Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Social Science & Medicine 320 (2023) 115671

Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

How socio-institutional contexts and cultural worldviews relate to COVID-19 acceptance rates: A representative study in Italy

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ARTICLE INFO

Handling Editor: Blair T. Johnson

Keywords:
Sensemaking
Semiosis
Vaccine hesitancy
Political values
Trust in institutions
Cultural psychology

ABSTRACT

Rationale: Despite its importance to counter the COVID-19 pandemic, vaccination has raised hesitation in large segments of the population. This hesitation makes it important to understand the mechanisms underlying vaccine acceptance. To this end, the study adopts the Semiotic Cultural Psychology Theory, holding that social behaviors – and therefore, vaccination acceptance – depend on the cultural meanings in terms of which people interpret the social world.

Objective: The study aims at estimating the impact a) of the way people interpret the socio-institutional context of the pandemic and b) of the underlying cultural worldviews on vaccine acceptance. More particularly, the study tested the three following hypotheses. a) The meanings grounding the interpretation of the socio-institutional framework – that is, trust in institutions and political values – are an antecedent of vaccination acceptance. b) The impact of these meanings is moderated by the cultural worldviews (operationalized as symbolic universes). And c), the magnitude of the symbolic universes' moderator effect depends on the uncertainty to which the respondent is exposed. The exposure to uncertainty was estimated in terms of socioeconomic status – the lower the status, the high the exposure to uncertainty.

Methods: An Italian representative sample (N = 3020) completed a questionnaire, measuring vaccination acceptance, the meanings attributed to the socio-institutional context – that is, political values and trust in institutions – and symbolic universes.

Results: The findings were consistent with the hypotheses. a) Structural equation modelling proved that vaccine acceptance was predicted by trust in institutions. b) Multigroup analysis revealed that symbolic universes moderated the correlation between trust in institutions and vaccine acceptance. And c), the moderation effect of symbolic universes proved to occur only in the segment of lower socio-economic status (i.e., the group exposed to higher uncertainty).

Conclusions: Vaccination acceptance is not only a medical issue; it is also dependent upon the rationalization of the socio-institutional context. Implications for the promotion of vaccination acceptance are discussed.

1. Introduction

As the main preventive measure against the COVID-19 pandemic, vaccination has also led to an increase in vaccination hesitancy. Thus, it is not surprising that this issue has been the focus of increasing interest among social scientists and psychologists (Eritsyan et al., 2017). These analyses are embedded in the broad debate on vaccine hesitancy that has developed over the last 20 years. Gowda and Dempsey (2013) distinguished three clusters of interrelated factors connected to vaccination hesitancy: a) *Parent-specific factors*, such as race/ethnicity, education level, income, knowledge about vaccines, and previous experiences. Aspects such as belonging to ethnic minorities, having a

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https://doi.org/10.1016/j.socscimed.2023.115671
Received 8 November 2021; Received in revised form 9 December 2022; Accepted 9 January 2023
Available online 14 January 2023

low income and poor education, and relying on experiential-intuitive thinking (see also Tomljenovic et al., 2020) are correlated with vaccine hesitancy. Nevertheless, educated and high-income mothers may feel that a healthy lifestyle immunizes their children without resorting to vaccines (Reich, 2014). b) *Vaccine-specific factors*, which are linked to how vaccine efficacy, vaccine safety, and disease susceptibility are perceived. Hesitant parents fear the short- and long-term effects of vaccination and consider large numbers of vaccines a risk to the immune system (Dìaz-Crescitelli et al., 2020; Martínez-Diz et al., 2014). Hesitant parents prefer natural immunity and underestimate the risk of diseases that they consider eradicated (Hasnan and Tan, 2021). And c), *External factors*, such as the patient-provider relationship, school immunization requirements, collective values/social norms, policies, and the media. Vaccination is a decision that is made in a historical, political, and cultural environment, so it is well-known that media controversies and incorrect information found on the web influence vaccine uptake (Dubé et al., 2013). Vaccine-hesitant parents are associated with lower trust in the healthcare system, as well as their health provider and government (Brown et al., 2018).

1.1. The COVID-19 vaccine and hesitancy

The COVID-19 pandemic has led to new studies on vaccine hesitancy and the underlying concerns. These studies have shown that the known reasons for refusing vaccination can be applied to the COVID-19 vaccine as well. Recent publications indicate an association between the unwillingness to vaccinate against COVID-19 and a more general negative attitude towards the vaccine (De Figueiredo et al., 2020; Paul et al., 2021), its perceived unsafety (Karlsson et al., 2021), and high religiosity of respondents (Garcia and Yap, 2021).

A dominant rationale for hesitation to immunize is the vaccine development speed (Brown et al., 2018; Dror et al., 2020), especially among older people (Caserotti et al., 2021). Rather than being perceived as the result of collaboration between experts, speed has raised the general population's doubts as to the hasty way that experiments were carried out or the predominantly economic significance of the process (Paul et al., 2021; Pogue et al., 2020). Other explicit drivers of COVID-19 vaccine hesitation that have been highlighted include distrust in vaccine efficacy, unease about its effects, concern about commercial exploitation, and a preference for natural immunity (Paul et al., 2021; Williams et al., 2020). According to Kreps et al. (2020), as the perceived vaccine efficacy increases, the acceptance rate will follow.

Willingness to vaccinate does not depend only on vaccine-related aspects, but also on cultural and sociodemographic factors (Vezzoni et al., 2021). First of all, high levels of vaccine hesitancy are present among ethnic minorities (Paul et al., 2021; Robertson et al., 2021), especially those characterized by distinct social norms and cultures, as well as low levels of education (Moola et al., 2021; Robertson et al., 2021), income (Jantzen et al., 2022; Moola et al., 2021), and knowledge of COVID-19 guidelines (Moola et al., 2021), in addition to the choice not to obtain the seasonal flu vaccine (Nery et al., 2022; Sherman et al., 2021), the presence of comorbidities (Nery et al., 2022; Reno et al., 2021) and, in general, low trust in the healthcare system (Williams et al., 2021) and the safety of the vaccine (Morales et al., 2022). Additionally, women have a greater hesitancy to vaccinate than men (Gautier et al., 2022; Robertson et al., 2021; Zintel et al., 2022), although this effect is moderated by socio-economic background (Morales et al., 2022). Moreover, vaccine hesitancy is negatively correlated with age (Reno et al., 2021; Robertson et al., 2021).

The newness of COVID-19 vaccines also inevitably causes a degree of uncertainty as to the effects or duration of the immunization, leading to the preference to postpone obtaining the vaccine (Seale et al., 2021). In addition, the uncertainty related to the pandemic is magnified by counter-information transmitted via the web and info-dumping phenomena (Barello et al., 2020). Therefore, those who feel highly confused by conflicting information from different sources, as well as anxious and distrustful (about government decisions and information in government newspapers) are the least supportive of vaccination (Lockyer et al., 2021). Finally, personal health-related risk perception, in addition to a positive attitude towards vaccination in general, correlates with acceptance behaviour (Chu and Liu, 2021; Kreps and Kriner, 2021).

1.2. The specificity of the COVID-19 pandemic scenario

As the brief review provided above shows, while the debate has recognized the specificities of COVID-19 vaccination, less attention has been paid to the socio-institutional scenario of the pandemic which frames the meanings people attribute to vaccination. More specifically, it is worth highlighting two major facets of that scenario (for a discussion, see Venuleo et al., 2020).

First, the pandemic has represented a radical global rupture that has profoundly changed people's ways of life, temporal perspectives, and perceptions of others (Time, 2020). This rupture has been felt by large segments of societies as highly threatening and generative of a sense of profound uncertainty. Different conditions merged simultaneously for the first time and have been a challenge for healthcare institutions, clinicians, and policymakers. Additional social representations arose and greatly changed our personal relationships (Jaspal and Nerlich, 2020). New social objects (e.g., social distancing, lockdown measures, wearing masks) emerged and the way of making sense of them triggered different discursive and pragmatic positioning within the population and even cultural conflicts.

Second, and related to its globality, vaccination has gone far beyond the meaning of a medical measure, to assume the value of a strategic, institutional and political issue. In no previous circumstances had the technical and institutional procedures of validation of a vaccine gained such large-scale constant space in media discourses. Again, the organizational and logistic facets of the vaccination campaigns have been managed at the highest institutional level, with the involvement of structures, competencies, and resources from the whole governmental structure.

Once these two major facets are considered, one can expect that the behaviour towards the COVID-19 vaccine (henceforth: the *demand*) may not reflect only its technical, content-specific aspects; in addition, it may indicate how people have interpreted the deep rupture in their lives, produced by the pandemic as well as the institutional and political context of which vaccination is a part. In brief, *the specificity of the COVID-19 vaccine – and therefore of the demand for it – consists of the fact that the experience of the whole context of the pandemic crisis – in both subjective and institutional dimensions – may have played a role in the way people think of and experience vaccination*.

This consideration echoes what has been highlighted by other authors, who have identified trust in institutions (e.g., Lockyer et al., 2021; for the Italian context, see Graffigna, 2021), and political orientation (Kreps and Kriner, 2021) as important drivers of the demand for COVID-19 vaccination. Yet, it is less clear how the meaning attributed to the socio-institutional context operates in the scenario of the radical subjective rupture caused by COVID-19. The current study contributes to this issue by analysing the role played by the interpretation of the socio-institutional scenario in shaping vaccination demand.

1.3. How to model the role of the context

Several psychological theories have recognized that the representation of and attitudes towards objects and events in the social environment are influenced by the interpretation of the social context in which they occur. To provide a few examples, it has been shown that people tend to interpret negative acts as due to situational or dispositional causes due to the perpetrator's membership of the in- or out-group (Weiss and Cropanzano, 1996); evaluations and even perceptions can reflect the salience of implicit social norms (e.g., World Bank Group, 2015) and/or the need to cope with contextual uncertainty (e.g., Arkin

et al., 2013). Again, psychoanalytic theory has highlighted that affect-laden interpretations of the social context frame the meaning attributed to discrete elements of experience (Carli and Paniccia, 1999; Salvatore and Freda, 2011).

This study uses semiotic cultural psychology theory (SCPT, Cremaschi et al., 2021; Valsiner, 2014) to model the role played by the domain meanings grounding the interpretations of the context in COVID-19 vaccine hesitancy. The SCPT framework enables one to take the affect-laden dimension of domain meanings into account and to estimate their distribution within the population as well as their salience (i.e., their capacity to influence other beliefs and behaviour). Following the main statement of cultural psychology, and in line with approaches in social sciences that have highlighted the role of shared systems of meaning – for example, cognitive sociology (Zerubavel, 1999), grid-group theory (Douglas and Wildavsky, 1982), and cultural anthropology (Appadurai, 2004) – SCPT assumes that individual cognition is mediated – that is, channelled, organized, and shaped – by semiotic resources (e.g., beliefs, symbolism, images, values, behavioural scripts, rituals, and worldviews) grounded on patterns of embodied meanings embedded in the systems of practices comprising the social group's cultural milieu (Vygotsky, 1978; see also Cole, 1998; Valsiner, 2007; for a similar view of the role of embodied meanings in regulating social action, see Bourdieu, 1977). Thus, meaning-making is inherently social and cultural.

Semiotic resources have different levels of generalization and interact with each other accordingly. Semiotic resources concerning the context in which the meaning-making is carried out – that is, *domain meanings* – facilitate the access to certain object-specific meanings – that is, those used to interpret objects and events occurring in the context – while preventing the use of others (Salvatore et al., 2021a). Thus, a domain meaning is a global meaning (e.g., a shared belief, a social representation) that provides an interpretation of a given area of social life (e.g., the socio-institutional sphere, the network of family relations, or the work environment). In turn, the domain meaning frames the social actor's interpretation of specific aspects/events in the domain. To provide an example related to the current discussion, if one assumes that the institutions governing the vaccination campaign are unreliable (domain meaning), one will tend to bring narratives concerning dysfunctions and problems related to vaccines (object-specific meaning) to the fore, while backgrounding narratives about the positive function of vaccination.

According to SCPT, the domain meanings are in turn affected by hyper-generalized meanings – *symbolic universes*, according to the terminology adopted (Salvatore et al., 2018). Each symbolic universe works as an embodied, pre-reflective assumption concerning the whole self-world relationship – that is, what and who one is, what the world is, and how things go/should go. More specifically, SCPT conceptualizes symbolic universes as affect-laden global worldviews that do not concern discrete objects (e.g., vaccination, immigration, or the place one lives) or a specific domain (e.g., institutional sphere, family relations), but the entire field of the subject's life, taken as a whole. They are affect-laden because each of them is made up of a set of meanings that are related because of their affective valence (e.g., pleasantness sense of powerfulness), even in the absence of semantic linkage – or even despite their semantic conflict (Ciavolino et al., 2017). Symbolic universes are on the border between culture and biology – as affective, embodied meanings they are a combination of the basic global patterns of sensory-motor organizers of experience (Salvatore et al., 2021a); at the same time, the way the combination occurs depends on the discursive practices and institutional dynamics in which the meaning-makers are embedded (Salvatore, 2019). Thus, symbolic universes work as interiorized cultural frames, which guide the individual's meaning-making, in turn orienting her/his social behaviour.

It is worth pointing out that symbolic universes do not guide the interpretation of a specific object directly; rather, their influence is indirect through two complementary ways (Cremaschi et al., 2021). On the one hand, the symbolic universe with which the meaning-maker is identified limits his/her access to the domain meanings that are effectively in contrast with it. Mannarini et al. (2020) have recently explored the constraining action of symbolic universes in populist voting behaviour in the Italian electorate. They found that the populist vote was driven by a pattern of political culture (i.e., a domain meaning) comprising a combination of civism, support for democracy, and distrust in institutions. In turn, this pattern was associated with certain symbolic universes that are active in the Italian cultural milieu. On the other hand, the symbolic universe moderates the salience of the domain meanings – the greater the consistency between the symbolic universe and the domain meaning, the larger the latter's capacity to frame the interpretation of the specific object – and therefore to guide the behaviour towards it (Cremaschi et al., 2021). The current study will focus on this second aspect, which is relevant to understanding the influence of domain meanings on vaccine hesitancy.

It is important to mention another SCPT tenet. The theory assumes that the capacity of the symbolic universes to constrain access and moderate the salience of domain meanings varies, both within and between subjects (Salvatore et al., 2021b). Thus, meaning-making can be fully controlled by symbolic universes. The variability can depend on several factors that the SCPT is still investigating – for example, the content and structure of the symbolic universes, the characteristics of the meaning-maker, as well as the social context (Salvatore et al., 2019a). One of these factors is the contextual uncertainty associated with meaning-making: the higher the uncertainty, the stronger the salience of the symbolic universe over the domain meaning (Cremaschi et al., 2021; Salvatore et al., 2021b).

In brief, with respect to other theories, the SCPT enables us to take the affective level of meaning-making into account and to model it as the process bridging individual cognition and cultural dynamics. On these grounds, the SCPT has developed a methodological framework to map the content and the structure of the affect-laden generalized meaning, to estimate their distribution within societies and their impact on people's way of feeling, thinking, and acting. Thus, thanks to SCPT, instances of social behaviour – in this case, COVID-19 vaccine hesitancy – can be interpreted using the interplay between different levels of meaning – that is, object-specific, domain meanings, and generalized cultural worldviews (Salvatore et al., 2019a).

2. Aims and hypotheses

Analysing the attitude towards COVID-19 vaccination in the light of the SCPT leads to the thesis that the interpretation of vaccination – and therefore the demand for it – is strongly influenced by a) the domain meanings in terms of which people interpret the whole socio-institutional context of the pandemic crisis and the measures to counteract it and b) the global worldviews (i.e., symbolic universes) in terms of which subjects make sense of the rupture of their lives caused by the outbreak. Specifically, the COVID-19 pandemic has generated a condition of high contextual uncertainty (Sodi et al., 2021; Venuleo et al., 2020) that, according to the SCPT, magnifies the impact of the symbolic universes over individual and collective meaning-making.

The current study is aimed at empirically validating this thesis, with a specific focus on the Italian context. Its core purpose is to estimate whether, in what direction, and to what extent the domain meanings and symbolic universes affect the demand for the COVID-19 vaccine, and therefore its behavioural side – the acceptance, hesitancy, or refusal of vaccination.

To this end, we use the thesis developed above to posit three hypotheses.

H1. It is expected that domain meanings comprising the interpretation of the socio-institutional framework – more specifically, we focus on trust in institutions and political values as representative forms of domain meanings assumed to be relevant to the phenomenon under

investigation – are salient in influencing the demand for COVID-19 vaccination (in terms of acceptance vs non-acceptance – that is, hesitancy or refusal).

H2. The salience of the domain meanings is moderated by symbolic universes. More specifically, we expect that the greater the within-individual consistency between the symbolic universe and the domain meaning, the larger the latter's influence on COVID-19 vaccination.

H3. The magnitude of the symbolic universes' moderator effect depends on the level of uncertainty. More specifically, it is hypothesized that the symbolic universes have a larger moderator effect in the low-income population segment than in the high-income sector, because the low-income group is assumed to be more exposed to the disruptive impact of the pandemic, and therefore to the uncertainty resulting from it, than the high-income one.

Fig. 1 provides a graphic synthesis of the three hypotheses tested.

3. Methods

3.1. Sample

This study is part of a larger survey (ethical clearance N.0000116/2021 by the Department of Dynamic and Clinical Psychology and Health Studies, Sapienza University of Rome), based on a representative Italian national sample of 3020 respondents, stratified by gender ($W = 51.3\%$) age (Mean = 47.6; $SD = 14.45$; range 18–75), and Italian regions (see Fig. 2). The respondents either completed a computer-assisted web interview (computer-assisted web interviewing [CAWI]; $N = 2{,}574$, 85.2% of the sample, 18–65 age segments) or were contacted by phone for a computer-assisted telephone interview (CATI; $N = 446$, 14% of the sample, 66–75 age segment). In line with a consolidated approach (e.g., de Leeuw, 2005), the CATI procedure was used in order to avoid the sampling bias related to older people's lower computer competence. All the items in both interview procedures had a modality that catered to the respondent's unwillingness to respond (e.g., "I prefer not to respond"; "I do not know"). Still, this modality was not used by the respondents. Interviews were performed during the last week of April 2021. Table 1 reports the distribution by education.

3.2. Instruments

This study adopted measures aimed at detecting: a) demand for COVID-19 vaccination, b) the domain meanings framing the interpretation of the socio-institutional scenario, c) the symbolic universes, and d) respondents' sociodemographic and other characteristics.

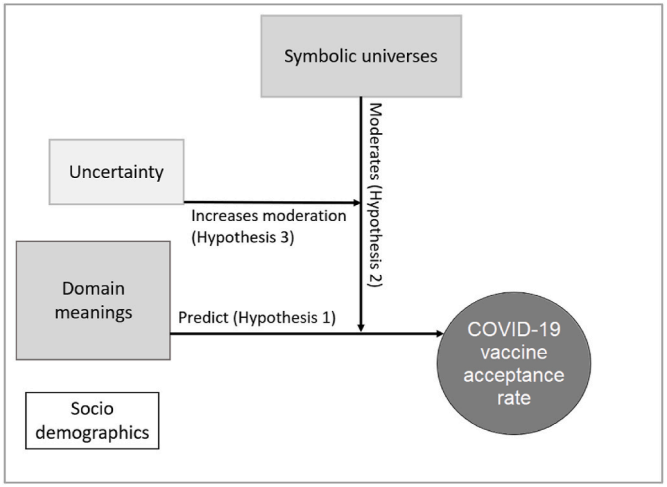


Fig. 1. Hypotheses tested in the current study.

3.2.1. Demand for COVID-19 vaccination

Participants were asked if they had received the vaccination. Those who responded negatively were asked if they intend to be vaccinated as soon as possible, with five alternative responses: certainly yes, probably yes, I do not know, probably not, certainly not. To test the hypotheses, responses were grouped into two classes: participants who stated they were already vaccinated or who expressed the intention to become vaccinated (certainly or probably) were considered as adhering to vaccination, and the others as hesitant/refusing. Although, in order to provide a detailed map of the distribution of the demand for COVID-19 vaccination over the Italian population, preliminary descriptive statistics were based on a tripartite segmentation: acceptance (already vaccinated, or certainly/probably yes); hesitancy (I do not know); refusal (probably not, certainly not).

3.2.2. Domain meanings

We have focused on political values and trust in institutions as domain meanings shaping the interpretation of the socio-institutional context of the pandemic crisis. Needless to say, these two domain meanings are not the only ones that can be expected to be relevant in that sense; nonetheless, they proved to play a key role in channelling meaning-making and behaviour in the socio-institutional context. This is epitomized by the impact of both political values (Scharfbillig et al., 2021; Schwartz et al., 2010) and trust in institutions (Kim, 2014; Koivula et al., 2021; Mannarini et al., 2020) on political participation and voting behaviour.

1) Political values were detected through an adjusted shortened version of the core political values (aCPV; Schwartz et al., 2010). The aCPV was composed of 12 Likert-type items with a response format ranging from 1 = not at all agree to 5 = totally agree, designed to measure five core political values: *law and order*, *blind patriotism*, *traditional morality*, *equality*, *free enterprise*, and *civic liberties*. Compared to the original version, we only selected two items for each core value. Moreover, we did not select items concerning two core political values: *military intervention* and *accepting immigrants*. As to *military intervention*, we assumed (at the time of the design of this study) it was not particularly relevant in the Italian political context, and therefore it would have played a marginal role in affecting vaccination hesitancy; moreover, *military intervention* proved to be robustly correlated with *law and order* ($r = 0.69$) and *blind patriotism* ($r = 0.66$) (Schwartz et al., 2010); thus, we considered that disregarding this core value would have a limited impact in terms of loss of information. As to *accepting immigrants*, we considered this value to be dependent on symbolic universes and already measured by a View Of Context (VOC) item. Previous studies (Schwartz et al., 2010) have found that all dimensions have sufficient reliability and satisfactory internal consistency (an α between 0.74 and 0.85).
2) Trust in institutions was measured using eight items, referring to a corresponding number of institutions. Six institutions (EU, political parties, the justice system, national government, one's town mayor, and the church) are the same as those considered in the last Eurobarometer survey (European Commission, 2021); additionally, we inserted banks as well as the President of the Republic – the former was introduced to extend the analysis to the economic field; the latter to include a political institution generally highly valued by Italians as a benchmark. Respondents were asked to indicate the level of their trust for each institution, on a 4-point Likert-type scale, with a response format ranging from 1 = not at all to 4 = a lot.

3.2.3. Symbolic universes

The symbolic universes were mapped by means of the short version of the VOC questionnaire (Ciavolino et al., 2017; see Appendix A, online supplement), which was composed of 29 items with a response format ranging from 1 = totally disagree to 4 = totally agree. The VOC questionnaire is designed to identify the symbolic universes that are active

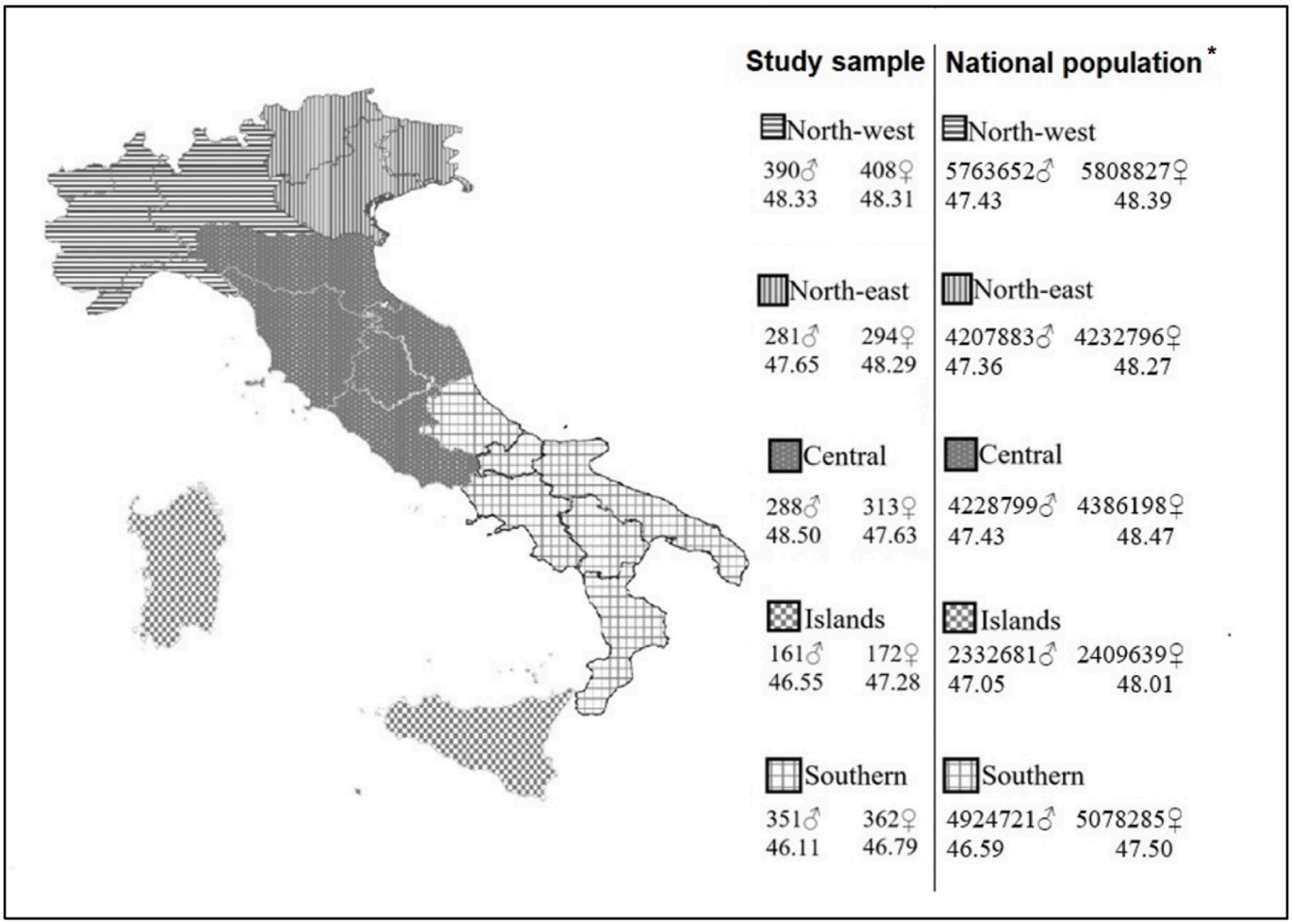


Fig. 2. Sample distribution per geographical area (number of males (♂) and females (♀); mean age) (ISTAT, 2021a).

Table 1
Distribution of study sample by education.

Education level	Study sample		National population*	
	N	%	*N*	%
Primary school	19	1	9992	10
Middle school	361	12	27,736	32
High school	1763	58	33,401	40
University degree	877	29	14,699	18

* source: Italian National Statistics Institute ISTAT (2021b).

within the sample, based on the way people represent significant and affective-laden aspects of their life contexts. More specifically, based on the SCPT framework, the questionnaire aims at detecting the oppositional semantic structures underpinning the ways of making sense of reality. To this end, items were constructed to facilitate the expression of perceptions/opinions/judgements concerning the microsocial and macrosocial spheres of experience (e.g., an evaluation of the place where the person lives or the level of trustworthiness of the social structures) and social identity (e.g., moral judgements on critical social behaviours) and in so doing to trigger the activation of generalized meanings (for details on the methodology, see Salvatore et al., 2019a). The VOC questionnaire proved to have satisfactory construct validity and internal consistency ($\alpha = 0.70$) (Ciavolino et al., 2017).

3.2.4. Characteristics of participants

1) Sociodemographic characteristics. Items were used to detect gender, age, education level, and a self-reported estimation of one's economic status (compared to the average population).
2) Self-evaluated level of health. This is a single-item scale asking the respondent to rate their current state of health compared to people of the same age on a 5-point Likert-type scale (1 = much worse to 5 = much better and with the average as the middle point).

3.3. Data analysis

Preliminary analyses (e.g., an analysis of variance [ANOVA], χ^2, and principal component analysis [PCA]) were carried out, in order to provide descriptive statistics for the measures adopted as well as to make them suitable for the subsequent steps of the evaluation.

Then, in order to detect the symbolic universes that are active within the Italian population, this study adopted the procedure used by Salvatore et al. (2018: see also Salvatore et al., 2019b) for the same aim. More particularly, responses to the VOC questionnaire were subjected to a combination of multidimensional correspondence analysis (MCA) and cluster analysis (CA). MCA was used to transform the categorical variables into continuous dimensions mapping their covariation. The main factorial dimensions extracted by the MCA were employed by the CA (hierarchical classification method) as similarity/dissimilarity criteria. Thus, each cluster obtained by the CA detects a response profile that characterizes a segment of the sample. According to the SCPT framework, each cluster is interpreted as the marker of a symbolic universe

underpinning the way of combining the responses performed by a cluster of respondents (Salvatore et al., 2018).

H_1 – that domain meanings comprising the interpretation of the whole socio-institutional framework foster COVID-19 vaccination hesitancy/refusal – was checked by means of a non-parametrical statistical modelling technique (partial least squares – structural equation modelling, PLS-SEM; Hair et al., 2017, 2021), where trust in institutions and political values in addition to sociodemographical and individual characteristics (age, sex, education, and self-reported health) were used as predictors of the outcome hesitancy/refusal to vaccinate.

To test H_2 – that the effect of the domain meanings on the hesitancy/refusal to vaccinate is moderated by the symbolic universes – a multigroup analysis (MGA) using PLS-SEM was performed with the same variables used by the previous PLS-SEM, namely, trust in institutions and political values, age, sex, education, and self-reported health, employed as predictors of hesitancy/refusal to vaccinate. The four symbolic universes obtained from the previous step (see section 2.1) were employed to divide the sample into groups.

To test H_3, two further parallel MGAs were carried out separately on two subsamples defined by low-/very low-income and high-/very high-income participants, respectively. To satisfy the requirement of statistical power, both MGAs were confined to comparing the symbolic universe that proved to have the highest moderator effect in the previous MGA against the other three. All estimates were validated through 5000 bootstrap resamplings.

Given that the self-reported income could not be a fully reliable index of socio-economic status, we repeated the analysis with education as an alternative index of socio-economic status (income and education proved to be associated significantly, yet only weakly; *rho* = .22; $p <$ .01). To this end, we compared respondents with low (primary and middle school) and high levels of education (degree or higher level).

4. Results

The PCA (oblimin rotation) applied to the adjusted Core Political Value scale (aCPV) produced three factors (58.03% of the total variance; 26.55%, 22.55%, and 8.93% of variance explained by the three factors, respectively). Factor 1 was saturated by the items of the original version's core values *blind patriotism* and *traditional morality* plus one item of *law and order* (police should have more power to protect citizens), factor 2 by the *equality* and *civic liberties* items, and factor 3 by *free enterprise* and *law and order* items, except the one associated with the first factor. Accordingly, we labelled *nationalist conservatism*, *civic egalitarianism,* and *authoritarian liberalism* as the first, second, and third factors, respectively.

Responses to the 8-item scale measuring trust in institutions produced a unidimensional solution – the first factor explained 50.35% of the variance. Accordingly, we adopted the factorial score to compute the index.

4.1. Demand for COVID-19 vaccination: Descriptive analyses

Of the sample, 17.5% claimed to be vaccinated, while 44.3% and 15.7% stated that they would be vaccinated in the near future, certainly and probably, respectively. In addition, 5.6% and 4.6% stated that they would certainly and probably not become vaccinated, respectively. Finally, 12.3% responded, "I do not know". Thus, globally, 22.5% of the sample expressed hesitancy or refusal to obtain the COVID-19 vaccination (i.e., answers: "I do not know" "probably not", "certainly not") (Fig. 3).

For further analysis, the hesitant and refusing groups were combined as one group of non-acceptance. Demand for vaccination proves to be related to sociodemographic characteristics. More specifically, people expressing acceptance are older than those expressing hesitancy (ANOVA test: M [non-acceptance] = 45.64; M [acceptance] = 48.18; F [1.3018] = 16.61, $p < .001$; $\eta_p^2 = 0.073$). Moreover, the acceptance

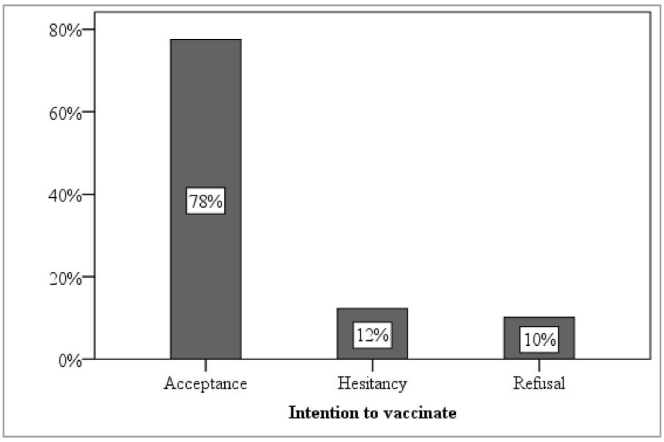


Fig. 3. Acceptance, Hesitancy, and Refusal of Vaccination Over the Sample.

group is characterized by a higher proportion of a) males (χ^2 [1] = 16.281, $p < .001$, contingent coefficient = 0.073) and b) inhabitants of the centre and south of Italy (χ^2 [4] = 34.332, $p < .001$, contingent coefficient = 0.106), as well as those with c) a high education level (i.e., degree or higher) (χ^2 [2] = 20.713, $p < .001$, contingent coefficient = 0.083); and d) a (self-reported) high economic status (i.e., higher or much higher than the average Italian) (χ^2 [2] = 27.239, $p < .001$, contingent coefficient = 0.095), than the non-acceptance group. Regardless, as shown by η_p^2 and contingent coefficients, the size of these relationships is quite small and their statistical significance must be considered an effect of the statistical power of analyses. No relation with the self-reported description of the respondent's state of health was found.

4.2. Symbolic universes

A preliminary MCA extracted six main factors, which explain 96.07% of the total inertia (according to Benzecri's "optimistic" formula of revaluation). The factors extracted were those contributing more than 10% of the cumulative inertia. These factors were used as classificatory criteria in the subsequent CA, which identified four valid clusters and a residual group (8.3%) (intra-class inertia 0.377; total 0.711 ratio: 0.442).

Table 2 reports the response profiles of the clusters. We accordingly interpreted the clusters as follows:

Symbolic Universe 1: Disheartened Affiliates (34.5%). This cluster contains respondents characterized by fatalism, familism, distrust in people, pessimism, conformity, passivity, low commitment to ethical and civic rules, and a view of social life as a power game in which they assume a subordinate position. For these respondents, the world is an object to adhere to passively.

Symbolic Universe 2: Confident Engaged (31.0%). This response profile is characterized by the rejection of fatalism and power games, and commitment to ethical and civic rules, as well as by moderate trust in people, agencies, and institutions. For these respondents, the world is an object to engage with.

Symbolic Universe 3: Idealizing Optimists (11.8%). Respondents in this cluster are characterized by an extreme rejection of fatalism, as well as trust in people, institutions, and the future, in addition to a rejection of conformism and high agency. All positive qualities are magnified, and negative aspects and values are radically rejected. For these respondents, the world is an object to idealize, rather than a reality to analyse critically.

Symbolic Universe 4: Reactive Anomics (14.5%). These respondents are characterized by extreme distrust in institutions, but trust in people, as well as extreme fatalism, a devaluation of immigrants, and a view of oneself as subject to an overwhelming power, in addition to conformism

Table 2
Response profiles characterizing the symbolic universes.

Item	Response modality	% modal/ sample	% modal/ cluster	% cluster/ modal	Value test	Frequency
Cluster 1						
It is useless to bustle, since you cannot affect what will be	quite agree	37.75	63.59	58.07	21.17*	1140
Those who succeed in life have luck on their side	quite agree	38.05	61.38	55.61	19.06*	1149
People are unable to change	quite agree	45.23	67.72	51.61	18.08*	1366
It's hardly fair to bring children into the world	quite agree	29.30	49.18	57.85	17.13*	885
For success in life, how important is: Adjusting to the main trends	quite	50.13	70.89	48.75	16.70*	1514
To a great extent, my life is controlled by accidental happenings	quite agree	34.14	53.99	54.51	16.50*	1031
For success in life, how important is: Acquiring knowledge	quite	31.39	50.72	55.70	16.37*	948
Nowadays a person has to live pretty much day by day	quite agree	53.08	72.62	47.16	15.79*	1603
Sometimes one has to break the rules to help loved ones	quite agree	51.92	71.37	47.39	15.68*	1568
It is not possible at all to make any provision about the future	quite agree	52.58	71.47	46.85	15.23*	1588
Cluster 2						
It is useless to bustle, since you cannot affect what will be	quite disagree	41.06	70.94	53.55	22.41*	1240
Those who succeed in life have luck on their side	quite disagree	42.35	71.79	52.54	22.04*	1279
People are unable to change	quite disagree	34.40	59.62	53.71	19.28*	1039
To a great extent, my life is controlled by accidental happenings	quite disagree	46.09	70.94	47.70	18.48*	1392
There's little use in writing to public officials	quite disagree	21.69	42.41	60.61	17.90*	655
My life is chiefly controlled by powerful others	quite disagree	38.94	62.29	49.57	17.51*	1176
It is not possible at all to make any provision about the future	quite disagree	21.03	40.06	59.06	16.62*	635
Sometimes one has to break the rules to help loved ones	quite disagree	29.70	50.43	52.62	16.35*	897
Nowadays a person has to live pretty much day by day	quite disagree	19.40	37.50	59.90	16.24*	586
These days a person doesn't really know whom he can count on	quite disagree	17.58	34.94	61.58	16.13*	531
Cluster 3						
It is useless to bustle, since you cannot affect what will be	strongly disagree	11.76	52.96	52.96	21.08*	355
Those who succeed in life have luck on their side	strongly disagree	11.66	52.68	53.13	21.05*	352
To a great extent, my life is controlled by accidental happenings	strongly disagree	13.81	54.65	46.52	20.00*	417
For success in life, how important is: Having few scruples	not at all	15.73	54.37	40.63	18.35*	475
For success in life, how important is: Forming alliances with stronger people	not at all	9.07	40.28	52.19	17.66*	274
People are unable to change	strongly disagree	8.11	37.46	54.29	17.30*	245
It's hardly fair to bring children into the world	strongly disagree	21.56	57.18	31.18	15.75*	651
Sometimes one has to break the rules to help loved ones	strongly disagree	7.15	31.55	51.85	15.24*	216
For success in life, how important is: Adjusting to the main trends	not at all	6.92	30.70	52.15	15.06*	209
My life is chiefly controlled by powerful others	strongly disagree	26.89	61.41	26.85	14.60*	812
Cluster 4						
How reliable is: Public Administration	not at all	14.97	57.67	55.75	23.32*	452
There's little use in writing to public officials	strongly agree	26.16	72.54	40.13	22.26*	790
These days a person doesn't really know whom he can count on	strongly agree	26.03	69.11	38.42	20.70*	786
The lot of the average person is getting worse	strongly agree	28.81	70.48	35.40	19.70*	870
How reliable is: Health care services	not at all	7.35	34.55	68.02	19.23*	222
How reliable is: Public transport	not at all	15.07	48.05	46.15	18.25*	455
Nowadays a person has to live pretty much day by day	strongly agree	23.58	60.18	36.94	17.97*	712
Future will be	far worse	6.72	30.21	65.02	17.32*	203
How will the place you live in be in next 5 years	much worse	6.32	28.83	65.97	17.02*	191
How reliable is: Schools	not at all	4.11	22.65	79.84	16.80*	124

Each cluster contains the 10 most representative items. *Value test is significant at the level $p < .001$.
Legend. %modal/sample–proportion of the entire study sample that responded by the item modality. **%modal/cluster** –proportion of cluster members that responded by the item modality. **%cluster/modal** – proportion of the cluster members who responded with the item modality Symbolic universe groups do not differentiate as to age (ANOVA test, not significant) and gender (χ^2 test, not significant), while they are associated with territorial area ($\chi^2[12] = 29.924$, $p = .003$, contingent coefficient = 0.103), education ($\chi^2[6] = 22.259$, $p < .001$, contingent coefficient = 0.089) and economic status ($\chi^2[6] = 142.489$, $p < .001$, contingent coefficient = 0.221). More specifically (see Appendix B; Tables A1–A3, online supplement).

and a low commitment to ethical and civic rules. For them, the world is a rejecting and persecutory reality.

The residual group was characterized by a contradictory response profile that was not interpretable as if the responses were given casually. Accordingly, we decided to omit it from further analyses. The residual group did not distinguish itself from the rest of the sample in terms of sociodemographic characteristics (gender, age, education, geographical area).

- The disheartened affiliates are characterized by inhabitants of the islands with a low education level and low economic status;
- The confident engaged are characterized by inhabitants of the northwest with a high education level and medium and high economic status;
- The idealizing optimists are characterized by people with high economic status, with no specificity as to territory or level of education;
- The reactive anomics are characterized by inhabitants of the south with a low education level and medium or low economic status.

Symbolic universes proved to be associated with demand for vaccination (χ^2 [3] = 86.491, $p < .001$, contingent coefficient = 0.174). More specifically, non-acceptance is proportionally higher among reactive anomics and disheartened affiliates than in the other two symbolic universe groups (see Fig. 4).

4.3. Predictors of vaccination propensity (H_1)

First, we applied the path analysis to the whole sample (N = 3020). It revealed that all variables except the nationalist conservatism and the civic egalitarianism values predicted vaccination acceptance: trust in institutions ($t = 13.407$, $p < .001$), authoritarian liberalism ($t = 2.882$, $p = .004$), age ($t = 5.297$, $p < .001$), gender ($t = 3.510$ $p < .001$), education ($t = 3.848$, $p < .001$), and health ($t = 1.967$, $p = .049$). Still, only

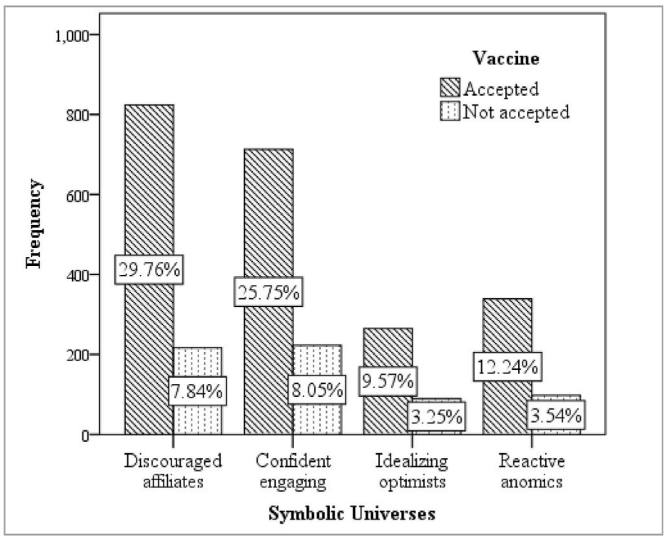


Fig. 4. Distribution of Vaccine Acceptance Within Each Symbolic Universe Group.

trust in institutions has a path coefficient (0.254) of a large size (Fig. 5).

4.4. Moderation analyses (H_2)

MGA analysis revealed that the path analyses focusing on the four subpopulations defined by the symbolic universes have statistically significant differences. More specifically, the following differences were found.

First, the trust in institutions path coefficient is significantly lower ($p < .05$) in the disheartened affiliates group (coef. = 0.138, $t = 4.149$, $p < .001$) than in the other groups, which do not differ significantly from each other (confident engaged, coef. = 0.253, $t = 7.699$, $p < .001$, idealizing optimists coef. = 0.265, $t = 5.056$, $p < .001$, reactive anomic, coef. = 0.251, $t = 5.672$, $p < .001$; see Fig. 6).

Second, the authoritarian liberalism path coefficient is significantly lower ($p < .05$) in the idealizing optimist group (coef. = −0.185, $t = 3.337$, $p = .001$) than in the other groups, which do not differ significantly from each other (see Fig. 7).

Finally, the age path coefficient proved to be significantly lower ($p < .01$) in the disheartened affiliates group (coef. = 0.162, $t = 5.405$, $p < .001$) than in the other ones, which do not differ significantly from each other.

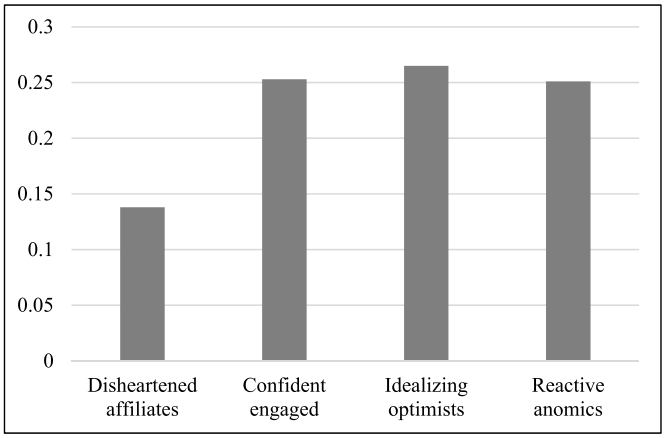
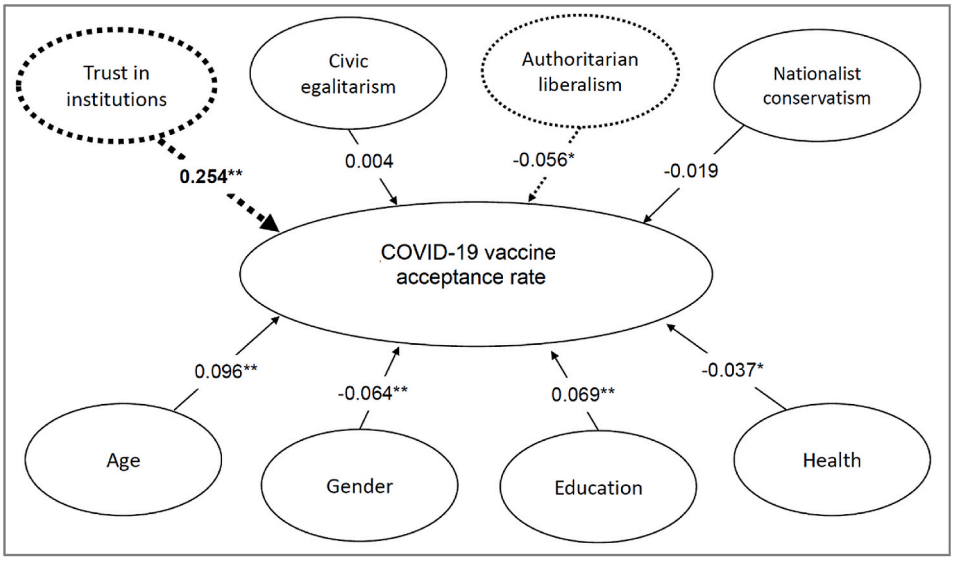


Fig. 6. Multigroup Analysis: The Trust in Institutions Path Coefficient for Each Symbolic Universe Group.



* $p < .05$; ** $p < .001$

Fig. 5. Path Model: Predictors of COVID-19 Vaccination Acceptance.

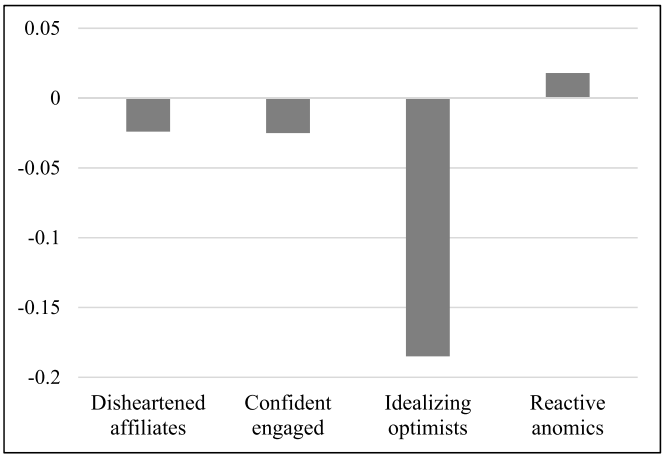


Fig. 7. Multigroup Analysis: The Authoritarian Liberalism Political Value Path Coefficients for Each Symbolic Universe Group.

4.5. Low-vs high-income comparison (H_3)

Two separate MGAs were performed: one for the low-income segment ($N = 792$) and one for the high-income segment ($N = 247$). The low-income segment was defined by those who indicated their income as much lower or lower than the Italian average and the high-income one by those who indicated that they had a higher or much higher income than the Italian average.

The MGAs employed the same model used in the previous analyses: trust in institutions, civic egalitarianism, nationalist conservatism, authoritarian liberalism, age, sex, education, and state of health as predictors of vaccination acceptance.

The previous MGA showed that the only between-group difference that is both significant and of considerable size was the one concerning the trust in institutions path coefficient between disheartened affiliates and all other groups. Accordingly, given the reduced size of the subsample at our disposal for this analysis, we decided to contrast the disheartened affiliates with the group made up by the aggregation of the other three symbolic universe groups.

The MGA applied to the low-income subsample showed that the trust in institutions path coefficients was significantly different between the two symbolic universe groups (path coefficient difference. = 0.219, $p = .003$). Age also showed significantly different path coefficients between the two symbolic universe groups, although they were of limited size (−0.150; $p = .04$). No significant difference between the two groups was found in the MGA applied to the high-income subsample (see Table 3).

The two parallel MGAs performed on the subsamples with low (N = 343) and high education levels (N = 813) produced an equivalent pattern of findings: a) the MGA applied to the low education level showed that the trust in institutions path coefficients differed significantly between the two symbolic universe groups (path coefficient difference. = 0.24, $p = .02$); b) no significant differences between the two symbolic universes were found in the MGA applied to the high education level subsample.

Table 3
Difference in path coefficients between the disheartened affiliates' group and the other three symbolic universe groups for high-income and for low-income participants.

	High-income participants		Low-income participants	
Path	Path coef. difference	*p*	Path coef. difference	*p*
Trust in institutions → Vax	0.079	.653	0.219[a]	.003
Civic egalitarianism → Vax	0.025	.878	0.017	.805
Authoritarian liberalism → Vax	−0.014	.933	0.100	.170
Nationalist conservatism → Vax	−0.299	.123	−0.115	.137
Age → Vax	−0.073	.583	−0.150[a]	.040
Gender → Vax	−0.080	.580	0.029	.674
Education → Vax	0.056	.652	−0.077	.292
Health → Vax	0.087	.542	−0.058	.427

[a] The path coefficient of the Disheartened affiliates group vs. all the other participants is significant ($p < .05$).

5. Discussion

5.1. Core findings

The current study investigated the role of the interpretation of the socio-institutional context of the pandemic as well as cultural worldviews (operationalized as symbolic universes) on the acceptance rates for the COVID-19 vaccine in a representative sample of the Italian population. The findings were consistent with the three hypotheses which were tested: a) trust in institutions predicts vaccine acceptance; b) the impact of the trust in institutions on vaccine acceptance is moderated by symbolic universes; and c), the magnitude of the moderator effect of symbolic universes depends on the uncertainty to which respondents are exposed (estimated in terms of socio-economic status) – the greater the uncertainty, the higher the moderator effect.

First, the path model with domain meanings and other characteristics of respondents as control variables proved to fit the data and this is consistent with Hypothesis 1. More particularly, in line with the descriptive analyses and studies concerning other socio-cultural contexts (gender: Gautier et al., 2022; Robertson et al., 2021; Zintel et al., 2022; age: Reno et al., 2021; Robertson et al., 2021; education: Moola et al., 2021; Robertson et al., 2021; see above, "COVID-19 vaccine and hesitancy" section), male, older and higher-educated people proved to be more prone to acceptance than female, younger and less educated people. Yet the size of these effects was quite low, and its statistical significance has to be attributed to the amplitude of the sample. We tend to think that this result reflects the specificity of the way the pandemic crisis was handled in the Italian context. More specifically, the rapid activation and the global and transversal spread of public health measures adopted by Italian authorities – that is, the high recourse to smart working, and the financial support for economic activities, damaged by the lockdown – may have reduced the differences within the society, therefore making sociodemographic characteristics associated with such differences less salient. Yet, the relationship between the systemic breadth of anti-pandemic measures and the reduction of the impact of sociodemographic differences on the attitude toward vaccination is at the moment no more than a conjecture that needs to be tested.

The only predictor that proved to have a strong enough impact on acceptance was trust in institutions – the greater the trust, the higher the acceptance. In brief, COVID-19 vaccine acceptance seems to be only slightly associated with the individual characteristics that one can consider functionally related to vaccination, that is, age (the older the person, the more useful the vaccination), education (the higher their education, the more capable of accessing and using scientific knowledge about vaccination the person can be expected to be) and state of health (the worse their health, the more useful the vaccination should be perceived).

Moreover, vaccination acceptance proved to have no relationship, or only a weak one, to political values. This finding was not forecasted by Hypothesis 1, yet it can be interpreted by the SCPT framework of this study – what fosters vaccination is the global perception of the reliability of the institutional scenario as a whole, not the political beliefs as to how the world should be. This conclusion is consistent with analyses that have highlighted the increasing tendency, typical of Western democratic societies, to interpret – and act within – the public sphere in terms of

affect-laden, homogenizing meanings that leave only the most polarized differences alive, while any other distinction concerning scientific arguments, political values, interests, aims and so forth fade away (Salvatore et al., 2019a, 2021a). Thus, this finding is consistent with those who highlighted the necessity to make a distinction between the political values that can steer attitudes toward vaccination and the politicization of such views (Bolsen and Palm, 2022).

Second, the MGA showed the hypothesized symbolic universes' moderator effect on the relationship between domain meanings and demand for vaccination (Hypothesis 2). More specifically, we found that, concerning other symbolic universes, the disheartened affiliates reduce the effect of trust in institutions on vaccination acceptance. The direction of this moderation effect is consistent with the SCPT theory underlying Hypothesis 2. Indeed, in the case of disheartened affiliates, the perception of the institutions as trustworthy is embedded in a globally negative view of the world that limits its positive effect on acceptance. Notably, it must be considered that the MGA does not take the absolute level of trust into account, but only the covariation with vaccination acceptance. Therefore, this result is not in contradiction with the negative view of the world that characterizes the disheartened affiliates – in fact, in absolute terms, the level of trust in institutions of the disheartened affiliates is low when compared with other symbolic universes.

In addition, in the case of the two symbolic universes that express a positive view of the world (the idealizing optimists and confident engaged), the direction of the moderator effect seems consistent – to have a global positive worldview enforces the salience of trust in institutions in fostering vaccination acceptance. What appears unexpected is that the same kind of moderator effect seems to occur in the case of the reactive anomics, the symbolic universe conveying the most negative, fatalist worldview. Nonetheless, this result can be interpreted as occurring because the level of trust in institutions in the reactive anomics cluster was very homogeneous; therefore, within this group, even a small difference in the level of trust could make a difference – in other words, for people strongly distrusting and feeling deprived and hopeless, even a small quantum of trust could have an impact on the decision to vaccinate.

A further moderator effect concerns authoritarian liberalism. The globally significant, yet small negative effect of this political value on vaccination acceptance becomes of large size in the case of the idealizing optimists. We are prone to think that this moderator effect reflects the idealizing optimists' tendency to adopt extreme positions. Accordingly, in the case of this group, the individualism embedded in authoritarian liberalism may have fostered the perception of the COVID-19 campaign as an attack on individual autonomy. Regardless, so far this possibility must be considered a conjecture requiring further analyses to be corroborated.

Third, the comparison between the analyses focused on the low- and the high-income subsamples provided findings that are consistent with Hypothesis 3 – symbolic universes proved to moderate the relationship between domain meanings and demand for vaccination in the low-income group, namely in the group assumed to be more exposed to the uncertainty conveyed by the pandemic crisis, whereas no moderation effect was found in the segment whose income was assumed to work as a buffer against uncertainty.

5.2. Other findings

It is worth mentioning some other findings that emerged from the preliminary analyses. First, the measure of the political value (aCPV) showed a three-dimensional structure, which is different from the original (Schwartz et al., 2010). This difference may have been due to the selection of items we made – we used only two items for each political value, and we took only six values into account. Moreover, it must be remembered that the original factorial solution was identified in the context of a multinational study; therefore, it reflects the purpose of optimizing the similarity among countries, rather than of detecting the specificity of each context of investigation. Having said that, it must be pointed out that there is a clear relationship between the factorial structure we extracted and the original. More specifically, in our findings, dimensions that are independent in the original factorial structure proved to be merged, including blind patriotism and traditional morality, equality and civic liberties, free enterprise, and law and order. These combinations make sense, both in themselves and in accordance with the current Italian politics – for example, Italian political forces endorsing free enterprise are allied with those that are sympathetic towards the Hungarian Prime Minister Orban's authoritarian politics. Future studies will tell us if/to what extent they reflect a specificity of Italian political cultures, and/or an evolution that has occurred since the time of the Schwartz et al. (2010) analysis.

Second, the one-dimensionality of the trust in institutions scale provides food for thought. These findings show that this trust operates as quite a generalized and homogenizing attitude, which does not make a distinction between the institutions it refers to – the church, mayor, President of the Republic, EU, and so forth. This justifies viewing trust as a domain meaning – indeed, it concerns the general class of institutions, rather than this or that specific specimen of such a class. Additionally, this result is consistent with the SCPT view of domain meanings as a kind of affect-laden meaning. According to the SCPT, an affect-laden meaning is a generalized, homogenizing category of significance. Given those characteristics, affective meaning tends to foster global interpretations that do not take differences among aspects of reality into account (Salvatore and Freda, 2011) – for affect-laden meaning, in the dark, all cows are black.

Third, the sociodemographic profile of the symbolic universes is consistent with previous analyses, which showed that they are not characterized in terms of gender and age, while they proved to vary due to education and territory. Above all, the distribution of the symbolic universes shows that more than half of the sample is characterized by the identification with a negative and defensive (disheartened affiliates) or highly negative and hopeless (reactive anomics) worldview. Still, if one compares these figures with the analysis of the symbolic universes of the Italian cultural milieu carried out in January–February 2018 (Salvatore et al., 2019a), one can see that the situation seems to have been evolving positively – the two symbolic universes comparable to the disheartened affiliates and reactive anomics (niche of belongingness and others' world, respectively) were estimated to correspond to the 61.6% of the population (40% and 21.6%, respectively).

At first glance, this is quite a surprising finding, which contradicts the common-sense expectation that the dramatic impact of the pandemic crisis cannot but worsen the way people perceive the world. It would extend beyond the purpose of this work to discuss possible interpretations of this result. We, therefore, confine ourselves to putting forward an interpretation that needs to be checked by subsequent analyses. To this end, preliminarily, though it may seem paradoxical, it is plausible to say that the pandemic crisis reduced the contextual uncertainty. This was (is) due to two independent yet converging processes: on the one hand, especially in its first stage, the pandemic crisis provided a clear-cut image of the world, universally shared among the population and saturating any level of interpretation of the social reality. Any kind of social and individual event and experience lent itself to be seen through the interpretative framework of the conflict between us and the threatening virus. On the other hand, at least in the Italian context, institutions were able to provide forms of systemic governance during the outbreak (Santeramo et al., 2021; Vese, 2020), and this can be expected to have fostered a sense of public/institutional control on pandemic events in a large segment of the population. In brief, the situation generated by the pandemic was very critical, yet evident, and interpretable in perfectly acceptable ways. Now, insofar as one assumes that the pandemic crisis has reduced the contextual uncertainty, the decrease in negative (i.e., fatalist, pessimist, distrusting) worldviews can be understood through the lens of the SCPT argument that this kind of

worldview is an emotional buffer against uncertainty – rather than being a reaction to the negative social conditions in themselves (Cremaschi et al., 2021; Salvatore et al., 2021b). Thus, the lower the uncertainty, the lower the incidence of negative worldviews.

Fourth, as to the magnitude of COVID-19 vaccination non-acceptance, more than one out of five respondents in the sample, which is representative of the Italian population, express hesitancy or refusal of the COVID-19 vaccine. This proportion is higher than that found by Graffigna (2021) and that reported by the Morning Consult Survey, which, through online interviews, estimated the proportion of hesitancy/refusal in the Italian population at 17% (9% uncertain, 8% unwilling) (assessed 27 July–2 August 2021). In part, these differences may reflect the statistical error related to samples; it may also be due to the different ways of detecting the phenomenon. Having said that, it can be interpreted, at least partially, in light of the progressive increase in the positive attitude towards COVID-19 vaccination, as shown by the studies mentioned above.

5.3. Implications

Taken as a whole, these results have important theoretical and practical implications. At the theoretical level, they support two core tenets of the SCPT framework. On the one hand, they add further evidence to the growing set of studies (e.g., Mannarini et al., 2020; Salvatore et al., 2019a; Veltri et al., 2019) that have shown that symbolic universes matter, namely, that they play a role in orienting modes of feeling, thinking and acting. Notably, concerning these studies, the current analysis introduces a new way of modelling the role of the symbolic universes – as a moderator of the relationship between domain meanings and behaviour. On the other hand, the findings provide evidence for the SCPT idea that the salience of the affective meanings characterizing the symbolic universes depends on the level of uncertainty – the higher the uncertainty, the greater is the tendency of the affect-laden, global worldviews, as mapped by the symbolic universes, to influence meaning-making and behaviour. This tenet is consistent with the broad literature on the socio-cognitive impact of uncertainty (Arkin et al., 2013); however, it adds an element to this literature – the mediational role of the affective meaning between uncertainty and cognitive response (Cremaschi et al., 2021).

As to the demand for vaccination, the findings have shown that the propensity to vaccinate or the hesitancy/refusal to do so are choices that do not depend only on functional evaluations – that is, evaluations concerning the cost/benefits analysis. In line with the sociocultural assumption at the basis of this study, COVID-19 vaccination proved to be a social object, embedded in the institutional framework, perceived and addressed by reason, and in terms of the values of trust attributed to such a framework.

The latter statement also has practical implications. One can draw some pointers from it, regarding what would not be useful and what would be worth doing. First, insofar as no sociodemographic characteristic is associated with the demand for vaccination, one must question the approach aimed at designing strategies for the promotion of vaccination acceptance based on the sociodemographic segmentation of targets. Second, to the extent that trust in institutions, as a global attitude towards the public sphere, plays a major role in fostering vaccination acceptance, it is strategic to empower all elements of the vaccination campaign that can foster the feeling of the trustworthiness of both the vaccine and the institutions promoting it. These elements are functional – for example, in terms of the transparency of decisions and informative networks – as well as a socio-symbolic and emotional one – for instance, in relation to the stability of the organizational framework, or the possibility for people to experience the vaccination as a user-oriented caring setting. Third, insofar as symbolic universes matter, it is useful to adopt them as a criterion for segmenting the strategies of vaccination promotion – if the role of trust in institutions varies from one symbolic universe to another, calibrating the mode of engaging people based on their symbolic universe can contribute to the whole efficacy of the promotional efforts.

5.4. Limitations

Though the findings have important implications, their limitations are also worth underlining. First, the data collection was based mainly on the use of the CAWI method. This procedure introduces a potential bias, given the heterogeneous distribution of computer competence across ages. Thus, we decided to interview the older segment of the sample through direct telephonic contact (the CATI method). Still, it must be recognized that while this choice avoided the sampling bias, it may have introduced a further potential source of bias, consisting of the difference introduced in the relational and functional context mediating responses. For instance, people could be more subjected to the pressure of conformism in answering directly to the interviewer than in the context of the web interview. Thus, findings concerning age must be taken with caution, since it is not possible to rule out that they could depend – at least in part – on the way the data were collected.

Second, we must recognize that we limited the detection of domain meanings concerning the socio-institutional scenarios to trust in institutions and political values. This decision reflects the obvious necessity to limit the number of constructs introduced in the path analysis model. We have explicitly stated in the method section why we chose these two constructs; however, it is more than plausible that other domain meanings play a role in fostering the demand for COVID-19 vaccination (e.g., the sense of belonging to the community; Wakefield and Khauser, 2021). Having said that, the methodological choice to restrict the selection to two domain meanings is consistent with the purpose of this study, which aimed at testing the hypothesis that domain meanings affect vaccination behaviour, rather than at mapping the whole spectrum of domain meanings that do so.

Third, analyses concerning H_2 and H_3 were tested after the omission from the sample of a segment of respondents (8.3%) for whom we were unable to identify the symbolic universe. Although this residual group proved to have a sociodemographic profile that is indistinguishable from that of the other respondents, their exclusion from analysis suggests caution in the generalization of findings. This is so for H_3 in particular. Indeed, H_2 was tested using the independent comparisons between each symbolic universe group and each of the others. Therefore, the omission of the residual group from the analysis did not affect the other comparisons. In contrast, H_3 was tested by contrasting one symbolic universe (the disheartened affiliates) to all the others. Therefore, in this case, the choice to omit a group could have had an impact, given that it modified the composition of the contrasting group.

Fourth, we used the comparison between low and high income as a proxy for the high vs low exposure to uncertainty. Although this choice raises several issues. First, we adopted a self-reported measure of income that must be not considered a fully reliable way to estimate it. Still, we repeated analyses with education as the proxy for uncertainty. The fact that we found a very similar pattern of results supports our conclusion. Second, income and education are only indirect markers of uncertainty, therefore one cannot exclude other interpretations of the moderator effect it proved to have on the relation between symbolic universes, domain meanings, and demand for COVID-19 vaccination. For instance, the level of income could have worked as a moderator not because it was a proxy for the level of uncertainty, but because of its association with the respondents' capacity to access medical advisors. These alternative interpretations need to be checked by further studies.

Finally, it must be highlighted that an idiographic method was adopted to map symbolic universes. Indeed, we detected them in terms of the specific patterns of responses clustering respondents. Therefore, the symbolic universes identified are contingent on the sample adopted – although they are representative, however, of the Italian population. This choice is drawn from the SCPT theoretical framework that focuses on the idiosyncratic patterns of meanings comprising the social group's

cultural milieu, rather than measuring it, as it were, from the outside, through one or more supposedly universal dimensions (e.g., individualism/collectivism) (for a discussion, see Valsiner, 2007). Having said that, it is also true that this choice limits the ability to generalize the association between the content of the symbolic universes and the demand for vaccination modelled by the current study across societies and time.

6. Conclusions

This study aimed at estimating the role played by the way people interpret the socio-institutional context of the COVID-19 pandemic, and by the underlying cultural worldviews (symbolic universes), in vaccine acceptance. Analyses were carried out on a representative sample of the Italian population. Findings showed that trust in institutions – that is, one of the domain meanings in terms of which people interpret the socio-institutional context – works as an antecedent of vaccination acceptance. Interestingly enough, vaccination acceptance did not prove to be predicted by sociodemographic factors. Moreover, this study showed that the cultural worldviews (symbolic universes, in the terminology adopted) moderated the relationship between trust in institutions and vaccine acceptance. More specifically, the major moderation effect concerns the symbolic universe conveying a negative worldview (disheartened affiliates): for respondents espousing this symbolic universe, the impact of trust in institutions on vaccine acceptance is lower than for respondents of other symbolic universes.

Finally, the analyses showed that the moderation effect of the symbolic universes was associated with the level of respondents' exposure to uncertainty (estimated both in terms of self-reported income and level of education). This pattern of findings was consistent with the three hypotheses this study aimed at testing. Yet, they must be taken with caution, due to some of the limitations of this research (the method of data collection, the limited variables used to detect the way people interpret the socio-institutional context, the omission of a segment of respondents, and the idiographic approach to the detection of the symbolic universes). Nevertheless, they provide food for thought. On the one hand, in line with the conceptual framework this study was based on (the Semiotic Cultural Psychology Theory, SCPT), the findings showed that symbolic universes play a moderating role in vaccine acceptance – and such a role depends on the exposure to uncertainty. On the other hand, the findings showed that, at least in Italian society, the COVID-19 pandemic and therefore vaccination assumed a global institutional connotation that went beyond its medical, technical meaning. This result has important practical implications. Indeed, it suggests that policies aimed at promoting vaccination acceptance should take the complexity of the meanings associated with this choice into account – namely, they should consider that the decision to vaccinate is (at least in the Italian context) not only or mainly the result of an evaluation of the medical aspects of the vaccine, but reflects how people view the whole socio-institutional context as well, and therefore the cultural worldviews that shape such a view.

Authorship statement

Barbara Cordella, Conceptualization, Methodology / Study design, Writing – review & editing, Funding acquisition, Fulvio Signore, Methodology / Study design, Formal analysis, Data curation, Silvia Andreassi, Conceptualization, Methodology / Study design, Resources, Funding acquisition, Serena De Dominicis-Writing – review & editing, Alessandro Gennaro-Conceptualization, Methodology / Study design, Formal analysis, Data curation, Writing – review & editing, Funding acquisition, Salvatore Iuso-Resources, Writing – review & editing, Terri Mannarini-Conceptualization, Methodology / Study design, Writing – review & editing, Skaiste Kerusauskaite-Methodology / Study design, Data curation, Writing – review & editing, Visualization, Project administration, Ankica Kosic-Conceptualization, Methodology / Study design, Resources, Writing – review & editing, Funding acquisition, Matteo Reho-Writing – review & editing, Alessia Rochira-Methodology / Study design, Resources, Writing – review & editing, Giulia Rocchi-Writing – review & editing, Sergio Salvatore-Conceptualization, Methodology / Study design, Formal analysis, Data curation, Writing – review & editing, Visualization, Supervision, Funding acquisition, NA-Software, Validation, Investigation

Data availability

The data that has been used is confidential.

Acknowledgments

This work was supported by the Trust of the grant RG120172B95A8209 (Bando Ateneo 2020 - Grandi Progetti), Sapienza University of Rome.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.socscimed.2023.115671.

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