Fuzzy Hybrid Approach to Shatter Religious Tolerance and Fundamentalism Stereotypes across Diverse Nations

Alessandro Indelicato | ORCID: 0000-0001-5194-4333
Research Fellow, School of Theology, University of Eastern Finland,
Joensuu, Finland
Department of Applied Economics, Universidad de Las Palmas de
Gran Canaria, Las Palmas de Gran Canaria, Spain
Corresponding Author
alessandro.indelicato@ulpgc.es

Juan Carlos Martín | ORCID: 0000-0002-2950-2405
Full Professor, Department of Applied Economics, Universidad de
Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain
jcarlos.martin@ulpgc.es

Abstract

The study transcends borders to challenge conventional narratives about religious tolerance and fundamentalism. Leveraging a Fuzzy-Hybrid Approach, we delve into the multifaceted realities of eight diverse nations: Germany, Cyprus, the United States, Lebanon, Palestine, Israel, Turkey, and Kenya. Our innovative analysis unveils surprising complexities, shattering stereotypes and painting a nuanced picture of religious beliefs. Germany emerges as a beacon of tolerance, boasting the highest tolerance levels with the lowest fundamentalism. However, the stark reality for citizens of Lebanon, Kenya, and Palestine reveals a landscape of lower tolerance and higher fundamentalism. This study delves deeper, using quantile regression models to expose the intricate interplay between religious tolerance, individual socioeconomic factors like education and religious discrimination, and even views on the death penalty. Our findings

challenge simplistic assumptions, revealing intricate relationships between tolerance and fundamentalism across diverse contexts.

Keywords

fundamentalism – religion – Christians – Jews – Atheist – fuzzy-hybrid approach

1 Introduction

Religious tolerance (RT) and religious fundamentalism (RF) constitute essential but distinct concepts within the realm of religious studies. Achieving RT requires cultivating an attitude that acknowledges and accepts individuals with differing beliefs, thereby recognising their existence.[1] On the other hand, RF is characterised by strict adherence to traditional religious tenets and practises, often accompanied by the rejection of secular or modern ideas.[2]

In our contemporary world, attitudes towards RT and RF vary dramatically across regions and cultures. This complexity demands a nuanced understanding of the underlying factors driving these dynamics.[3] Through a combination of the Fuzzy-Hybrid Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS), a multi-criteria approach able to provide synthetic indicators of complex latent variables and Quantile Regression, we delve into the intricacies of factors influencing RF. However, our central quest goes beyond mere description. We aim to unravel the mediation effects of RT and a range of sociodemographic variables on the formation of RF. By examining how RT and other factors indirectly influence RF, we offer a deeper understanding of the complex tapestry woven between individual beliefs, societal contexts, and the potential emergence of fundamentalism.

The research includes diverse factors such as country of residence, age, religious background, gender, occupation, education, income, experiences with discrimination, and religious knowledge, spanning Jewish, Christian, and Muslim affiliations. Utilising data derived from the 2021 Religius Fundamentalism

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1 Cf. Sari/Indartono, *Teaching Religious Tolerance through Social Studies Education*.

2 Cf. Fan et al., *A Simulation Study of How Religious Fundamentalism Takes Root*; Habermas, *Religious Tolerance*; Hannover/Gubernath/Schultze/Zander, *Religiosity, Religious Fundamentalism, and Ambivalent Sexism*; Abu-Amr, *Islamic Fundamentalism in the West Bank and Gaza*; Wibisono/Louis/Jetten, *The Role of Religious Fundamentalism*.

3 Cf. Davis, *The Evolution of Religious Freedom as a Universal Human Right*; Iannaccone/Berman, *Religious Extremism*.

and Radicalization Survey module within the Wissenschafts-Zentrum Berlin für Sozial-Forschung (WZB) dataset, covering geographical regions including Cyprus, Germany, Israel, Kenya, Lebanon, the Palestinian territories, Turkey, and the USA, our study transcends conventional methodologies. By incorporating mathematical and statistical approaches uncommon in the field, we contribute to the existing body of literature and establish a framework for applying these innovative quantitative methods. Consequently, our research seeks to enhance the comprehension of the relationship between RT and RF, offering valuable insights into the nuanced interplay of other sociodemographic variables.

2 Brief Theoretical Background

2.1 Religious Tolerance

Religious tolerance is defined as citizens' positive attitudes toward others with other customs and religious traditions different from theirs.[4] The academic literature studies the theories on intergroup relationships and the prejudicial attitudes of other religious groups.[5] Tolerance and harmonious behaviour among groups contribute positively to keeping respectful attitudes.[6] On the other hand, problematic intergroup relationships, such as any form of discrimination, can negatively affect intergroup interaction.[7]

The intricate interplay between cultural diversity and RT profoundly influences intergroup dynamics, contributing to the fabric of societal interactions. Verkuyten et al.[8] underscore the pivotal role of this interrelationship, emphasising its impact on shaping collective attitudes and behaviours within diverse communities. Following Erbas,[9] cultural diversity, with its rich tapestry of traditions, beliefs, and practices, becomes a focal point in understanding the complexities of RT across different cultural contexts. Cross-cultural

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4 Cf. Neusner/Chilton, *Religious Tolerance in World Religions*.

5 Cf. Clobert/Saroglou/Hwang/Soong, *East Asian Religious Tolerance – A Myth or a Reality?*; Habermas, *Religious Tolerance*; Hoffman, *Religion and Tolerance of Minority Sects in the Arab World*; Schweitzer, *Religious Individualization*.

6 Cf. Paluck/Green/Green, *The Contact Hypothesis Re-evaluated*; Pettigrew/Tropp, *Does Intergroup Contact Reduce Prejudice?*

7 Cf. Branscombe/Schmitt/Harvey, *Perceiving Pervasive Discrimination among African Americans*; Dion, *The Social Psychology of Perceived Prejudice and Discrimination*; Akbaba/Taydas, *Does Religious Discrimination Promote Dissent?*; Craig/Richeson, *Coalition or Derogation*.

8 Cf. Verkuyten/Yogeeswaran/Adelman, *The Social Psychology of Intergroup Tolerance and Intolerance*.

9 Cf. Erbaş, *Perception of Cultural Diversity*.

studies further illuminate this connection, offering a nuanced perspective on how different societies navigate and respond to the challenges and opportunities presented by religious diversity.[10] These studies not only enhance the comprehension of the multifaceted nature of intergroup relationships but also contribute to a more comprehensive and globally informed view of RT, acknowledging its dynamic nature across varied social contexts and cultural landscapes.

Various scholars have demonstrated that RT is not determined only by religion; other individual socioeconomic characteristics could also play a key role. Oliveira & Menezes and Kubicek et al.[11] show that attitudes toward religions differ according to socioeconomic characteristics such as age. According to Kubicek et al. 2009,[12] younger generations tend to show less openness toward those who profess other religions. Ferrara[13] also found that education and income affect RT, showing that the highest levels of education and medium/high economic levels positively influence RT.

2.2   *Fundamentalism*

Pollack et al. (2023) define "fundamentalism as an attitude characterised by four components: the claim to exclusive truth (1), to superiority over all other positions (2), to the universal validity of exclusive truth (3), and the demand that the unadulterated past be restored through a radical change in the present (4)".[14] Academic literature has identified religious fundamentalist profiles with some characteristics. Almond et al. (1995)[15] identified nine interrelated characteristics (1) reactivity to the marginalisation of religion; (2) selectivity; (3) dualistic worldview between the good and the evil; (4) absolutism and inerrancy; (5) millennialism and messianism; (6) elect or chosen membership; (7) sharp boundaries; (8) authoritarian organisation; and (9) behavioural requirements according to rules.

Of the above nine characteristics, Emerson and Hartman[16] highlighted that RF is mainly based on a defensive reaction to modernisation and secularisation.

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10   Cf. Bossmann, *Ethnocentrism vs. Cross-cultural Study of the Bible*; Cohen/Shengtao Wu/ Miller, *Religion and Culture*; Ciocan, *Cross-culture in Religious Realm due to Migration*.

11   Cf. de Oliveira/de Oliva Menezes, *The Meaning of Religion/Religiosity for the Elderly*; Kubicek et al., "*God made me Gay for a Reason*".

12   Cf. Kubicek et al., "*God made me Gay for a Reason*".

13   Cf. Ferrara, *Religious Tolerance and Understanding in the French Education System*.

14   Pollack/Demmrich/Müller, *Religious Fundamentalism*, p. 5.

15   Cf. Almond/Sivan/Appleby, *Fundamentalism: Genus and Species*.

16   Cf. Emerson/Hartman, *The Rise of Religious Fundamentalism*.

Shairgojri[17] emphasised the strict association between religion and infallibility. In addition to these characteristics, according to Pickel,[18] fundamentalism is not only related to a specific faith. Instead, it represents a significant presence in most of the credos, even if it is inherently at odds with fundamental democratic principles, including freedom, equality, and tolerance.

Sabriseilabi et al.[19] assert that individuals who firmly reject or express disagreement with the idea of executing citizens deemed evil in the eyes of God or Allah tend to display lower levels of RF. In this context, Curran[20] suggests that the opposition to violence within a religious context signifies a nuanced comprehension of one's religious beliefs, leaning towards a perspective that values moderation and tolerance. The resistance to endorsing violence in the name of religion indicates a more sophisticated understanding of one's faith, emphasising a perspective prioritising values such as compassion and forgiveness.[21] Thus, individuals who reject executing citizens based on perceived evil embrace principles that promote compassion and forgiveness within their religious framework.[22]

The discourse on fundamentalism also encompasses a critical exploration of the gender dimension, especially in evolving societal norms moving away from traditional religious values.[23] For example, examining women's roles in Muslim societies reveals a multifaceted interplay between religious influences and varying levels of social development, creating disparities across periods, social contexts, classes, and regions.[24] As in Stjepanović-Zaharijevski,[25] across major world religions, women generally face unfavourable conditions, and societies shaped by these religions often restrict women's rights. This inequality is exacerbated by differing levels of development in the countries they inhabit, impacting the extent to which women can exercise their rights. Nevertheless, Powell and Steelman, as well as Burris,[26] observe a noteworthy trend: these unfavourable conditions lead women in fundamentalist

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17   Cf. Shairgojr, *Rising Fundamentalism*.
18   Cf. Pickel, *Perceptions of Plurality*.
19   Cf. Sabriseilabi/Williams/Sadri, *How Does Race Moderate the Effect of Religion Dimensions on Attitudes toward the Death Penalty?*
20   Cf. Curran, *Tolerance and Nonviolent Practices*.
21   Cf. Curran, *Tolerance and Nonviolent Practices*.
22   Cf. Sudakova, *Genetic Sources of the Worldview Determinants of Nonviolent Cultural Practices*.
23   Cf. Gavrilović, *Gender, Religion, Fundamentalism*.
24   Cf. Malik/Qiong, *Gender Disparity in Literacy*.
25   Cf. Stjepanović-Zaharijevski,*"The Female" Element and its Influence on Islam*.
26   Cf. Powell/Carr Steelman, *Fundamentalism and Sexism*, as well as Burris, *Who Opposed the ERA?*

groups to exhibit higher levels of extremism compared to males in fundamentalist groups.

An extensive body of literature has also shown a strong relationship between RF and prejudice toward different groups, such as racial and ethnic minorities, women, homosexuals, Jews, Muslims and immigrants.[27] Scholars often explore the psychological mechanisms underlying this relationship, examining how RF contributes to developing and reinforcing prejudiced attitudes.[28] The link between RF and prejudice is complex and may involve factors such as rigid adherence to doctrinal beliefs, fear of change, and a perceived threat to one's religious identity.[29]

3   Data

This work extracts data from the *Religious Fundamentalism and Radicalization Survey module of the Wissenschafts-Zentrum Berlin für Sozial-Forschung* (WZB) dataset. It is a large-scale cross-sectional survey administered in Cyprus, Germany, Israel, Kenya, Lebanon, the Palestinian territories, Turkey, and the USA, developed by Kanol et al.[30] to analyse the citizens' RT and RF. To ensure robust external validity, it employs a stratified approach, conducting telephone, face-to-face, and online surveys on religion and society. The sample encompasses over 10,000 respondents from Christian, Muslim, and Jewish communities. Religious minorities in specific countries, such as Muslims in Kenya or Jews in the United States, are oversampled.

Table 1 shows that the USA and Turkey are the most represented countries of the sample, while Palestine is the least represented country. Younger people are the most represented group of the sample (under 25, 23.64% and 26–35, 25.99%), and those over 75 are the smallest group (2.19%). Men and women are equally represented by almost 50% of the sample. In the survey, nearly half of the interviewees come from families that practice one of the Abrahamic

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27   Cf. Altemeyer/Hunsberger, *Authoritarianism, Religious Fundamentalism, Quest, and Prejudice*; Altemeyer, *Why Do Religious Fundamentalists Tend to Be Prejudiced?*; Koopmans, *Religious Fundamentalism and Hostility against Out-groups*; Pickel, *Perceptions of Plurality*.

28   Cf. Hunsberger/Jackson, *Religion, Meaning, and Prejudice*; Hill/Terrell/Cohen/Nagoshi, *The Role of Social Cognition in the Religious Fundamentalism-Prejudice Relationship*; Brandt/Van Tongeren, *People Both High and Low on Religious Fundamentalism are Prejudiced toward Dissimilar Groups*.

29   Cf. Rowatt/Al-Kire, *Dimensions of Religiousness and their Connection to Racial, Ethnic, and Atheist Prejudices*.

30   Cf. Kanol/Koopmans/Stolle, *Religious Fundamentalism and Radicalization Survey*.

TABLE 1 Descriptive statistics

Group	n	%	Group	n	%
Country			*Religion*		
Cyprus	1357	13.51	Christian	3196	31.81
Germany	1281	12.75	Muslim	5745	57.19
Israel	1212	12.06	Jewish	1105	11.00
Kenya	1197	11.92	*Monthly Income*		
Lebanon	1190	11.85	Below 500 €	1229	12.23
Palestine	843	8.39	500–1000 €	2194	21.84
USA	1546	15.39	1000–2000 €	1936	19.27
Turkey	1420	14.13	2000–3000 €	1417	14.11
Age			3000–4000 €	634	6.31
<=25	2375	23.64	4000–5000 €	521	5.19
A26-35	2611	25.99	More than 5000 €	276	2.75
A36-45	1755	17.47	More than $350,000	22	0.22
A46-55	1482	14.75	*Evil killed*		
A56-65	1001	9.96	Completely agree	869	8.65
A66-75	602	5.99	Agree	1015	10.1
>75	220	2.19	Neither agree nor disagree	1089	10.84
Gender			Disagree	1782	17.74
Male	4972	49.49	Completely disagree	3358	33.43
Female	5011	49.88	*Religion discrimination*		
Education			Never	3908	38.9
No education	192	1.91	Rarely	3183	31.68
Primary education	1417	14.11	Often	1811	18.03
Lower secondary education	1475	14.68	All the time	791	7.87
Upper secondary education	2571	25.59	*Religious Knowledge: Islam*		
Post-secondary	1085	10.8	0	798	7.94
tertiary education	373	3.71	1	967	9.63
Bachelor's degree	2042	20.33	2	2101	20.91
Master's degree	829	8.25	3	1879	18.7
Main Status			*Religious Knowledge: Christian*		
Housewife/man	1449	14.42	0	497	4.95
Pensioner	846	8.42	1	739	7.36
Disability	172	1.71	2	1130	11.25
Unemployed	712	7.09	3	830	8.26

TABLE 1   Descriptive statistics (*cont.*)

Group	n	%	Group	n	%
Student	998	9.93	*Religious Knowledge: Jew*		
Parental leave	43	0.43	0	35	0.35
Other	282	2.81	1	102	1.02
In paid job	5117	50.94	2	215	2.14
Conversion			3	753	7.5
Not	9275	92.33			
Yes	603	6.00			

Some categories do not reach 100% because of the missing values.

religions analysed in the survey. Twenty per cent have a Bachelor's degree, and almost all respondents were raised by their parents in their credo.

Additionally, 57% of the interviewers are Muslim, and 32% are Christian. Only 11% of interviewers are Jewish, from Israel and the US. 19% of the sample completely agree or agree that those subjects who do evil in the eyes of God should be killed, and 39% of the sample have not experienced religious discrimination ever. Moreover, finally, a significant part of the sample (69%) does have good religious knowledge (answering correctly to two or three questions related to religion).

The WZB dataset contains four items that concern RT. As in Kanol,[31] four items have been chosen to measure RT by the question, "What is your opinion of the following groups [...]?" The respondents provided an opinion of four groups, namely (a) Jews; (b) Christians; (c) Muslims; and (d) Atheists. The scale goes from 0 to 100, where 0 expresses an opinion that is not at all favourable, and 100 is very favourable. From the same dataset, items to measure fundamentalism are extracted. These items are:

1.   Islam/Christianity/Judaism is superior to other religions
2.   Final battle between Islam/Christianity/Judaism and forces of evil
3.   Only one correct interpretation of Quran/Bible/Torah
4.   Whenever science and the Quran/Bible/Torah conflict, science is probably right
5.   Those who don't follow rules in scripture are not Muslims/Christians/Jews
6.   There is only one perfectly true religion
7.   It is more important to be a good person than to have the right religion

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31   Cf. Kanol, *Explaining Unfavorable Attitudes toward Religious Out-groups.*

The answers were based on a 5-point Likert Scale, from 1, completely agree, to 5, completely disagree. Items 1, 2, 3, 5, and 6 have been reversed to associate positive values with a more fundamentalist position. Meanwhile, 4 and 7 are not reverse-coded for the same reason.

4   Methodology

4.1   *Fuzzy Logic*

The literature on social attitudes, their causes,[32] and their mutations,[33] is not new. The measurement scales to analyse these latent variables in the past were based on selecting a large set of indicators.[34] While widely employed, survey measurements are perceived as less precise due to their inherent reliance on subjective responses.[35] According to Di Nardo and Simone,[36] the information provided by questionnaires to measure social latent variables is vague. The responses extracted by surveys are often uncertain and subjective. In our approach, we recognise the potential for ambiguity in survey data and aim to navigate this challenge by employing a carefully designed methodology.

Fuzzy Set Theory (FST), using Fuzzy Numbers, effectively treats the questionnaires' vagueness.[37] Fuzzy Logic is an extension of the classical Boolean Logic, in which the truth value of variables may be any real number between 0 and 1 (completely true and completely false).[38] Thus, the answers provided by respondents are transformed into Triangular Fuzzy Numbers (TFN), using a 3-tuple (a_1, a_2, a_3) of real numbers that assign a TFN to each point on the scale within a universe of discourse ranging from 0 to 100.

This transformation follows the principles established by scholars such as Mamdani & Assilian, Erdoğan & Kaya, and Indelicato et al.[39] Using the Fuzzy Set Logic Algebra, the information is aggregated on each group of interest to researchers, e.g., country, age, religion, gender, education, occupation, income,

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32   Cf. Fishbein/Ajzen, *Belief, Attitude, Intention, and Behavior*; Tesser, *Self-generated Attitude Change*; Zajonc, *Attitudinal Effects of Mere Exposure*.

33   Cf. Hovland/Janis/Kelley, *Communication and Persuasion*; Matz/Wood, *Cognitive Dissonance in Groups*; Petty/Cacioppo, *The Elaboration Likelihood Model of Persuasion*.

34   Cf. Cohen/Manion/Morrison, *Research Methods in Education*; Likert, *A Technique for the Measurement of Attitudes*.

35   Cf. Gawlikowski et al., *A Survey of Uncertainty in Deep Neural Networks*.

36   Cf. Di Nardo/Simone, *A Model-based Fuzzy Analysis of Questionnaires*.

37   Cf. Indelicato/Martín, *Two Approaches*.

38   Cf. Zadeh, *Information and Control*.

39   Cf. Mamdani/Assilian, *An Experiment in Linguistic Synthesis*; Erdoğan/Kaya, *A Combined Fuzzy Approach* and Indelicato/Martín/Scuderi, *A Comparison of Attitudes Towards Immigrants*.

religious discrimination, and more. Thus, a TFN matrix is obtained in which the elements are TFNs.[40] As the information is still complex, a defuzzified information matrix has to be calculated. This involves the conversion of TFNs into crisp values to determine a singular value that accurately represents the central tendency of the Fuzzy set.[41] TFNs are transformed in crisps values, obtained through the weighted average of the respective TFN as follows:

$$v_{\tilde{A}} = \frac{(a_1 + 2a_2 + a_3)}{4} \tag{1}$$

4.2 *Fuzzy-Hybrid TOPSIS*

The Fuzzy-Hybrid TOPSIS is applied to measure both the citizen's religious tolerance and fundamentalism. TOPSIS stands for Technique for Order Preference by Similarity to Ideal Solution. It is a powerful multi-criteria decision-making (MCDM) method used to analyse and compare alternatives based on multiple, often conflicting, criteria. It is an approach that is becoming popular in many fields, such as education,[42] green energy,[43] logistics,[44] healthcare,[45] or in the study of citizen's attitudes toward immigrants and national identity.[46] The approach is hybrid because TOPSIS is not directly applied to raw information but to the defuzzified information matrix explained above by applying the three previous steps of FST.

Thus, once the defuzzified information matrix is obtained, the positive (PIS) and negative ideal (NIS) solutions are calculated.[47] The PIS comprises the maximum value of the defuzzified information matrix for each group and item under analysis, while the NIS corresponds to the minimum value. In the context of this study, PIS represent groups exhibiting more positive attitudes on religion and fewer fundamentalist values. Conversely, NIS denote groups with less positive behaviours towards religions and more pronounced

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40 Cf. Kumar, *Some Recent Defuzzification Methods.*

41 Cf. Lotfi/Sadreddini, *Mining Fuzzy Association Rules Using Mutual Information.*

42 Cf. Di Nardo/Simone, *A Model-based Fuzzy Analysis of Questionnaires.*

43 Cf. Di Nardo/Simone, *A Model-based Fuzzy Analysis of Questionnaires.*

44 Cf. Liu/Li/Tu/Mei, *Fuzzy TOPSIS-EW Method with Multi-granularity Linguistic Assessment Information.*

45 Cf. Tolga/Burak Parlak/Castillo, *Finite-interval-valued Type-2 Gaussian Fuzzy Numbers Applied to Fuzzy TODIM in a Healthcare Problem.*

46 Cf. Indelicato/Martín/Scuderi, *Comparing Regional Attitudes toward Immigrants in Six European Countries*; Martín/Indelicato, *A Fuzzy-hybrid Analysis of Citizens' Perception toward Immigrants in Europe.*

47 Cf. Hwang/Yoon, *Multiple Attribute Decision Making.*

fundamentalist values. As in Behzadian et al.,[48] all the items are considered to have a beneficial nature because the scale items were coded according to express the idea that higher figures are related to more positive RT and more RF positions.

In the next step, the distance of each group with the ideal solutions is calculated using the Euclidean distance between each observation group and the ideal solutions. The relative ratio of the distance of each group concerning the ideal solution and the sum of the distances between each group and both ideal solutions gives the indicators that measure both the citizens' RT and fundamentalism. Mathematically, the indicator is calculated as follows:

$$Ind_i = \frac{S_i^-}{S_i^+ + S_i^-} \rightarrow [0,1], \tag{2}$$

and it gives a more straightforward interpretation of RT or RF, as the higher the indicator, the higher the tolerance toward religions and the fundamentalist ideology of the particular group.

4.3   *Quantile Regression*

In order to gain a deeper understanding of the relationship between RT and RF, advanced statistical techniques such as quantile regression models are employed. These models enable us to gauge the impact of RT and other socio-economic traits on an individual's inclination to be a fundamentalist. By using this approach, we can comprehensively examine how fundamentalism – the dependent variable – is affected by RT and other socio-economic factors – the independent variables in the study. Scholars apply quantile regression models to study how a set of variables affects the dependent variable – using quantiles of the dependent variable as functions of related variables.[49]

Let $y = x'\beta + \varepsilon$ be a linear regression model, the quantile regression model is given by the following assumption:

$$Q[y|x, q] = x'\beta q + \varepsilon \tag{3a}$$

such that

$$Prob[y \leq x'\beta q|x] = q \tag{3b}$$
$$0 < q < 1 \tag{3c}$$

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48   Cf. Behzadian/Otaghsara/Yazdani/Ignatius, *A State-of-the-art Survey of TOPSIS Applications.*
49   Cf. Östh/Dolciotti/Reggiani/Nijkamp, *Social Capital, Resilience and Accessibility in Urban Systems.*

where q is the q_{th} quantile. If q_{th} is equal to 0.5, it is the median quantile ε is the error term.

This model provides more results and adjusts the dataset better than a linear model. This is because the coefficients used in the model are indexed by q, which can vary between 0 and 1. Thus, the linear model can be extended by many parameter vectors with any value.[50]

Here, the dependent variable is the indicator that measures the citizens' fundamentalism obtained by the Fuzzy-Hybrid TOPSIS at the individual level (omitting the aggregation step of the Fuzzy Set Logic Algebra). The explained variables are country, age, religion, to be raised in a religion, gender, occupation, education, income, killing those who do evil in the eyes of God, group treatment, religious discrimination, and religious knowledge (Judaism, Christianity, and Islam). Three corresponding quantiles are analysed: the 0.25 quantile, the 0.5 or median quantile, and the 0.75 quantile. Covariates are dummy variables in which 1 represents the presence of the condition. For example, in the case of the Germany dummy variable, it is equal to 1 whenever the citizen is German or 0 otherwise.

5   Results

This work applies Fuzzy-Hybrid TOPSIS to measure citizens' RT and RF. Then, quantile regression is estimated to analyse the effect of RT and other socioeconomic characteristics on fundamentalism.

5.1   *Fuzzy Numbers and Ideal Solutions*

Our results reveal that a deeper understanding of the beliefs and culture of Jews and Christians correlates with higher levels of RT towards these groups, as indicated by their positive ideal solution scores (Table 2). Concerning Positive and Negative Ideal solutions, respondents who did not specify whether they had changed their religion exhibited higher values on attitudes towards Muslims. Conversely, individuals with a good knowledge of Judaism show higher values towards atheists. At country level, Lebanese respondents exhibit the most negative attitudes towards both Jews and atheists. In the USA, the least tolerance is shown towards Christians, while respondents with no knowledge of Judaism displayed the lowest level of tolerance towards Muslims.

As in Table 3, positive ideal solutions for the RF show that Palestinians respondents tend to believe that their religion is superior to others and that a

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50   Cf. Greene, *Econometric Analysis*.

TABLE 2   Ideal solutions – religious tolerance

Attributes	PIS	Group	NIS	Group
Feeling Jews	84.95	know_jews (3)	44.45	Lebanon
Feeling Christian	81.76	know_chri (3)	50.76	USA
Feeling Muslims	83.95	Conv (NA)	41.95	know_jews (0)
Feeling Atheist	61.62	know_jews (2)	23.44	Lebanon

Own elaboration. PIS: Positive Ideal Solutions; NIS: Negative Ideal Solutions

TABLE 3   Ideal solutions – religious fundamentalism

Attribute	PIS	Group	NIS	Group
C1	83.48	Palestine	47.76	Germany
C2	68.69	Palestine	34.09	know_jews (2)
C3	76.83	Lebanon	33.44	know_jews (2)
C4	71.75	Kenya	28.92	know_jews (2)
C5	65.75	Palestine	21.88	know_jews (2)
C6	70.95	know_jews (2)	23.10	Palestine
C7	80.16	know_jews (2)	51.02	Conv (NA)

Own elaboration. PIS: Positive Ideal Solutions; NIS: Negative Ideal Solutions. C1: Islam/Christianity/Judaism is superior to other religions; C2: Final battle between Islam/Christianity/Judaism and forces of evil; C3: Only one correct interpretation of Quran/Bible/Torah; C4: Whenever science and the Quran/Bible/Torah conflict, science is probably right; C5: Those who don't follow rules in scripture are not Muslims/Christians/Jews; C6: There is only one perfectly true religion; C7: It is more important to be a good person than to have the right religion.

"final battle" between religions is necessary. In this context, this result provides some insights into the current situation in the Gaza Strip, as religion plays a crucial role in the conflict.[51] They also believe that those who do not follow the rules of the scriptures are not truly religious. Meanwhile, the Lebanese prioritise the idea that there is only one correct interpretation of holy scripture, and Kenyans tend to believe that science is probably wrong when it conflicts with the Quran/Bible/Torah. Moreover, respondents of all our countries that have high level of knowledge about Judaism tend to believe that there is only one

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51   Cf. Jones, *Islamic Fundamentalism in the Middle East.*

perfectly true religion and that it is less important to be a good person than to adhere to a particular religion.

Regarding the Negative Ideal Solutions (NIS), it can be seen that it is mainly represented by those who have a good knowledge of the Torah. For the rest of the items, the representative group is associated with the German and Palestinian sample and those who have not answered whether they were converted to a new religion.

5.2   *Religious Tolerance and Fundamentalism*

The fuzzy-TOPSIS approach is implemented to derive the RT Index of citizens through Equation 2. The RT outcomes, presented in Table 4, indicate that Israelis, Turks, and Germans demonstrate above-average RT, while Cypriots, Lebanese, and Palestinian citizens exhibit below-average tolerance.

Notably, older individuals display higher RT values compared to younger ones, with Jewish respondents ranking highest in terms of RT, followed by Christians and Muslims. Interestingly, being raised by parents in a specific religion does not seem to significantly influence RT. Furthermore, individuals with higher education and income levels exhibit greater tolerance than those with lower education or income.

Results from our Fuzzy-Hybrid TOPSIS approach show that pensioners, people with disabilities, and parents on parental leave demonstrate higher levels of tolerance compared to housewives, the unemployed, or students. As expected, the findings also highlight that some participants desire to witness evildoers' punishment, and those in agreement with this sentiment generally hold less tolerant positions than those who disagree. However, interesting results emerge regarding individuals' experiences with religious discrimination, as those reporting being discriminated against often display greater tolerance than those who report never experiencing discrimination.

Table 5 illustrates the results of the indicator measuring RT among Christians, Muslims, and Jewish respondents towards out-religion groups. The findings reveal that Jewish respondents exhibit the highest level of RT towards other religious groups (and it even increases when Muslims are excluded), while Muslims in our study display the lowest RT. Christians in our study demonstrate higher RT levels when excluding Muslims from the analysis. However, these values decrease when respondents who identify as Christians are not part of the out-group. Consequently, religious affiliation influences RT, with Jewish respondents showing the highest tolerance, followed by Christians and Muslims of our sample. The study suggests that certain religious beliefs or cultural factors may contribute to Muslims in our study having a lower level of RT towards other religions.

TABLE 4   Religious tolerance

Group	RT	Group	RT
Total	0.45	In paid job	0.49
Germany	0.82	Student	0.42
Israel	0.72	Unemployed	0.38
Turkey	0.66	Housewife/man	0.34
USA	0.35	3000–4000 EUR or $80,000–$119,999	0.61
Kenya	0.33	More than 5000 EUR or $200,000–$349,999	0.59
Palestine	0.33	Income (NA)	0.59
Lebanon	0.29	More than $350,000	0.54
Cyprus	0.28	4000–5000 EUR/month or $120,000–$199,999/year	0.50
>75	0.55	2000–3000 EUR/month or $60,000–$79,999/year	0.49
A66–75	0.50	1000–2000 EUR/month or $40,000–$59,999/year	0.43
A46–55	0.50	500–1000 EUR/month or $20,000–$39,999/year	0.35
A56–65	0.48	Below 500 EUR/month or $19,999/year	0.35
A26–35	0.45	Kill Evildoers Completely disagree	0.57
A36–45	0.44	Kill Evildoers Disagree	0.49
<=25	0.42	Kill Evildoers Neither agree nor disagree	0.48
Jewish	0.68	Kill Evildoers Completely agree	0.38
Christian	0.52	Kill Evildoers (NA)	0.36
Muslim	0.38	Kill Evildoers Agree	0.33
Conv (Y)	0.48	Often	0.53
Conv (NA)	0.46	Rarely	0.49
Conv (N)	0.45	All the time	0.42
Female	0.46	Never	0.40
Male	0.45	know_musl (NA)	0.57
Gender (NA)	0.37	Relig_Disc (NA)	0.49
Master's degree or equivalent	0.74	know_musl (3)	0.41

TABLE 4   Religious tolerance (*cont.*)

Group	RT	Group	RT
Post-secondary non-tertiary education	0.61	know_musl (1)	0.39
Short-cycle tertiary education	0.59	know_musl (2)	0.36
Bachelor's degree or equivalent	0.48	know_musl (0)	0.35
Upper secondary education	0.44	know_chri (2)	0.56
Education (NA)	0.41	know_chri (0)	0.51
Lower secondary education	0.38	know_chri (1)	0.49
Primary education	0.29	know_chri (3)	0.48
No education	0.28	know_chri (NA)	0.43
Occupation (NA)	0.60	know_jews (2)	0.71
Disability	0.57	know_jews (1)	0.71
Parental leave	0.54	know_jews (3)	0.67
Pensioner	0.51	know_jews (0)	0.60
Other	0.51	know_jews (NA)	0.42

Own elaboration. RT: Religious Tolerance

TABLE 5   Religious tolerance by religion

Religion	non_jews	non_christians	non_muslims	non_atheists
Christian	0,53	0,41	0,57	0,53
Muslim	0,45	0,40	0,25	0,41
Jewish	0,57	0,68	0,83	0,64

Also, using Eq. 2, Table 6 presents results from the TOPSIS indicator measuring citizens' fundamentalism. Kenya, Palestine, and Lebanon exhibit the highest fundamentalist values at the country level. Consequently, Kenyans, Palestinians, and Lebanese are identified as more fundamentalist compared to residents of Cyprus, Turkey, Israel, the USA, and Germany, with Germany being the least fundamentalist among the studied countries. Furthermore, older generations display fewer fundamentalist attitudes than younger ones.

TABLE 6   Fundamentalism

Group	fund	Group	fund
Total	0.52	Disability	0.51
Kenya	0.64	In paid job	0.51
Palestine	0.61	Occupation (NA)	0.51
Lebanon	0.61	Pensioner	0.48
Cyprus	0.52	1000–2000 EUR/month or $40,000–$59,999/year	0.55
Turkey	0.47	Below 500 EUR/month or $19,999/year	0.54
Israel	0.46	500–1000 EUR/month or $20,000–$39,999/year	0.54
USA	0.42	2000–3000 EUR/month or $60,000–$79,999/year	0.53
Germany	0.41	More than $350,000/year	0.52
<=25	0.56	4000–5000 EUR/month or $120,000–$199,999/year	0.51
A26–35	0.54	Income (NA)	0.50
A36–45	0.53	More than 5000 EUR or $200,000–$349,999	0.47
A66–75	0.50	3000–4000 EUR or $80,000–$119,999	0.46
A56–65	0.49	Kill_Evildoers Completely agree	0.63
>75	0.49	Kill Evildoers Agree	0.62
A46–55	0.48	Kill Evildoers Neither agree nor disagree	0.57
Muslim	0.56	Kill Evildoers Disagree	0.52
Christian	0.51	Kill Evildoers (NA)	0.48
Jewish	0.41	Kill Evildoers Completely disagree	0.46
Conv (N)	0.53	All the time	0.60
Conv (Y)	0.51	Often	0.54
Conv (NA)	0.30	Rarely	0.52
Female	0.53	Never	0.50
Male	0.52	Relig_Disc (NA)	0.49
Gender (NA)	0.49	know_musl (3)	0.58
No education	0.58	know_musl (2)	0.55
Primary education	0.58	know_musl (1)	0.54

TABLE 6   Fundamentalism (*cont.*)

Group	fund	Group	fund
Education (NA)	0.56	know_musl (0)	0.54
Lower secondary education	0.55	know_musl (NA)	0.48
Upper secondary education	0.54	know_chri (3)	0.54
Post-secondary non-tertiary education	0.51	know_chri (NA)	0.53
Bachelor's degree or equivalent	0.51	know_chri (2)	0.50
Short-cycle tertiary education	0.49	know_chri (1)	0.50
Master's degree or equivalent	0.41	know_chri (0)	0.50
Unemployed	0.59	know_jews (NA)	0.54
Housewife/man	0.56	know_jews (0)	0.54
Parental leave	0.54	know_jews (1)	0.45
Student	0.54	know_jews (3)	0.41
Other	0.52	know_jews (2)	0.40

Own elaboration. fund: Fundamentalism

5.3   *Socioeconomic Influences on Fundamentalism*

In Table 7, the impact of RT and various socio-economic characteristics on citizens' fundamentalist values is shown, employing quantile regression (Eq. 3). Three quantiles – 0.25, 0.50 known as the median quantile, and 0.75 – have been selected to examine the effects of control variables on fundamentalism. All control variables are represented as dummies, where, for example, for the variable Germany, if the respective citizen is German, the value of the variable is equal to 1, and 0 otherwise. A reference variable must be chosen for each group in econometric models that use dummies. For instance, the reference group for RT is RT – (lowest values of religious tolerance), for the country, it is Cyprus, for age, it is younger than 25, and for the remaining variables, the reference variables are: Christians, Converted (N), Male, No Education, Housewife (Houseman), Below €500 or $19999, Never discriminated, Completely agree to evildoers being killed, and 0 knowledge about Judaism, Christianity, and Islam.

TABLE 7 Quantile regression on fundamentalism

Fundamentalism	Coef. (q.25)	P>t		Coef. (q.50)	P>t		Coef. (q.75)	P>t	
RT –	0.00	0.86		0.00	0.58		-0.01	0.02	*
RT +	-0.02	0.00	***	-0.01	0.00	***	-0.01	0.01	**
RT ++	-0.03	0.00	***	-0.03	0.00	***	-0.03	0.00	***
Germany	-0.05	0.00	***	-0.04	0.00	***	-0.03	0.00	***
Israel	0.01	0.13		0.03	0.00	***	0.03	0.00	***
Kenya	0.03	0.00	***	0.03	0.00	***	0.04	0.00	***
Lebanon	0.02	0.00	**	0.02	0.00	***	0.02	0.00	***
Palestine	0.02	0.00	**	0.02	0.00	***	0.02	0.00	**
USA	-0.09	0.00	***	-0.07	0.00	***	-0.05	0.00	***
Turkey	-0.01	0.01	**	0.00	0.44		0.01	0.35	
A26–35	0.00	0.42		0.00	0.67		0.00	0.45	
A36–45	0.01	0.22		0.00	0.86		0.00	0.54	
A46–55	-0.01	0.21		-0.01	0.20		0.00	0.43	
A56–65	0.01	0.27		0.00	0.75		0.00	0.47	
A66–75	0.01	0.11		0.01	0.10		0.01	0.30	
A>75	0.01	0.13		0.01	0.12		0.01	0.32	
Muslim	0.02	0.01		0.01	0.14		0.00	0.77	
Jewish	0.02	0.38		0.01	0.73		-0.01	0.56	
Conv (Y)	-0.02	0.00	***	-0.02	0.00	***	-0.01	0.06	
Female	0.01	0.00	**	0.01	0.01	**	0.01	0.02	**
Primary Education	0.01	0.38		0.01	0.17		0.01	0.26	
Lower Secondary Education	0.00	0.61		0.00	0.83		0.00	0.83	

TABLE 7 Quantile regression on fundamentalism (*cont.*)

Fundamentalism	Coef. (q.25)	P>t	Coef. (q.50)	P>t	Coef. (q.75)	P>t
Upper Secondary Education	0.00	0.85	0.01	0.50	0.01	0.42
Post-Secondary	0.00	0.84	0.00	1.00	0.00	0.96
Short cycle tertiary	−0.01	0.45	0.00	0.78	−0.01	0.65
Bachelor's degree	−0.01	0.27	−0.01	0.46	0.00	0.79
Master's degree	−0.03	0.01 **	−0.03	0.01 **	−0.02	0.13
Pensioner	0.01	0.22	0.00	0.74	0.00	0.97
Disability	0.01	0.51	0.00	0.62	0.01	0.62
Unemployed	0.01	0.10	0.00	0.76	0.01	0.29
Student	−0.01	0.37	0.00	0.48	0.00	0.92
Parental leave	0.02	0.25	0.00	0.97	0.01	0.44
Other	−0.01	0.53	−0.01	0.47	−0.01	0.30
In paid job	0.00	0.64	0.00	0.63	0.00	0.92
Income (2)	0.00	0.77	0.00	0.26	−0.01	0.14
Income (3)	0.00	0.60	0.00	0.67	0.00	0.82
Income (4)	0.00	0.67	0.00	0.53	0.00	0.80
Income (5)	−0.01	0.32	−0.01	0.06	−0.01	0.04
Income (6)	0.00	0.50	−0.01	0.14	−0.02	0.02 **
Income (7)	−0.01	0.20	−0.02	0.01 *	−0.02	0.01 **
Income (8)	0.00	0.88	0.00	0.97	−0.01	0.59
Kill Evildoers (Agree)	0.01	0.14	0.01	0.21	0.00	0.71

TABLE 7 Quantile regression on fundamentalism (*cont.*)

Fundamentalism	Coef. (q.25)	P>t	Coef. (q.50)	P>t	Coef. (q.75)	P>t
Kill Evildoers (Neither agree nor disagree)	0.00	0.46	0.00	1.00	0.00	0.54
Kill Evildoers (Disagree)	−0.02	0.00 ***	−0.02	0.00 ***	−0.03	0.00 ***
Kill Evildoers (Completely disagree)	−0.04	0.00 ***	−0.03	0.00 ***	−0.04	0.00 ***
Rarely	0.01	0.01 *	0.00	0.39	0.00	0.82
Often	0.01	0.00 ***	0.01	0.01 **	0.00	0.82
All the time	0.01	0.15	0.01	0.01 *	0.01	0.12
know_musl1	0.00	0.46	0.00	0.68	−0.01	0.15
know_musl2	0.00	0.46	0.00	0.88	−0.01	0.26
know_musl3	0.00	0.66	0.00	0.81	−0.01	0.34
know_chri1	0.01	0.16	0.00	0.68	−0.01	0.05 *
know_chri2	0.01	0.07	0.00	0.93	−0.02	0.00 **
know_chri3	0.00	0.95	−0.01	0.24	−0.01	0.09
know_jews1	−0.03	0.20	−0.04	0.06	−0.03	0.26
know_jews2	−0.05	0.01 **	−0.06	0.00 **	−0.07	0.00 **
know_jews3	−0.05	0.01 **	−0.05	0.01 **	−0.04	0.04 *
_cons	0.51	0.00 ***	0.57	0.00 ***	0.64	0.00 ***

Own Elaboration. * pvalue<0.05; ** pvalue≤0.01; *** pvalue≤0.001. Coef. Coefficient. q. 0.25: 1st quartile; q 0.50: median quartile; q. 0.75 3rd quartile. Income (1): Below 500 EUR or $19,999; Income (2): 500–1000 EUR or $20,000–$39,999; Income (3): 1000–2000 EUR or $40,000–$59,999; Income (4): 2000–3000 EUR or $60,000–$79,999; Income (5): 3000–4000 EUR or $80,000–$119,999; Income (6): 4000–5000 EUR or $120,000–$199,999; Income (7): More than 5000 EUR or $200,000–$349,999; Income (8): More than $350,000.

The research findings underscore the significant impact of RT on shaping citizens' fundamentalist values. Elevated levels of RT consistently correlate with decreased fundamentalist sentiments across all levels, suggesting that fostering greater RT could be an effective strategy for mitigating RF. Additionally, the study shows variations in fundamentalist values based on the country of origin. However, it is crucial to acknowledge that the study's oversampling of minorities may introduce potential biases into the cross-country results.

Age and religion do not significantly affect fundamentalism, but individuals who have converted to a specific religion are less fundamentalist than those raised in a religious credo. Interestingly, women tend to be more fundamentalist than men, highlighting the role of gender in shaping citizens' fundamentalist values. Education shows a significant effect on fundamentalism only for those individuals with a master's degree who tend to be less fundamentalist than the uneducated citizens for low and middle levels of fundamentalism.

High-income earners (sixth and seventh income groups) are less likely to be fundamentalist than low-income earners (below €500) for median and high values of religious extremism. Disagreeing or completely disagreeing with killing those who commit evil in the eyes of God negatively affects citizens' RF across all levels. Additionally, individuals who have often, rarely, or always received religious discrimination are more fundamentalist than those who have never experienced such discrimination for certain levels of fundamentalism.

Finally, the study underscores the crucial role of religious knowledge in explaining the influence of fundamentalism on Christians and Jews but not on Muslims. For the higher level of RF, having good knowledge about Christianity makes them less fundamentalist than those with no knowledge. Meanwhile, for all the levels of fundamentalism, greater knowledge about Judaism makes Jews less fundamentalist than those with no knowledge. These findings emphasise the significance of variables such as country, RT, religion conversion, gender, income, extremist opinions on what can be done with those who do evil in the eyes of God or Allah, and religious knowledge as key determinants of fundamentalism.

6   Discussion

Results show that citizens in Kenya, Lebanon, and Palestine are more fundamentalist than those in Cyprus, Turkey, Israel, the USA, and Germany. In this context, Mbote et al.[52] assert that RF is more accentuated in African countries

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52   Cf. Mbote et al., *Religious Fundamentalism and Attitudes Towards Sexual and Gender Minorities and Other Marginalized Groups.*

compared to higher-income countries, such as the USA and Germany. Scholars have also explained these results, asserting that political instability, violence, and conflict can contribute to the growth of RF. Individuals may turn to religion to find comfort, security, and a sense of identity in the face of insecurity and uncertainty.[53] In addition, poverty and economic hardship can also contribute to the growth of RF, as people may look at religion for answers to their material and spiritual needs.[54] Other scholars contend that historical and cultural traits are critical factors in explaining fundamentalism, such as the legacy of colonialism, the influence of religious institutions, and the role of religion in shaping national identities.[55]

As in Alam,[56] RT is critical in shaping individual attitudes towards RF. Embracing a mindset that values diverse beliefs becomes instrumental in countering extremism, fostering a societal environment where individuals with varied convictions coexist harmoniously through respectful dialogue.[57] Thus, the link between religious intolerance and fundamentalism accentuates the significance of fostering an environment of acceptance and understanding and contributes to the discourse on RT by emphasising the ongoing debate between expanding individual rights and advocating for more robust secularism and multiculturalism.[58]

Encouraging RT holds the potential to diminish the allure of extremist ideologies that aim to segregate people based on their faiths.[59] It minimises conflicts among individuals from diverse religious backgrounds and cultivates an environment encouraging education and understanding of religious beliefs and practices. Doing so mitigates misunderstandings, prejudices and stereotypes that might otherwise fuel the growth of RF.[60]

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53 Cf. della Porta, *Research on Social Movements and Political Violence*; Iannaccone/Berman, *Religious Extremism*.

54 Cf. Agbiji/Swart, *Religion and Social Transformation in Africa*.

55 Cf. Davis, *Enforcing Christian Nationalism*; Wibisono/Louis/Jetten, *The Role of Religious Fundamentalism*.

56 Cf. Alam, *A Collaborative Action in the Implementation of Moderate Islamic Education to Counter Radicalism*.

57 Cf. Ethridge/Feagin, *Varieties of "Fundamentalism"*; Pratt, *Terrorism and Religion: Christian Fundamentalism*.

58 Cf. Altemeyer/Hunsberger, *Authoritarianism, Religious Fundamentalism, Quest, and Prejudice*; Brown/Forst, *The Power of Tolerance*.

59 Cf. Pratt, *Terrorism and Religion: Christian Fundamentalism*.

60 Cf. Pelupessy-Wowor, *The Role of Religious Education in Promoting Religious Freedom*.

Similarly to the findings of Sabriseilabi et al.,[61] our results indicate that individuals who completely disagree or disagree with the notion of killing citizens who commit evil in the eyes of God or Allah exhibit lower levels of RF. This suggests a consistent pattern across studies, reinforcing the idea that individuals who express opposition to acts of violence carried out in the name of religion are likely to demonstrate lower levels of RF. Thus, as in Curran,[62] the opposition to violence in the context of religious beliefs might indicate a more moderate or tolerant interpretation of one's faith. Individuals who reject killing citizens based on perceived evil might prioritise values of compassion, forgiveness, or a more nuanced understanding of morality within their religious framework.

Moreover, the results of our study reveal a noteworthy positive relationship between instances of religious discrimination and the inclination to be more religiously fundamentalist. This correlation suggests that, in certain situations, individuals subjected to religious discrimination may amplify their religious or fundamentalist beliefs.[63] This response appears to function as a coping mechanism wherein the individuals seek solace, solidarity, and a reinforced sense of identity within their religious community.[64] The heightened adherence to RF in the face of discrimination might be viewed as a psychological and social response to external challenges.[65] Thus, individuals may find a source of strength and resilience in their religious convictions, turning to their faith to navigate the adversity brought about by discrimination.

As observed in previous studies,[66] socioeconomic characteristics influence RF. Quantile regression models reveal a tendency for women to display more pronounced fundamentalist tendencies than men. Nonetheless, the intricate relationship between gender and RF is influenced by various factors. As highlighted by Hannover et al.,[67] women might find themselves relegated to subservient roles in societies where RF prevails, encountering limited opportunities

61   Cf. Sabriseilabi/Williams/Sadri, *How Does Race Moderate the Effect of Religion Dimensions on Attitudes toward the Death Penalty?*

62   Cf. Curran, *Tolerance and Nonviolent Practices*.

63   Cf. Akbaba/Taydas, *Does Religious Discrimination Promote Dissent?*

64   Cf. Branscombe/Schmitt/Harvey, *Perceiving Pervasive Discrimination among African Americans*.

65   Cf. Yelderman, *Cognitive Rigidity Explains the Relationship between Religious Fundamentalism and Insanity Defence Attitudes*.

66   Cf. Ferrara, *Religious Tolerance and Understanding in the French Education System*; Kubicek et al., *"God made me Gay for a Reason"*; de Oliveira/de Oliva Menezes, *The Meaning of Religion/Religiosity for the Elderly*.

67   Cf. Hannover/Gubernath/Schultze/Zander, *Religiosity, Religious Fundamentalism, and Ambivalent Sexism*.

in education, employment, and political participation. This situation may contribute to an increased alignment with RF among women, offering them a sense of community, purpose, and identity. As mentioned above, according to Stjepanović-Zaharijevski,[68] women across major world religions often face unfavourable conditions, with societies shaped by these religions imposing restrictions on women's rights. Thus, these disparities might lead to the countries in which they inhabit more RF positions.

Furthermore, in accordance with the findings of Fan et al.,[69] individuals with higher income levels are more likely to exhibit lower levels of fundamentalism, as corroborated by this analysis. Higher-income individuals are often associated with lower religious affiliation or a reduced likelihood of embracing RF. Additionally, as per Yusuf et al.,[70] those perceiving higher salary levels are more likely to experience economic security, potentially diminishing feelings of insecurity and uncertainty, which can foster higher tolerance and lower RF.

7 Conclusion

This study analyses the mediating effects of citizen's RT and other socio-economic factors on RF in Germany, Cyprus, the USA, Lebanon, Palestine, Israel, Turkey, and Kenya. The analysis is conducted using a WZB – Berlin Social Science Center dataset. A Fuzzy-Hybrid TOPSIS approach is adopted to measure both latent social constructs, namely RT and RF. Differing from commonly utilised methodologies in attitude studies – such as Structural Equation Model (SEM), Multigroup Confirmatory Factor Analysis (MGCFA), and Linear Regressions – the Fuzzy-Hybrid TOPSIS stands out as a valid tool for presenting a more realistic and flexible framework. This approach can provide more accurate and nuanced explanations of social phenomena,[71] whereas other methodologies frequently exhibit inaccuracies and significant information losses.[72]

Our results complement other studies.[73] Less tolerant citizens show higher values of RF, such as in Kenya, Lebanon, and Palestine. Moreover, quantile regression estimation highlights that RT, country, education, income, religious

68 Cf. Stjepanović-Zaharijevski,*"The Female" Element and its Influence on Islam.*

69 Cf. Fan et al., *A Simulation Study of How Religious Fundamentalism Takes Root.*

70 Cf. Yusuf/Rizal Shidiq/Hariyadi, *On Socio-economic Predictors of Religious Intolerance.*

71 Cf. Zimmermann, *Fuzzy Set Theory.*

72 Cf. Martín/Indelicato, *A Fuzzy-hybrid Analysis of Citizens' Perception toward Immigrants in Europe.*

73 Cf. Fan et al., *A Simulation Study of How Religious Fundamentalism Takes Root*; Habermas, *Religious Tolerance*; Hannover/Gubernath/Schultze/Zander, *Religiosity, Religious*

conversion, religious discrimination and extreme opinions about the death penalty for those who commit evil in the eyes of God or Allah are critical to explaining fundamentalism.

Although this study carefully complements the existing literature, it is not exempt from some limitations. The analysis is not dynamic, considering only one year of reference. Moreover, the countries chosen represent a specific set of cultural, religious, and socio-political contexts, predominantly comprising Muslim and Christian-majority countries. As such, the findings may not be directly generalisable to other regions or countries with different religious compositions or social dynamics. Future studies should consider these two limitations by extending the number of countries included in the analysis and considering at least two waves of the same questionnaire. Including some other questions that complement the current study is also recommended.

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