Sociologie Românească

ISSN: 2668-1455 (print), ISSN: 1220-5389 (electronic)

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Sociologie Românească, 2021, vol. 19, Issue 1, pp. 117-133

https://doi.org/10.33788/sr.19.1.6

Published by:
Expert Projects Publishing House

On behalf of:
Asociația Română de Sociologie

WHICH ONE TO TRUST? EXPLORATORY ANALYSIS ON ASTROLOGY, SCIENCE AND RELIGIOSITY AMONG STUDENTS IN BUCHAREST

Dragoș OBREJA[1]

Abstract

Confidence in astrology remains a visible phenomenon in contemporary society, and this is a constant topic of academic interest. A survey based on 512 valid questionnaires were obtained from a non-probability sample of university students from Bucharest, in order to observe possible statistical relations between confidence in astrology, confidence in sciences such as medicine and mathematics, but also fields such as astronomy and horoscope. On the other hand, several statements have been used to measure the level of religiosity. Notable is the moderate positive correlation obtained between astrology and astronomy, but also the strong correlation between astrology and horoscope (this last correlation was expected). Broadly speaking, it is observed that astrology correlates positively with the variables that constitute the 'inward' component of religiosity, while the 'outward' component shows a rather negative correlation, but which does not enjoy a similar statistical significance. Astronomy, like medicine, outlines negative relation with the level of religiosity. Instead, the correlations that involve trust in medicine have a negative and moderate value, in relation to religiosity. In conclusion, it is observed that the trust in "strong sciences" generates more prompt correlations compared to the trust in astrology, while further studies are needed to clarify the reasons for such uncertain correlations between astrology and religiosity.

Keywords: astrology, astronomy, horoscope, medicine, pseudoscience, religiosity, supernatural, superstition.

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Introduction

Confidence in astrology, along with other fields considered supernatural, is an area of interest for sociologists. However, the results obtained in previous research provide quite different results in relation to the level of religiosity, which raises questions about what respondents understand by astrology. While some studies showed interest in respondents' confidence that astrology influences personality (Pennycook, & Rand, 2019), others are interested in the reasons for increased confidence in astrology and horoscope (Vlăsceanu *et al.*, 2010). Other studies highlight how trust in astrology differs depending on membership in a religious denomination (Sarkissian, 2009). All these multidimensional approaches, together with the present analysis demonstrate that astrology remains a consistent topic for analysis in sociology.

Astrology and Religiosity. Suggestive studies in the field

Certainly, the impact of astrology in specific spatial-temporal contexts should not be looked at in isolation from the way people in those places relate to the religious component. Basically, this is the foundation of the secularization theory, which has been written in different contexts in order to be subjected to a sociological analysis. In this regard, Norris & Inglehart (2004) argue that a specific feature of secularization is that of detachment from the supernatural, in the context in which the religious factor starts to lose ground. In his paper on secularization, Charles Turner (2020) argues that a common feature of totalitarian ideologies in the last century is the fact that they tend to be compared to religions, which has contributed to their decline (Turner, 2020, 147). On the other hand, Bryan Turner (2011) argues in his theory of secularization that the perception of a constant threat makes the "return to the sacred" a necessary feature in the context of modernity.

Other studies (Lindeman, & Svedholm, 2012) argue that the fact that a discipline is considered irrational does not equate to the fact that it is pseudo-scientific. The conclusion reached in this study is that, most often, the tendency to differentiate a science from a pseudoscience cannot be justified only by using perspectives such as the 'paranormal' or the 'irrational' nature that a school of thought has. The urge of the two authors is to conceive a universal basis for differentiating between a science and a pseudoscience, to pursue a uniformity in the academic environment for their classification.

Measurements of religious behaviour prove to be problematic, as spiritual conduct is frequently performed on multiple dimensions, and neglecting these dimensions, as well as the possibility of intertwining them, may prove to be a weakness of studies regarding the analysis of religiosity. For example, Laird *et al*. (2004) explain that while the 'intrinsic' component of religiosity acquires a statistically significant correlation with the supernatural, regarding the 'extrinsic' one, no similar correlations have emerged. Thus, the same authors justify the

multidimensional nature of prayer by mentioning adjacent variables in the analysis, such as: cognitive development, life events, emotional impact etc. Measuring the extrinsic impact of religious behaviour among respondents, Ladd and Spilka (2006) discuss an item such as: 'To what extent is it likely that other people may view you as a very religious individual?'. In the study, the authors found that individuals who have a visible religious behaviour were more likely to believe in the paranormal (superstitions, astrology, and reincarnation) compared to individuals who did not have an obvious religious behaviour. Other authors have been thoroughly interested in studying the reasons why many people everywhere consider astrology to be scientific.

According to Bok (1975), a field cannot be labelled a 'pseudoscience' just because it had a mystical past. As an argument, the author also discusses known sciences of today, such as medicine and chemistry, which in the past were far from enjoying the scientific character they enjoy today. On the other hand, Allum (2010) finds a dichotomy between people who read the astrological column strictly for fun and people who make important life decisions (buying a car, taking a bank loan) based on astrological predictions. One of the explanations offered by Allum (2010) in relation to the fact that astrology is frequently considered scientific is that of the suffix '-ology'; suffix enjoyed by other established sciences and which could explain, to a certain extent, the fact that astrology enjoys a higher confidence compared to the horoscope.

Other authors note that the immutability of individuals' beliefs in astrological predictions arise precisely because people know they cannot change them in any way. Thus, the well-known error of confirmation appears when individuals are not used to giving interest to information that might upset their previous beliefs (Furnham, 1991). Other studies (Lindeman, & Aarnio, 2006) show that trust in pseudo-sciences encompasses such vast fields that they cannot be fully understood within a particular study. Thus, from the diversity of beliefs that can capture individuals, some of the most popular beliefs include the power of the horoscope and astrological predictions.

On the other hand, there are also studies that recall that, despite the frequent correlations between what is supernatural, paranormal, magical or superstitious, unanimously accepted definitions for these concepts are impossible to obtain (Beck, & Forstmeier, 2007; Ng, Chong, & Du, 2010). However, when the normative definition is a problematic aspect, it is necessary to operationalize the concepts in question. For example, in a secondary analysis by Lindeman and Svedholm (2012), different beliefs were included in a complex spectrum of categories, consisting of four major elements: paranormal, superstition, magical and supernatural, all based on previous studies.

A complex work dedicated to the impact of astrology on the lives of individuals belongs to Theodor Adorno. In his book, *The Stars Down To Earth*, Adorno describes astrology as an amalgam of superstitions that have power over people

who know they cannot change anything about their destiny. The astrological statements have a stereotypical character, being far too general to be fought: 'Follow *that* intuition of yours' or 'Show *that* sharp mind of yours' (Adorno, 2002). As Bakker (2009) points out, even astrology sometimes uses less accessible vocabulary. The purpose of such an approach seems to be to obtain different interpretations among individuals, these being the moments when the need for a specialized astrologer proves to be crucial.

A suggestive dilemma in the study of individuals' confidence in astrology is that of the impossibility of distinguishing astrology from astronomy. Specifically, as Eve and Dunn (1990) show in their research, classifying which is a science and which is a pseudoscience in terms of astronomy and astrology has been a difficulty for the respondents, while Kallery (2001), in a research conducted in some educators, stated that more than half of the sample considered that both astronomy and astrology have a scientific character.

There are several studies that highlight possible correlations between religious belief and beliefs in the paranormal. According to Baker and Draper (2010), there is a significant correlation between Christian belief and trust in astrology. The same study shows that the highest confidence in pseudoscience is found among those who claimed that the Bible contains certain human errors. Even so, the authors' explanations confirm that individuals strongly engaged in religious beliefs tend to sceptically look at paranormal approaches, which is why they would not be interested in experiencing them (Baker, & Draper, 2010). Alternative studies reject any linear connection between the two. Orenstein (2002) shows that too low or too high rates of attending religious services result in low confidence in paranormal beliefs. There are also studies (Tiryakian, 1972) that indicate a greater chance of showing interest in astrology among young people who have university degrees, compared to those who are still in high school.

Towards the link between Religiosity and (pseudo)-science in Romania

Some studies on values in post-December Romanian society (Voicu, 2008; Obreja, 2019) confirm through secondary analyses that the index of religiosity, close to the maximum value in Romania, is the key element for capturing a low level of secularization in population. Even if the main denomination in a certain state does not contribute exhaustively to the calculation of the level of religiosity, it is worth noting the fact that in some states, being Protestant is an indicator in the study of secularization, as is the case in eastern Germany and Great Britain. In a study on cohorts in Romania, Voicu (2008) identifies a strongly linear relationship between age and level of religiosity, but this difference between generations does not remain as pronounced in 2005, compared to 1990. The fact that 'religious

revival' is a phenomenon whose magnitude is increasing in Romania is attributed to a simple fact, according to Voicu (2008): the increased influence of the Orthodox Church in Romanian society, along with low human capital.

In a comparative analysis of Slovak and Romanian companies, Čavojová *et al*. (2018) show that in societies where a large part of the population belongs to a church – being the case for 96% of Romanians and only 72% of Slovaks according to a 2002 measurement – it is more likely that individuals who adhere to the official religion of that state also adopt certain 'old forms' of faith, such as astrologers and healers. On the other hand, a lower percentage of individuals who adhere to the official religion of the respective state determine the adherence to the so-called 'new forms' of faith, such as New Age spirituality and Zen meditation. The explanations for such correlations seem to be diverse, but there seems to be a consensus that religious diversity and the diversity of beliefs in other forms of spirituality is predominantly reduced in former communist states (Sarkissian, 2009).

According to Pennycook and Rand (2019) there is a higher probability that young people, whether teenagers or students, show an increased receptivity to pseudoscience, or to what the authors call 'pseudo-profound bullshit'. According to the authors, even if such beliefs outline the impression of depth, the reasons why people trust such areas leave room for many interpretations. Even if the concept they use is rather a novelty in academia, the authors point out that the adherence of individuals to certain ideas does not necessarily equate to the presence of a rationality intrinsic to those ideas, but rather to their concern to find some depth. A possible explanation of the attractiveness of these concepts regardless of the languages in which they are presented is provided by Čavojová *et al*. (2018) which states that: 'Despite differences between languages, these words probably have the same impression inducing connotations in all languages that assimilate new words from science and culture'.

According to the same STISOC report from 2010 (Vlăsceanu *et al.*, 37), pseudo sciences are fields that use supernatural sources of knowledge, in this category being offered the example of astrology. In this sense, in a 2005 Eurobarometer statistic, 22% of Romanians considered the horoscope and lucky numbers to be scientifically based, with Romanians occupying the top of the ranking, along with Bulgaria and Cyprus. A significant conclusion of the report on Romanians' trust in the supernatural is that, while the level of education does not provide statistically significant correlations in this regard, the level of scientific knowledge of individuals is an important variable in making correlations. Also, the study does not indicate the possibility of a generalization in the whole population in terms of a correlation between the level of education and confidence that the sign influences "much" or "very much" the personality of an individual.

Methods

The present research was conducted through a sociological survey based on a questionnaire, applied to 512 students from Bucharest. The selected students belong to different faculties: sociology, psychology and history, from the University of Bucharest. Given that most of them are undergraduate students, the "age" variable was left as an open variable, where respondents must write alone their age. The questionnaires were self-administered (SAQ), data collection taking place between April and June 2019.

Since the age of the respondents remains somewhere between 18-24 years – with a median age around 21 years – the design of this research cannot allow the correlations between different key variables in this study and the age variable. Although this is one of the limits of the study, it is worth analysing the possible correlations between respondents' trust in astrology, trust in different sciences and, finally, the level of religiosity.

Data collection was mixed-mode, 300 questionnaires were applied using the pen-and-paper method, while the remaining 225 were applied online, being distributed on Facebook student groups, student groups of the faculties of: sociology, psychology, and history. The questionnaire was not password protected, so all students who showed interest in this topic were free to complete the questionnaire. However, 13 respondents from the total sample mentioned an age below 18 years, so they were eliminated from the analysis, resulting in a sample of 512 respondents.

Since the present study is based on two major measurements – on the one hand certain sciences, such as medicine, math and astronomy in their relationship with astrology and, on the other hand, the variables intended to outline a certain profile of religiosity among respondents – the main hypotheses taken into account are:

1. The existence of a statistical relationship between trust in astrology and the "strong" sciences, such as mathematics and medicine (most likely a negative relation).
2. The existence of a positive and quite strong statistical correlation is expected between respondents' confidence in astrology and confidence in the horoscope.
3. The existence of statistical relationships between respondents' confidence in astrology and the variables related to the shaping of religiosity. Since some variables regarding religiosity have a rather intrinsic nature (such as the nature of the relationship with God) and others are rather extrinsic (frequency of participation in religious services, but also the feeling of closeness to others around religious holidays), this study aims to observe possible trends between the two forms of religiosity.

The shortcomings of certain ways of collecting data represent an important methodological charge. In this regard, it is worth mentioning the higher tendency of respondents to provide answers considered more sensitive or personal when the questionnaires are administered online, through a web platform (Kreuter, Presser, & Tourangeau, 2008). Even if the comparison made by the authors also implies questionnaires administered by the CATI method – and not necessarily the pen-and-paper ones –, there is a tendency to show scepticism, in the spirit of the effect of social desirability, when the interaction with the researcher is direct (face to face) or telephonic. However, the results are not unanimous in this respect, since there are other studies (Knapp, & Kirk, 2003) that mention the lack of a significant difference in data on certain subjects considered sensitive, between the questionnaires administered by pen-and-paper, compared to those administered on the Internet.

Measures

Trust in science

Using a scale numbered from 1 ("I have no confidence") to 5 ("I have complete confidence"), seven areas were introduced, some of them having an officially recognized scientific character (Medicine, Mathematics, Chemistry, Astronomy and Biology), while the other two have a doubtful character regarding their scientific accreditation (Astrology and Horoscope). Given the separation between Astrology and Horoscope, I expect to see visible differences in respondents' confidence in the two.

On the other hand, as the present research follows how astrology determines a certain religious conduct, adjacent measurements will be exposed; measurements that will test the correlations between respondents' confidence in medicine and aspects designed to measure religiosity. This comparative approach has a clear purpose: to observe the extent to which trust/distrust in the paranormal determines a certain religious behaviour in the sample. However, not all sciences introduced in the questionnaire proved to have any statistical significance among the sampled population. Therefore, the suggestive areas of interest, whether scientific or not, that have remained statistically valid in this research are: V1. Medicine; V3. Astrology; V5. Horoscope and V6. Astronomy.

The level of perceived religiosity

About the difficulty of outlining a coherent scale within the level of religiosity has been written in various studies, especially when it comes to the operationalization of prayer (Ladd, & Spilka, 2006; Gorsuch, 1994; Kirkpatrick, & Hood, 1990). Among the mentioned shortcomings are the non-standardization of methods for quantifying responses, but also the mixture of different elements, such as cognitive, emotional and behavioural ones. Thus, based on a model outlined by the two

authors, in this study a dichotomy was kept between 'inward prayers', focused on the spiritual relationship with the self, but also 'outward prayers', concerned with strengthening the social component of prayer through interpersonal relationships between believers.

Since the component of religiosity manifests itself on several levels, whether intrinsic or extrinsic in relation to divinity, this study also contains five variables designed to measure the intensity of the perceived level of religiosity among students in Bucharest. All items were measured using an ordinal scale, with values from 1 meaning "not at all reliable" to 5, meaning "fully reliable". Thus, the variables considered are:

- **V11**. 'I trust that God is arranging things in my favour'
- **V12**. 'I always go to church when I have the opportunity'
- **V13**. 'It is impossible for me to imagine life without God'
- **V14**. 'Holidays bring me closer to my loved ones'
- **V15**. 'Those who depart from God, scarcely find their happiness'.

Results

Regarding the proposed variables to measure the perceived level of religiosity, a statistically significant correlation was obtained ($p < 0.01$) between the respondents' confidence in astrology and the confidence measured by the statement "I trust that God arranges things in my favour", where I have obtained a positive correlation ($R = 0.150$).

Quite intuitively, a strong correlation was obtained ($R = 0.781$) between the respondents' confidence as measured by the statement "I trust that God arranges things in my favour" and the statement "It is impossible for me to imagine life without God". This indicates that both statements converge around the 'inward' typology of religiosity, which certainly should have led to a strong correlation between the two.

It is noted that trust in astrology weakly explains the statements intended to evaluate religiosity. Unlike the correlations regarding confidence in astrology and the statements responsible for measuring the level of religiosity, the introduction of the level of confidence in medicine creates more visible correlations with the variables intended to measure religiosity. Thus, there are negative correlations of average value between the trust given to medicine, on the one hand, and the statements 'I trust that God is arranging things in my favour' ($R = -0.214$), 'Those who depart from God, find their happiness difficult' ($R = -0.295$), but also with the second variable responsible for measuring religiosity among the sample, 'I always

go to church when I have the opportunity' (R = -0.234). Another suggestive statistical relationship is that between trust in astrology and the frequency of participation in religious services, being a negative correlation. Thus, it is worth noting closely why the correlation regarding the strict relationship with God is a positive one, and the one regarding going to church is a negative one.

Table 1. R (Spearman) between Astrology, Sciences (Columns) and Religiosity (Rows)

Variable Name	**R (Astrology)**	**R (Astronomy)**	**R (Medicine)**	**R (Math)**
1. I trust that God is arranging things in my favour.	0.150	-0.190	-0.214	-0.153
2. I always go to church when I have the opportunity.	-0.133	-0.205	-0.234	-0.047
3. It is impossible for me to imagine life without God.	-0.086 *p (Sig)= 0.084*	-0.164	-0.184	-0.091 *p (Sig)= 0.039*
4. Holidays bring me closer to my loved ones.	-0.001 *p (Sig)= 0.979*	0.014 *p (Sig)= 0.748*	0.088 *p (Sig)= 0.09*	0.022 *p (Sig)= 0.615*
5. Those who depart from God, scarcely find their happiness.	0.083	-0.133	-0.295	-0.065 *p (Sig)= 0.143*
6. *Inward Religiosity Index* (1+3+5)	0.043 *p (Sig)= 0.328*	-0.181	-0.193	-0.114** *p (Sig)=0.01*

Note: Correlations without any mentioned p (Sig) are statistically significant at p<0.01. N=512

On the other hand, when the place of astrology is taken by astronomy, the correlations regarding religiosity are more prompt in adopting negative statistical relations. Statistically significant values (p < 0.01) on astronomy were obtained for four of the five statements on religiosity, the correlations being in the range R = [-0.205; -0133]. The only fragile positive value is that of holidays (R = 0.014), but the statistical error is overwhelming (Sig = 0.748).

Table 2. R (Spearman) between Astrology, Horoscope and Sciences

	Horoscope	Astrology	Medicine	Math	Astronomy
Horoscope	1	**0.635**	-0.026 *p=.564*	-0.198	0.112* *p=0.011*
Astrology	0.635	1	0.123	0.006 *p=.886*	0.252
Medicine	-0.026 *p=.564*	0.123	1	0.400	**0.513**
Math	-0.198	0.006 *p=.886*	**0.400**	1	0.325
Astronomy	0.112* *p=0.011*	0.635	0.513	0.325	1

Note: Correlations without any mentioned p (Sig) are statistically significant at p<0.01. N=512

The most pronounced correlation between two areas of interest is, by far, the positive correlation between trust in astrology and trust in horoscope (R = 0.635). Indeed, the two are strongly correlated, but an average of respondents' confidence for each area could be more clarifying in this regard. Thus, if astrology obtained an average of the respondents' confidence of 2.65 out of 5 (where 1 represents "I do not trust at all" and 5 "I have full confidence"), horoscope obtained an average of only 2.05 out of 5. A positive correlation, but a weak one, was observed between respondents' confidence in astrology and confidence in medicine (R = 0.123). Probably a correlation that deserves increased attention is the one obtained between trust in astrology and trust in astronomy, being a statistically significant and significant correlation among the sample (R = 0.252).

As expected, the weakest correlations are those with the statement "Holidays bring me closer to my loved ones". The weakest correlation of this index of religiosity (R = 0.375) is observed between the statement regarding the holidays and the statement "It is impossible for me to imagine life without God". Also, a fragile correlation compared to the others (R = 0.411) is found between the holiday statement and the confidence measured by the statement "I trust that God is arranging things in my favour". I performed the *Cronbach Alpha* analysis for the three statements meant to measure the intrinsic side of religiosity (that between individual and divinity), obtaining a value of .880 out of 1, which could suggest that the interdependence of the three variables is consistent with this study.

Through the statements meant to measure the respondents' religiosity, it was taken into account the rather multidimensional nature of the relationship to God, as previous studies had done with their own variables (Laird *et al.*, 2004; Ladd, & Spilka, 2006). Thus, it was included in the *intrinsic* category of spirituality statements such as: 'I trust that God is arranging things in my favour', 'It is

impossible for me to imagine life without God', but also 'Those who depart from God, scarcely find their happiness'. The other two variables, as they refer to the frequency of participation in religious services, but also to family closeness in the context of religious holidays are integrated rather in the *extrinsic* dimension of the relationship with divinity, as the community factor acquires greater values.

As expected, the strongest statistically significant correlations are visible when both statements have an 'intrinsic' character. For example, there is a strong correlation (R = 0.781) between the first variable and the third, while such a strong correlation (R = 0.724) is visible between the third variable and the fifth. An above-average correlation is also observed between the first variable and the fifth (R = 0.624). When it comes to correlations between interdimensional variables – a variable of intrinsic measurement with one of extrinsic measurement – the correlations acquire rather average values, as is the case between the first variable and the second (R = 0.507), but also between the second and fifth (R = 0.552). Probably, the most distinct variable in this set is the fourth variable, the one related to the holidays. Even if religious holidays can be an opportunity to socialize in the family environment as they coincide with legal holidays, so with more free time, it can be seen that increased assessment of the statement about the holidays does not necessarily imply an equally high assessment of the variables related to the relationship with God. Therefore, the correlations in the sampled population take average values in the fourth statement. Thus, between the first statement and the fourth one it is a correlation R = 0.411, and the correlation between the fourth statement and the second is also an average, of R = 0.428. The highest value (R = 0.464) is observed between the fourth statement and the fifth. The way in which family closeness in the context of religious holidays is an indicator in measuring religiosity remains an interesting topic, but the average correlations obtained among the sampled population indicate an obvious possibility to continue this approach.

Discussion

Although certain correlations with confidence in astrology did not have a statistical significance that would lead to more detailed conclusions about them, there are still certain correlations of this study that could represent an academic novelty. First, there is a positive correlation between the confidence of the respondents in astrology and the confidence in astronomy. Since the first is considered a pseudoscience and the second a science, ideally there should have been a negative correlation between the two, as other studies explained (Obreja, 2019). This is in line with previous studies, according to which respondents considered both astrology and astronomy to have a scientific character (Kallery, 2001). It is noted that respondents who showed increased confidence in astronomy are generally more sceptical about religiosity, except for the statement regarding religious

holidays, where the statistical error prevents the formation of obvious conclusions. This could indicate that astronomy was indeed considered more scientific than astrology, which contradicts, to some extent, the hypothesis regarding the scientific suffix-ology, proposed by Allum (2010).

The strong correlation between respondents' trust in astrology and horoscope ($R = 0.635$) shows that there is a high probability that individuals who have opted for a high trust in astrology will also opt for a similar high trust in the horoscope. However, such a correlation is not sufficient to fully explain the possible interdependence between the two, since a variance of almost 60% remains unexplained ($\sigma = 40.3\%$). The strong correlations regarding the two have been mentioned before. As we saw in Allum's (2010) study, astrology enjoys a higher confidence than the horoscope, but what this study additionally brings is the fact that trust in the two fields strongly correlates. On the other hand, the present hypothesis is confirmed even in Vlăsceanu *et al*. (2010), where it is observed that both astrology and horoscope are considered sources of scientific trust among the Romanian population.

However, understanding the activity of astronomers remains a visible problem at the sample level. While the correlations between astrology and the strong sciences are quite fragile (.123 for medicine and .006 for mathematics), the correlations between astronomy and the same strong sciences are stronger and statistically significant (.513 for medicine and .325 for mathematics). This captures a closer statistical relationship between individuals' confidence in astronomy (proven science) and the classical hard sciences.

The main hypothesis of this study, that of the existence of a strong statistical relationship between trust in astrology and trust in medicine or mathematics (either positive or negative), proved to be invalid. The variable on confidence in mathematics is statistically irrelevant ($p = 0.886$), unlike confidence in medicine ($p < 0.01$). This profound difference in statistical significance can be attributed to a simple fact: what is the scientific and practical relevance of mathematics? The fact that through the evolution of medicine the medical system has reached unprecedented performance today is already a well-known fact, but what would be the practical indicators of today to measure people's confidence in mathematics? In other words, what exactly does confidence in mathematics mean? These remain some methodological shortcomings that could be solved in further studies.

On the other hand, the correlation between trust between astrology and confidence in medicine is small, but statistically significant ($R = 0.123$), which contradicts the initial expectation to identify a negative relationship between the two. A possible explanation comes from the non-probabilistic sample, that falls into the young age category and is in the university environment, mainly as undergraduate students. It is not the first time that the correlations between trust in the supernatural and the level of education prove to be statistically insignificant, this being also the result obtained by STISOC (Vlăsceanu *et al.*, 2010). Another

explanation could be provided by Allum (2010), who observes the distinction between those who read the astrology column strictly for amusement and those who read it with great care and seriousness. The present study named the variables strictly "V1. Astrology" and "V5. Horoscope", leaving it to the freedom of each respondent to establish the appropriate level of confidence, so that dichotomies with a higher degree of specificity cannot be established, as Allum (2010) did in his research.

It also confirms the results proposed by Baker and Draper (2010), which show that a higher frequency of religious activities leads to an increase in scepticism about the paranormal. This is especially obvious in the correlation between participation in religious services, on the one hand, and trust in astrology, on the other. Although it is a fragile correlation, the negative statistical relationship between the two confirms the hypothesis that a religious community stability should diminish confidence in magic and in paranormal. On the other hand, the fact that the old school of thought, where paranormal fields such as astrology and horoscopes are integrated, is increasingly popular in communities where official religion almost monopolizes religious diversity in a particular country – confirmed by Čavojová *et al.* (2018) – is also observed in this study conducted among students in Bucharest.

As we have seen, the components aimed at the "outward" side of religiosity are rather in a negative relationship with the trust in astrology, while other statements regarding the "inward" side tend towards a positive correlation. This is not as bizarre as it seems at first glance, given that those who are socialized in the church acquire an anti-astrology perspective more quickly than those who do not attend church.

As it was observed, among the variables responsible for the analysis of religiosity, the most fragile correlations are those concerning the fourth statement, the one referring to the holidays. Thus, the four resulting correlations are arranged somewhere in the range R = [0.375; 0.464]. Like the results obtained by Laird *et al*. (2004), the correlations between statements of an intrinsic nature have led to more visible statistical conclusions than those of an extrinsic nature, so it is worth asking to what extent religious holidays contribute in any way to the spiritual connection with God.

Probably a noteworthy aspect of this study is the correlations between trust in medicine and statements meant to measure religiosity. As can be seen in Table 2, all the correlations involving confidence in medicine acquire mean and negative values, except the one about holidays, so that they are included in the range [-0.295; 0.088]. The fact that increased trust in science entails a decrease in religious values is no secret, this being integrated even in the well-known thesis of secularization (Turner, 2011; Turner, 2020). While correlations regarding confidence in astrology and the level of religiosity frequently fluctuate from study to study, correlations involving trust in science or trust in medicine are shown to be in an obviously

negative statistical relationship with statements about measuring the spiritual component.

Limits

The present study has certain limitations, some of which refer to the way of constructing the variables. In this respect, an obvious criticism concerns the lack of any deep clarification regarding the average correlation between respondents' trust in astrology and trust in astronomy. The explanations for this positive and counterintuitive correlation can be quite diverse, and the assumption that astrology takes on the scientific appearance as it enjoys the suffix "-ology" does not seem to be by far an exhaustive explanation. Indeed, a clarification on this correlation between the two areas would be necessary in future studies.

On the other hand, for reasons related to the accessibility of the sample, it was not possible to use a nationally representative sample. Therefore, the statistical relations presented are rather summarized at a non-probabilistic sample of students from Bucharest. However, as we have seen, several results of previous studies have been confirmed even at the level of a small population, which may confirm some perpetuation of statistical correlations involving confidence in various forms of the supernatural.

On the other hand, the analysis of the "inward" and "outward" components could be extended with further clarifications. While this study has focused on a dichotomous component of religiosity, the "inward" and the "outward", some studies point to the transcendental component of the relationship with the divinity as a separate component (Ladd, & Spilka, 2006). In this article, the connection between man and God has been assimilated to the "inward" component. The *Cronbach Alpha* analysis for the inward component of religiosity shows an increased relevance in creating an index for the 3 variables (0.880). However, further studies could reconstruct the variables related to the outward component of religiosity, for better statistical significance. Other suggestion for future research would be to use a regression model, as it could prove useful in explaining more complex statistical models.

In future research, like in the objective proposed in the STISOC report (2010), I would aim, at the level of a representative sample, to introduce socio-demographic variables that could influence the correlation between belief in the supernatural and religiosity, variables such as gender, age and level of education, but also a variable such as income.

Conclusion

Among the promptest correlations obtained in this study, the correlation between astrology and horoscope is noticeable. Even in the absence of an operationalization of these two old schools of thought, it is quite visible that, at least among the established sample, individuals explain their confidence in astrology somehow by trusting the horoscope. Further studies may be concerned with the possible existence of differences between the two. Although not the first time, this study also observed a positive and significant correlation between trust in astrology and trust in astronomy, which raises serious problems regarding the understanding of the two fields. The statistical correlations proved to be much more obvious when confidence in medicine was involved, this being visible also in its relationship with the level of religiosity, where negative relationships were obtained with all five established statements. Although such correlations with the "strong sciences" have proven to be significant, adjacent studies are needed to further involve the statistical relationships involving trust in astrology, along with its eventual operationalization. Thus, this study did not capture any overwhelming statistical relationship between trust in astrology and claims about religiosity, but when medicine took the place of astrology, the correlations (all negative) became much more visible.

The fact that not all correlations involving astrology are statistically significant shows the need for additional research on the relationships described in this study, since all correlations involving sample confidence in medicine are statistically significant at $p < 0.01$. Thus, a possible assumption of this fact is given by the fact that the notion of "medicine" did not require further explanations among the sampled population, while the notion of "astrology" could be operationalized in certain more precise indicators to measure this confidence.

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Annexe

Table 3. Descriptive Statistics for the variables used in this study (N=512; Minimum = 1; Maximum = 5)

Name of Variable	Mean	Median	Standard Deviation
1. Horoscope	2.05	2	1.150
2. Astrology	2.65	3	1.242
3. Medicine	3.71	4	1.077
4. Math	3.90	4	1.243
5. Astronomy	3.28	3	1.173
6. I trust that God is arranging things in my favor.	3.24	3	1.469
7. I always go to church when I have the opportunity.	2.19	**1**	1.480
8. It is impossible for me to imagine life without God.	3.05	3	1.630
9. Holidays bring me closer to my loved ones.	3.64	**4**	1.346
10. Those who depart from God, scarcely find their happiness.	2.38	2	1.438