

Skeptics and Believers: Examining the Role of Extroversion and Skepticism in Paranormal
Beliefs

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Abstract

Prior research has identified inconsistencies in relations between extroversion and paranormal beliefs, particularly in the context of a direct association between skepticism and paranormal beliefs. Thus, the current study investigates the role of skepticism and extroversion on the paranormal beliefs of individuals. Participants were 384 students from an accredited postsecondary minority institution enrolled in a Skepticism and Pseudoscience Psychology class. All participants completed a set of online questionnaires that examined their personality traits (i.e., extroversion and neuroticism), skepticism, and paranormal beliefs. A 2x2 analysis of variance indicated that extroverted individuals exhibited greater belief in the paranormal than their less extroverted counterparts. No association was found between skepticism and paranormal beliefs. However, for less extroverted individuals, belief in the paranormal was higher for those with high skepticism relative to those with low skepticism. The limitations and implications of these findings are discussed.

KEYWORDS: ESP, extroversion, paranormal beliefs, skepticism,

Introduction

Paranormal or supernatural beliefs have been pervasive in society since the late 90's (Campbell, Nelson & Sparks, 1997). Despite scientific advancements, such beliefs and activities persist as popular interest in newspaper articles, books, television programs, and movies (Molle & Bader, 2013; Scheidt, 1973). There is also a psychological axiom that 'beliefs' are held because they serve significant psychodynamic needs of an individual (Irwin, 1993). Therefore, by uncovering the psychological aspects linked to paranormal beliefs, we hope to better understand how these belief systems work.

The most basic operationalization of paranormal beliefs has been the assessing belief in extrasensory perception (ESP). In this context, Thalbourne (1981) and Thalbourne and Haraldsson (1980) found that a high tendency for belief in extrasensory perception (ESP) exists among believers who are slightly more extroverted than their less-extroverted counterparts. However, Tobacyk's (1983) findings report that global paranormal beliefs (or the belief in psi, ESP, witchcraft, superstitions, precognition, etc.) are positively correlated with greater social alienation of individuals. Still, other studies suggest that there is no correlation between extroversion and paranormal beliefs. To illustrate, Lester and Monaghan (1995) explored the personality correlates of paranormal beliefs but found no significant relations. More recently, Williams et al. (2007) examined individual differences in paranormal beliefs in a sample of adolescents aged 13 to 16 and found that paranormal beliefs were independent of extroversion. Thus, empirical literature demonstrates discrepancies in the associations between extroversion and paranormal beliefs.

Another postulation is that paranormal believers may perceive more meaningful patterns in ambiguous information such as semantic or visual stimuli than their skeptical counterparts

(Blackmore & Toscano, 1985; Brugger et al., 1993; Giannotti et al., 2001). Brugger et al. (1993) explored the effects of belief in ESP on the attribution of meaningfulness to random patterns. They found a positive correlation between the propensity to see meaningful patterns (in the given random display) and the subject's belief in ESP. This susceptibility of believers was attributed to their 'yes-saying' tendency and confirmation bias (Wiseman, Greening & Smith, 2003). The results of these studies hint at the possibility that the believers may be overly sensitive to social information and thus may only require a small amount of information to activate their social information processing agency. Another potential explanation is that the belief in the paranormal may lead individuals to misinterpret normal events as paranormal occurrences and perceive human characteristics when none exist (Blackmore & Moore, 1994; Jones & Russell, 1980).

Given that personality factors may be important both as potentially confounding variables and independent predictors of ESP, Thalbourne and Haraldsson (1980) examined the differences in personality factors of believers and non-believers with respect to ESP. They suggest that believers tend to be more extroverted and more conservative than non-believers who may be inclined towards introversion and intellectual skepticism. To elaborate, it is possible that those who are socially withdrawn may shy away from paranormal beliefs for fear they may be ostracized from their already more limited social support networks. Additionally, Farag and Elias (2016) demonstrated a positive relation between extroversion and trait professional skepticism (a psychological construct; ability to detect fraud and maintain an independent attitude) of graduating students.

Overall, the literature on the relations between paranormal beliefs and the personality trait of extroversion is mixed, with some studies suggesting positive relations between belief in ESP and extroversion (Irwin, 1993; Thalbourne, 1981; Thalbourne & Haraldsson, 1980), some

indicating negative associations (Milford & Tobacyk, 1985), while others indicating no associations at all (Lester & Monaghan, 1995; Williams et al., 2007). Additionally, there is a dearth of literature examining a direct relationship between paranormal beliefs and skepticism. Thus, the current study aims to add to the existing pool of literature by investigating extroversion and skepticism as potential correlates or psychological mechanisms that may be underlying the paranormal beliefs. The results of this study may provide a better understanding of the basis of paranormal beliefs and how factors of psychological nature potentially play a role in fostering and making these beliefs a common feature of the thinking and behavior of individuals in society.

This study addresses the following three hypotheses:

Hypothesis 1: More extroverted individuals are likely to exhibit greater belief in the paranormal than less-extroverted individuals.

Hypothesis 2: Less-skeptical individuals are more likely to exhibit paranormal beliefs than more skeptical individuals.

Hypothesis 3: Extroverted individuals with low skepticism are more likely to believe in the paranormal than their more skeptical counterparts.

Methods

Participants

The sample included 384 students from an accredited postsecondary minority institution (University of California, Riverside) ($N = 384$; 75% females; $M_{age} = 20.5$ years; age range: 18-22 years), who were enrolled in psychology courses in the Winter and Summer of 2008 and Skepticism and Pseudoscience Psychology class in Spring, 2008. The sample was ethnically diverse. All participants agreed to participate in this research as it was a part of their course

requirement (extra credit opportunity), and informed consent was obtained from all participants. 152 participants were excluded from the total sample due to incomplete survey responses and scales that were subsequently added to the battery of assessments, yielding a final sample of 232.

Procedure

IRB approval was obtained for conducting the study. All participants were subjected to online questionnaires that measured their extroversion, skepticism, and paranormal beliefs. The questionnaires accounted for the diversity in the sample and were utilized during several studies performed on campus. The questionnaires were accessed via an online portal, and there were no time limitations for completing them. The participants responded using their personal computers and from a location of their choice. The data coding and analysis were conducted using the SPSS software. All analyses were controlled for participants' gender, race/ethnicity, and SES.

Materials

Sociodemographic information

Participants self-reported their demographics (name, age, gender, ethnicity, and SES).

Extroversion

Extroversion was assessed using an online version of the 8-item Extroversion scale drawn from the full 44-item Big Five Inventory (BFI; John, Donahue & Kentle, 1991). Participants rated how much they agreed with each item (e.g., is outgoing, sociable) on a 5-point Likert scale from (1) strongly disagree to (5) strongly agree.

Skepticism

Skepticism was assessed using a 6-item Skepticism, Gullibility, and Trust Scale (SGT; Burgess, 2002). This scale distinguishes between general assessment of trust, gullibility and skepticism,

and these assessments of self in personal relationships. A 3-point Likert scale (ranging from strongly disagree, not sure, to strongly agree) indicated the ratings of participants on the skepticism dimension.

Paranormal Beliefs

Paranormal beliefs were assessed using the 25-item Paranormal Belief Scale (Tobacyk & Milford, 1983). Participants rated how much they agreed with each item (e.g., *witches do exist*) on a 5-point Likert scale (ranging from [1] strongly disagree to [5] strongly agree).

Results

To test the hypotheses, a 2 (Extroversion: high vs. low) X 2 (Skepticism: high vs. low) ANOVA was conducted on the Paranormal Belief Scores. Results are reported in Table 1. Individuals scoring high on extroversion indicated greater belief in paranormal ($M = 70.2$) than those who scored lower ($M = 67.9$, $F(1,92) = 4.24$, $p = .04$). Individuals scoring high on skepticism ($M = 69.2$) did not indicate any greater belief in paranormal than those who scored lower ($M = 68.7$, $F(1,92) = 0.68$, $p = 0.79$).

Further analysis revealed an interaction of extroversion and skepticism on paranormal beliefs, $F(1,92) = 4.84$, $p = .03$ (Table 1). To probe this interaction, pairwise comparisons were conducted at an alpha level of $p = 0.05$. For extroverted individuals with low skepticism, there was no reliable difference in their paranormal beliefs ($M = 75.1$) relative to extroverted individuals with high skepticism ($M = 69.2$, $F(1,46) = 1.49$, $p = 0.22$). However, for less-extroverted individuals, there was a reliable difference in their paranormal beliefs. Belief in the paranormal was higher for those with high skepticism ($M = 69.6$) relative to less-extroverted individuals with low skepticism ($M = 62.2$, $F(1,46) = 4.10$, $p = 0.04$, see Figure 1). Skepticism did not predict a reliable difference in the paranormal beliefs of those who were more

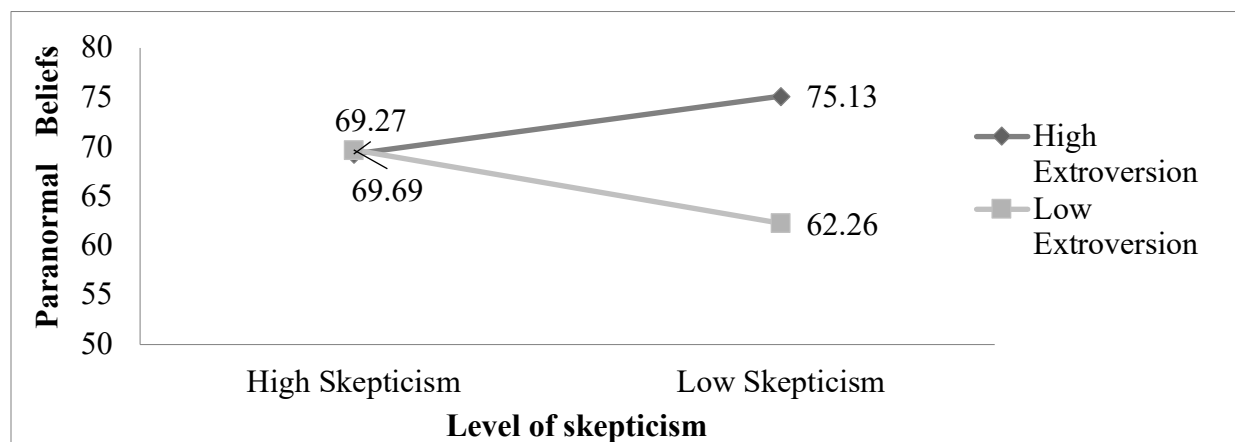
extroverted ($M = 69.27$) relative to those who were less-extroverted ($M = 69.6$, $F(1,36) = 0.57$, $p = 0.45$).

Table 1. ANOVA Table

Predictor	<i>df</i>	SS	Mean Squares	<i>F</i> -value	λ	Power
Extroversion	1	798.259	798.259	4.242*	4.242	.518
Skepticism	1	12.705	12.705	.068	.068	.058
Extroversion*Skepticism	1	910.843	910.843	4.840*	4.840	.578
Residual	92	17312.182	188.176			

* $p < .05$. Note. *df* indicates degrees of freedom; SS indicates sum of squares; λ indicates Lambda values.

Figure 1. Interaction of extroversion and skepticism



Discussion

Despite no objective evidence for the existence of the paranormal phenomena, many people continue to believe in it (Markovsky & Thye, 2001). Marks (1986) claims that factors of psychological nature may foster the paranormal beliefs of individuals and make them a common feature of their thinking and behavior. Building on this, the current study investigated the role of extroversion and skepticism in the paranormal beliefs of individuals. Consistent with hypothesis

1, the results indicate that extroverted individuals exhibit a greater belief in the paranormal than their less extroverted counterparts. The results did not support hypothesis 2, as the individuals with high skepticism did not indicate any greater belief in the paranormal than their less-skeptic counterparts. Hypothesis 3 was partially supported, as the interaction of extroversion and skepticism on the paranormal beliefs indicate that less-extroverted individuals with high skepticism believe more in the paranormal than their less-skeptic counterparts.

Although partially supportive of Marks' (1986) claims the results of the present study are significant in several ways. Besides adding to the existing pool of knowledge about the psychological correlates of paranormal beliefs, the study results provide evidence that traits like extroversion and skepticism may make individuals more prone to believing in the paranormal. Secondly, the positive association between extroversion and paranormal beliefs is consistent with the findings of other researchers, thus strengthening the credibility of this relationship (Irwin, 1993; Thalbourne, 1981; Thalbourne & Haraldsson, 1980). Thirdly, the lack of association between skepticism and paranormal beliefs suggests that all skeptics may not uniformly hold implicit beliefs in the supernatural phenomena. Some non-analytical skeptics may be prone to biases that further predispose them to having such beliefs. Intuitively, skeptics may comprise of a heterogeneous group of individuals, some of whom are disbelievers, some who may evince cognitive biases that may predispose them to supernatural beliefs, and others who may implicitly endorse the actual, culturally-shared supernatural/paranormal beliefs (Lindeman, Svedholm-Häkkinen & Riekkilä, 2016). More importantly, the results demonstrate that in addition to the level of extroversion, an individual's beliefs in the paranormal are dependent on his/her level of skepticism. In this sense, the notion of extroversion underlying paranormal beliefs seems no longer tenable. However, it may also be that the expressions of paranormal beliefs are used by

individuals to address their particular contextual needs, or that people may be attributing the ambiguous processes to paranormality. Another possibility is that, compared to skeptics, believers may possess much tighter construct systems in which any change at their core level may imply a significantly greater upheaval in their belief systems (Marks, 1986).

Owing to the possible limitations, the present study's results are tentative. First, the participants were University of California, Riverside students who took psychology and pseudoscience courses. The sample size was reduced from 300 to 232 during data analysis due to incomplete survey responses and scales that were subsequently added to the battery of assessments. Additionally, a higher percentage of women in the sample suggests that the results may be best describing women's beliefs in the paranormal and that the results may be different for men. However, women showing a stronger belief in the paranormal has been a general trend consistent with the findings of prior research (Irwin, 1985; Randall, 1990).

Much empirical work is yet to be done on this topic. Future theoretical refinements in the understanding of paranormal beliefs may benefit from the findings of this study. Future investigations should corroborate these results and explore factors like an individual's underlying cognitive processes, such as inferential confusion, confirmation bias, and metacognitive beliefs (Irwin, Dagnall & Drinkwater, 2012; Musch & Ehrenberg, 2002); perceptual mechanisms that detect patterns and agency (Van Elk, 2013); and the individual's experience of childhood trauma (Irwin, 1994). Examining the cognitive processes may allow for drawing similarities between paranormal beliefs and delusions. Perceptual mechanisms and perceptual sensitivity may inform whether paranormal believers may be more biased towards detecting agency or just jumping to conclusions based only on limited evidence. Finally, examining childhood trauma in terms of children's home lives with alcoholic or abusive parents may help explain if trauma evokes a need

for a sense of control over life events and makes them generally susceptible to paranormal beliefs via “providing an impression of at least intellectual mastery over threatening situations and anomalous or otherwise incomprehensible events” (Irwin, Dagnall & Drinkwater, 2012).

The broad scope of paranormal beliefs further calls for closer scrutiny. Nonetheless, the results of the given study are fundamental as they are the first to suggest that in addition to the level of extroversion, an individual’s beliefs in the paranormal are dependent on his/her level of skepticism. Knowing the extent to which believers and non-believers differ on personality dimensions may be crucial and act as an impetus for future research efforts that pertain to understand the mechanisms that may contribute to the maintenance of paranormal beliefs.

Overall, the scientific study of paranormal beliefs seems legitimate, irrespective of the non-resolution of the debate about the reality of the existence of the paranormal phenomena. The evident impact of paranormal beliefs upon an individual’s life signals the importance of pursuing a better understanding of psychological functions, personality correlates, and other aspects related to such beliefs. Additional research on the beliefs and disbeliefs in the paranormal may shed light on the psychological factors involved in being a believer or a skeptic potentially helping to further clear people’s misconceptions about the reality behind such beliefs.

References

- Blackmore, S., & Moore, R. (1994). Seeing things: Visual recognition and belief in the paranormal. *European Journal of Parapsychology*, 10, 91-103.
- Blackmore, S., & Trościanko, T. (1985). Belief in the paranormal: Probability judgements, illusory control, and the 'chance baseline shift'. *British journal of Psychology*, 76(4), 459-468.
- Brugger, P., Regard, M., Landis, T., Cook, N., Krebs, D., & Niederberger, J. (1993). 'Meaningful' patterns in visual noise: Effects of lateral stimulation and the observer's belief in ESP. *Psychopathology*, 26(5-6), 261-265.
- Burgess, C. (2002). Assessment of trust, gullibility, and skepticism scale. Unpublished scale. University of California, Riverside.
- Campbell, R. G., Nelson, C. L., & Sparks, G. G., (1997). The relationship between exposure to televised messages about paranormal phenomena and paranormal beliefs. *Journal of Broadcasting & Electronic Media*, 41(3), 345-359.
- Farag, M. S., & Elias, R. Z. (2016). The relationship between accounting students' personality, professional skepticism, and anticipatory socialization. *Accounting Education*, 25(2), 124-138.
- Irwin, H. J. (1993). Belief in the paranormal: A review of the empirical literature. *Journal of the American Society for Psychical Research*, 87(1), 1-39.
- Irwin, H. J. (1994). Childhood trauma and the origins of paranormal belief: A constructive replication. *Psychological Reports*, 74(1), 107-111.
- Irwin, H. J. (1985). A study of the measurement and the correlates of 34 Journal of the American Society for Psychical Research paranormal belief. *Journal of the American Society for Psychical Research*, 79, 301-326.
- Irwin, H. J., Dagnall, N., & Drinkwater, K. (2012). Paranormal beliefs and cognitive processes underlying the formation of delusions. *Australian Journal of Parapsychology*, 12(2), 107.
- John, O.P., Donahue, E.M., & Kentle, R.L. (1991). The Big Five Inventory: Versions 4a and 54. Technical report, *Institute of Personality and Social Research*, University of California, Berkeley, CA.
- Jones, W. H., & Russell, D. (1980). The selective processing of belief disconfirming information. *European Journal of Social Psychology*.

- Lester, D., & Monaghan, K. (1995). Belief in paranormal phenomena and personality. *Perceptual and Motor Skills*, 81, 114.
- Markovsky, B., & Thye, S. R. (2001). Social influence on paranormal beliefs. *Sociological Perspectives*, 44(1), 21-44.
- Marks, D. F. (1986). Investigating the paranormal. *Nature*, 320(6058), 119-124.
- Milford, G., & Tobacyk, J. (1985). Intentionality and irrational beliefs. *Psychological Reports*, 56(1), 236-238.
- Molle, A., & Bader, C. D. (2013). 'Paranormal Science' from America to Italy: A Case of Cultural Homogenization. *The Ashgate Research Companion to Paranormal Cultures*, 121-138.
- Musch, J., & Ehrenberg, K. (2002). Probability misjudgment, cognitive ability, and belief in the paranormal. *British Journal of Psychology*, 93(2), 169-177.
- Randall, T. M. (1990). Belief in the paranormal declines: 1977-1987. *Psychological Reports*, 66, 1347-1351
- Scheidt, R. J. (1973). Belief in supernatural phenomena and locus of control. *Psychological Reports*, 32(3_suppl), 1159-1162.
- Thalbourne, M. A., & Haraldsson, E. (1980). Personality characteristics of sheep and goats. *Personality and individual differences*, 1(2), 180-185.
- Thalbourne, M. A. (1981). Extroversion and the sheep-goat variable: A conceptual replication. *Journal of the American Society for Psychical Research*, 75(2), 105-119. Retrieved from <https://search.proquest.com/docview/616539205?accountid=14521>
- Tobacyk, J., & Milford, G. (1983). Belief in paranormal phenomena: Assessment instrument development and implications for personality functioning. *Journal of personality and social psychology*, 44(5), 1029.
- Van Elk, M. (2013). Paranormal believers are more prone to illusory agency detection than skeptics. *Consciousness and cognition*, 22(3), 1041-1046.
- Williams, E., Francis, L. J., & Robbins, M. (2007). Personality and paranormal belief: A study among adolescents. *Pastoral Psychology*, 56(1), 9-14.
- Wiseman, R., Greening, E., & Smith, M. (2003). Belief in the paranormal and suggestion in the seance room. *British Journal of Psychology*, 94(3), 285-297.