

Evolutionism and creationism in the social mentality – a study case in the Romanian population

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Abstract. Due to the dynamic of our ever-evolving society, basically, population is now divided in two categories: one with conservative values (religion) and the other one focused on exploring the unknown (science). The aim of our study is to analyze the proportion of the two types of perspectives in the Romanian social mentality and to evaluate the participants' attitude towards science or religion subjects. In the period between November 2016 and March 2017, questionnaires have been distributed to 400 people from Cluj-Napoca (N-W Romania) and Petroșani (S-W Romania). The questionnaire consisted of a field which evaluates personal data and a second part of 21 questions. Some of the most important results of the study included: 56% of those are religious, 71% believe in God, 55% believe that a supernatural force controls the universe, 44% consider it necessary to teach evolution in schools and 57% consider it necessary to teach religion in schools. The percentages for conservative values (religion) is 56% and those who are focused on exploring the unknown (science) is 29%.

Keywords: evolutionism, creations, conservative society, religion.

Introduction

As we know, our species has evolved and adapted through time. Evolution happened gradually; humans started as hunters-gatherers and then became farmers, which led to physical, behavioral, social and cognitive changes. It has not stopped here, as we will see further developments (Losos *et al.*, 2014).

The hunter-gatherers were the first to begin a form of “society”, because they had a socio-political structure, divided into men and women (Bondarenko *et al.*, 2002). The structure evolved in time and become the society that we know today, with a dynamic evolution. In the last century, we observed an “explosion” of industrial, scientific and technological development, which evolved based

on the existing domains (Arthur and Polok, 2006). At the same time, technology gave us a feeling of power and control which helped us overcome the feeling of uselessness (Barbour, 1990).

Along with the technological era, society began to separate into two categories of values: conservative and avant-garde. One of the leading factors of this segregation was the exponential growth that mass-media, religion and culture have known recently (Hoover and Clark, 2002).

Conservative people are the ones that hardly accept facts, those who see everything in black and white, without in-betweens (Watson *et al.*, 1999). They hardly accept new concepts and ideas, like those related to evolution and the beginnings of life on Earth. In this sphere is included religion with its fixed concepts that haven't changed in centuries, even though science has evolved and it's providing more and more facts.

People with avant-garde values have free, open thinking. They are the ones that give credit to scientific facts for explaining phenomena and subjects that past generation did not understand. They also understand that everything evolves, such as bacteria becoming resistant to antibiotics (e.g. *Staphylococcus aureus* becoming increasingly resistant to methicillin) (Nadelson and Hardy, 2015). As previously stated, the society has split in two groups: the religious group and the group that accepts evolutionism.

As far as we know, in Romania, there have not yet been carried out studies to explore the proportion of those categories. As an overview, the Romanian population has 21.5 million inhabitants, 86.5% are Orthodox, 5% Greek Catholics, while the rest have other religious beliefs. In this context, the aims of our study are: (i) to evaluate the percentages of those two views (evolutionism and creationism) distribution in the evaluated Romanian group, (ii) explore the participants' attitude towards science or religion subjects, analyze them in the social- cultural context and (iii) compare the results with available ones from other studies performed on different communities.

Materials and methods

Between November 2016 and March 2017, 400 subjects were questioned in the study. The questionnaire, distributed printed or online, consisted of a field containing personal data: name and surname (was optional, initials of the name could be used), age, occupation, etc., and one section containing 21 questions - 13 questions oriented towards religion and 8 related to science.

For comparing our results, we used studies belonging to the Gallup Institute. The questionnaires used were:

- Global index of religion and atheism
- In the US, 42% Believe Creationist View of Human Origins (Newport, 2014).

- Evolution, Creationism, Intelligent Design
- On Darwin's Birthday, only 4 in 10 Believe in Evolution (Newport, 2009).
- Americans Weigh in on Evolution vs. Creationism in Schools (Carlson, 2005).

Global index of religion and atheism: This study was made in 2012 in 57 countries around the world, with a sample of more than 50,000 people, both women and men. There was also presented data on Romania, where 1050 people were interviewed, between November 26th and December 5th. The countries where the study was conducted are: China, Japan, Romania, Iceland, Australia, Germany, France, Czech Republic, Iraq, Kenya, Macedonia, Fiji, Armenia, Brazil, Peru, Moldova, Columbia, India, Nigeria, Turkey. The data gathered in Romania only aimed at presenting a percentage not to analyze the factors behind the numbers.

In the U.S., 42% of Believe Creationist View of Human Origins was realized for 1,028 adults, aged 18 and older, living in all 50 U.S. states and the District of Columbia. In this study, the questions were based on facts about evolution, e.g.: "Human beings have developed over millions of years from less advanced forms of life, but God guided this process", "Human beings have developed over millions of years from less advanced forms of life, but God had no part in this process". The results showed that 40% believe that God is the explanation of the origins of life on Earth.

Evolution, Creationism, Intelligent Design: was conducted between 3-7 May 2017 in the U.S., with 1011 people questioned.

On Darwin's Birthday, only 4 in 10 believed in Evolution: was done in U.S. with 1,018 people on February 6th-7th, 2009. In this study, people were asked if they believe in evolution and facts related to it. Only 39% of Americans say they "believe in the theory of evolution," while a quarter say they do not believe it, and the remaining 36% don't have an opinion either way.

Americans Weigh In on Evolution Creationism in Schools: conducted on 21-23 March 2005 with 1001 participants. The overall result of the study is that the percentage of Americans wanting to have creationism taught in schools may seem relatively modest at 30%, but still significantly larger than the percentage of Americans wanting evolutionism taught to their children.

Results

Age: the majority of interviewees are young people (ages between 16 – 22, 66%; 23 – 30, 10 %) (Fig. 1). This will be visible in the percentage of some questions, such as those related to scientific topics. But also, the fact that they are so young means that they can be easily manipulated or feel compelled to act or behave as "normal" for either society (of religious-conservative values), or their family, even if the answers are confidential.

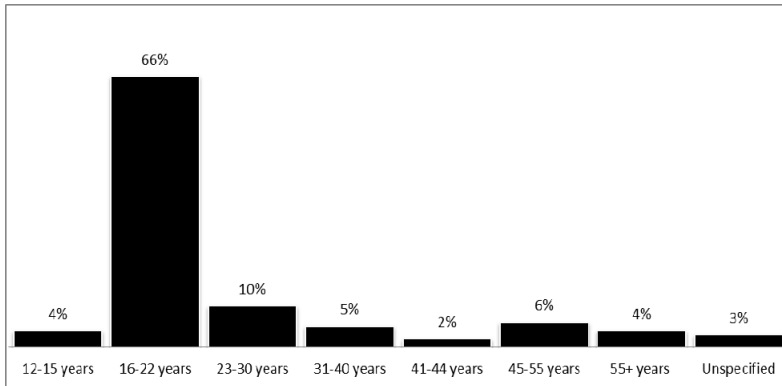


Figure 1. Age percent of interviewed people.

Another influencing factor is that teenagers have the tendency to spend more time in groups, including church groups (Cheadle and Schwadel, 2012).

Education level: there is a link between the education level and the way of understanding and accepting evolution (Heddy and Nadelson, 2013), which can be seen in the answers given to some questions of the study.

The fact that the percentages were equal for high school and university (Fig. 2) gives us two points of view about certain topics like evolution, religion, life and death, etc.

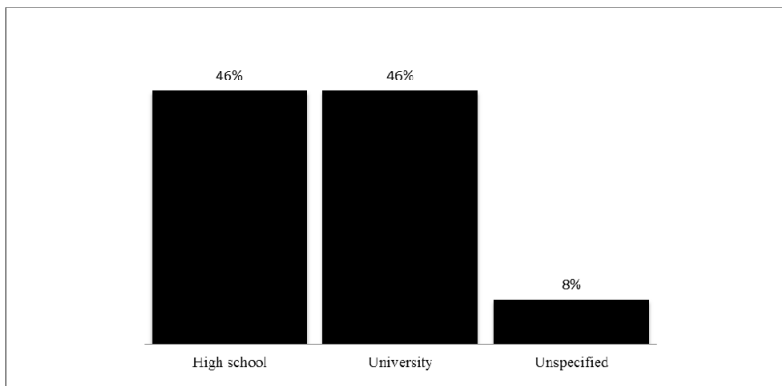


Figure 2. Level of education of interviewed population.

The education level is important because people having better studies can take decisions on their own and they analyze the information given to them before drawing conclusions.

Background. The fact that most of those who have taken the questionnaire are born in urban regions, can be seen in their responses to questions concerning science (“Do you like to keep up with the scientific topics?”, “Do you consider yourself a modern, open minded person?”), as they have easier access to information (in Romania the countryside is underdeveloped, providing lesser access to Internet and public libraries).

We can observe for those from the urban areas that there is a higher rate of university attendance due to several social (Fig. 3), economic factors, etc., while in the rural areas just a few have graduated or followed college-level education, these may graduating high-schools or technological schools having levels up to 10 classes.

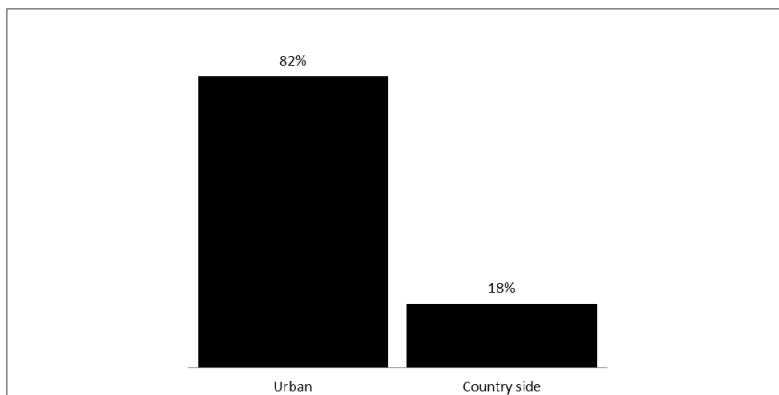


Figure 3. The background of interviewed people.

We analyzed the answers of the most relevant questions:

Question: *Are you a religious person?*

56% of people answered affirmatively (Fig. 4), which is not surprising, since most of the interviewees are teenagers or young people that haven't come out of the family environment, where the influence of their parents is stronger. This issue was discussed by Deborah Keleman in “Are Children Intuitive Theists?”, where she supports the idea that at the age of 5, children can make the difference between natural and supernatural events (Keleman, 2004). Thus, the children know that God is a supernatural being, but because of the massive institutionalization of religion, children are likely to view religious rules as relatively coherent (Guthrie, 2002).

Another reason for the high percentage is the marketing over religion. Today's religions must compete with more fun and recreational activities (Einstein, 2008). In Romania, a cult of religious icon depicting saints has evolved recently, and this is associated with religion and belief. Religion brings people together and creates links between people (Heddy and Nadelson, 2013).

According to the results of the “Religion and atheism” study conducted by Gallup International during 2005-2012, which involved questioning 1050 individuals, there has been an increase in the number of religious people. Romania ranked 6th in the most religious countries of the world, and we also rank high among the countries with the highest percentage of religious people.

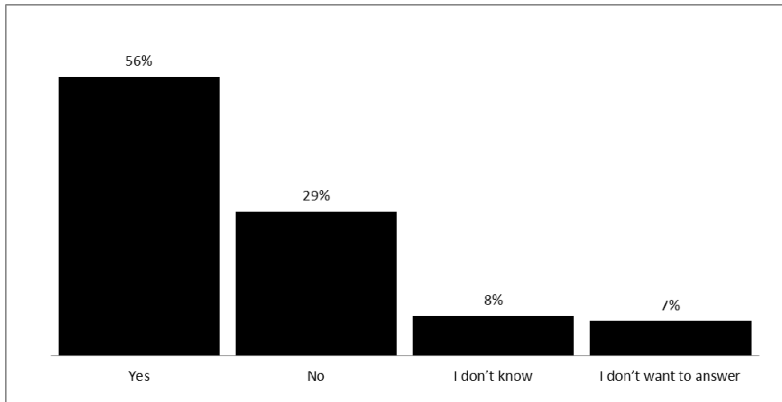


Figure 4. Answers to: “Are you a religious person? “

Question: *Do you believe in God?*

Those who have chosen “Yes” (Fig. 5) are raised or forced to believe in God and at the same time inherited the concept of God (Alper, 2008). Much of the present population comes from the countryside and that influences current thinking (in particular subjects like religion). People also have designed their “personal God” to motivate their choices in life (Van Ments *et al.*, 2018). This is another factor that can explain the high percentage for the affirmative answer.

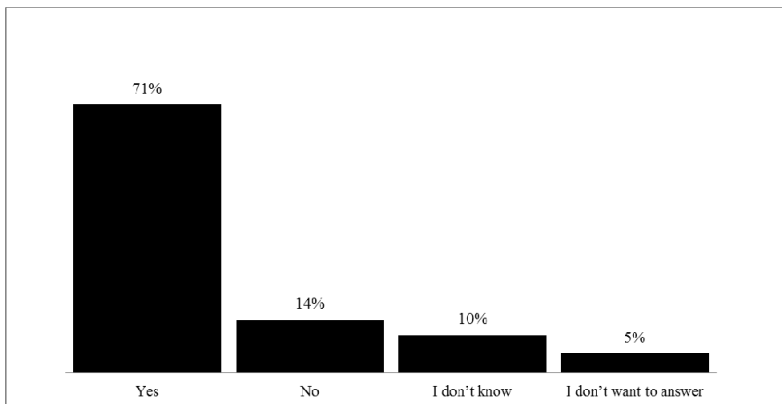


Figure 5. The percentage for those who believe in God.

We can also see that there is also 10% that chose “Do not know” as answer, percentage that belongs to the agnostic category, thinking that it is impossible to really know if God exists (Scott, 2009).

As we previously mentioned, Romania was ranked 6th among the most religious countries in the world, and since then, no relevant increase of the number of atheists was recorded, showing the rigidity that churches exercise on their followers.

Question: *Do you agree with the existence of a supernatural force that controls the Universe?*

This question was not used just for verification for the previous question, but it goes along with the theory of Intelligent Design. This theory states that evolution was controlled by a “smart designer” and evolution did not happen chaotically or accidentally, as natural selection shows, instead having a precise and certain creator (Coyne, 2015). The fact that 55% responded affirmatively to this question confirm what figure number 6 indicates: this concept is quite widespread (thanks to the media, literatures etc) (Fig. 6).

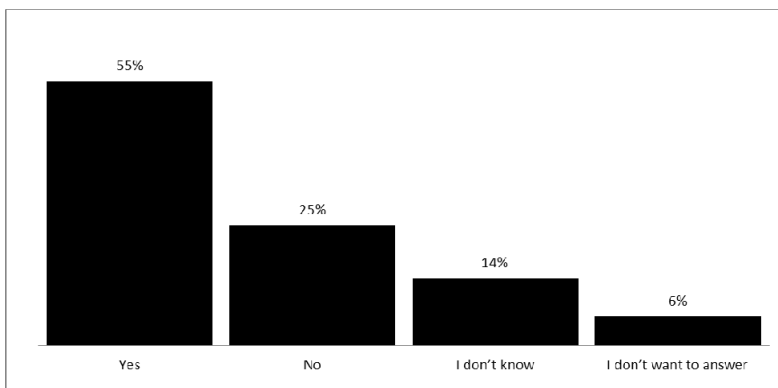


Figure 6. Answers for: “Do you agree with the existence of a supernatural force that controls the universe?”

The fact that there is a 29% difference between the answers to “Do you believe in the existence of God” and “Do you agree with the existence of a supernatural force that leads the universe?” indicates that people still need to believe in something.

Question: *Do you believe in natural selection?*

Due to the fact that we have evolved from many points of view (social, economic, informational, technological, educational, etc.), people have a more open way of thinking and they accept new ideas like natural selection much easier. The percentage of those who chose “No” and “I don’t know” are similar (Fig. 7), meaning that people are either uninformed or they don’t want to accept that fact. Even

though 71% believe in God (Fig. 5), 61% of respondents also believe in natural selection (Fig. 7). These results, from a scientific perspective may be contradictory. The “intelligent design theory” may explain the compatibility between God faith and natural selection. This was supported by Wallace’s statement which said that humans evolved through natural selection, just as every animal, but God gave them a soul and also by Pope Pius XII (Singer, 2006).

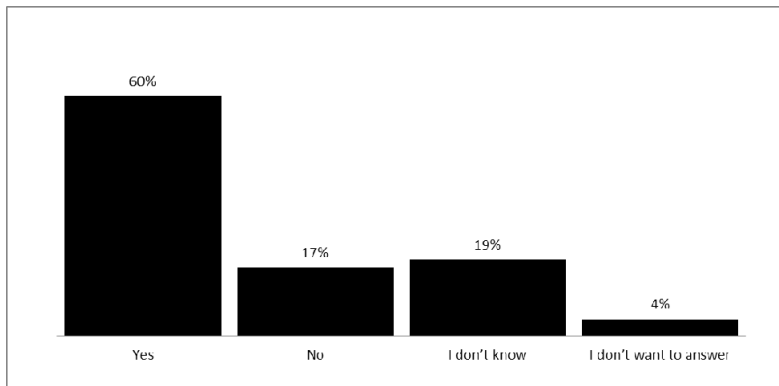


Figure 7. The percentage of those who believe in natural selection.

From the study conducted by Gallup in February 2009 in which the 1018 interviewees answered to the question “Do you believe in evolution?”, results that the high school students don’t believe in evolution (21%) A higher percentage for the same answer is seen in those with higher education (71%).

Question: Do you consider it necessary to teach evolutionism in primary and high schools?

We know that the teaching of evolutionism in Romanian education (and also in other countries) is still a controversial topic. Evolution is a concept of biology, and many college students do not accept this because of their religious beliefs (Barnes and Brownell, 2016). This can be seen quite well through the fact that the percentage of those responding affirmatively (44%) is small (not even 50%) (Fig. 8). A cause for this is also the parents’ mindsets, who often blame or straight refuse to let teachers explain evolutionism in school. For most countries, religiosity is negatively associated with evolution (Heddy and Nadelson, 2013).

In the study conducted by Gallup, “Evolution, Creationism, Intelligent Design”, the question: “Do you think each of the following explanations about the origin and development of life on earth should or should not be taught in public school science classes, or are you unsure?”, evolutionism has the highest positive percentage - 61% (U.S. is well developed compared to Romania). The percentage for “No, should not” (20%) and “Unsure” (19%) are close, proving their uncertainty towards that subject.

In the “Americans Weigh in on Evolution vs. Creationism in Schools” study, conducted by Gallup with a total of 1001 people between March 21th-23th 2005, the ones that graduated high school (37%) said that they would feel disturbed to teach only evolutionism in school, but for the postgraduate level the situation is exactly the opposite, 35% refusing to teach creationism alone. This indicates that people with higher level of education give more credit to scientific explanations on the dilemmas of existence.

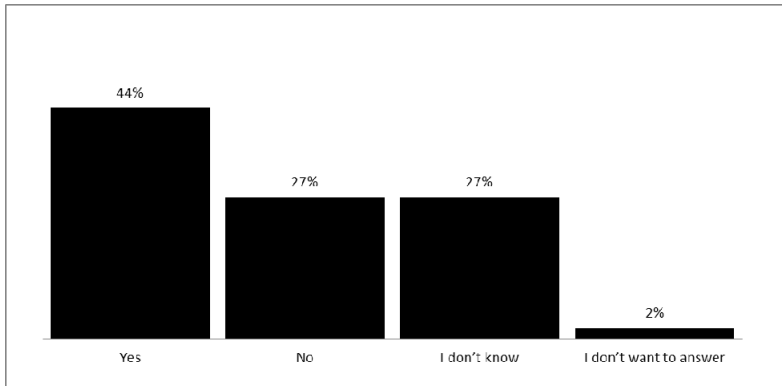


Figure 8. Opinion of the interviewed population on teaching evolution.

Question: *Do you think you understand the concept of natural selection?*

In the answers for this question, a link between birthplace (rural or urban) and level of study can be seen (in Romania, the schools from rural regions are poorly equipped compared to the urban areas), due to the access to information. The 68% that answered positively (Fig. 9), denotes the fact that young people are interested in knowing the meaning of life and its scientific explanation.

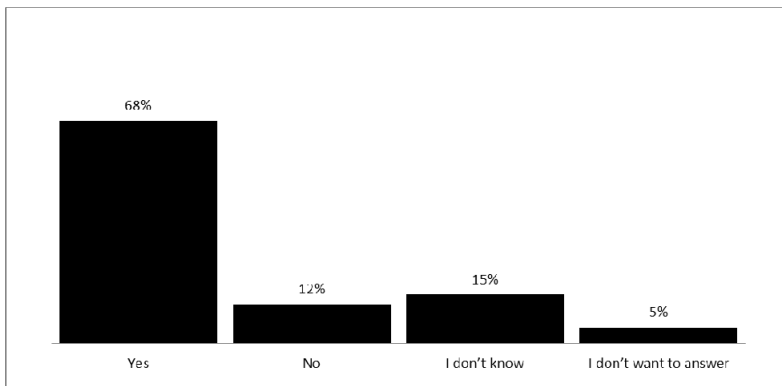


Figure 9. The percentage of those who understand natural selection.

A small percentage belongs to those that chose to answer “Do not know” (perhaps due to several factors like family, entourage of friends etc).

For the question posed by the Gallup website in the study entitled “Evolution, Creationism, Intelligent Design” – “How familiar would say you are with each of the following explanations about origin and development of life on earth?” we can see an increase in the familiarity of the American population with the idea of evolution because in June 2007 there were 41% while in May 2014 it was 42%.

We can notice a decrease for familiarity of creationism (from 50% to 38%), attributed to the evolution of technology and ease of access to information.

Question: *Do you consider it necessary to teach religion in primary and high schools?*

We conducted the study in a country under a strong religious influence (especially Orthodox), and this was reflected in the percentage of affirmative answers (57%) (Fig. 12). Some of the factors that influenced this percentage are family (in each family there is at least one religious parent who sees teaching religion as an absolute necessity for education), and age (those that answered the questionnaire, have recently graduated or currently follow high-school or college-level education - they consider religion to be a non-essential subject for their studies).

Question: *Name a personality who has contributed to religion/ theology/ mysticism.*

Answers: Arsenie Boca - 32%, Jesus - 13%, Virgin Mary - 13%, Luther King - 3%, The Pope - 11%, people mentioned in the Bible - 2%, Buddha - 3%, Other saints - 6%, Unspecified - 16%, I don't know - 0%, Another - 1%.

Due to the fact that Romania is a predominantly Orthodox country, with a percentage of 86.45% out of the whole population that declared their belief (Opaschi, 2014) , this greatly influenced the choices of the answers. This is visible in the fact that “Arsenie Boca” has a 32% share, much higher than “Jesus”, with only 13%. This result may suggest the poor quality of religious education, focused more on spectacles and miraculous on a local scale and less on the universal values of the Orthodoxy.

Question: *Name a personality that has contributed to science/ biology/physics.*

Answers: Emil Racoviță - 2%, Albert Einstein - 20%, Gregor Mendel - 4%, Nikola Tesla - 4%, Charles Darwin - 7%, Thomas Edison - 2%, Isaac Newton - 11%, Stephen Hawking - 5%, Another - 19%, I don't know - 3%, I don't want to answer- 1%, Unspecified - 22%.

The first thing that we can see is the difference between the percentages of the “I don’t know” answers for personalities that contributed to religion (0%) and the same answer for this question (3%). This is due to the fact that in Romania religion is taught since first grade, while science is only taught from sixth grade.

Conclusions

Following the analysis of the answers given by the respondent positively to the question “Are you a religious person?” (56%) and “Do you believe in God?” (71%) we conclude that the majority of Romanians are religious and believe in the theory of creationism. But we can see that there is an openness to science from those who said they believed in natural selection – 60%.

It should also be noted that the current young generation has more interest and gives more credit to the scientific explanations and they have a much more open attitude to science, as 44% of them consider it necessary to teach evolutionism in schools.

People's attitude towards religion has remained unchanged along the centuries. They are guided by standards of religion in their everyday life and are against other ideas or ideologies that are not the same as theirs and that can be seen by the 57% who consider it necessary to teach religion in schools.

Even though, the study has reduced number of questionnaires and a narrow age range of the subjects, it brings new and valuable information about the mentality's dynamics related to evolutionism and creationism in a part of the Romanian society.

REFERENCES

- Alper, M. (2008). The “God” Part of the Brain: A Scientific Interpretation of Human Spirituality and God. *Sourcebooks, Inc.*, Illinois.
- Arthur, W. B., & Polak, W. (2006). The Evolution of Technology within a Simple Computer Model. *Complexity at Large*, Volume 11, Issue 5, USA.
- Barbour, I. (1990). Religion in an Age of Science (Gifford Lectures 1989-1991, Vol 1), Harpercollins, New York.
- Barnes, M. E., & Brownell, S. E. (2016). Practices and Perspectives of College Instructors on Addressing Religious Beliefs When Teaching Evolution. *CBE- Life Sciences Education*, Vol. 15.
- Bondarenko, D. M, Grinin, L. E., & Korotayev, A. V. (2002). Alternative Pathways of Social Evolution and Basic Principles of Culture Organization, Russian State University for the Humanities, Moscow.
- Carlson, D. K. (2005). Americans Weigh In on Evolution vs. Creationism in Schools. Responses vary by religiosity, education, ideology [Accessed 18 March 2019] <https://news.gallup.com/poll/16462/americans-weigh-evolution-vs-creationism-schools.aspx>.

- Cheadle, J. E., & Schwadel, P. (2012). The 'friendship dynamics of religion,' or the 'religious dynamics of friendship'? A social network analysis of adolescents who attend small schools, *Social Science Research*, Volume 41, Issue 5.
- Coyne, J. A. (2015). *Faith Versus Fact: Why Science and Religion Are Incompatible*. Ed. *Viking*, New York.
- Einstein, M. (2008). *Brands of Faith-Marketing Religion in a Commercial Age*, Routledge, New York.
- Evolution, Creationism, Intelligent Design [Accessed 18 March 2019] <https://news.gallup.com/poll/21814/evolution-creationism-intelligent-design.aspx>
- Global index of religion and atheism (2012) [Accessed 18 March 2019] <https://sidmennt.is/wp-content/uploads/Gallup-International-um-tr%C3%BA-og-tr%C3%BAleysi-2012.pdf>.
- Guthrie, S. (2002). Animal animism: Evolutionary roots of religious cognition, *Current approaches in the cognitive science of religion*. *Continuum*, New York.
- Heddy, B. C., & Nadelson, L. S. (2013). The variables related to public acceptance of evolution in the United States, *Evolution: Education and Outreach*, Vol. 6, Issue 3.
- Hoover, S. M., & Clark, L. S. (2002). *Practicing Religion in the Age of the Media: Explorations in Media, Religion, and Culture*. *Columbia University Press*, Columbia.
- Keleman, D. (2004). Are Children "Intuitive Theists"? - Reasoning About Purpose and Design in Nature. *Sage journal*, Volume 15, Number 5.
- Losos, J. B., Baum, D. A., Futuyma, D. J., Hoekstra H. E., Lenski, R. E., Moore, A. J., Peichel C. L., Schluter D., & Whitlock M. C. (2014). *The Princeton Guide to Evolution*. *Princeton University Press*, New Jersey.
- Nadelson, L. S., & Hardy, H. H. (2015). Trust in science and scientists and the acceptance of evolution, *Evolution: Education and Outreach*, Volume 8, Issue 9.
- Newport, F. (2009). On Darwin's Birthday, Only 4 in 10 Believe in Evolution. Belief drops to 24% among frequent church attenders, [Accessed 18 March 2019] <https://news.gallup.com/poll/114544/darwin-birthday-believe-evolution.aspx>.
- Newport, F. (2014). In U.S., 42% Believe Creationist View of Human Origins. Americans' views related to religiousness, age, education [Accessed 18 March 2019] <https://news.gallup.com/poll/170822/believe-creationist-view-human-origins.aspx>.
- Opaschi, V. (2014). *Statul și cultele religioase*, Secretariatul de Stat pentru Culte, București.
- Scott, E. C. (2009). *Evolution vs. Creationism: An Introduction*, Greenwood Press, London.
- Singer, P. (2006). *Tratat de Etică*. Ed. *Polirom*, Iași.
- Van Ments, L., Roelofsma, P., & Treurcorresponding, J. (2018). Modelling the effect of religion on human empathy based on an adaptive temporal-causal network model. *Computational Social Networks*.
- Watson, P. J., Morris, R. J., Hood, R. W., Jr., Miller, L., & Waddell, M. G. (1999). Religion and the Experiential System: Relationships of Constructive Thinking with Religious. *The International Journal for the Psychology of Religion*, Volume 9, Issue 3.