

## **Religious and conspiracist? An analysis of the relationship between the dimensions of individual religiosity and belief in a big pharma conspiracy theory**

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### **Abstract**

In the increasing scholars' attention to factors associated with conspiracy beliefs, religiosity has been under-investigated, at least in empirical research. This work aims to address the issue by analysing to what extent and in which forms individual religiosity is associated with conspiracy beliefs. Religion and conspiracy theories could show both similarities and dissimilarities. First, as alternative religiosity and conspiracy theories tend to spread knowledge stigmatized by the authorities, we expect that alternative religious beliefs are positively associated with conspiracy beliefs. Second, as religion and conspiracy theories explain events with the agency of invisible forces and detect patterns in nature, also conventional religious beliefs are supposed to be positively associated with conspiracy beliefs. Third, church attendance is hypothesized to discourage conspiracy beliefs, as exposure to religious authorities could deter the adhesion to unofficial

narratives. By employing data coming from the Italian joint edition of the European Values Study-World Values Survey 2018, the article tests the hypotheses by analysing the association between the multiple dimensions of individual religiosity and belief in a conspiracy theory on pharmaceutical companies. Results show that, after controlling for confidence in political and religious institutions and attitudes towards science, only alternative religious beliefs, here measured with belief in the reincarnation, are positively associated with belief in the big pharma conspiracy theory. Empirical evidence suggests taking caution when looking at similarities between conventional religiosity and conspiracy beliefs.

**Keywords:** conspiracy beliefs; religiosity; alternative religiosity; big pharma; European Values Study; World Value Survey; Italy

## **Introduction**

Conspiracy theories have been gaining more and more room within the public opinion debate. Although previous research found that the presence of conspiracy theories in letters to US newspapers remained somewhat stable from 1890 to 2000 (Uscinski and Parent 2014) and that there is no evidence toward a higher credulity among the public in recent times (Garrett 2011), we cannot ignore the emergence of some elements which recently contributed to the circulation of such ideas. Especially, the diffusion of web communication allowed the spreading of rumouring through the public (Garrett 2011) and the intense use of social media has exposed individuals to a higher number of unofficial news. The debateful arena of the social media, where authorities are often not able to impose their voice, can indeed lead to more ambiguity in the news, which reflects in providing more voice to conspiracy theories (Edy and Risley-Baird 2016). Moreover, even though it was argued that social media create echo-chambers and filter-bubbles, even in these social environments individuals are overall exposed to cross-cutting positions and information (Bakshy, Messing, and Adamic 2015; Vaccari et al. 2016); thus, also people not believing in conspiracy theories are likely to be exposed to them.

The salience of conspiracy theories in the public debate led scholars from several disciplines, like history, philosophy, political science, psychology, and sociology to increase their attention toward them. In this respect, social sciences have mostly investigated individuals' conspiracy beliefs by analysing their antecedents and

consequences. For what concerns the latter, conspiracy beliefs were found to impact on health (Jolley and Douglas 2014a), social (van der Linden 2015), and political (Jolley and Douglas 2014b; Mancosu, Ladini, and Vassallo 2021) behaviors.

As conspiracism – the tendency to believe in conspiracy theories - is consequential on such a large set of behaviors, researchers need first to have a clear understanding on the antecedents of conspiracism and on those factors associated with it. In the last decade, a growing body of empirical literature indeed aimed to analyse who are the conspiracists. Studies in social psychology found that belief in conspiracy theories is associated with psychopathologies such as schizotypy and paranoid ideation (Darwin, Neave, and Holmes 2011; Barron et al. 2014), while socio-political research focused on socio-demographic and political characteristics. As argued by Uscinski and Parents, conspiracy theories are “for outsiders” (2014, 103). Broad empirical evidence shows a negative relationship between educational level and conspiracy beliefs (Van Prooijen, Krouwel, and Pollet 2015; Mancosu, Vassallo, and Vezzoni 2017; Van Prooijen 2017), that is partially explained by the higher analytical thinking and feeling of control among the high-educated individuals (Van Prooijen 2017). Others also found a negative relationship between the level of income and belief in conspiracy theories (Uscinski and Parent 2014; Freeman and Bentall 2017). For what concerns political attitudes, higher levels of conspiracism are associated with anti-elitist and Manichean attitudes (Castanho-Silva, Vegetti, and Littvay 2017) and lower institutional trust (Einstein and Glick 2015). In

relation to political ideologies, in the US no difference in conspiracy beliefs was detected between left- and right-wing voters (Oliver and Wood 2014a), while conspiracy beliefs are more spread among politically extreme individuals in the Netherlands (Van Prooijen, Krouwel, and Pollet 2015) and among right-wing and not located ones in Italy (Mancosu, Vassallo, and Vezzoni 2017).

However, little is known about the relationship between religiosity and conspiracy beliefs, although the concepts present both common traits and dissimilarities. According to Michael Barkun (2003), all conspiracy theories share the common ideation that nothing happens by accident, nothing is as it seems, and everything is connected. This ideation tends to share with religiosity the scope to provide explanations of world events with the agency of unseen forces or actors (Kelley 2018). Notwithstanding, institutional religion tends to deter unofficial explanations of events, like the ones promoted by conspiracy theories. In light of these considerations, how religiosity is associated with conspiracy beliefs? By employing survey data coming from the Italian joint edition of the European Values Study-World Values Survey 2018, this contribution aims to answer this broad question by analysing the relationship between individual religiosity and belief in a conspiracy theory concerning the big pharmaceutical groups. We will consider the multidimensionality of the concept of religiosity (Glock and Stark 1965; Cornwall et al. 1986) to empirically test how different dimensions of religiosity can be associated with belief in the big pharma conspiracy theory. Also, we will analyse to what extent the

possible relationships between the dimensions of religiosity and conspiracy beliefs are explained by other factors like interpersonal and institutional trust and attitudes toward science.

By employing data coming from a high-quality probabilistic sample representative of the Italian population aged 18 and more, this study also aims to overcome one of the methodological issues in the empirical research on conspiracy beliefs, that is, the use of low-cost convenience samples, widespread especially in psychological research (Douglas et al. 2019).

Results show that the associations of both belief in God and church attendance with belief in the big pharma conspiracy theory are explained by attitudes towards science and institutional trust. Only alternative forms of religious belief, here measured with belief in reincarnation, show a genuine positive association with belief in the big pharma conspiracy theory. This evidence suggests caution when arguing about similarities between individual religiosity and conspiracy beliefs, and to always consider which dimensions of religiosity are tapped by the indicators when analysing the association between the two concepts.

### **Religiosity and belief in conspiracy theories**

During the last decade, various scholars have debated the possible connections between religion and conspiracy theories and, accordingly, between individual religiosity

and belief in conspiracy theories. These possible connections were analysed through the adoption of multiple perspectives, by looking at conspiracism as religion, conspiracies in religion, and conspiracies about religion (Robertson 2017; Robertson, Aspren, and Dyrendal 2018). The approach which looks at conspiracism as religion aims to highlight analogies and differences between the two concepts by examining, for instance, whether a conspiracist worldview shares similar traits with a religious worldview. When analysing conspiracies in religion, scholars identify those religions characterized by a conspiracist narrative, such as the millennialist narrative in the New Age spirituality. Conspiracies about religion instead refer to the demonization of certain religions with the argumentation that they are part of a big conspiracy, like the anti-Jewish conspiracy theory about the Protocols of the Elders of Zion.

When studying the relationship between individual religiosity and conspiracy beliefs we should refer to the theoretical perspective which analyses conspiracism as religion, by looking at similarities and dissimilarities.

The first tentative which links conspiracy theories and religion come from Ward and Voas (2011), who analyse a web movement characterized by belief in conspiracy theories and New Age spirituality. By exploring the traits of what they define as ‘conspirituality’ (the combination of conspiracism and alternative spirituality), it is argued that both the systems of beliefs are based on a common ground: the attribution of agency to hidden forces. Although the authors point out their scepticism about the

intersection between conspiracy beliefs and New Age spirituality – as the former are more spread among men and conservatives and the latter is more liberal- and female-oriented - , others reinforce their common traits by overcoming that apparent ambiguity. By observing that among the public both conspiracy beliefs and alternative forms of spirituality are instead similarly distributed by gender and left-right position, Asprem and Dyrendal (2015) argue that both the concepts are rooted in a similar cultic milieu, described as a “cultural underground region of the society” that “includes all deviant belief systems and their associated practices” (Campbell 1972, 122). Indeed, both the systems of beliefs can be referred to as deviant since on the one side conspiracy theories are drivers of a “stigmatized knowledge”, where the stigmatization comes from official authorities<sup>1</sup> (Barkun 2003), and on the other side, alternative spirituality looks for a paradigm shift in human consciousness which is not foreseen by dominant religions. Furthermore, in opposition to Ward and Voas (2011), Asprem and Dyrendal (2015) argue that the connection between conspiracy theories and alternative spirituality is not a recent phenomenon but it is historically rooted within the esotericism (see also Dyrendal, Asprem, and Robertson 2018). The principles of Barkun’s “stigmatized knowledge” share indeed several elements with the esoteric currents, especially with occultism. Thence, conspiracy theories could be interpreted in terms of esoteric discourse based on a dynamic of secrecy and revelation aimed at seeking for a higher knowledge (Von Stuckrad 2005;

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<sup>1</sup> This is especially true for Western countries.



Dyrendal, Aspren, and Robertson 2018). According to the esoteric perspective, “the object of conspiracist revelation is hidden power and hidden agency” (Dyrendal, Aspren, and Robertson 2018, 40) which are crucial elements in a conspiracist ideation.

Similarities and dissimilarities between conspiracy theories and religion can emerge even outside the borders of the alternative spirituality when examining more traditional forms of religiosity (Keeley 2018, Oliver and Wood 2014a). Looking at religious beliefs, similar to conspiracy theories they can provide explanation of events by highlighting the role of not visible forces (Keeley 2018). Keeley’s theorization identifies analogies between conspiracy theories and the providence, that is, God’s plan to provide order to the world. As God is expected to act in mundane events, in the framework of conspiracy theories few actors are supposed to determine world events. Keeley (2018) also identified two apparent dissimilarities between traditional religious belief and conspiracy theories: the singularity of the monotheistic God against the plurality of actors in conspiracy theories, and the generalized pursuit for good in religion against the nefarious nature of conspiracies. However, the author argues that those dissimilarities can be easily overcome, on the one hand by outlining that even monotheistic Gods often act through other agents, like the prophets and the angels, and on the other side by pointing out that conspiracies are not nefarious *per se*, as they also have positive goals. In general, the common ground between religion and conspiracy theories seems to overcome their divergent elements. Moreover, others argue that conspiracy theories play the role of

secular religions in the worldview they provide, that allows giving order to the randomness of the world - for instance, by attributing the cause of a natural catastrophe either to a vengeful God or to a conspiracy (Wood and Douglas 2018). According to the theory of compensatory control (Kay et al. 2010; Rutjens and Kay 2017), indeed, having a system of religious beliefs can allow coping with a lack of control in certain situations. and conspiracy theories could be intended as useful tools in perceiving higher control. In this respect, there are psychological antecedents to both the religious and the conspiratorial system of beliefs, that could be referred to as patternicity and agenticity, namely, “a general human tendency towards detecting patterns and agency in nature” (Wood and Douglas 2018).

While belief in conspiracy theories seems to share various elements both to alternative spirituality and conventional religious beliefs, more differences emerge when considering the forms of institutional religiosity.<sup>2</sup> First, institutional religiosity tends to reject those marginal and unconventional narratives, like esoteric and conspiratorial narratives, not supported by the authorities (Dyrendal, Aspren, and Robertson 2018). Among those authorities, we can also recognize those churchmen who lead religious communities in which church attenders are embedded. Second, among the forms of institutional religiosity, the religious practice includes the communitarian element which

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<sup>2</sup> As argued by Nicolet and Tresch (2009, 81), the institutional dimension of religiosity refers to both “the extent to which people are *involved* in the church” and their “subjective *assessment* of established churches”.

is less salient in conspiracy beliefs (Wood and Douglas 2018). While church attenders are interconnected within the religious community, believers in conspiracy theories are not used to belong to the same community (Wood and Douglas 2018), and they are also less prone to pro-social behavior than non-believers (van der Linden 2015).<sup>3</sup>

Although several theoretical arguments have been employed to explain the possible relationship between religion and conspiracy theories, by now that relationship has remained under-investigated in the empirical research. Some empirical works analysing the determinants of conspiracy beliefs included measures of individual religiosity as control variables, while others analyse the relationship between individual religiosity and conspiracy beliefs without properly distinguishing among the dimensions of religiosity, except for a single study (Jasinskaja-Lahti and Jetten 2019). Among the existent empirical works, findings lead to inconclusive evidence. In the US, Oliver and Wood (2014a) show that belief in supernatural forces (angels and devil) is not associated with belief in five out of seven conspiracy theories, while it is negatively associated with belief in the remaining two conspiracy theories contrarily to the theoretical expectation. Analogously, in Australia belief in God is not associated with belief in conspiracy theories, but it moderates the relationship between religious worldview and belief in conspiracy theories (Jasinskaja-Lahti and Jetten 2019): among believers in God, the importance of having a

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<sup>3</sup> Experimental evidence show that individuals exposed to a conspiracy theory about global warming are less likely to declare signing in the future, donating and volunteering for a charitable organization (van der Linden 2015).

religious worldview is positively related to belief in conspiracy theories, while the same does not apply to non-believers. Finally, the only empirical evidence coming from the Italian context shows that the importance of God in people's life is positively associated with their belief in conspiracy theories (Mancosu, Vassallo, and Vezzoni 2017), but no other measures of religiosity were included in the analyses.

### **Hypotheses**

The theoretical background has outlined that religion and conspiracy theories share various elements, but they can also diverge in some respects. However, most of the existent literature on the topic examined the features of the two concepts without explicit reference to individual attitudes, behaviors, and beliefs. This contribution aims instead at testing whether the similarities and discrepancies between the two concepts of religion and conspiracy theories also reflect in the relationship between individual religiosity and belief in conspiracy theories.

Because of the multidimensionality of individual religiosity, according to our expectations different dimensions of religiosity could have a different relationship with belief in conspiracy theories. We will focus on those dimensions which are theoretically connected with belief in conspiracy theories. Because of the complexity of establishing a causal relationship between individual religiosity and belief in conspiracy theories, all the

theoretical expectations and, accordingly, the results of the analysis are presented in terms of associations between concepts (variables).

Notwithstanding, in this study, we do not focus on belief in several conspiracy theories (Goertzel 1994; Oliver and Wood 2014a; Mancosu, Vassallo, and Vezzoni 2017; Mancosu, Ladini, and Vassallo 2021) or on the general conspiratorial ideation (Brotherton, French, and Pickering 2013; Uscinski and Parent 2014; Lantian et al. 2016; Uscinski, Klofstad, and Atkinson 2016), but on believing in a single conspiracy theory on pharmaceutical companies. The ‘Big pharma’ conspiracy theory shares several common elements with other conspiracy theories, but it even constitutes a specific genre of conspiratorial narratives (Blaskiewicz 2013). In this respect, individuals who believe in such conspiracy theories tend not to have a negative reputation of the pharmaceutical industry *per se*, but of their personal image of the pharmaceutical companies. As Blaskiewicz (2013, 259) argues, in conspiracy theories “‘Big Pharma’ is shorthand for an abstract entity comprised of corporations, regulators, NGOs, politicians, and often physicians, all with a finger in the trillion-dollar prescription pharmaceutical pie”. However, previous research suggested that belief in a certain conspiracy theory is strongly correlated to belief in another conspiracy theory even when they are reciprocally inconsistent (Goertzel 1994; Swami et al. 2011; Wood, Douglas, and Sutton 2012). In other words, believers in conspiracy theories tend to have a monological belief system used to explain any kind of phenomenon (Goertzel 1994).

As argued in the previous section, alternative religiosity (Stolz 2009) and conspiracy theories share various elements, since they are supposed to be rooted in the same cultic milieu and have in common the adherence to an alternative system of beliefs. Therefore, the first hypothesis is as follows:

H1: Alternative religious beliefs are positively associated with belief in the big pharma conspiracy theory.

Similarly, we have pointed out that even conventional religious beliefs (Orenstein 2002; Glendinning 2006) and conspiracy theories both aim to explain mundane events with the agency of invisible forces and to provide order to the randomness of the world. In addition, we have argued that the discrepancies which emerge in the comparison between religious belief and conspiracy theories are neglectable and can be outnumbered by the similarities. Thence, the formulation of the second hypothesis is the following:

H2: Conventional religious beliefs are positively associated with belief in the big pharma conspiracy theory.

Finally, as explained in the theoretical background, previous literature pointed out that more institutional forms of religiosity promote pro-social behaviors, contrarily from belief in conspiracy theories. Moreover, individuals who adhere to institutional forms of religiosity are more likely to be exposed to authorities, especially priests, who tend to reject that “stigmatized knowledge” which is spread by conspiracy theories. Accordingly, we aim to empirically test the following third theoretical expectation:

H3: Institutional forms of religiosity are negatively associated with belief in the big pharma conspiracy theory.

One could argue that various confounders could attenuate the relationship between the different dimensions of religiosity and belief in the big pharma conspiracy theory. Moreover, the dimensions of individual religiosity are not independent, especially conventional religious beliefs and institutional forms of religiosity. Our hypotheses should be read in terms of the genuine association between the dimensions of religiosity and belief in conspiracy theories net of all the confounders which can modify the nature of the association. The possible confounders will be introduced in the Operationalization section.

### **Italy as a case study**

When studying the association between religiosity and other values and attitudes the role of the religious context cannot be neglected (Siegers 2019). To test our working hypotheses, we focus on the Italian context. Although the process of secularization is ongoing (Vezzoni and Biolcati-Rinaldi 2015), Italy has a strong Catholic tradition and the large majority of the Italian population declares to be Catholic – 74%, according to the Italian edition of the European Values Study-World Values Survey 2018. The same data also report that Catholics represent 96% of those declaring to belong to a religion. At the contextual level, the presence in the country of the highest authority of the Catholic

Church, the Pope, is influential both among the public and especially among the clergy. Pope Francis never endorsed conspiracy theories and, on the contrary, is one of the leading voices in the fight against global warming<sup>4</sup>, which is the object of widespread conspiracy theories (van der Linden 2015). Furthermore, the Catholic religion does not explicitly endorse conspiratorial narratives, unlike other religious denominations, such as the Evangelical Protestantism which often supports millennial narratives (Sturm and Albrecht 2020).

### **Data**

To test the hypotheses, we employ data coming from the Italian edition of the European Values Study-World Values Survey 2018. The survey adopted a three-domain and three-stage (municipality, electoral section, individual) probabilistic sampling design. The first sampling domain is represented by the six most populated Italian cities (with more than 500,000 residents aged 18 and more), the second domain is made of all the other provincial capital cities, while the remaining domain is constituted by the other municipalities. In the first sampling stage, all the six most populated cities (self-representative) were selected, while both provincial capital cities and the other municipalities were randomly extracted by means of a stratified probabilistic sampling design whose stratification variables were the geographical area (the four macro-regional

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<sup>4</sup> In particular, his encyclical ‘Laudato si’ addressed that issue.



areas for the provincial capital cities, the regions for the other municipalities) and the size of the municipalities. Within every municipality selected, electoral sections were selected by simple random sampling and, accordingly, individuals were extracted from the electoral lists through a systematic sampling design. The final sample is made of 2,277 Italian citizens aged 18 and over resident in 199 Italian municipalities within private households. These individuals were CAPI (Computer Assisted Personal Interview) interviewed between September 24, 2018, and January 30, 2019. The interviews lasted 53 minutes on average.

### **Operationalization**

#### *Belief in (Big pharma) conspiracy theories*

In this study belief in conspiracy theories is measured by a single item which assesses the degree of belief in the big pharma conspiracy theory among the Italian respondents. The wording of the survey item is as follows: ‘Pharmaceutical companies hinder the development of effective medications to heal serious diseases because they fear losing profits.’<sup>5</sup> The original five answer categories ranged from strongly agree (value 1) to strongly disagree (value 5). In the empirical analysis the semantic polarity of

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<sup>5</sup> The item is not included within the common questionnaire of the European Values Study-World Values Survey 2018, as it is one of the additional items included only in the Italian questionnaire.

the item is reversed on a 1-5 scale where the value 1 indicates the lowest degree of belief in the conspiracy theory against the pharmaceutical companies and the value 5 the highest degree of belief. All the empirical analyses employ the measure of belief in the big pharma conspiracy theory as the dependent variable. The item is part of a three-items battery, where the other two measure attitudes toward vaccines. Those items are not analysed in this work since they do not tap into the concept of belief in conspiracy theories as the item on pharmaceutical companies does. Indeed, the wording of the item contains the conspiratorial element of “hid(ing) vital secrets or illicitly caus(ing) widespread harm” by means of a “small number of actors” (Uscinski, Klofstad, and Atkinson 2016, 58), namely, the pharmaceutical companies.

### *Religiosity*

Data coming from the European Values Study and the World Values Survey projects are particularly useful to distinguish among different dimensions of individual religiosity, since they include several variables concerning the religious sphere. To test our hypotheses, we aim at distinguishing between alternative religious beliefs, conventional religious beliefs, and institutional forms of religiosity. Although other dimensions could be both theoretically and empirically distinguished, we prefer to

analyse only those dimensions whose relationships with belief in conspiracy theories are theoretically grounded.<sup>6</sup>

To measure alternative religious beliefs, we consider a single dichotomous item asking respondents whether they believe in reincarnation. Christian religion does not admit belief in reincarnation, contrarily from non-Christian religions like Hinduism, Buddhism, and Sikhism. Nonetheless, in Western countries the number of people affiliated to those religions is scant, while the proportion of people who believe in reincarnation is far higher (Siegers 2013). For instance, in the Italian edition of European Values Study-World Values Survey 2018 only 18 respondents declared to be Hinduist or Buddhist (0.8% of the whole sample representative of the Italian citizens aged 18 and more), while 441 individuals declared to believe in reincarnation (19% of the whole sample).<sup>7</sup> Previous research suggests to consider the item as an indicator of alternative religious beliefs (Stolz 2009), New Age orientation (Granqvist and Hagekull 2001; Houtman and Mascini 2002), holistic beliefs (Siegers 2013) and post-Christian religiosity when associated with the absence of God's belief (Houtman and Aupers 2007). In general,

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<sup>6</sup> Further approaches have been employed to study individual religiosity, e. g. by distinguishing between intrinsic and extrinsic religiosity (Allport and Ross 1967). Nonetheless, theoretical expectations proposed in this work do not pertain to those dimensions of religiosity. Furthermore, data here employed does not allow providing empirical measures of those dimensions.

<sup>7</sup> Although it was argued that respondents could confuse reincarnation with resurrection when answering a survey, empirical evidence tends to exclude the possible ambiguity (Siegers 2013).

the item intends to measure non-conventional religious beliefs. In the analysis, we distinguish between individuals who declare to believe in reincarnation and the others who do not believe in reincarnation or do not know.

Conventional religious belief is measured by four items of the same battery asking whether the respondent believes in God, hell, heaven, and life after death. All those objects of belief characterize the Christian religions and, accordingly, the Catholic religion which is largely prevalent in Italy. In the empirical analysis, we included an additive index of the four items rescaled on a 0-1 scale (Cronbach's alpha = 0.82).<sup>8</sup>

Institutional religiosity is measured by attendance to religious services. Since in the theoretical framework we highlight the communitarian dimension of institutional religiosity, church attendance is expected to be the most suitable measure of such form of religiosity, as "it exposes the laity to the messages from the clergy, and it fosters social interaction and group formation" (Vezzoni and Biolcati Rinaldi 2015, 104). Church attendance, originally measured in 7 categories (from 'more than once a week' to 'never/practically never') is here categorized in regular practicing (at least once a week), irregular practicing (at least once a year), and non-practicing (less often, never/practically never).

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<sup>8</sup> The correlation between conventional religious beliefs and belief in reincarnation is equal to 0.22.

### *Control variables and confounders*

The analysis of the association between individual religiosity and belief in the big pharma conspiracy theory needs to account for the several control variables and confounders which can impact on that relationship. Among socio-demographics we include as control variables gender, age in 6 categories (18-24, 25-34, 35-44, 45-54, 55-64, 65 and more), and level of education (3 categories: low, which refers to lower secondary education at most; medium, which corresponds to upper secondary education; high, which means tertiary education).

Previous research showed that church attenders have a higher level of interpersonal trust (Bahr and Martin 1983), which in turn proves to be negatively associated with belief in conspiracy theories (Goertzel 1994; Leman and Cinnirella 2013) Therefore, we also include as control variable a measure of generalized trust, that is the dichotomous answer to the following standard EVS question: ‘Do you think most people can be trusted, or that you cannot be too careful in dealing with strangers?’. The two possible answers are ‘cannot be too careful’ (value 0) and ‘most people can be trusted’ (value 1).

Furthermore, distrust in institutions is conceptually close to belief in conspiracy theories (Einstein and Glick 2015). In the case of belief in the big pharma conspiracy theory, individuals who believe that few pharmaceutical companies secretly act against the public good are supposed to have a lower trust in those institutions in charge of the public management, like political institutions, than individuals not believing in the

conspiracy theory. Thence, to test the genuine relationship between religiosity and belief in the big pharma conspiracy theory, we include in our models as possible confounder a measure of trust in political institutions (see Jasinskaja-Lahti and Jetten 2019). For the aim of this study, we do not distinguish between the various dimensions of trust in public institutions; thus, we consider a single additive index of political trust (Marien 2011; Marien and Hooghe 2011). The scale of political trust includes the items on confidence in political parties, parliament, legal system, and civil service, all of them belonging to the same battery and originally measured on a 4-point scale (1 – a great deal, 2 – quite a lot, 3 – not very much, 4 – not at all). To compute the scale, we reversed the semantic polarity of the items to build a final index measured on a 0-3 scale where 0 indicates the minimum level of confidence and 3 the maximum level (Cronbach's  $\alpha = 0.77$ ). Separately, we also control for confidence in church. Like the index of political trust, in the analysis the item was reversed on a 0-3 scale where 0 means not at all confidence and 3 a great deal of confidence.

Given the specific nature of the big pharma conspiracy item, which is closely related to antiscientific ideation, attitudes toward science could explain the relationship between all the dimensions of individual religiosity and belief in the big pharma conspiracy theory. Indeed, previous research showed that higher religious people are more sceptical toward science (Chan 2018). In turn, negative attitudes toward science should be associated with higher belief in the big pharma conspiracy theory. To measure attitudes toward science,

by following the existent literature we distinguish between two dimensions of belief in the promise of science and technology and reservations concerning science and technology (Nisbet et al. 2002). The first dimension is measured by means of the additive index of the two items ‘Science and technology are making our lives healthier, easier and more comfortable’ and ‘Because of science and technology, there will be more opportunities for the next generations’ (Cronbach’s alpha = 0.83). The second dimension is measured by the additive index of the other two items ‘One of the bad effects of science is that it breaks down people's ideas of right and wrong’ and ‘We depend too much on science and not enough on faith’ (Cronbach’s alpha = 0.69).<sup>9</sup> All the items belong to the same battery and are originally measured on a 1-10 scale where 1 means “totally disagree” and 10 means “totally agree”. Thence, both the indexes of attitudes toward science are measured on a 1-10 scale, where higher values for the index of belief in the promise of science and technology indicate positive attitudes toward science, while higher values for

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<sup>9</sup> An additional item is included in the battery, whose wording is “It is not important for me to know about science in my daily life”. Nonetheless, although previous research argues that the item is an indicator of reservations concerning science and technology (Nisbet et al. 2002), a principal component analysis of the five items has shown that, unlike the other items, less than 50% (43%) of the variability of that item was explained by the principal component analysis model (see Table S1 in the Online Supplementary Materials). Therefore, we decide not to include it in the index of reservations concerning science and technology (see in Table S2 in the Online Supplementary Materials the principal component analysis of the battery without that item).

the index of reservations concerning science and technology indicate negative attitudes toward science.<sup>10</sup>

## **Methods**

To test research hypotheses, we use linear regression models where the dependent variable is the five-point scale item measuring belief in the big pharma conspiracy theory.<sup>11</sup> Model 1 includes as independent variables only the measures of religious beliefs, while church attendance is added in Model 2. Socio-demographics are introduced as control variables in Model 3, while the measures of interpersonal and institutional trust are added in the regression analysis respectively in Model 4 and 5. Finally, attitudes towards the science are inserted in Model 6.

## **Results**

Previous research has shown that belief in conspiracy theories is not marginal among the public. In the US, national representative surveys show that half of the

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<sup>10</sup> In the Appendix, Table A1 shows the descriptive statistics of the independent and control variables.

<sup>11</sup> Since the dependent variable was measured on a five-point Likert scale, we consider it as a quasi-cardinal variable and, accordingly, we employ linear regression models to test the hypothesis (Norman 2010). Nonetheless, all the models have been also tested by accounting for belief in the big-pharma conspiracy theory as a dichotomous variable (yes: strongly agree, agree; no: neither agree nor disagree, disagree, strongly disagree). As shown in Table A2 in the Appendix, results are largely consistent.



population declare to believe at least in one of the most widespread conspiracy theories (Oliver and Wood 2014a). Analogously, in December 2016 in Italy about half of the respondents to an opt-in online survey (47%) stated to believe at least in one out of four conspiracy theories on moon landings, chemical trials, vaccines and big pharmaceutical groups (Mancosu, Vassallo, and Vezzoni 2017). In particular, the conspiracy theory on big pharmaceutical groups, held responsible for obstructing a method to cure neurodegenerative diseases (the Stamina method invented by Davide Vannoni), proved to be the conspiracy theory with the highest share of believers (38% of respondents provided an answer between 6 and 10 on a 0-10 scale where 0 meant ‘not plausible at all’ and 10 meant ‘completely plausible’). In October 2016, in a previous wave of the same opt-in online panel survey, the percentage of respondents who declared to believe in that conspiracy theory was even equal to 49%. As Figure 1 shows, survey data from the Italian edition of the European Values Study-World Values Survey 2018 provide similar results. On a probabilistic sample representative of the Italian population half of the respondents providing a valid answer<sup>12</sup> think that pharmaceutical groups hinder the development of effective medications to heal serious diseases (21% totally agree, 29% agree). Moreover, survey data show that among respondents who gave a valid answer only 18% do not

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<sup>12</sup> 8% of the sample answered do not know or did not answer (respectively, 7% and 1% of the whole sample).

believe in the big pharma conspiracy theory, since the remaining 32% neither agree nor disagree with the statement.

[FIGURE 1 ABOUT HERE]

To answer the research questions, Table 1 shows the regression models where the item on belief in the big pharma conspiracy theory is the dependent variable and the measures of religiosity represent the main independent variables. To correctly interpret the results, we have to point out that lower values of the dependent variable indicate a lower degree of belief in the conspiracy theory. In line with the expectations, Model 1, which includes only the measures of religious belief, shows that the average degree of belief in the conspiracy theory is higher among individuals who believe in reincarnation (0.34 higher than non-believers). Instead, conventional religious beliefs prove not to be associated with belief in the big pharma conspiracy theory. After adding church attendance in Model 2, the relationship between religious beliefs and conspiracy beliefs does not substantially vary. Moreover, Model 2 shows that regular church attenders on average are less likely to believe in the big pharma conspiracy theory (0.14 lower than non-attenders, 0.18 lower than irregular attenders). Preliminary results thus provide empirical evidence toward H1 and H3 and no evidence toward H2. Notwithstanding, the religiosity variables included in the model explain a small portion of the variance of the item on conspiracy beliefs, equal to 2.3%.

The association between the variables of religiosity and the item on big pharma conspiracy theories does not substantially change after adding socio-demographic variables (Model 3). Consistent with previous research (Uscinski and Parent, 2014; Mancosu, Vassallo, and Vezzoni 2017), net of the other variables higher educated people are less likely to believe in the big pharma conspiracy theory than lower educated ones. However, unlike Mancosu and colleagues (2017) who analyse the determinants of beliefs in several conspiracy theories in Italy, results show no gender differences, as well as between individuals with higher secondary education and lower levels of education. For what concerns age, respondents aged between 18 and 24 show the lowest level of belief in the big pharma conspiracy theory.

[TABLE 1 ABOUT HERE]

Model 4 shows that the relationships between the measures of individual religiosity and belief in the big pharma conspiracy theory remain unaltered after controlling for generalized trust.

Nonetheless, the introduction of measures of institutional trust (the index of confidence in political institutions and the item of confidence in the church) in Model 5 substantially modifies the relationship between church attendance and belief in the big pharma conspiracy theory. As expected, church attenders show a higher trust in political and religious authorities, which, in turn, are negatively associated with conspiracy beliefs.

After accounting for institutional trust, the difference in belief in the big pharma conspiracy theory between regular church attenders and non-churchgoers becomes not statistically significant. Thus, Model 5 provides some empirical evidence against H3. Nonetheless, if we change the reference category of the measure of church attendance, empirical analysis suggests that the difference between regular and irregular church attenders remains statistically significant at 0.05 level.<sup>13</sup> Instead, belief in reincarnation is still positively associated with belief in the big pharma conspiracy theory, and the relationship only slightly decreases after controlling for confidence in political institutions and in the church (mean difference between believers and non-believers in reincarnation moves from 0.34 to 0.31). When looking at the measures of trust, net of all the other independent variables trust in political institutions is strongly associated with belief in the big pharma conspiracy theory: among individuals with the lowest level of trust in political institutions the mean of the item of conspiracy belief is 0.80 higher than among individuals with the highest level of trust in political institutions. On the contrary, trust in the church is not significantly associated with belief in the big pharma conspiracy theory when controlling for all the other variables. The relevance of trust in explaining conspiracy belief also emerges when looking at the r-squared, which increases from 0.04 to 0.07 after adding the factors of generalized and institutional trust.

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<sup>13</sup> Results are available upon request.

Finally, we have argued that attitudes toward sciences could represent a further confounder of the association between religiosity and belief in conspiracy theories. Thus, the two indexes of belief in the promise of science and technology and reservations concerning science and technology are added in Model 6. As in Model 5, no significant differences are reported between regular church attenders and non-practicing, while the average of belief in the conspiracy theory is slightly higher (0.15) among irregular attenders when compared with regular ones. Moreover, the index of conventional religious beliefs is not associated with belief in the big pharma conspiracy theory. Net of socio-demographics, generalized and institutional trust and attitudes toward science, believers in reincarnation still show a substantially higher belief in the big pharma conspiracy theory than non-believers (average difference equal to 0.28). Therefore, empirical evidence explicitly supported only H3. Implications of this findings on the emerging literature on the connections between religion and conspiracy theories are discussed in the next concluding section.

### **Discussion and conclusions**

Ten years ago, Charlotte Ward and David Voas (2011) shed light on the emergence of a web movement they defined as conspirituality, which promoted beliefs in both an alternative spirituality and in conspiracy theories. According to them, the existence of such a movement was coherent with the common trait of conspiracy theories and

alternative spirituality to provide explanations of life and world events by means of what Michael Barkun (2003) defines as “stigmatized knowledge”, that is, knowledge generally not accepted by the official authorities. These considerations about the spreading of conspirituality made increase scholars’ attention on similarities and dissimilarities between religiosity and belief in conspiracy theories. Notwithstanding, little empirical research tested at the individual level Ward and Voas’ suggestion of a confluence between alternative religious beliefs and conspiracy believes. The present work has aimed to analyse that relationship with survey data, and moreover to analyse the associations between the different dimensions of individual religiosity and belief in a big pharma conspiracy theory, by distinguishing between alternative religious beliefs, conventional religious beliefs, and institutional forms of religiosity.

Results suggest taking caution when drawing general conclusions about the association between religiosity and belief in conspiracy theories. Indeed, the multiple dimensions of religiosity show differentiated associations with conspiracy belief. Traditional forms of religiosity, *per se*, are not related with belief in big pharma conspiracy theory. On the one hand, church attendance was expected to be negatively associated with belief in the conspiracy theory, because it should foster pro-social behavior and make expose individuals to religious authorities that are supposed to reject forms of stigmatized knowledge. On the other hand, conventional religious beliefs were thought to share with belief in conspiracy theories the agenticity and the patternicity.

Although at a first glance the evidence seems to confirm the expectations, the difference between regular church attenders and non-practicing people becomes no more significant when accounting for institutional trust (measured by confidence in political institutions and in the Church). However, irregular church attenders show a slightly higher belief in the big pharma conspiracy theory than regular attenders. Instead, conventional religious beliefs (in God, hell, heaven, life after death) are not even associated with belief in the big pharma conspiracy theory in the first regression model including only the two measures of religious belief. In light of our findings, most of the previous arguments which identify various similarities and dissimilarities between religiosity and belief in conspiracy theories need to be reconsidered by taking seriously into account those individual attitudes which can explain the association. However, data provide empirical evidence toward the existence of a genuine association between belief in the big pharma conspiracy theory and alternative religious beliefs, here measured with belief in reincarnation – which opposes to the dogmas of the Catholic religion, which is the prevalent religious affiliation in Italy.

Nonetheless, this work does not come without shortcomings. One could argue that some of the concepts and dimensions here analysed could suffer from poor measurement.

First, belief in conspiracy theories is measured by means of a single item, which refers to a specific conspiracy theory on pharmaceutical companies and not to general conspiratorial attitudes. In this respect, we have often specified that conclusions here

drawn should specifically refer to belief in the big pharma conspiracy theory. That conspiracy theory includes a relevant anti-elitist component, which is represented by the opposition toward the pharmaceutical companies. Unfortunately, the multi-purpose survey here employed does not contain specific measures of anti-elitist attitudes which could mediate the association between the dimensions of individual religiosity and the belief in the big pharma conspiracy theory; future research is welcomed to account for that factor, if available (Castanho-Silva, Vegetti, and Littvay 2017). Notwithstanding, as outlined in the Hypotheses section, belief in a certain conspiracy theory is highly correlated to belief in another conspiracy theory, as well depicted by Van der Linden (2015, 171) with the image of a “slippery-slope”. This means that, although we need to be cautious when inferring the results here provided to general conspiratorial attitudes, it is highly plausible that these results can be confirmed even when considering richer measurement of conspiracy beliefs. In addition, for the aim of the paper the use of a measure of conspiracy beliefs that pertains to a totally different sphere than the religious one could speak to the external validity of the generalization of the findings here provided to general conspiracy beliefs.<sup>14</sup>

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<sup>14</sup> Previous research which shows associations between attitudes and belief in conspiracy theories that refer to the same topic, for instance between anti-Israeli attitudes and belief in Anti-Jewish conspiracy theories (Golec de Zavala and Cichočka 2012; Swami 2012) and between health choices and conspiracy belief on medicine (Oliver and Wood 2014b) is more limited in its scope.



Second, also the measurement of individual religiosity could be considered poor in some respects. We measure alternative religious beliefs with the single measure of belief in reincarnation. Further evidence is needed with more accurate measurement of alternative religiosity. However, we have to point out that, among the multi-purpose high-quality social surveys, the European Values Study and the World Values Survey include in every round in the core questionnaire the largest range of variables on religiosity<sup>15</sup> and, different from several other social surveys (e.g. European Social Survey, Eurobarometer), they provide measures of alternative religious beliefs.

Third, although the research design implied the choice of one dependent and several independent variables, the nature of this study is correlational, as the theoretical arguments mostly refer to similarities and dissimilarities between religiosity and belief in conspiracy theories. It is beyond the scope of this work to assess whether religiosity could be considered an antecedent of conspiracy beliefs.

Finally, empirical analyses come from a single national context, Italy, which is characterized by a dominant Catholic religious affiliation and a lower level of secularization in comparison to several European countries. We should not theoretically expect different patterns when analysing the association between dimensions of

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<sup>15</sup> The survey contains even further variables on religiosity with respect to the one employed in this study. However, the decision was to include in the analyses only those indicators of dimensions of religiosity which are more theoretically related to belief in conspiracy theories.

individual religiosity and belief in big pharma conspiracy theory in contexts where Catholic religion is prevalent. Nonetheless, to test whether the dimensions of religiosity are differently associated with conspiracy beliefs in more secularized countries, as well as in countries characterized by other prevalent religious denominations and higher religious diversity (see Siegers 2019), future comparative projects are invited to collect data on both the several dimensions of religiosity and the measures of conspiracy beliefs.

Notwithstanding, even if referred to a single context, the adoption of a probabilistic high-quality sampling design for data collection allows drawing inference to the national population, different from the majority of empirical research on conspiracy beliefs that employs convenient samples (as highlighted in Douglas et al. 2019). Here, besides making inference to the Italian population on the relationship between individual religiosity and conspiracy belief, data even allows estimating the percentage of individuals who believe in a big pharma conspiracy theory among over 18 Italian citizens, that nearly reaches the half of the population.

The main implication of this article is to always take account of the different dimensions of religiosity tapped by indicators used in survey research when analysing the relationship between religiosity and conspiracy beliefs. In line with previous research, our results also suggest including, if available, measures of educational level, institutional trust, and attitudes toward science as control variables when analysing the possible consequences of belief in conspiracy theories (at least, on big pharma).

To conclude, by paraphrasing Wood and Douglas (2018) conspiracy theories seem not to be a surrogate of God, but they could be a surrogate of alternative religious beliefs. Only future research could provide additional evidence to reinforce or challenge the conclusions here drawn.

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### **Data**

The replication dataset is available at <http://thedata.harvard.edu/dvn/dv/ipsr-risp>

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## Tables and Figures

TABLE 1. Linear regression models with belief in the big pharma conspiracy theory as dependent variable. European Values Study-World Values Survey 2018 Italian data (N = 1,820). Unstandardized coefficients and standard errors in parentheses.

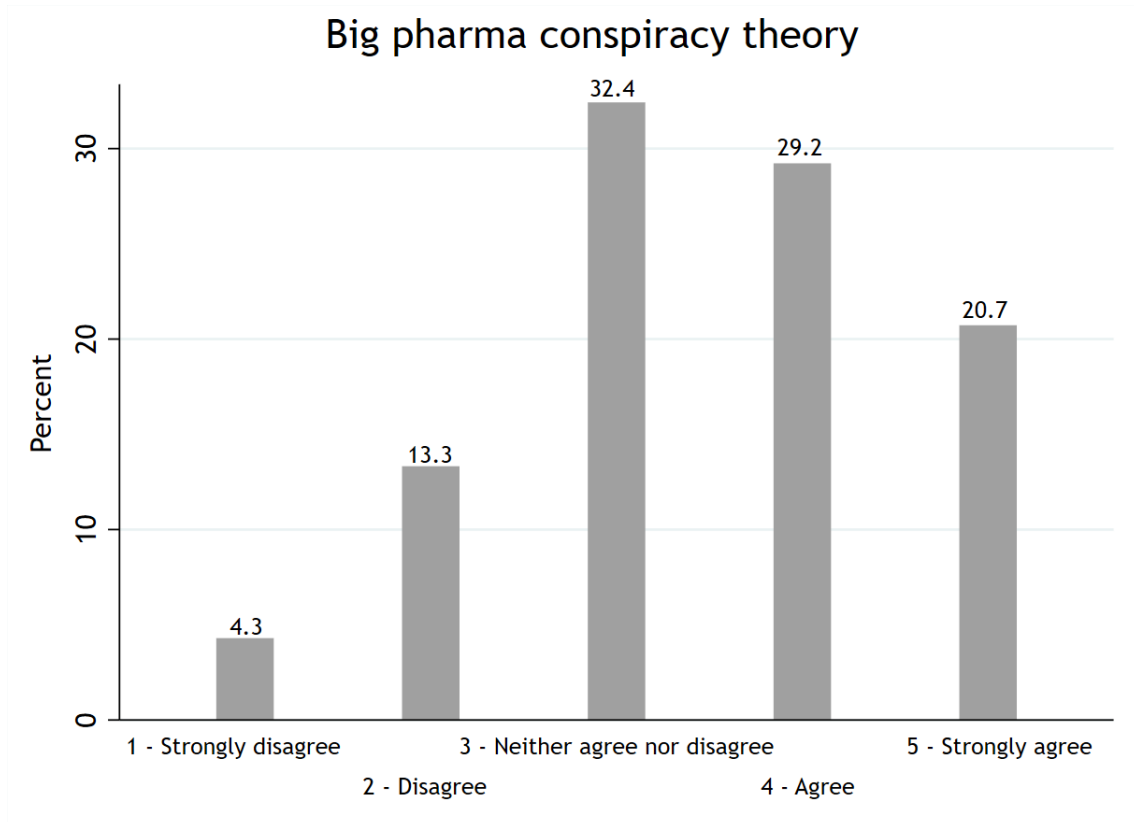
Independent variables	Categories/ Scale	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>RELIGIOSITY</b>							
Conventional religious beliefs	0-1	0.05 (0.07)	0.11 (0.08)	0.05 (0.08)	0.05 (0.08)	0.09 (0.08)	0.04 (0.08)
Alternative religious beliefs: Belief in reincarnation	Yes	0.34*** (0.06)	0.33*** (0.06)	0.34*** (0.06)	0.34*** (0.06)	0.31*** (0.06)	0.28*** (0.06)
Institutional religiosity: Church attendance (Ref. cat.: Non-practicing)	Regular		-0.14* (0.08)	-0.16* (0.08)	-0.14* (0.08)	-0.10 (0.09)	-0.12 (0.09)
	Irregular		0.04 (0.07)	0.04 (0.07)	0.03 (0.07)	0.05 (0.07)	0.03 (0.07)
<b>SOCIO-DEMOGRAPHICS</b>							
Gender (Ref. cat.: Male)	Female			0.05 (0.05)	0.04 (0.05)	0.03 (0.05)	0.01 (0.05)
Educational level (Ref. cat.: Low)	Medium			-0.06 (0.06)	-0.04 (0.06)	-0.03 (0.06)	0.02 (0.06)
	High			-0.39*** (0.08)	-0.34*** (0.08)	-0.31*** (0.08)	-0.22*** (0.08)
Age (18-24)	25-34			0.26** (0.11)	0.25** (0.11)	0.20* (0.11)	0.18* (0.11)
	35-44			0.26** (0.11)	0.26** (0.10)	0.25** (0.10)	0.23** (0.10)
	45-54			0.36*** (0.11)	0.36*** (0.11)	0.35*** (0.10)	0.32*** (0.10)
	55-64			0.36*** (0.10)	0.36*** (0.10)	0.36*** (0.10)	0.34*** (0.10)

	65 and More			0.27*** (0.10)	0.26*** (0.10)	0.27*** (0.10)	0.23** (0.10)
TRUST							
Generalized trust (Ref. cat.: No)	Yes					-0.28*** (0.06)	-0.23*** (0.06)
Confidence in political Institutions	0-3						-0.27*** (0.05)
Confidence in the Church	0-3						-0.01 (0.04)
							-0.22*** (0.05)
							-0.04 (0.04)
ATTITUDES TOWARD SCIENCE							
Reservations concerning science and technology	1-10						0.05*** (0.01)
Belief in the promise of science and technology	1-10						-0.05*** (0.01)
Constant		3.41*** (0.04)	3.40*** (0.05)	3.16*** (0.12)	3.24*** (0.12)	3.51*** (0.13)	3.67*** (0.17)
Observations		1,820	1,820	1,820	1,820	1,820	1,820
R-squared		0.02	0.02	0.04	0.06	0.07	0.10

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



FIGURE 1. Percentage distribution of the item “Pharmaceutical companies hinder the development of effective medications to heal serious diseases because they fear losing profits”. European Values Study-World Values Survey 2018 Italian data (Valid cases, N = 2,094).



## Appendix

TABLE A1: Descriptive statistics of independent and control variables employed in the linear regression models (N = 1,820)

<b>Categorical variables</b>	<b>%</b>	
Belief in reincarnation: Yes	21.0	
Church attendance: Regular	27.1	
Church attendance: Irregular	44.5	
Church attendance: Non practicing	28.5	
Gender: Female	49.3	
Educational level: low	36.7	
Educational level: medium	46.9	
Educational level: high	16.4	
Age: 18-24	9.2	
Age: 25-34	12.6	
Age: 35-54	17.3	
Age: 45-54	17.0	
Age: 55-64	18.7	
Age: 65 and more	25.3	
Generalized trust: Yes	28.7	

<b>Cardinal variables</b>	<b>Mean</b>	<b>St. Dev.</b>
Conventional religious beliefs (0-1)	0.54	1.30
Confidence in political institutions (0-3)	1.10	0.58
Confidence in the Church (0-3)	1.51	0.94
Reservations concerning science and technology (1-10)	4.91	2.37
Belief in the promise of science and technology (1-10)	6.90	2.17

TABLE A2. Logistic regression models with belief in the big pharma conspiracy theory as dichotomous dependent variable (1 - yes: strongly agree, agree; 0 - no: neither agree nor disagree, disagree, strongly disagree). European Values Study-World Values Survey 2018 Italian data (N = 1,820). Coefficients and standard errors in parentheses.

Independent variables	Categories/ Scale	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>RELIGIOSITY</b>							
Conventional religious beliefs	0-1	0.02 (0.12)	0.16 (0.15)	0.09 (0.15)	0.08 (0.15)	0.17 (0.16)	0.10 (0.16)
Alternative religious beliefs: Belief in reincarnation	Yes	0.51*** (0.12)	0.51*** (0.12)	0.52*** (0.12)	0.53*** (0.12)	0.49*** (0.12)	0.44*** (0.12)
Institutional religiosity: Church attendance (Non-practicing)	Regular		-0.30** (0.15)	-0.32** (0.15)	-0.30* (0.15)	-0.19 (0.17)	-0.24 (0.17)
	Irregular		-0.02 (0.12)	-0.02 (0.12)	-0.04 (0.12)	0.02 (0.13)	-0.01 (0.13)
<b>SOCIO-DEMOGRAPHICS</b>							
Gender (Male)	Female			0.05 (0.10)	0.04 (0.10)	0.02 (0.10)	-0.01 (0.10)
Educational level (Low)	Medium			-0.09 (0.11)	-0.06 (0.11)	-0.05 (0.11)	0.04 (0.11)
	High			-0.59*** (0.15)	-0.50*** (0.15)	-0.46*** (0.15)	-0.30* (0.16)
Age (18-24)	25-34			0.24 (0.21)	0.22 (0.21)	0.15 (0.21)	0.12 (0.22)
	35-44			0.46** (0.20)	0.46** (0.20)	0.45** (0.20)	0.41** (0.20)
	45-54			0.54*** (0.20)	0.54*** (0.20)	0.55*** (0.20)	0.50** (0.20)
	55-64			0.49** (0.19)	0.50** (0.20)	0.50** (0.20)	0.47** (0.20)
	65 and More			0.35* (0.19)	0.33* (0.19)	0.35* (0.19)	0.29 (0.20)
<b>TRUST</b>							

Generalized trust (No)	Yes				-0.46***	-0.37***	-0.33***
					(0.11)	(0.11)	(0.11)
Confidence in political Institutions	0-3					-0.46***	-0.38***
						(0.09)	(0.09)
Confidence in the Church	0-3					-0.05	-0.11
						(0.07)	(0.07)
ATTITUDES TOWARD SCIENCE							
Reservations concerning science and technology	1-10						0.09***
							(0.02)
Belief in the promise of science and technology	1-10						-0.09***
							(0.02)
Constant		-0.07	-0.05	-0.33	-0.20	0.27	0.53
		(0.08)	(0.10)	(0.23)	(0.23)	(0.25)	(0.33)
Observations		1,820	1,820	1,820	1,820	1,820	1,820

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1