



Superstitiousness and Paranormal Beliefs of Engineering Students Comparing to Students Majoring in Sciences, Arts and Humanities

Supersticiosidad y creencias paranormales de los estudiantes de ingeniería en comparación con estudiantes que se especializan en ciencias, artes y humanidades

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Contents

- [1. Introduction](#)
 - [2. Literature Review](#)
 - [3. Materials and Methods](#)
 - [4. Results](#)
 - [5. Discussion](#)
 - [6. Conclusions](#)
- [Acknowledgment](#)
- [Bibliographic references](#)

ABSTRACT:

The research the differences in manifestation of superstitiousness and paranormal beliefs of students of different studies. A hypothesis was made that engineering students have lower indexes of superstitiousness and paranormal beliefs. 90 undergraduate students took part in the research: 30 engineering students, 30 humanitarian students (Philology, Psychology and Sociology) and 30 students majoring in Natural Sciences (Physics, Chemistry, Biology and Mathematics). The study revealed no significant differences between the students who study engineering and natural sciences in despite dissimilar world-views.

Keywords: Superstitiousness, paranormal beliefs, engineering students, students majoring in Humanities

RESUMEN:

La investigación de las diferencias en la manifestación de la superstición y las creencias paranormales de los estudiantes de diferentes estudios. Se hizo una hipótesis de que los estudiantes de ingeniería tienen índices más bajos de supersticiosidad y creencias paranormales. Participaron en el estudio 90 estudiantes universitarios, 30 estudiantes humanitarios (Filología, Psicología y Sociología) y 30 estudiantes de Ciencias Naturales (Física, Química, Biología y Matemáticas). El estudio no reveló diferencias significativas entre los estudiantes que estudian ingeniería y ciencias naturales a pesar de diferentes visiones del mundo.

Palabras clave: Supersticiosidad, creencias paranormales, estudiantes de ingeniería, estudiantes de Humanidades y Ciencias

1. Introduction

1.1. Relevance of the problem

Sociological studies carried out during the recent decade show that the large part the population in Russia (various demographical groups) believe in the paranormal, observe different rituals, turn to wizards, fortune-tellers, healers and psychic mediums for help.

According to the research of the non-governmental polling and sociological research organization "Levada Center" in 2012 59% of Russian citizens believed in hoodoo and basilisk-glance (comparing to 38% in 1990). The study carried out at the Institute of Sociology of the Russian Academy of Sciences (ISRAS) in 2013 showed that 67% of Russian women visited wizards, fortune-tellers, healers or psychic mediums. 48% of respondents believed in witchery, 55% believed in clairvoyance (according to the "Levada Center" and The All-Russian Public Opinion Research Center). In December 2015 36% of Russian citizens believed in the astrological prediction and 32% believed in the UFO.

This phenomenon is also spread enough among university students. Superstitiousness and beliefs in the paranormal among young people is a point of special research and educational interest as students represent a social group that will form the mentality of the society in the near future. In particular, future engineers will be responsible for many technological and cultural aspects of the post-industrial society.

Therefore the study was carried out to find out the peculiarities of engineering students' superstitiousness and paranormal beliefs.

1.2. Purpose and tasks of the study

The study was aimed at revealing of superstitiousness and paranormal beliefs of the engineering students in comparison to students who study Sciences, Arts and Humanities. It was supposed that engineering students as well as those who are specialized in the Natural Sciences are more prone to develop materialistic world-view than humanitarian students, who are traditionally more interested in mysticism, religious and philosophical ideas, spirituality, etc. Thus a hypothesis was made that engineering students have lower indexes of superstitiousness and paranormal beliefs.

Tasks of the research:

- To reveal differences in superstitiousness and separate components of paranormal beliefs between the students who study Engineering, Arts and Humanities and Natural Sciences.
- To analyze peculiarities of the correlational structure of the parameters of superstitiousness and paranormal beliefs between the students who study Engineering, Arts and Humanities and Natural Sciences.

2. Literature Review

Harvey J. Irwin (2007) in his review states that a systematic and sustained program of empirical investigation of superstitiousness was subsequently initiated by educationists in the early decades of the twentieth century. Nowadays this phenomenon is studied by folklorists, educationists, psychologists, psychiatrists, antropologists and other researches. Among the comtemporaty authors who study superstitiousness and superstitions P. Boyer (2000), D.S. Grigoriev (2015), Justin L. Barrett (2011), Kelly James Clark (2011), N.N. Ismodenova (2013), Y.V. Saenko (2006), M.Y. Strogalshikova (2012) and others may be mentioned.

Pascal Boyer points out that supernatural beliefs and superstitiousness are determined by

peculiar structure and functional mechanisms of mind of a contemporary human being. Cognitive apparatus is "configured" to mark out and remember ideas that have to do with the supernatural. A person imagines that all supernatural beings are anthropomorphic and that they have consciousness. Relationships with God and with other supernatural forces are built in equivalent to social relations. Supernatural spirits seem to have socially significant information about all people. To interact with such spirits people use rituals and cults that according to P. Boyer, "do not have sense although they have important meaning". Thus due the morphology of human mind all people are prone to percept and take into consideration (if not practically use) paranormal belief in their everyday life (Boyer, 2000).

D.S. Grigoriev in his article describes the validation procedure of the J. Tobacyk's Paranormal Belief Scale. J. Tobacyk outlined the following subscales (types of believes): traditional religious belief, psi-related belief, witchcraft, spiritualism, superstition, extraordinary life forms, and precognition (Grigoriev, 2015). In the given study the concepts "superstitiousness" and "paranormal beliefs" are considered as close categories.

N.N. Ismodenova points at the fact that superstitions are in itself social images or forms of collective consciousness developed when people leave collectively. She considers superstitions as preconceptions or faith in supernatural forces. Superstitions imply (often unconsciously) that there exists a protection against those forces and it may be possible to find an acceptable compromise. The author thinks that superstitions are revealed at the level of behavior in the reduced ritual forms: using good luck charms, tattoos, magic gestures, etc. Following signs (when definite signs are believed to precede certain events) is considered as a form of superstitiousness. N.N. Ismodenova found out that the majority of her respondents follow signs in their daily routine even though some of them do not believe signs. The study showed that the main reasons of using magic and superstitions are socio-psychological: fear, discomfort, uncertainty and desire to foresee the after-effect of one's behavior. The respondents were sure that mass media played the main role in spreading the magical world-view (Ismodenova, 2013).

Y.V. Saenko suggests three aspects of superstitions: cognitive, affective-motivational and behavioral. Cognitive component includes cognitive process aimed at identification and categorization of the unknown events and situations, at foreseeing the possible after-effects and choosing the behavioral strategy concerning those events or situations. Affective-motivational component of superstitions is represented by emotional states that a person experiences regarding the potentially dangerous or, on the contrary, desired phenomena related to the urgent needs of an individual. Behavioral component comprises rituals and symbolic acts aimed at protecting a person against the threat, achieving the desired event or avoiding the undesired thing (Saenko, 2006).

According to Y.V. Saenko, superstitions are based upon various irrational fears. When a person follows signs he/she strives to protect his/her identity and emotional sphere from anxiety and fear. Behavioral aspect of superstitions means that superstitious ideas regulate the human behavior in society and in the physical world. Y.V. Saenko's empiric study showed that superstitiousness has direct correlations with anxiety and external locus of control in the student sample group. In other words the more anxious the person is, the more prone he is to find the explanations of his failures and success in the external influences, the more superstitious he would be. Y.V. Saenko understands superstitiousness as a form anxiety alongside with neurotic disorders and religionism (Saenko, 2006).

M.Y. Stogalshikova concludes that the basilisk-glance ("evil eye") belief is a type of failure attribution and functions as a psychological defense (maintaining self-esteem, reducing anxiety, etc.) (Stogalshikova, 2012).

Basing on the existing definitions the authors came to the idea that superstitiousness is a trait of an individual world-view, his specific relation to reality. Evidently in the contemporary psychology the category of "faith" is the closest to the studied phenomenon. A.M. Dvoynin defines faith as "internal relation of a personality, mythologized attitude to reality" (Dvoynin,

2011). In this context superstitiousness may be considered as a particular case of faith because it also implies internal relation of a person towards goings-on and mythologizes (mediates) his/her attitude to reality. Unlike religious faith with its confidence in the existence of supernatural, almighty God who influences the people's lives and all the events, superstitiousness is conviction in the existence of cause-and-effect relationship between various events or separate behavioral acts (or inactivity) of a person and possible future misfortunes, as well as strong believing in different supernatural beings (ghosts, spirits, etc.) and their capability to affect people's lives. Therefore from the point of view of psychology superstitiousness and religious faith should not be counterposed. On the contrary they should be studied as various manifestations of faith as a psychological phenomenon.

In the given study superstitiousness is considered as a particular case of faith. It includes cognitive, behavioral and affective-motivational components and is manifested as a conviction in the existence of cause-and-effect relationship between various events or separate behavioral acts (or inactivity) of a person and possible future misfortunes, as well as strong believing in different supernatural beings (ghosts, spirits, etc.) and their capability to affect people's lives, in extrasensory (psi-related) capabilities and possibilities to foresee the future by fortunetelling, horoscopes, etc.

R. Wiseman describes several variants of how some superstitions could appear, basing on religious (mainly Christian) myths. For example he explains the "baker's dozen" superstition (belief that the number "13" causes unhappiness) reminding the story about the Lord's Supper, where 13 people were present and one of them soon betrayed Jesus Christ. The author says that the superstitious forbiddance to pass beneath a ladder leaned against a wall originates from the Blessed Trinity concept (the triangle made by the floor, the wall and the ladder is considered as its symbol): to pass under it would mean to destroy its triunity. Knocking on wood is, according to R. Wiseman (2011), an echo of pagan times when people addressed trees as spirits.

V.D. Mendeleovich described disharmonious character traits that prevent a person from successful adaptation and self-actualization. Non-sanity and irrationalism (both based on superstitiousness) are listed as the key traits of this type of character. In the author's opinion, "potential neurotic" is rigid and shows prognostic incompetence. A person becomes unable to predict the consequences of his behavior and possible negative events in the future because (alongside with some other reasons) in the process of education and socialization the family members and society in general (by means of national traditions expressed in proverbs and sayings) impress and fix a psychological stereotype. This stereotype is forbiddance to expect the possible negative events (Mendeleovich, 2011)

Human beliefs are studied as a part of religious thinking within the framework of Cognitive Science of Religion (CSR) (Barrett, 2011) Primarily, CSR draws upon the cognitive sciences to explain how pan-cultural features of human minds, interacting with their natural and social environments, inform and constrain religious thought and action. Additionally, CSR considers how particular religious, cultural, and environmental factors stretch or modify natural cognitive tendencies.

Superstitiousness is also studied by clinical psychologists as sometimes considered in the link with obsessive-compulsive disorder (Zebb, Moore, 2003), (Brugger, Viaud-Delmon, 2010)

B. Futrell (2011) in his study revealed that stronger beliefs in superstitious behaviors correlates to the frequency of trait anxiety symptoms, and that women will have higher superstitious behaviors and trait anxiety symptoms. His findings results indicate a positive linear relationship between superstitious beliefs and anxiety symptoms. He explains this relationship by the fact that when people are uncertain or distressed during times of aversive events, or when people feel that they are not prepared for life's events, they will attempt to gain control through superstitious behaviors.

N.P. Andryushkova (2015) explains superstitiousness by irrationality of human thinking.

Superstitiousness is considered to be culturally, socially and professionally determined (Tabaksoeva, 2016), (Zverev, 2014) and others. O.F. Lobasova (2016) studied superstitions as a segment of mass consciousness of the modern Russian society. The author considers the conditions of modern superstitions development and the spectrum of the roles of superstitions in the modern society, which are conventionally denoted as "insurance policy", "gift for housewarming party", and "chance for creativity".

The correlation between religiousness and paranormal beliefs is noted by many authors. For example, Beck, R., & Miller, J.P. (2001) found out that religiosity would predict differential beliefs in the supernatural versus the paranormal but that negative affect would attenuate these beliefs. W.L. MacDonald (1995) indicated that more frequent prayer is associated with higher odds of reporting telepathy, and that greater financial dissatisfaction is associated with higher odds of reporting clairvoyance. A. Orenstein (2002) basing on his research findings states that paranormal beliefs are profoundly religious in nature. Superstitiousness is sometimes considered a destructive form of faith (Inina 2014; Medvedeva, 2014).

In our study superstitiousness is also considered as a particular case of faith. It includes cognitive, behavioral and affective-motivational components and is manifested as a conviction in the existence of cause-and-effect relationship between various events or separate behavioral acts (or inactivity) of a person and possible future misfortunes, as well as strong believing in different supernatural beings (ghosts, spirits, etc.) and their capability to affect people's lives, in extrasensory (psi-related) capabilities and possibilities to foresee the future by fortunetelling, horoscopes, etc.

Literature review showed that there are still very few studies of superstitiousness specifics of the students (Abitov et al., 2017; Andryushkova, 2016). However these studies are needed for understanding the mentality and attitudes of the younger generation that will determine the global development in the near future.

Besides globalization and knowledge based economy of this contemporary world fosters interest in the professional education and its influence on the person in terms of mentality, values and general outlook. Personal behavior and decisions are determined by the value system and belief system. Superstitions and beliefs form the part of personal outlook and may impact the behavior in social and professional situations.

Therefore it is currently significant to know the peculiarities of superstitiousness and paranormal beliefs of students who study various fields. In spite of this there are no researches that focus on that issue. That is why the study of these phenomena in the engineering, natural science and humanitarian students sample group are scientifically relevant and interesting from the research and practical points of view.

3. Materials and Methods

3.1. Research Methodology

To find out superstitiousness and paranormal beliefs The Paranormal Belief Scale (J. Tobacyk), and The Superstitiousness Inventory (I. Abitov) were used.

The Paranormal Belief Scale consists of 26 items and 7 subscales: traditional religious belief, psi-related belief, witchcraft, spiritualism, superstition, extraordinary life forms, and precognition. It includes a seven-point ratingscale (1- «strongly disagree», 7 – «strongly agree»).

To determine the superstitiousness manifestation an original questionnaire "The Superstitiousness Inventory" was worked out that consists of 30 statements to reveal if the respondents behave and act according to superstitious beliefs and if they accept the beliefs that are typical in the contemporary Russian society. To gain a more objective data the respondents were also asked to list signs and beliefs that they follow but that were not included in the

inventory. A 4-points scale was used to evaluate the suggested statements: 0 – “I never do this”, “1 – I do this rarely”, “2 – I do this often”, “3 – I always do this”. One of the partial tasks of the study was to test the face validity of the developed inventory.

The survey was completed via the Internet, the on-line survey with an URL link was sent for the participants by e-mails.

The data distribution was normal; therefore parametric statistics was used to analyze the correlations and differences. The following statistics was used to process the data: Pearson's coefficient, Student's coefficient correlation analysis.

3.2. Population of the study

The population of the study consisted of Bachelor students from the Kazan (Volga-Region) Federal University, Novosibirsk State Pedagogical University, Chuvash State University and Yaroslavl State University.

90 undergraduate students took part in the research: 30 engineering students, 30 humanitarian students (Philology, Psychology and Sociology) and 30 students majoring in Natural Sciences (Physics, Chemistry, Biology and Mathematics).

4. Results

Students's criteria did not show any significant differences between the samples of engineering students and those who are majoring in Natural Sciences. The research showed that the humanitarian students have higher indexes of the scales “traditional religious beliefs” ($p \leq 0,05$; $t = - 2,379$) and “spiritualism” ($p \leq 0,001$; $t = - 3,060$), than the natural sciences students. Also humanitarian students have stronger traditional religious beliefs ($p \leq 0,05$; $t = - 2,488$) and beliefs in spiritualism ($p \leq 0,01$; $t = - 2,826$) than the engineering students' sample group.

The empiric study showed that engineering and natural sciences students are less prone to believe in the traditional religious formulas about the existence of God, devil, paradise and hell than the humanitarian sample group. Engineering and natural science students also have less manifested faith in metempsychosis (reincarnation), out-of-body experiences, and possibilities to contact with spirits dead people.

The correlation structure between the studied parameters in all the three sample groups is similar: all the parameters have statistically significant correlations with each other. This fact may indicate the unified framework of superstitiousness and the faith in the paranormal regardless of the peculiarities of sample groups.

5. Discussion

The significance of the research findings was assured by using the relevant psychodiagnostic methodology and mathematical statistics.

The given study is the first one that focuses on the superstitiousness and paranormal beliefs of students depending on their major. It proves the supposition that superstitiousness and paranormal beliefs are directly connected with the educational or professional specifics. On the one hand, the acquired professional education form the students general outlook, concepts of Universe, God and cause-and-effect relationships. On the other hand, it is evident that young people choose their future profession according to their concepts and ideas. At all accounts further researches in this field are needed to analyse the correlation between superstitions and educational background.

The study accords with the P. Boyer's idea that superstitiousness and paranormal beliefs are derivatives from the properly functioning consciousness (Boyer, 2000). They cannot be considered as pathologic features of mind. All the tested sample groupes have superstitions and manifest faith in various supranatural phenomena, and the differenses between the groups

were not numerous and dramatically distinctive. At the same time it was revealed that humanitarian students have higher superstitiousness than those who study engineering and natural sciences.

The revealed differences between the samples may be explained by the peculiarities of world-views of people who choose Arts and Humanities or Natural Sciences and Engineering as their university major. Humanitarian students often have mystique religious worldview (or their combination). Their world general outlook focuses on a human being as an object of cognition, on human abilities, laws of development and existence. Young people who choose engineering and natural sciences as their future profession are mainly interested in the universal laws of nature and development. They are less involved in specifically "human, personal" issues, dealing with spirituality, meaning of life, sense of purpose, etc.

It may be supposed that young people who choose Arts and Humanities had more paranormal beliefs and attitudes before they were enrolled at the university. This idea must be tested in the new empirical study.

6. Conclusions

The study revealed no significant differences between the students who study engineering and natural sciences. Considerable peculiarities were revealed though in manifestation of superstitiousness and paranormal beliefs of engineering students comparing to the students who study Arts and Humanities. These differences indicate dissimilar world-views of engineering and humanitarian students and should be taken into consideration in the educational process. Especially university professors who teach social and humanitarian disciplines should make the difference between engineering and humanitarian students in choosing their educational approaches and technologies.

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