



BELIEF IN THE PARANORMAL AND ITS ASSOCIATION WITH IRRATIONAL THINKING CONTROLLED FOR CONTEXT EFFECTS

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Summary—A total of 814 students from two universities were given the Paranormal Belief Scale (PBS) and the Irrational Beliefs Inventory (IBI) under three different testing conditions in order to observe the possible effects of context (see Council, 1993) on the association between these two measures. In one condition students received the questionnaires together as components of the same study. In another condition students were given one of the questionnaires first, followed by the second questionnaire approximately 2 weeks apart. The questionnaires were administered by the same investigator as if they were part of two different research projects. Students in the third condition also received each of the questionnaires 2 weeks apart as if they were part of two different research projects, but each questionnaire was administered by a different investigator. Although correlation coefficients between the two measures became weaker as a function of context controls, regression analyses revealed no statistically significant effects of context. When data from all three context conditions were combined, PBS' subscales of traditional religious belief, superstition, and precognition correlated significantly with a global measure of irrational thinking. © 1998 Elsevier Science Ltd. All rights reserved

Surveys of the general population (e.g. Gallup & Newport, 1991; Ross & Joshi, 1992), as well as of college students (Messer & Griggs, 1989), continue to show a high degree of belief, interest, and involvement in a variety of paranormal phenomena (e.g. astrology, extrasensory perception, unidentified flying objects, extraordinary life-forms). Perhaps due to the wide-spread existence of such beliefs, even among those with a college education, and its apparent association with maladaptive patterns of thinking (see Irwin, 1993 for a review), the investigation of correlates of paranormal belief has received considerable attention in recent years.

In spite of some negative results (see for example, Irwin, 1991; Spanos *et al.*, 1993), the bulk of the empirical literature seems to support the existence of an association between paranormal beliefs and a variety of thinking patterns representing a continuum ranging from normal, but 'non-rational' right hemisphere cognitive processes to maladaptive and irrational patterns of thinking. For example, Brugger *et al.* (1993) have found that belief in extra sensory perception (ESP) correlated significantly ($\rho = 0.49$, $N = 30$, $P < 0.01$) with a right-hemisphere bias in a lateralized tachistoscopic lexical-decision task. Roig and Neaman (1992) have also reported low but statistically reliable correlations ($\rho = 0.32$, $N = 106$, $P < 0.0003$ and $\rho = 0.23$, $N = 108$; $P < 0.007$) between right hemisphericity style of thinking and two distinct measures of belief in ESP.

With respect to maladaptive thinking patterns, Tobacyk and Milford (1983) have reported low, but statistically significant correlations between the superstition ($r = 0.27$, $N = 86$; $P < 0.01$) and spiritualism ($r = 0.21$, $N = 86$; $P < 0.04$) scales of the Paranormal Beliefs Scale (PBS) and a measure of irrational thinking. In addition, Windholz and Diamant, 1974 found positive correlations between a measure of paranormal beliefs and the hypochondriasis ($r = 0.31$, $N = 72$; $P < 0.01$), schizophrenia ($r = 0.31$, $N = 72$; $P < 0.01$), and hypomania ($r = 0.36$, $N = 72$; $P < 0.01$) scales of the Minnesota

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Multiphasic Personality Inventory (MMPI). The latter association is noteworthy because it is not uncommon for individuals suffering from certain types of schizophrenia to evidence themes of paranormality in their delusional thinking (e.g. being able to telepathically communicate with others, being controlled by extraterrestrials). According to Irwin (1993) who recently conducted a comprehensive review of the literature, the evidence suggests "a clear association between a wide range of paranormal beliefs and proneness to psychosis" (p. 25).

Unfortunately, the bulk of the questionnaire-based studies in the area of paranormal beliefs, as well as in other areas of psychological research, which rely on paper and pencil instruments as a source of data, may suffer from a serious methodological concern that has only recently been brought to light in the social-personality literature. Council (1993) and Council *et al.* (1995, 1996) have provided evidence showing that a 'context effect' may occur when participants who complete two or more questionnaires during the same testing session adjust their responses to items in all instruments based on a perceived relationship between the constructs measured by those instruments. When the same questionnaires are presented as independent research projects by different investigators during separate testing sessions (i.e. days or weeks apart) any perceived relationship between the questionnaires is minimized or almost eliminated and thus true relationships between constructs are thought to emerge. Council (1993) has reported studies in which context has been manipulated, and whose results cast doubt on the previously reported (and seemingly well-established) association between hypnotizability and absorption. It appears that when the effects of context are controlled, the association between these two variables tends to disappear.

In an effort to extend the effects of context to another area of investigation, Council *et al.* (1995) also examined the relationship between paranormal belief and psychopathology. These authors used Tobacyk's (1988) revised PBS and the Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1983) and, as predicted by their hypotheses, when the questionnaires were administered together as part of the same research project, no statistically significant correlations emerged. But when context was controlled (i.e. the questionnaires were presented as independent projects by different investigators 2 weeks apart), significant correlations emerged between the various subscales of psychopathology and paranormal belief (mean $r=0.26$, $N=92$).

The results of Council *et al.* (1995) seem to validate Irwin's (1993) conclusions of an association between paranormal beliefs and proneness to psychosis. However, it remains unclear as to whether context effects may have spuriously suppressed or perhaps enhanced previously established relationships between paranormal beliefs and other variables assessed by paper and pencil instruments administered during the same testing session. Therefore, it would seem prudent to, at the very least, re-examine certain correlates of paranormal belief, particularly those for which the evidence is considered minimal or not firm, with a control for context effects. To this end, we elected to examine the relationship between paranormal beliefs and irrational thinking in the present study, because the existing literature has not clearly established the nature of the association between these two variables.

In addition to the study by Tobacyk and Milford (1983), where the authors reported low but positive correlations between irrational thinking and the superstition and spiritualism scales of the PBS, Tobacyk and Tobacyk (1992) found a similar association between irrational thinking and superstition ($r=0.18$, $N=149$; $P<0.05$) in a sample of Polish students. However, the PBS scale of traditional religious belief was found to be associated with *lower* scores of irrational thinking ($r=-0.21$, $N=149$; $P<0.05$). Furthermore, these authors failed to replicate the earlier associations reported by Tobacyk and Milford (1983) with a new sample of American students. Neither of the studies controlled for context effects, as these were not generally known at the time, and there is reason to believe that the measure of irrational beliefs used in those studies may suffer from a number of psychometric weaknesses (see Koopmans *et al.*, 1994).

Since irrational thinking patterns are a feature of at least some forms of psychopathology tapped by the SCL-90-R (Council *et al.*, 1995), and because at least some forms of irrational thinking (e.g. worrying, need for approval) are thought to represent 'lower-order' factors of neuroticism (see Koopmans *et al.*, 1994) we felt that the potential relationship between irrational thinking and paranormal beliefs warranted a careful examination. Therefore, in the present study, college students were administered the Koopmans *et al.* (1994) Irrational Beliefs Inventory (IBI), which represents a newly improved measure of irrational thinking, and Tobacyk's (1988) PBS under context-controlled

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