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The Paranormal Belief Among Iraqi University Students

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ABSTRACT

Over the past three decades, researchers have increasingly focused on studying the rise of paranormal beliefs among students and the general public, despite advancements in scientific knowledge and higher levels of education. Singer and Benassi (1981) indicated that the level of belief in the paranormal could be considered an indicator of deficiencies in science education programs. Accordingly, paranormal belief is viewed as a violation of scientific facts and laws, posing a threat to public scientific literacy. This necessitates identifying and diagnosing such beliefs within society, particularly among students, as a crucial step toward addressing gaps and weaknesses in the educational system. The goal is to enhance scientific understanding and foster critical thinking in the face of such phenomena. Therefore, the present study seeks to uncover the level of paranormal belief among Iraqi university students and to analyze differences in belief levels based on gender and academic specialization.

Keywords: Paranormal belief, superstitions, pseudoscience.

INTRODUCTION

Paranormal phenomena are defined as events or occurrences that lie beyond the boundaries of current scientific understanding. Tobacyk (1995) described them as phenomena that exceed the explanatory power of known science, while Irwin (1993) regarded them as events that are impossible according to the known laws of physics. "Paranormal belief," as Arslan (2010) explained, refers to the acceptance and belief in such phenomena. Tobacyk and Milford (1983) identified three criteria for defining paranormal phenomena:

1. Events that cannot be explained by current scientific knowledge.
2. Events that require fundamental revisions of scientific laws to be explained.
3. Events that contradict normative conceptions and expectations about reality.

Paranormal beliefs manifest in a variety of forms and patterns; they are not confined to a single type of thinking but span a broad spectrum of concepts and phenomena. In this context, the researcher conducted a preliminary exploratory study on a sample from Iraqi society to identify the most widespread paranormal beliefs and phenomena. Based on the findings of this initial phase, the researcher developed a scale comprising six main domains representing the most common types of beliefs in the Iraqi context: popular superstitions, future prediction, magic, pseudoscience, belief in ghosts, and folk remedies.

Some researchers attribute the spread of paranormal beliefs to their ability to provide individuals with a sense of meaning and psychological comfort. As Schemann (2010) noted, such beliefs can help reduce existential anxiety and offer explanations for aspects of life that are difficult to comprehend through reason alone.

Another reason for the prevalence of these beliefs is the weakness of scientific literacy and a poor understanding of scientific methods and processes. This phenomenon poses a challenge to scientific education, as paranormal beliefs often compete with scientific explanations and diminish the influence of science on public awareness. From a scientific perspective, any claim lacking empirical evidence is considered unreliable. Since

paranormal phenomena cannot be explained within the framework of current scientific knowledge, the relationship between science and the paranormal is inherently antagonistic and conflicting (Martin & Hansen, 2008).

Thus, in this context, paranormal beliefs are defined as beliefs in the existence of forces or events that violate scientific facts and the fundamental laws of nature, as defined by Tobacyk & Milford (1983). The researcher extensively relied on their theoretical framework in this study, particularly their *Trait Theory*. Trait theory posits that individuals possess relatively stable psychological characteristics referred to as traits that influence their thinking, behavior, and responses to different stimuli, including irrational beliefs such as belief in paranormal phenomena.

Tobacyk and colleagues proposed that paranormal belief is not a unified construct but a *multidimensional construct*, with its dimensions and content varying across different cultures and societies. These dimensions are typically identified and validated through exploratory factor analysis, revealing distinct yet interrelated components that collectively reflect the broader structure of paranormal belief. Tobacyk argued that these dimensions are associated with specific personality traits, most notably:

- **Positive schizotypy** – a tendency to interpret ordinary events in unusual ways, often accompanied by referential thinking and sensitivity to anomalous stimuli (Hergovich, Schott, & Arendasy, 2008).
- **Openness to experience** – one of the Big Five personality traits, strongly linked to paranormal belief due to its association with intellectual curiosity, imagination, and interest in unconventional ideas (Lindeman & Aarnio, 2007).
- **Fantasy proneness** – the disposition to become deeply immersed in vivid mental imagery and experiences, shown to be a strong predictor of belief in paranormal phenomena, especially among individuals who struggle to distinguish between subjective experience and objective reality (Wilson & French, 2006).

Research Questions and Objectives

The current study aims to answer the following questions:

1. What is the level of paranormal belief among Iraqi university students?
2. Are there differences in paranormal belief among university students based on gender (male–female)?
3. Are there differences in paranormal belief among university students based on academic specialization (scientific–humanities)?

PREVIOUS RESEARCH ON PARANORMAL BELIEFS

In recent years, there has been a noticeable increase in research interest regarding paranormal beliefs, given that these phenomena provide an entry point to understanding irrational thinking patterns and the prevalence of non-scientific beliefs across various societies. A prominent trend in these studies has been the examination of individual differences in levels of paranormal belief, particularly with respect to gender and academic specialization.

Gender has been identified as a significant factor in understanding paranormal belief. Many studies have reported gender-based differences, generally showing that women exhibit stronger paranormal beliefs than men, both in terms of type and intensity. Women tend to believe more in intuition-related or psychic abilities, whereas men are more inclined toward types of beliefs associated with power or control. These differences are attributed to the influences of socialization, gender role stereotypes, and cognitive differences in processing ambiguity and psychological stress (de Vaus & McAllister, 1987).

In a cross-cultural context, comparative studies have found that university students in Finland, Poland, the UK, Australia, China, and Iceland differ significantly in both the degree and type of paranormal beliefs. For example, students in Finland and Poland showed lower belief in superstitions, while students in China and Iceland reported high levels of belief in telepathy. Another study comparing paranormal beliefs between university students in Singapore and Canada found that Singaporean students exhibited significantly higher levels of global paranormal belief (Davies, 1988).

Based on these notable differences in levels of paranormal belief by gender and academic field, the researcher adopted these two variables in the present study to examine the nature of such relationships within the Iraqi cultural context. The aim was to determine whether previous findings hold true in the local environment or differ due to unique cultural and cognitive factors.

METHODOLOGY

Sample:

The sample consisted of 196 university students, both male and female, from scientific and humanities disciplines, aged between 18 and 22 years.

Data Collection and Analysis:

The research instrument, which covers six main domains, was administered to a stratified random sample drawn from three Iraqi provinces one from the central region, one from the north, and one from the south. This ensured a geographically diverse representation. Completion of the scale took approximately 7–10 minutes. The responses were analyzed using SPSS statistical software. The validity of the scale was verified by a panel of eight expert judges in the field.

Research Instrument:

A. Paranormal Belief Scale

The researcher developed the current scale by relying on two major existing instruments:

- **Rice's (2014)** scale for measuring unscientific beliefs, composed of 17 items.
- **Tobacyk & Milford's (2004)** original Paranormal Belief Scale, composed of 26 items.

The researcher adapted the items after conducting a preliminary pilot study, emphasizing the need highlighted by multiple scholars for cultural sensitivity in psychological assessment tools. The adaptation process was conducted in collaboration with the research supervisor and involved the following steps:

- **Rephrasing several items** taken from previous scales to suit the linguistic and cultural context of Iraqi society, ensuring greater clarity and accuracy.
- **Replacing certain items** that reflected beliefs specific to the cultures where the original scales were developed, with new items representing beliefs more relevant to Iraqi social and cultural reality. For example, some domains like *pseudoscience* though present in the literature were not as prevalent when the earlier scales were developed. However, they have recently witnessed noticeable growth and diversity, warranting their inclusion to enhance the scale's cultural validity.
- **Verifying the existence of these beliefs** through a pilot study in which participants completed the scale and answered an open-ended question that allowed them to express their beliefs freely. This helped the researcher generate new items that were added to the main domains of the scale.

As a result, the current **Paranormal Belief Scale** consists of **27 items** across six domains:

- **Popular Superstitions:** 5 items
- **Future Prediction:** 3 items
- **Magic:** 3 items
- **Pseudoscience (e.g., energy healing, astrology):** 7 items
- **Belief in Ghosts:** 3 items
- **Traditional Remedies (psychological and physical):** 6 items

The response format follows a 5-point Likert scale:
(1) Strongly Disagree, (2) Slightly Disagree, (3) Neutral, (4) Slightly Agree, (5) Strongly Agree.

Validity

Validity refers to the degree to which the scale accurately measures the psychological construct it is intended to assess (Stanley et al., 1972, p.111). According to Cronbach (1964), it reflects how well the scale captures a particular psychological trait (pp. 120–121).

The researcher employed several types of validity, including:

1. **Content-Related Validity:**
   This type assesses the extent to which the scale items represent the behaviors or dimensions related to the target trait. The content should adequately cover the domain of interest. Ebel (1972) stated that the best way to assess content validity is by presenting the items to a panel of expert judges to evaluate their relevance and appropriateness (Ebel, 1972, p.155).
2. **Face Validity**, a subcomponent of content validity, concerns the general appearance of the scale in terms of item formulation, clarity, relevance of response options, and the accuracy of the instructions provided.

Table (1): Experts' Evaluation of the Validity of Paranormal Belief Scale Items

Item Sequence	Number of Items	Number Agreeing	Number Disagreeing	Percentage	Decision
1, 2, 3, 4, 5, 7, 8, 10, 11, 12, 13, 15, 16, 18, 19, 20, 22, 23, 25, 26, 27	21	8	0	100%	Accepted
6, 9, 14, 17, 21, 24	6	7	1	87.5%	Accepted
Total Items	**27**				

3. Construct-Related Validity Procedures

> This type of validity was assessed by calculating the Pearson correlation coefficient between each item score and the total score of the scale. According to Lindquist (1951), the correlation of each item with the total scale score is an indicator of construct validity. A strong correlation implies that the item measures the same construct as the overall scale (Lindquist, 1951, p. 286).

Additionally, the correlation was calculated between each item and its respective domain, between each domain and the total scale score, and among the different domains themselves. This demonstrates the internal consistency and structural cohesion of the scale based on its theoretical construct.

Furthermore, Confirmatory Factor Analysis (CFA) was employed as an advanced statistical method to assess construct validity. CFA tests how well the theoretical model underlying the scale matches the actual data collected from the sample. It helps confirm the number of factors in the instrument and evaluates the consistency of each item within its domain by estimating the factor loadings.

Confirmatory Factor Analysis of the Paranormal Belief Scale

The CFA process assesses the degree of fit between the covariance matrix of the observed variables and the matrix derived from the hypothesized model. After conducting CFA for the Paranormal Belief Scale as illustrated in Figure (1) and Table (2) all item loadings on their respective factors were found to be statistically significant.

This is evidenced by the fact that all standardized regression weights exceeded the critical value of 1.96 (based on the T-test at $\alpha = 0.05$), confirming the statistical significance of the item-factor relationships. The standardized regression weight indicates the strength of association between each item and its corresponding latent factor.

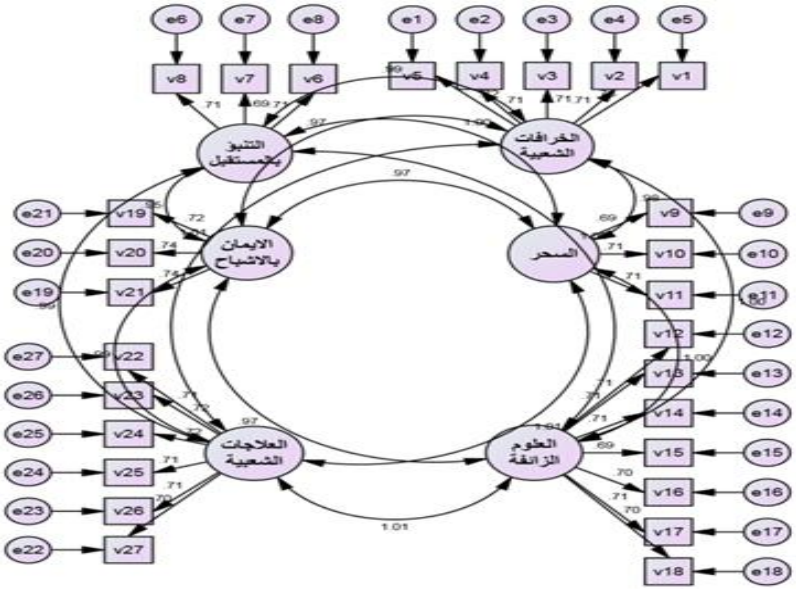

Figure (1): Confirmatory Factor Analysis Model for the Paranormal Belief Scale

Table (2): Factor Loadings and Critical Ratios for the Items on the Paranormal Belief Scale

No.	Item Code	Domain	Factor Loading (Estimate)	Critical Ratio (C.R.)	Significance
1	v5	Popular Superstitions	0.72	24.88	Significant
2	v4	Popular Superstitions	0.71	24.43	Significant
3	v3	Popular Superstitions	0.71	24.26	Significant
4	v2	Popular Superstitions	0.71	24.25	Significant
5	v1	Popular Superstitions	0.73	24.91	Significant
6	v8	Future Prediction	0.71	23.98	Significant
7	v7	Future Prediction	0.69	23.34	Significant
8	v6	Future Prediction	0.71	23.91	Significant
9	v9	Magic	0.69	21.22	Significant
10	v10	Magic	0.71	23.69	Significant
11	v11	Magic	0.71	23.45	Significant
12	v12	Pseudoscience	0.72	24.00	Significant
13	v13	Pseudoscience	0.71	24.52	Significant
14	v14	Pseudoscience	0.71	24.28	Significant
15	v15	Pseudoscience	0.69	23.67	Significant

16	v16	Pseudoscience	0.70	24.03	Significant
17	v17	Pseudoscience	0.71	24.36	Significant
18	v18	Pseudoscience	0.70	24.16	Significant
19	v21	Belief in Ghosts	0.74	25.13	Significant
20	v20	Belief in Ghosts	0.74	25.56	Significant
21	v19	Belief in Ghosts	0.72	24.75	Significant
22	v27	Traditional Remedies	0.70	23.24	Significant
23	v26	Traditional Remedies	0.71	24.12	Significant
24	v25	Traditional Remedies	0.71	23.95	Significant
25	v24	Traditional Remedies	0.72	24.44	Significant
26	v23	Traditional Remedies	0.72	24.26	Significant
27	v22	Traditional Remedies	0.71	24.03	Significant

In addition to the statistically significant factor loadings, the researcher obtained a number of key **model fit indices**, confirming that the theoretical model she adopted appropriately fits the data from the study sample. These indices reflect how well the proposed factor structure represents the actual responses, without substantial deviation.

Table (3): Fit Indices for the Paranormal Belief Scale

No.	Fit Index	Value	Cutoff Criteria
1	χ^2/df Ratio	1.08	Less than 5
2	Root Mean Square Error of Approximation (RMSEA)	0.01	Between 0.05 – 0.08
3	Comparative Fit Index (CFI)	0.99	Between 0 – 1
4	Goodness of Fit Index (GFI)	0.98	Between 0 – 1
5	Adjusted Goodness of Fit Index (AGFI)	0.97	Between 0 – 1
6	Parsimony Ratio (PRATIO)	0.88	Between 0 – 1
7	Hoelter Index	1261	> 200

As shown in Table (3), all the fit indices fall within the acceptable or ideal ranges for model fit, indicating that the Paranormal Belief Scale demonstrates construct validity.

In addition, the researcher also extracted indices related to construct-related procedures, including:

- The correlation between each item and the total score of the scale,
- The correlation between each domain and the total score,
- The inter-correlations among domains.

These results are presented in Tables (4) and (5):

Table (4): Item Validity Using Item-Total Correlations for the Paranormal Belief Scale

Item	Correlation	Significance	Item	Correlation	Significance	Item	Correlation	Significance
1	0.74	Significant	10	0.73	Significant	19	0.72	Significant
2	0.72	Significant	11	0.72	Significant	20	0.73	Significant
3	0.72	Significant	12	0.73	Significant	21	0.73	Significant
4	0.72	Significant	13	0.73	Significant	22	0.72	Significant
5	0.73	Significant	14	0.72	Significant	23	0.73	Significant
6	0.72	Significant	15	0.71	Significant	24	0.74	Significant
7	0.70	Significant	16	0.71	Significant	25	0.72	Significant
8	0.71	Significant	17	0.72	Significant	26	0.73	Significant
9	0.70	Significant	18	0.72	Significant	27	0.72	Significant

All correlation values indicate statistically significant relationships, confirming that each item contributes meaningfully to the overall scale construct.

Table (5): Domain Inter-Correlations and Domain–Total Score Correlations

Domain	Popular Superstitions	Future Prediction	Magic	Pseudoscience	Belief in Ghosts	Traditional Remedies	Paranormal Belief (Total)
Popular Superstitions	1	0.78	0.78	0.86	0.78	0.86	0.93
Future Prediction		1	0.75	0.81	0.72	0.79	0.87
Magic			1	0.81	0.74	0.81	0.88
Pseudoscience				1	0.80	0.87	0.95
Belief in Ghosts					1	0.81	0.87
Traditional Remedies						1	0.95

This table confirms strong correlations between all domains and the total score of the Paranormal Belief Scale, as well as moderate to strong correlations among the subdomains themselves, supporting the theoretical assumption that paranormal belief is a multidimensional but coherent construct.

Reliability

The researcher adopted two methods to estimate the reliability of the Paranormal Belief Scale:

1. ***Cronbach's Alpha Coefficient:***
   Used to measure the internal consistency of the scale. The reliability coefficient obtained was 0.97, indicating a very high level of internal consistency.
2. ***Test–Retest Method:***
   To assess the scale's stability over time, the researcher re-administered the scale to a random sample of 50 students after a two-week interval. Using Pearson's correlation coefficient between the scores of the two administrations, the test–retest reliability was found to be 0.98, confirming excellent stability.

RESULTS

1. **Overall Level of Paranormal Belief:**
   - The mean total score was 91.34, with a standard deviation of 6.27.
   - The possible score range was from 27 to 135, with a theoretical mean of 81.
   - The calculated mean (91.34) is notably higher than the expected average, indicating that the participants hold a relatively high level of belief in paranormal phenomena.
2. **Differences in Paranormal Belief by Gender:**
   - Males: N = 94, M = 90.85, SD = 6.44
   - Females: N = 102, M = 91.80, SD = 6.11
3. **Independent Samples T-Test Results:**
   - $t = 1.17$, $df = 194$, $p = 0.24$
     → These results indicate **no statistically significant difference** in the level of paranormal belief between males and females at the 0.05 significance level. Therefore, **gender is not a significant factor** affecting paranormal belief within this sample.
4. **Differences in Paranormal Belief by Academic Major:**
   - **Science students:** N = 98, M = 91.10, SD = 6.39
   - **Humanities students:** N = 98, M = 91.59, SD = 6.16
   - Independent samples **t-test** results:
     $t = 0.59$, $df = 194$, $p = 0.55$
     → These findings also show **no statistically significant difference** in paranormal belief based on academic specialization. Hence, **academic major does not influence** the level of belief in paranormal phenomena among the sample.

CONCLUSIONS

1. Paranormal belief is multidimensional, encompassing a broad and diverse range of phenomena that go beyond the boundaries of scientific understanding. This variety reflects that paranormal belief is not a simple or isolated concept, but rather a comprehensive belief system that varies in intensity and form across individuals and cultures.
2. Individuals who hold paranormal beliefs often adhere to an integrated set of ideas, not just a single belief. This pattern suggests a cognitive structure characterized by reduced rational scrutiny.
3. Through the adoption of paranormal beliefs especially in the absence of critical thinking individuals may develop what can be called "cognitive immunization" against challenges to these beliefs. This leads to closed and biased thinking patterns.
4. Reducing reliance on paranormal beliefs contributes to preparing a generation capable of making decisions based on analytical reasoning and accurate scientific information, which is vital in disciplines related to society, natural sciences, and applied fields.
   This underscores the need to incorporate educational curricula that promote critical and logical thinking, training students to distinguish between knowledge and belief especially in an era dominated by misleading content on social media platforms.

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