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Ideological Worldviews, Religiosity, and COVID-19 Vaccine Hesitancy: Evidence from Greece

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Abstract

To examine associations between ideological orientations, religiosity, and COVID-19 vaccine perceptions in Greece before the vaccination rollout. A sample of 166 Greek university students completed measures of Right-Wing Authoritarianism (RWA), Social Dominance Orientation (SDO), belief in a just world (BJW), and religiosity (general/COVID-related). Vaccine perceptions included perceived protection, side effects, institutional trust, and vaccination willingness. Higher SDO was associated with lower perceived protection and institutional trust. BJW associated with greater institutional trust. RWA and increased religiosity/spirituality were associated with stronger perceptions of vaccine side effects. Logistic regression showed that RWA was associated with vaccination reluctance. Indirect effect analysis indicated that increased religiosity/spirituality statistically accounted for part of the association between RWA and perceived vaccine side effects. Ideological orientations and pandemic-related religious engagement were associated with vaccine perceptions during the crisis. Findings highlight the relevance of existential threat and worldview defense to public health interventions.

Keywords

Right-Wing Authoritarianism; Social Dominance Orientation; religiosity; vaccine hesitancy; institutional trust

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Introduction

The global COVID-19 crisis necessitated a rapid vaccination rollout to curb transmission and severe disease outcomes [1]. While vaccines represented a critical public health tool, their effectiveness relied on widespread acceptance. However, vaccine hesitancy - defined as the "delay in acceptance or refusal of vaccines despite their availability" [1] - emerged as a significant obstacle, influenced by concerns over safety, efficacy, institutional trust, and the virus's origins [2, 3]. Public communication around COVID-19 often adopted a top-down approach, overlooking trusted intermediaries such as religious or ideological communities. This lack of engagement weakened public trust and reinforced skepticism [4-6]. These challenges underscore the importance of inclusive, culturally informed communication strategies that actively involve trusted intermediaries. Effective crisis communication requires transparency, cultural sensitivity, and collaboration with local stakeholders [7]. Messages must resonate with community values, employ trusted messengers, and promote two-way dialogue to maintain public trust. Such principles are particularly relevant in Greece, where limited engagement with religious and ideological groups hindered public acceptance of health measures.

Few studies have explored vaccine intentions in Greece. Argyroudi and Gardikiotis reported that 53.9% of respondents expressed negative or uncertain intentions, primarily influenced by positive vaccine beliefs, anticipated regret, and social norms, which outweighed demographic and trust-related factors [8]. Understanding the psychological factors that shape vaccine attitudes is therefore a central concern within health psychology. In particular, ideological worldviews and religious belief systems may influence how individuals interpret health threats, evaluate medical information, and respond to public health recommendations during periods of uncertainty such as the COVID-19 pandemic.

Among the array of factors shaping vaccine attitudes, underlying psychological dispositions and ideological frameworks have garnered considerable attention in social psychology [4]. Political ideology—particularly the distinction between left- and right-leaning orientations—has been consistently linked to vaccine acceptance. However, much of the existing research has focused on broad associations between ideology and health behavior, without incorporating the theoretical perspectives employed in this study, such as Terror Management Theory or models of authoritarianism. Furthermore, most studies to date have drawn on data from the United States or other Western contexts, paying limited attention to the Greek sociocultural setting. This gap in the literature underscores the importance of the present study, which examines how existential concerns, religiosity, and ideological orientations intersect in shaping vaccine attitudes in Greece during the COVID-19 pandemic. To better understand the psychological underpinnings of vaccine perceptions during the COVID-19 pandemic, the present study draws upon three complementary theoretical frameworks: Terror Management Theory (TMT) [9], the Meaning Maintenance Model (MMM) [10], and the Dual Process Motivational Model of Ideological Attitudes and System Justification [11-12]. TMT posits that existential anxiety elicited by mortality salience—such as that triggered by a global health crisis—motivates individuals to affirm culturally sanctioned worldviews that provide meaning and psychological security. Likewise, MMM highlights the human drive to restore coherence and purpose when meaning is disrupted, implying that ideological rigidity and heightened religiosity may function as compensatory responses to the existential disorientation provoked by the pandemic. The Dual Process Motivational Model further explains how ideological orientations—specifically Right-Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO)—represent distinct psychological needs related to threat management and social hierarchy, which subsequently shape attitudes towards collective health measures. Taken together, these perspectives suggest that existential threat may activate psychological motives to defend culturally meaningful worldviews. Ideological orientations such as Right-Wing Authoritarianism and Social Dominance Orientation represent structured belief systems that shape how individuals interpret threats and evaluate institutional authority. Religiosity may similarly function as a worldview resource that provides existential meaning and psychological security during periods of uncertainty. Within the context of a global health crisis, these ideological and religious frameworks may therefore influence how individuals evaluate vaccination risks, institutional trust, and public health recommendations.

Numerous studies have observed greater acceptance of COVID-19 vaccination among individuals identifying with left-leaning political ideologies [13]. Conversely, 'right-leaning' or conservative political ideologies have been associated with greater vaccine hesitancy, often linked to a lower perceived risk of COVID-19, increased belief in conspiracy theories, and reduced trust in governmental and scientific institutions [14]. For instance, in a US survey, vaccine acceptance was notably lower among White individuals with Republican ideologies [15]. This pattern extends beyond the United States, as ideological extremism has also been strongly correlated with vaccine skepticism in various European contexts [16]. The politicization of COVID-19 vaccines has therefore contributed to a pronounced partisan divide, rendering ideological conservatives more likely to express concerns about vaccine safety and efficacy [15].

Beyond political ideology, religiosity has emerged as a complex and occasionally contradictory predictor of vaccine attitudes. An inverse association between religiosity and vaccination intention has been reported among Muslim and Christian populations, with religiosity and COVID-19 conspiracy beliefs being positively related to vaccine hesitancy [17-18]. For example, Murphy et al. reported that in both Irish (69.8% Christian) and UK (50.4% Christian) samples, vaccine-hesitant or resistant individuals exhibited significantly stronger religious beliefs than vaccine-accepting groups, particularly concerning a hypothetical vaccine during the initial lockdown period [18].

However, the association between religiosity and vaccine acceptance is not uniform and seems to depend more on the

type of religious or supernatural belief than on overall religiosity per se. For instance, some religious individuals believe that God endorses COVID-19 vaccination, a view associated with higher vaccine acceptance and lower susceptibility to conspiracy thinking [17, 19]. These findings indicate that although religiosity can act as a barrier, it also offers an avenue for public health engagement—particularly through collaboration with religious leaders and faith communities to promote vaccine uptake.

Trust in the healthcare system and its providers is central to vaccine acceptance. Numerous studies consistently demonstrate that trust in allopathic providers and the broader healthcare system is a key determinant of vaccine uptake [13, 20]. Such trust is strengthened through positive, non-judgmental, and supportive interactions with healthcare providers who acknowledge and address patient concerns [14]. Moreover, prior acceptance of vaccines for other diseases—such as influenza—strongly predicts COVID-19 vaccine acceptance, reflecting pre-existing trust in healthcare systems and vaccine production processes [20]. Interestingly, belief in the natural origin of SARS-CoV-2 also appears to foster trust in healthcare systems and reduce susceptibility to conspiracy beliefs, thereby promoting vaccine acceptance. For example, one study found that vaccine acceptance rates were 26% higher in Turkey and 63% higher in the United Kingdom among participants who believed COVID-19 had a natural origin, compared to those who considered it artificially manufactured [2].

In Greece, the Orthodox Church occupies a long-standing and deeply embedded position within the country's cultural and institutional framework [6]. At the onset of the COVID-19 pandemic, when social distancing measures were first implemented, the Church initially resisted suspending public religious services. Church gatherings were only officially suspended following state intervention [6]. The formal Church leadership—including the Archbishop of Athens and most senior clergy—eventually complied with public health directives. Nevertheless, dissenting clergy and segments of the faithful continued to express vaccine skepticism and anti-vaccine views [6]. Additionally, advocates of "alternative medicine" contributed to vaccine hesitancy by distrusting laboratory-developed pharmaceuticals and promoting natural or holistic healing methods. This orientation often intersects with a broader spiritual worldview emphasizing personal connection with a higher power, the search for meaning, inner harmony, and spiritual well-being [21]. Notably, the convergence of New Age spirituality and alternative health ideologies with conspiracy narratives and far-right discourse became increasingly evident during the pandemic, particularly across social media platforms such as Instagram [6]. In countries such as the Czech Republic and the Netherlands, spiritual beliefs have been identified as strong predictors of vaccine skepticism [21, 22]. Consequently, anti-vaccine discourse in Greece constitutes a complex mosaic of ideologies, combining strong vaccine rejection, religious and political conspiracy narratives, and advocacy for holistic or "natural" alternatives to biomedical interventions [6].

Conducted shortly before the implementation of Greece's universal COVID-19 vaccination program, this study examines the complex interplay between ideological orientations—specifically Right-Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO)—and religiosity in relation to vaccine-related perceptions. The study was carried out during Greece's second COVID-19 lockdown, immediately preceding the launch of the nationwide vaccination program. According to the Oxford COVID-19 Government Response Tracker (OxCGRT), Greece's lockdown restrictions were among the strictest in Europe—and indeed globally—at the time the study was conducted [23]. By investigating how these ideological and religious factors are associated with perceptions of vaccine side effects, perceived protection, trust in the healthcare system, and vaccination intent, the study aims to clarify the nuanced psychosocial determinants of vaccine attitudes within a distinct cultural context. Understanding these dynamics is essential for designing targeted, culturally informed public health communication strategies that address underlying ideological and religious concerns, thereby promoting vaccine acceptance and improving public health outcomes.

These theoretical perspectives can be understood as complementary. From a Terror Management Theory perspective, existential threats such as a global pandemic heighten mortality awareness and motivate individuals to defend their cultural worldviews. The Meaning Maintenance Model similarly suggests that individuals respond to threats to meaning by reinforcing existing belief systems. Within this context, ideological orientations such as Right-Wing Authoritarianism and Social Dominance Orientation may shape how individuals interpret health threats and institutional responses. Religiosity may also function as a worldview resource that provides existential security and meaning during periods of uncertainty. Together, these frameworks suggest that ideological and religious orientations may influence how individuals interpret vaccination risks and benefits during a public health crisis.

Method

Participants

A total of 174 students enrolled at a large public university in Greece participated. Following data-quality screening using an anomaly index, eight cases were excluded, primarily because of high proportions of missing data or anomalous response patterns, resulting in a final sample of 166 participants. Data were collected online through convenience and snowball sampling via university social networks. The sample included 28 men (16.9%) and 138 women (83.1%), with a mean age of 23.3 years (SD = 7.07).

Measurements

Social Dominance Orientation (SDO): measured with the 16-item scale by Pratto et al. [24] ($\alpha = 0.88$). Items (e.g., "Some groups of people are just more worthy than others") were rated on a 7-point scale (1 = strongly disagree, 7 = strongly agree); higher scores indicated greater approval of group dominance.

Right-Wing Authoritarianism (RWA): assessed with Zakrisson's [25] 15-item adaptation of Altemeyer's scale (α = 0.77), rated from 1 = very negative to 7 = very positive; higher scores reflect stronger conservative orientation.

Global Belief in a Just World (BJW): seven items [26-27] rated 1–7 (strongly disagree–strongly agree), α = 0.86.

Trust in health institutions: participants rated trust (1 = not at all, 7 = highest) towards the National Health System, doctors and nurses, and the WHO. The index, adapted from Massou et al. [28] and Tsouvelas et al. [29], showed acceptable reliability (α = 0.71).

Duke University Religion Index (DUREL) questionnaire: Participants rated the five-item Duke University Religion Index (DUREL); α = 0.88) assessing organizational, non-organizational, and intrinsic religiosity (e.g., church attendance, belief importance) [30]. Higher scores indicate greater religiosity.

Religiosity in relation to COVID-19: three items assessed (1) faith importance regarding COVID-19 risk, (2) change in faith during the pandemic, and (3) faith-based sense of safety; each rated on a 7-point scale (1 = not at all, 7 = very much).

Perceived Vaccine Protection: six items measuring perceived effectiveness of COVID-19 vaccines for personal, familial, and societal protection (α = 0.90).

Perceived Side Effects: five items assessing concern over vaccine adverse effects (e.g., mild reactions, severe illness, fertility issues; α = 0.82).

Vaccination Intention: a single yes/no item indicating intention or reluctance to vaccinate.

Demographics: gender, age, health status, vulnerability group membership, and religious belief strength. (see Table 1).

Table 1. Demographics of the sample (N = 166)

		N	*%*
Gender			
Male		28	16.9
Female		138	83.1
Vulnerable population			
Yes		21	12.7
No		145	87.3
	Range	***M***	***SD***
Age	18–52	23.30	7.05
Self-evaluation of health status	1-7	5.67	1.15
Trust in religion	1-7	3.71	2.20
Trust in God	1-7	4.20	2.19

Procedure

Instruments were translated into Greek via back-translation [31]. Data were collected online between February 2021, during Greece's second national COVID-19 lockdown and shortly before the implementation of the nationwide vaccination program using a cross-sectional design; completion time was about 35 minutes. Before beginning the survey, participants viewed an information page describing the study's purpose, procedures, voluntary nature, anonymity, and data-protection arrangements. Written informed consent was obtained electronically from all participants by requiring them to indicate their consent before accessing the questionnaire. Participants who did not provide consent could not proceed to the survey.

Ethical Statement

Under the institutional regulations in force when the study was conducted, formal ethics committee approval was not required for this anonymous, non-interventional survey. The study nevertheless followed the ethical principles of the Declaration of Helsinki and the research ethics guidelines of the authors' host institution.

Data Analysis

Data were analyzed using IBM SPSS Statistics (Version 20) and Jamovi (Version 2.6.44). Prior to analysis, data were screened for missing values, outliers, and assumption violations. Eight cases showing excessive missing data or anomalous response patterns were excluded, resulting in a final sample of 166 participants. Descriptive statistics (means, standard deviations, and ranges) were computed for all study variables, and internal consistency reliability was assessed using Cronbach's α coefficients. To examine associations among ideological, religiosity-related, and vaccine perception variables, Pearson product–moment correlations were conducted. To identify significant statistical correlates of vaccine attitudes, a series of stepwise multiple regression analyses were performed with Right-Wing Authoritarianism (RWA), Social Dominance Orientation (SDO), Belief in a Just World (BJW), and religiosity measures entered as predictors. Three dependent variables were tested separately: (a) perceived vaccine protection, (b) perceived vaccine side effects, and (c) trust in health institutions. A binary logistic regression analysis was then conducted to assess the association between RWA and vaccination reluctance (coded as 0 = intention to vaccinate, 1 = no intention to vaccinate). Odds ratios (ORs) and 95% confidence intervals (CIs) were reported to estimate the likelihood of vaccine refusal as a function of authoritarian tendencies. Finally, an indirect effect analysis was conducted in Jamovi to examine whether increased religiosity or spirituality during the COVID-19 pandemic statistically accounted for part of the association between RWA and perceived vaccine side effects. The indirect effect was evaluated using a bootstrapping procedure (2,000 resamples) with bias-corrected 95% CIs.

Results

Descriptive statistics

Participants showed moderate trust in the National Health System and the WHO, and higher trust in doctors and nurses. Ideological scores were higher for RWA and lower for BJW and SDO. Religiosity levels (DUREL) and COVID-related faith measures were generally low. Participants expressed favorable views of vaccine protection and limited concern about side effects (Table 2).

Table 2. Means and standard deviations of the study variables

	Min	*Max*	*M*	*SD*
Trust in National Health System (ESY)	1	7	3.7	1.5
Trust in doctors/nurses	2	7	5.3	1.2
Trust in WHO	1	7	4.4	1.5
Trust in health institutions	1	7	4.4	1.2
SDO	1	6	1.9	0.8
RWA	1	6	3.4	0.9
BJW	1	6	2.9	0.8
Religiosity (DUREL)	1	5	2.4	1.2
The importance of faith or spirituality in relation to COVID-19 risk	1	7	2.9	2.0
The degree to which faith increased during the pandemic	1	7	2.2	1.7
The extent to which faith made participants feel safer	1	7	2.6	1.9
Protection for yourself	1	5	3.2	1.0
Protection for family/loved ones	1	5	3.4	1.0
Protection for vulnerable groups	1	5	3.6	1.0
Lifting restrictions within a year	1	5	3.7	1.0
Stop spread in the country	1	5	3.5	1.0
Stop global spread	1	5	3.4	1.0
Total score: Attitudes towards the Protection of Vaccines	1	5	3.5	0.8
Mild (e.g., low fever)	1	5	3.5	0.9
Acute/treatable condition	1	5	2.5	0.9
Permanent/untreatable condition	1	5	2.0	1.0
Death	1	5	1.7	0.9
Future fertility problems	1	5	1.9	1.1
Total score Attitudes towards Side Effects of Vaccines	1	5	2.3	0.7

Regarding unwillingness to be vaccinated, 26.2% of respondents were unwilling, while 73.8% indicated willingness.

Correlation of attitudes towards vaccine protection, side effects and trust in Health institutions with ideological and religiosity variables

Perceived vaccine protection was negatively correlated with SDO. Perceived side effects correlated positively with SDO, RWA, and religiosity, as well as COVID-related spirituality: faith importance, faith increase, and faith-based safety. Trust in health institutions correlated positively with Belief in a Just World and faith importance (see Table 3).

Table 3. Correlations of vaccine attitudes and trust in health institutions with ideological and religiosity variables

Pearson r	Attitudes Toward the Protection of Vaccines	Attitudes towards Side Effects of Vaccines	Trust in health institutions
SDO	–.15*	.21**	–.14
RWA	–.12	.29**	.00
BJW	.02	.07	.22**
Religiosity	–.03	.23**	.12
How important is your faith/or spirituality in relation to the risk posed by the coronavirus?	–.05	.29**	.17*
Has your faith/or spirituality increased during the coronavirus period?	–.04	.33**	.08
Would you say that your faith/or spirituality makes you feel safer during the pandemic?	–.12	.28**	.07

Predictors of Attitudes Toward the Protection of Vaccines

To investigate factors predicting perceived vaccine protection, a stepwise linear regression was performed. The analysis revealed that Social Dominance Orientation (SDO) was the only variable that significantly entered the model, $F(1, 162) = 3.91$, $p = .050$. The model was marginally significant, explaining 2.4% of the variance ($R^2 = .024$). SDO was a marginally significant negative predictor of vaccine protection, $\beta = -.154$, $p = .050$. Individuals with higher social dominance orientation tended to perceive the vaccine as offering less protection (see Table 4).

Predictors of Attitudes Toward Side Effects of Vaccines

A stepwise linear regression analysis was conducted to examine whether Right-Wing Authoritarianism (RWA) and the increase in religiosity/spirituality during the COVID-19 pandemic were associated with participants' perceptions of vaccine side effects. The final model was statistically significant, $F(2, 160) = 14.54$, $p < .001$, and explained 15.4% of the variance in side effect perception ($R^2 = .154$, Adjusted $R^2 = .143$). Both predictors were significant. RWA was positively associated with perceived vaccine side effects, $\beta = .215$, $p = .005$. Similarly, the increase in religiosity/spirituality during COVID-19 was also a significant positive predictor, $\beta = .274$, $p < .001$. Individuals with stronger authoritarian tendencies and those who reported an increase in religiosity/spirituality during the pandemic were more likely to perceive greater risks of vaccine side effects (see Table 4).

Predictors of Trust in Health Institutions

A stepwise regression analysis was conducted to identify predictors of trust in the healthcare system. The model was statistically significant, $F(2, 161) = 6.48$, $p = .002$, explaining 7.5% of the variance ($R^2 = .08$, Adjusted $R^2 = .06$). Two variables emerged as significant predictors: General Trust in a Just World (BJW) and SDO. BJW was positively associated with trust in the healthcare system, $\beta = .231$, $p = .003$, while SDO was negatively associated, $\beta = -.164$, $p = .033$. Greater belief in a just world was linked to higher trust in health institutions, whereas stronger dominance-oriented attitudes were linked to lower trust (see Table 4).

Table 4. Multiple regression analyses for the prediction of attitudes towards the protection of vaccines, Attitudes towards Side Effects of Vaccines and Trust in health institutions by ideological and religiosity parameters

	Attitudes Toward the Protection of Vaccines		Attitudes towards Side Effects of Vaccines		Trust in health institutions	
	Step(ΔR2)	β	Step(ΔR2)	β	Step(ΔR2)	β
SDO	1(0.02)	– .15*			2(0.03)	– .16*
RWA			2(0.04)	.22**		
BJW					1(0.05)	.23**
Religiosity						
How important is your faith/or spirituality in relation to the risk posed by the coronavirus?						
Has your faith/or spirituality increased during the coronavirus period?			1(0.11)	.27***		
Would you say that your faith/or spirituality makes you feel safer during the pandemic?						
	R2 = .02		R2 = .15		R2 = .08	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Predicting Reluctance to Get Vaccinated

A binary logistic regression was conducted to assess whether RWA was associated with the intention not to get vaccinated. The final model included only RWA as a significant predictor, $B = 0.411$, $SE = 0.208$, Wald = 3.91, $p = .048$. The odds ratio (OR) was 1.51, indicating that higher levels of RWA were associated with a 51% increase in the odds of not intending to vaccinate. The overall model was marginally significant, $\chi^2(1) = 4.09$, $p = .043$, with a small explained variance (Nagelkerke $R^2 = .036$). Higher authoritarianism was associated with a greater likelihood of rejecting vaccination, although the model's explanatory power was limited.

Indirect Effect Analysis

An indirect effect analysis was conducted to examine whether increased faith or spirituality during the coronavirus period statistically accounted for part of the association between right-wing authoritarianism (RWA) and perceived vaccine side effects. The analysis revealed a significant indirect effect, indicating that increased faith or spirituality during the coronavirus period statistically accounted for part of the association between RWA and perceptions of vaccine side effects. Specifically, the indirect effect was statistically significant, $\beta = 0.06$, $SE = 0.02$, $z = 2.58$, $p = .010$, with higher RWA being associated with a greater reported increase in faith or spirituality during the pandemic, which was, in turn, associated with stronger perceptions of vaccine side effects. The direct asso-

ciation of RWA on vaccine side effect perceptions remained significant after increased faith or spirituality was included in the model, β = 0.18, *SE* = 0.06, *z* = 2.88, *p* = .004, indicating that the indirect pathway did not fully account for this association. The total association of RWA on perceived vaccine side effects was also significant, β = 0.24, *SE* = 0.06, *z* = 3.88, *p* < .001. Analysis of the individual path estimates showed that RWA was significantly associated with increased faith or spirituality during the pandemic, β = 0.52, *SE* = 0.14, *z* = 3.65, *p* < .001. In turn, increased faith or spirituality was significantly associated with greater perceptions of vaccine side effects, β = 0.12, *SE* = 0.03, *z* = 3.65, p < .001. The direct association from RWA to perceived vaccine side effects remained significant, β = 0.18, *SE* = 0.06, *z* = 2.88, *p* = .004. These findings suggest that increases in faith or spirituality during the coronavirus pandemic statistically accounted for part of the association between right-wing authoritarianism and concerns about vaccine side effects.

Discussion

This study investigated the associations of ideological, existential, and religious orientations with vaccine attitudes and trust in health institutions in Greece. Findings revealed that Right-Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO) were associated with greater vaccine hesitancy and lower institutional trust, whereas increased religiosity during the pandemic was associated with heightened concern about vaccine side effects. Collectively, these results suggest that ideological and existential dynamics are related to public responses to scientific authority during crises. Unlike studies relying on single-item religiosity measures, our multidimensional approach assessed both general religiosity and pandemic-related changes in faith during collective threats. Static measures may underestimate religiosity's context-dependent associations; therefore, future research should explore temporally sensitive expressions of faith in health-related behavior.

Specifically, authoritarianism and religiosity were positively associated with concern over vaccine side effects, while social dominance orientation was negatively related to perceived vaccine protection and institutional trust. In contrast, belief in a just world was associated with higher levels of trust in health institutions. Furthermore, RWA was significantly associated to reluctance to vaccinate. These results contribute to the growing body of evidence indicating that ideological and existential motives are deeply embedded in health-related decision-making, particularly during large-scale crises such as pandemics.

From an existential social psychology perspective, these findings can be understood through the framework of Terror Management Theory [9]. TMT proposes that mortality awareness evokes existential anxiety, which individuals manage by reinforcing culturally sanctioned worldviews that provide meaning, order, and symbolic immortality. The COVID-19 pandemic—with its omnipresent reminders of mortality—likely heightened such salience. In this context, increased religiosity and authoritarian orientations may have functioned as psychological defense mechanisms, offering existential stability and a sense of security [32]. The association between increased religiosity during the pandemic and heightened concern about vaccine side effects may reflect a defensive turn towards sacred and familiar belief systems in response to uncertainty. This aligns with prior evidence suggesting that religious or ideological rigidity often intensifies under existential threat [33], particularly when scientific interventions—such as vaccination—are perceived as morally ambiguous or in tension with core beliefs. The observed indirect association is consistent with the possibility that vaccine skepticism among individuals higher in RWA may be related to worldview-defensive processes rather than reflecting a purely ideological or conservative stance. Consistent with Burke et al.'s meta-analysis, existential threat appears to strengthen adherence to available cultural meaning systems—such as religious faith and authoritarian values—that provide psychological security while concurrently fostering distrust towards biomedical interventions [34]. Greek experimental evidence similarly indicates that mortality salience strengthens existing ideological and religious worldviews rather than prompting convergence towards a single conservative orientation [35]. This distinction underscores the need for interventions addressing vaccine hesitancy to consider the worldview-defensive roles of religiosity and authoritarianism. Public health communication should therefore be designed to resonate with these frameworks, rather than opposing them through exclusively rational or scientific messaging.

Likewise, the positive association between RWA and both vaccine side-effect concerns and hesitancy supports the notion that authoritarian ideologies serve as cognitive–motivational strategies for mitigating existential anxiety. Authoritarianism is typically linked to a heightened need for order, cognitive closure, and sensitivity to threat [36, 37]. Consequently, vaccines—particularly those developed rapidly and perceived as novel or externally imposed—may appear threatening to the structured worldview that high-RWA individuals value, leading to increased suspicion or resistance, especially when such initiatives are associated with global or elite institutions that challenge traditional norms.

The negative association between Social Dominance Orientation (SDO) and both perceived vaccine protection and trust in the healthcare system aligns with the dual-process motivational model of ideology and prejudice [11], which distinguishes between the threat-driven pathway of RWA and the competitiveness-driven pathway of SDO. SDO reflects a preference for hierarchy and intergroup inequality, and individuals high in SDO often exhibit lower empathy and reduced concern for collective welfare. In the context of a public health crisis, where vaccine protection is often framed in terms of collective benefit and solidarity (e.g., protecting the vulnerable), individuals high in SDO may disengage or devalue such narratives. Their lower Trust in health institutions may stem from a more generalized skepticism towards egalitarian systems or institutions perceived to promote redistribution of care and protection [24].

Importantly, belief in a just world (BJW) was positively associated with Trust in health institutions. From a system justification theory perspective [12,36], this belief serves as a palliative function by promoting the perception that the social order is fair and predictable, even amid crisis. Individuals endorsing strong BJW may be more inclined to trust official narratives and institutional responses to the pandemic, including vaccine rollout, because doing so affirms their worldview that the world operates according to just and rational principles. This trust, in turn, may be associated with reduced anxiety and a greater sense of control [38].

The indirect effect analysis suggested that increased faith or spirituality during the COVID-19 pandemic may statistically account for part of the association between Right-Wing Authoritarianism (RWA) and perceived vaccine side effects. One possible interpretation is that periods of heightened uncertainty and mortality awareness, such as the COVID-19 crisis, may lead some individuals to rely more strongly on existing cultural or religious belief systems that provide meaning and psychological stability. From the perspective of Terror Management Theory [9] and the Meaning Maintenance Model [10], existential threats can motivate individuals to reaffirm familiar worldviews that help restore a sense of coherence and control. Within this context, individuals higher in authoritarian orientation may have been more likely to report increased reliance on religious or spiritual frameworks during the pandemic. Such shifts in meaning-making may in turn be related to how individuals interpret health information and evaluate potential risks associated with novel medical interventions such as COVID-19 vaccines. Importantly, these findings should be interpreted cautiously given the cross-sectional design of the study, which does not allow conclusions about causal relationships. Nevertheless, the results suggest that ideological orientations, religious coping, and perceptions of health risks may be interconnected processes during periods of large-scale societal threat.

It is important to note that the association between religiosity and vaccine concerns should not be interpreted as indicating that religiosity inherently promotes vaccine skepticism. Religiosity may also function as a coping mechanism during periods of uncertainty and existential threat, providing individuals with a sense of meaning and psychological security. In this context, increased reliance on religious or spiritual frameworks during the pandemic may have been associated with how individuals interpreted health information and perceived potential risks associated with vaccination.

Implications and Future Directions

These findings have both theoretical and practical implications. Theoretically, they highlight the value of integrating existential-motivational frameworks into the study of health behavior, particularly in times of collective threat. They also underscore the differentiated roles of RWA and SDO, affirming the dual-process model as a useful lens for understanding ideological resistance to health interventions.

Practically, our results suggest that public health messaging should be sensitive to existential and ideological orientations. For instance, vaccine promotion strategies that emphasize moral values shared by religious or conservative communities—such as protecting the vulnerable or fulfilling civic duty—may be more effective than purely rational appeals. Engaging trusted messengers, such as religious leaders or culturally conservative figures, could also enhance receptivity among hesitant populations. The findings of the present study raise the possibility that public health messaging during the COVID-19 pandemic may have inadvertently alienated segments of the population characterized by higher religiosity and right-wing authoritarian orientations. Specifically, the Greek government's communication strategy, which often framed vaccine skeptics as irrational "sprayed" individuals or conspiracy theorists [6], may have contributed to heightened polarization. This framing could plausibly have reinforced defensiveness among conservative or religious individuals who already perceived vaccines as threatening to their values or worldview. Research in health communication indicates that stigmatizing skeptical groups can entrench resistance and deepen distrust in scientific and governmental authorities [39]. Instead, targeted, culturally sensitive interventions that respect ideological and spiritual frameworks could foster more openness. Collaborating with trusted messengers—such as local clergy or faith-based community leaders—has been shown to increase vaccine acceptance, particularly when public health initiatives are framed in moral or communal terms [19]. In the Greek context, more proactive engagement between state health authorities and the Orthodox Church, particularly among moderate or influential figures who supported vaccination, could have mitigated distrust and improved vaccination rates among religious conservatives. Tailoring messages to emphasize shared values—such as protecting the vulnerable, fulfilling communal responsibility, and acting in the service of others—may thus be more effective than appeals rooted solely in scientific authority.

Public health interventions may benefit from acknowledging the role of worldview-related beliefs in shaping health attitudes. Communication strategies that engage trusted community institutions, including religious organizations, may help increase confidence in vaccination programs. In addition, messages that address concerns about vaccine safety while emphasizing collective responsibility and social protection may resonate more strongly among individuals whose ideological orientations emphasize order, authority, or moral values.

Limitations and Conclusion

This study has several limitations. First, the cross-sectional design does not allow causal conclusions about the relationships observed. Second, the sample consisted primarily of university students and was predominantly female, which limits the generalizability of the findings to the broader Greek population. University students may differ from the general population in levels of political engagement, institutional trust, and vaccine

attitudes. Additionally, the use of self-report measures may introduce response biases such as social desirability. Future research should examine these relationships in larger and more diverse samples and consider longitudinal designs to better understand the development of vaccine attitudes over time. In conclusion, this study contributes to a deeper understanding of the psychosocial roots of vaccine attitudes during the COVID-19 pandemic. By situating ideological and religious correlates within broader existential frameworks, it underscores how health behaviors are not merely rational choices but may also be associated with deeper needs for meaning, order, and symbolic security in times of crisis.

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Conflict of interest

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