in religious, psychic, and other paranormal phenomena. *Zetetic Scholar*, No. 9, 7-17.
- STANOVICH, K. E. (1989). Implicit philosophies of mind: The Dualism Scale and its relation to religiosity and belief in extrasensory perception. *Journal of Psychology*, 123, 5-23.
- SULLIVAN, C. (1982). On "Patterns of belief in religious, psychic and other paranormal phenomena." *Zetetic Scholar*, No. 10, 147-149.
- TAYLOR, S. E., & BROWN, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 103, 193-210.
- TER KEURST, A. J. (1939). Comparative differences between superstitious and non-superstitious children. *Journal of Experimental Education*, 7, 261-267.
- THALBOURNE, M. A. (1981). Extraversion and the sheep-goat variable: A conceptual replication. *Journal of the American Society for Psychical Research*, 75, 105-119.
- THALBOURNE, M. A. (1982). *A Glossary of Terms Used in Parapsychology*. London: Heinemann.
- THALBOURNE, M. A. (1984). Some correlates of belief in psychical phenomena: A partial replication of the Haraldsson findings. *Parapsychology Review*, 15(2), 13-15.
- THALBOURNE, M. A. (1985). Are believers in psi more prone to schizophrenia? [Summary]. In R. A. White & J. Solfvin (Eds.), *Research in Parapsychology 1984* (pp. 85-88). Metuchen, NJ: Scarecrow Press.

- THALBOURNE, M. A., BELOFF, J., DELANOY, D., & JUNGKUNTZ, J. (1983). Some further tests of the extraverted sheep versus introverted goats hypothesis [Summary]. In W. G. Roll, J. Beloff, & R. A. White (Eds.), *Research in Parapsychology 1982* (pp. 199-200). Metuchen, NJ: Scarecrow Press.
- THALBOURNE, M. A., & HARALDSSON, E. (1980). Personality characteristics of sheep and goats. *Personality and Individual Differences, 1*, 180-185.
- TOBACYK, J. [J.] (1982). Paranormal belief and trait anxiety. *Psychological Reports, 51*, 861-862.
- TOBACYK, J. J. (1983a). Reduction in paranormal belief among participants in a college course. *Skeptical Inquirer, 8*, 57-61.
- TOBACYK, J. [J.] (1983b). Paranormal beliefs, interpersonal trust, and social interest. *Psychological Reports, 53*, 229-230.
- TOBACYK, J. [J.] (1983c). Death threat, death concerns, and paranormal belief. *Death Education, 7*, 115-124.
- TOBACYK, J. [J.] (1984). Paranormal belief and college grade point average. *Psychological Reports, 54*, 217-218.
- TOBACYK, J. J. (1985a). Paranormal beliefs and identity achievement. *Psychological Reports, 56*, 26.
- TOBACYK, J. J. (1985b). The Paranormal Belief Scale and social desirability. *Psychological Reports, 57*, 624.
- TOBACYK, J. J. (1985c). Paranormal beliefs, alienation and anomie in college students. *Psychological Reports, 57*, 844-846.
- TOBACYK, J. J. (1988). *A Revised Paranormal Belief Scale*. Unpublished manuscript, Louisiana Tech University, Ruston, LA.
- TOBACYK, J. J. (in press). Paranormal beliefs and their relationships with personality adjustment: A cross-national comparison of Polish and American university students. *Journal of Cross-Cultural Psychology*.
- TOBACYK, J. [J.], & MILFORD, G. (1983). Belief in paranormal phenomena: Assessment instrument development and implications for personality functioning. *Journal of Personality and Social Psychology, 44*, 1029-1037.
- TOBACYK, J. [J.], MILLER, M. J., & JONES, G. (1984). Paranormal beliefs of high school students. *Psychological Reports, 55*, 255-261.
- TOBACYK, J. [J.], MILLER, M., MURPHY, P., & MITCHELL, T. (1988). Comparisons of paranormal beliefs of black and white university students from the southern United States. *Psychological Reports, 63*, 492-494.
- TOBACYK, J. J., & MITCHELL, T. E. (1987). Out-of-body experience status as a moderator of effects of narcissism on paranormal beliefs. *Psychological Reports, 60*, 440-442.
- TOBACYK, J. J., NAGOT, E., & MILLER, M. (1988). Paranormal beliefs and locus of control: A multidimensional examination. *Journal of Personality Assessment, 52*, 241-246.
- TOBACYK, J. J., & PIRTTILA-BLACKMAN, A. (1992). Paranormal beliefs

- and their implications in university students from Finland and the United States. *Journal of Cross-Cultural Psychology*, 23, 59-71.
- TOBACYK, J. [J.], PRITCHETT, G., & MITCHELL, T. (1988). Paranormal beliefs in late-adulthood. *Psychological Reports*, 62, 965-966.
- TOBACYK, J. J., & WILKINSON, L. V. (1990). Magical thinking and paranormal beliefs. *Journal of Social Behavior and Personality*, 5(4), Special Issue, 255-264.
- TUPPER, V., & WILLIAMS, R. J. (1986). Unsubstantiated beliefs among beginning psychology students: 1925, 1952, 1983. *Psychological Reports*, 58, 383-388.
- VALENTINE, W. L. (1936). Common misconceptions of college students. *Journal of Applied Psychology*, 20, 633-658.
- WAGNER, M. E. (1928). Superstitions and their social and psychological correlatives among college students. *Journal of Educational Sociology*, 2, 26-36.
- WAGNER, M. W., & RATZEBURG, F. H. (1987). Hypnotic suggestibility and paranormal belief. *Psychological Reports*, 60, 1069-1070.
- WIERZBICKI, M. (1985). Reasoning errors and belief in the paranormal. *Journal of Social Psychology*, 125, 489-494.
- WILLIAMS, L. [M.] (1989). *An Exploratory Study of the Relationship between Paranormal Belief Magical Ideation and Schizotypy*. Unpublished honors thesis, University of New England, Armidale, Australia.
- WILLIAMS, L. M., & IRWIN, H. J. (1991). A study of paranormal belief, magical ideation as an index of schizotypy, and cognitive style. *Personality and Individual Differences*, 12, 1339-1348.
- WILSON, S. C., & BARBER, T. X. (1983). The fantasy-prone personality: Implications for understanding imagery, hypnosis, and parapsychological phenomena. In A. A. Sheikh (Ed.), *Imagery: Current Theory, Research, and Application* (pp. 340-387). New York: Wiley.
- WINDHOLZ, G., & DIAMANT, L. (1974). Some personality traits of believers in extraordinary phenomena. *Bulletin of the Psychonomic Society*, 3, 125-126.
- WUTHNOW, R. (1976). Astrology and marginality. *Journal for the Scientific Study of Religion*, 15, 157-168.
- ZAPF, R. M. (1945). Relationship between belief in superstitions and other factors. *Journal of Educational Research*, 38, 561-579.
- ZA'ROUR, G. I. (1972). Superstitions among certain groups of Lebanese Arab students in Beirut. *Journal of Cross-Cultural Psychology*, 3, 273-282.
- ZUSNE, L., & JONES, W. H. (1982). *Anomalistic Psychology: A Study of Extraordinary Phenomena of Behavior and Experience*. Hillsdale, NJ: Lawrence Erlbaum.

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