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**PARANORMALITY vs. SCIENTIFIC PSYCHOLOGY: WRONG
BELIEFS AMONG HEALTH SCIENCE STUDENTS**

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Abstract

The current investigation was designed to examine student perceptions of psychology as a science as well as beliefs about paranormal phenomena. For this purpose, the scales Psychology As a Science (PAS) and Revised Paranormal Beliefs (RPB) were used. The sample was comprised of 264 undergraduate students in Health Sciences (i.e., Medicine, Dentistry, and Psychology). Our results showed that Medicine students believed fewer paranormal phenomena than did the other Health Sciences students (Dentistry and Psychology). Furthermore, as expected, Psychology students showed higher favorable attitudes toward placing Psychology as a hard science and the need for psychological research training than the other Health Sciences students (Dentistry and Medicine). Whereas some gender differences were found, age did not account for any differences in PAS or RPB scores. Overall, these results suggest that still a significant proportion of students hold supernatural beliefs or have doubts about the status of psychology as a science. Psychology instructors should put more emphasis on presenting psychology as a true science and reducing beliefs in the paranormal.

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1. Introduction

Education is posited to be the great antidote against ignorance; more educated people tend to be healthier (Grossman, 2006), are better than less educated people acquiring relevant information (Lange, 2011), and have greater ability for critical thinking (McPeck, 2016).

Widespread consensus exists that effectively communicating the status of Psychology as a science is fundamental in college teaching, mainly given that Psychology and other science students often arrive at their first Introductory Psychology course with plenty of misconceptions (e.g., ideas about paranormal phenomena) and lack of critical thinking regarding the field of psychology and the human mind in particular (Lilienfeld et al, 2011).

In this study we set out to investigate whether the beliefs about paranormality and psychology as a science vary in undergraduates students in Health Sciences, while controlling for possible confounding variables (gender and age). We also explored the interdependency between these two beliefs.

Because parapsychology can be partly understood as the lack of understanding in terms of current scientific knowledge (Tobacyk & Milford, 1983) or phenomena that is impossible to occur in physics (Irwin, 1993), it would be expected to find a negative correlation between paranormal and psychology-as-a-science beliefs. We were also interested in exploring differences between Health Science degrees (i.e., Medicine, Psychology, and Dentistry) in their paranormal beliefs and perceptions of psychology as a science. We predicted that Psychology students would report fewer paranormal beliefs and support the idea of Psychology as a science.

2. Problem Statement

Psychology and other college students hold plenty of misconceptions (e.g., ideas about paranormal phenomena) and lack of critical thinking regarding the human mind.

3. Research Questions

Health-related students must understand the principles of the scientific method to develop and foster a critical thinking orientation style that allows future professionals to evaluate different treatment programs.

4. Purpose of the Study

We set out to (1) examine the prevalence of inaccurate beliefs about the status of Psychology as a science in first-year Psychology, Dentistry and Medicine undergraduate students at European University of Madrid; (2) examine the prevalence of believing in parapsychology phenomena in first-year Psychology, Dentistry and Medicine undergraduate students at European University of Madrid; (3) find out if there is a relationship between these beliefs.

5. Research Methods

Two hundred and sixty-four undergraduate (Medicine, Dentistry, and Psychology) students at European University of Madrid were employed as volunteer subjects, chosen on the basis that they were taking at least one Introduction to Psychology course. Our data consisted of 29.1% men and 70.9% women.

For this study, the scales Psychology As a Science (PAS) and Revised Paranormal Beliefs (RPB) were used. Friedrich’s Psychology as Science (PAS) scale (see Table 1) is intended to measure the degree to which respondents view the discipline of psychology as a science with a seven-point rating scale (Friedrich, 1996). Scores can range from 15 to 105, with higher scores reflecting a greater inclination to perceive psychology as a science. Using factor analysis, Friedrich divided the scale into three subscales: (1) respondents’ willingness to place psychology in the same conceptual or functional framework as the hard sciences; (2) beliefs regarding the need for psychological research and the value of methodological training; (3) views of determinism and belief in the predictability of behavior.

Tobacyk’s Revised Paranormal Belief (RPB) Scale (see Table 2) provides a measure of degree in each of seven dimensions of paranormal belief: (1) traditional religious belief; (2) psi; (3) witchcraft; (4) superstition; (5) spiritualism; (6) extraordinary life forms; and (7) precognition. Respondents indicate degree of belief for 26 items by using a seven-point rating scale. Total scores can range from 26 to 182, with higher scores reflecting a greater inclination to belief in paranormality (Tobacyk & Milford, 1983; Tobacyk, 2004).

Statistics tests such as Cronbach’s alpha, Pearson correlation, student’s t-test, and ANOVA’s followed by Tukey HSD post-hoc analyses were performed when appropriated with the statistical program SPSS (version 20). Data were represented as means ±SEM. An alpha level of 5% was considered statistically significant.

6. Findings

As can be seen in Table 1, our results showed that Medicine students held fewer paranormal beliefs than did the other Health Sciences students (Dentistry and Psychology) in terms of ideas about psi, witchcraft, and spiritualism. In general, most students moderately disagreed with the statements provided.

Table 1. Differences in different types of paranormal belief scores by degree (**p<0.01;***p<0.001)

Column1	Medicine	Psychology	Dentistry	ANOVA
Religiosity (RPB1)	3.57	3.35	4.60	***
Psi (RPB2)	2.35	2.61	2.78	**
Witchcraft (RPB3)	1.67	2.18	2.59	***
Superstition (RPB4)	1.50	1.68	1.73	
Spiritualism (RPB5)	2.40	3.13	3.17	***
Extraterrestrial life (RPB6)	2.61	2.57	2.80	
Precognition (RPB7)	2.44	2.69	2.81	
TOTAL RPB	57.81	64.76	72.51	***

The reliability measures (Cronbach's alpha) for each RBP subscales for our sample were .8 (Witchcraft), .7 (Psi), .8 (Superstition), .7 (Spiritualism), .7 (Precognition), .4 (Extraterrestrial Life), .9 (Religiosity). The Cronbach's alpha for the RBP scale was .9.

Regarding PAS scores (see Table 2), Psychology students showed higher favorable attitudes toward placing Psychology in the same conceptual framework as the hard sciences and their beliefs in the need for psychological research and the value of methodological training than did the other Health Sciences students (Dentistry and Medicine).

The reliability measures (Cronbach's alpha) for each PAS subscales for our sample were .7 (Psychology as a hard science), .6 (Need for psychological research), .4 (Determinis and behavior prediction). The Cronbach's alpha for the PAS scale was .7.

Table 2. Differences in different types of psychology as a science belief scores by degree (*p<0.05;***p<0.001)

Columnl	Medicine	Psychology	Dentistry	ANOVA
Psychology as hard science (PAS1)	19.42	23.59	19.69	***
Need for psychological research (PAS2)	22.52	23.82	21.12	*
Determinism and behavioral prediction (PAS3)	26.94	28.82	27.61	
TOTAL PAS	68.88	73.53	71.12	

Data demonstrated partial interdependency between PAS and RPB scores (see Table 3). Specifically, overall PAS scores were related to precognition (r=0.2, p<0.01), whereas overall RPB scores were related to beliefs about the need for psychological research and the value of methodological training (r=0.2, p<0.01).

Table 3. Matrix of inter-correlations between PAS and RPB scores (*p<0.05;**p<0.01)

	TOTAL PAS	PAS1	PAS2	PAS3	TOTAL RPB	RPB1	RPB2	RPB3	RPB4	RPB5	RPB6	RPB7
TOTAL PAS	1											
PAS1	.647**	1										
PAS2	.711**	0.096	1									
PAS3	.780**	.368**	.331**	1								
TOTAL RPB	-0.106	-0.027	-.173**	-0.008	1							
RPB1	-0.105	-0.063	-0.091	-0.067	.582**	1						
RPB2	-0.111	-0.061	-.147*	-0.019	.663**	.165**	1					
RPB3	-0.034	0.037	-0.100	0.005	.796**	.366**	.468**	1				
RPB4	-0.120	-0.034	-.187**	-0.022	.581**	.267**	.303**	.339**	1			
RPB5	-0.015	0.043	-0.083	0.022	.808**	.338**	.424**	.647**	.429**	1		
RPB6	0.079	0.037	0.009	.131*	.482**	0.026	.333**	.320**	.230**	.355**	1	
RPB7	-.185**	-0.110	-.222**	-0.048	.716**	.236**	.569**	.473**	.521**	.500**	.315**	1

Age, a potential confounding variable, was not related to any PAS or RPB scores (p=NS). Finally, gender differences were found statistically significant for PAS3 and RPB6. Men held significantly more

views of determinism and belief in the predictability of behavior ($t=2.3$, $p<0.05$) and extraterrestrial life ($t=2.3$, $p<0.05$) than women. |

7. Conclusion

Regarding our initial hypothesis, Psychology students did not report fewer supernatural beliefs. On the contrary, Medicine students held fewer paranormal beliefs than did the other Health Sciences students (Dentistry and Psychology) in terms of ideas about psi, witchcraft, and spiritualism.

Regarding PAS scores, Psychology students, as expected, showed better attitudes toward placing Psychology in the same conceptual framework as the hard sciences and their beliefs in the need for psychological research and the value of methodological training than did the other Health Sciences students (Dentistry and Medicine).

In general, a negative but modest correlation between paranormal and psychology-as-a-science beliefs was found, indicating partial interdependency between PAS and RPB scores.

Importantly, a significant proportion of students hold supernatural beliefs and/or have doubts about the status of psychology as a science. The investigation of these beliefs in Health Science students is of the utmost importance, as it may affect both clinical practice and the quality of care patients receive. Psychology instructors should put more emphasis on presenting psychology as a true science and reducing beliefs in the paranormal. |

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