

Tell me what you are like and I will tell you what you believe in: Social representations of COVID-19 in the Americas, Europe and Asia

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This study analyzes the range and content of Social Representations (SRs) about the COVID-19 pandemic in 21 geographical zones from 17 countries in the Americas, Europe and Asia ($N = 4430$). Based on Social Representations Theory, as well as the psychosocial consequences of pandemics and crises, we evaluate the perceptions of severity and risks, the agreement with different SRs, and participants' Social Dominance Orientation (SDO) and Right-Wing Authoritarianism (RWA). Different sets of beliefs are discussed as SRs, together with their prevalence and association with contextual variables. Results show that severity and risk perceptions were associated with different SRs of the pandemic. Specifically, those focused on Emerging Externalizing zoonotic and ecological factors (*the virus is due to Chinese unhygienic habits and the overexploitation of the planet*), Polemic Conspiracies (*the virus is a weapon*), views of Elite and Mass Villains (*the elites deceive us and profit with the pandemic*), and Personal Responsibility (*the neglectful deserves contagion*) during the pandemic. Furthermore, most of the SRs are anchored in SDO and, more strongly, in RWA orientations. Additional meta-analyses and multi-level regressions show that the effects are replicated in most geographical areas and that risk perception was a consistent explanatory variable, even after controlling for demographics and 'real risk'

(i.e., actual numbers of contagion and death). Results suggest that, while coping with and making sense of the pandemic, authoritarian subjects agree with SR that feed a sense of social control and legitimize outgroup derogation, and support punishment of ingroup low-status deviants.

Keywords: COVID-19, Social Representations, Conspiracy Beliefs, Risk Perception, Socio-political orientations

A large volume of studies evidence the negative impact of a pandemic, and of people's physical isolation, on various forms of well-being; moreover, studies show how a pandemic forces the mobilization of diverse resources to cope with the situation (Brooks et al., 2020; Taylor, 2019). The current COVID-19 pandemic produced by the SARS-CoV-2 virus – commonly known as *Coronavirus* – in addition to the confinement of a third of the world population in their homes, is an unusual and unprecedented experience for the vast majority. Therefore, different pleas have been made stressing the importance of knowledge for efficient forms of coping (e.g., Sigurvinsdottir, Thorisdottir & Gylfason, 2020), as well as the necessity of multidisciplinary approaches to better understand the pandemic's scope (Chew, Wei, Vasoo, Chua, & Sim, 2020; Holmes et al., 2020; van Bavel et al., 2020).

In this regard, Social Representation Theory (SRT) (Moscovici, 1984; see also Jodelet, 1984) is a particularly useful approach to understand how people experience a pandemic of this magnitude and integrate new and significant concepts, events, and realities. Social Representations (SRs) are oriented toward communicating and understanding the social environment, and have specific characteristics regarding their content and the mental operations that they require (Jodelet, 1984). Understood as a product, SRs are the mental models groups share. As a process, conversely, they are the way these shared models are generated through interpersonal and intergroup communication (Abric, 1993; Pérez, 2004).

This article explores different SRs of the COVID-19 pandemic that have been shared through mass media and social networks. It also seeks to understand how these SRs are associated with the perception of risk felt by people in different countries and geographical regions, as well as with variables of a socio-political nature.

SOCIAL REPRESENTATIONS OF COVID-19

In health-related domains, SRs are constantly formed and shared by using information from past situations. In particular, it can be seen how people develop and transmit infectious diseases, finding connections with different elements of the disease in general or a pandemic in particular (Eicher & Bangerter, 2015). Considering the COVID-19 pandemic, and taking into account the great variety of domains it affects (e.g., social, labor, economic, cultural; van Bavel et al., 2020), there is a generalized and ongoing perception of threat, fear of infection, and distrust of the unknown. As Wagner and Hayes (2005) indicate, SRs act as collective forms of symbolic coping.

Beginning of hegemonic Social Representations

On the one hand, the transmission of information by the World Health Organization (WHO), diverse governments, mass media and social networks is a source for lay thinking or common-sense beliefs. In this context, the modality of information dissemination favors the unconscious imitation of what other people do or think (Pérez, 2004), and people in power (i.e., those in prestigious positions, such as local leaders) become a source of imitation (Henrich & McElreath, 2007). Consequently, the fear of an infectious disease boosts conformism in a community (Murray & Schaller, 2016), creating a social rejection *ethos* to those who act or behave in a different form. Majoritarian opinion is thus established and helps to reduce uncertainty, offer solutions, and reinforce social cohesion and ingroup solidarity (Páez & Pérez, 2020). In addition, it is manifested across several contexts; for instance, in the unanimity among political parties, social agents or, at least, a generalized absence of criticism. A hegemonic representation of COVID-19 as a viral pandemic became dominant (see Cinelli et al., 2020).

Opposition to hegemony: Emerging Social Representations

Scientific discourses are assimilated and recreated in the common sense. Along with hegemonic SRs, emerging and even polemic SRs are generated, thus maintaining significance while adapting to realities that are more concrete. Emerging SRs are based on information propagation, which emphasize different views without the intrinsic necessity of contradiction. Conversely, polemic SRs are primarily based on propaganda, social conflicts, and value-related contradictions (Páez & Pérez, 2020), which in turn can undermine the possibility of true engagement with alternative representations (Gillespie, 2008). This process is characterized by the mechanisms of *Anchoring* and *Objectification* that intervene in the elaboration of collective

symbolic productions, which allow individuals to face the negative emotional charge that is produced (e.g., uncertainty, fear, anxiety).

Anchoring refers to the mechanism by which non-expert thinking, through pre-existing metaphors and categories, transforms what is new or strange into something familiar (see Abric, 1996). In the case of epidemics, a link is established between a new disease and previous ones through this anchorage mechanism, which integrates the understanding of the new disease by framing it within previous ones (Jaspal & Nerlich, 2020; Sherlaw & Raude, 2013). Closely related, objectification is the process through which lay thought schematizes and materializes allowing SRs to occur (Abric, 1993, 1996). In Barlett's (1995) terms, it is the simplification and concretion of information to make something 'visible'. Through objectification, discourses are selectively assimilated and new and integrative discourses are created. Some attributes are selected, unified, and integrated into a figurative pattern (Vala & Castro, 2017). For the time being, the mask and the generalization of its use appear as the pandemic's prototypical image (e.g., Jaspal, & Nerlich, 2020).

Besides making the strange familiar, and decreasing anxiety (Thalgott, 1986), anchoring also serves to defend collective self-esteem (Páez & Pérez, 2020) by linking the disease to outgroups, such as immigrants or the stigmatized. This is seen in Reny and Barreto's (2020) study showing unfavorable feelings toward Asian Americans and, in particular, the Chinese in a scenario where US president Donald Trump has constantly blamed these social groups directly and indirectly.

This is congruent with what has been found in various studies on Ebola, AIDS and the H1N1 bird flu. The disease is linked to an 'other' or outgroup, distant from the social identity of the person interviewed: 'the African' for the British (Ebola or AIDS) and the 'mainland Chinese' for people in Hong Kong (H1N1) (Smith, O'Connor & Joffe, 2015). In the current scenario, thus, a controversial SR of COVID-19 as a Chinese foreign disease emerged and has been sustained by the propaganda actions of governments such as the United States (see Chiu, 2020). In addition to politically driven misinformation and propaganda, a scientific discourse that gave rise to this anchoring process was that of COVID-19 as a zoonosis: a disease that is transmitted from animals to humans.¹

¹ This argument is explicit in a piece of news that was found in many different news websites. The news alerted about a large reservoir of SARS-CoV-2-like viruses in bats, along with the culture of eating exotic mammals in southern China, suggesting it is a time bomb. This was published by scientists at the State Key Laboratory of Emerging Infectious Diseases at the University of Hong Kong in *Clinical Microbiology Reviews*, in October 2007 (Cheng, Lau, Woo, & Kwok, 2007).

Previous studies on epidemics have shown that these external – and often subordinate – groups are considered responsible for unhygienic and/or immoral practices or conspiracies to spread the disease (Eicher & Bangerter, 2015). In England, the British media, when reporting on SARS or previous viral zoonosis, tended to explain the diseases' appearances in China, appealing to the group's hygienic and culinary habits, such as eating 'exotic' animals and the tendency to spit on the floor (Eicher & Bangerter, 2015; Smith, O'Connor & Joffe, 2015). The zoonotic character of COVID-19 activated the image or social representation of the unhygienic or 'disgusting' practices of the Chinese – from a mainstream Western view – such as eating wild animals (e.g., pangolins, bats), from which viruses are transmitted and adapted to humans. These behaviors are portrayed as a deviation from the Western spirit of self-control, which is in line with the stereotypes of non-Western cultural groups – or stigmatized groups within Western society – lacking the instrumentality to justify their inferior status. Therefore, stigmatization toward China has spread in many countries (Roberto, Johnson, & Rauhaus, 2020), and has even reached scientific circles (Zeng, Wang & Zhang, 2020). This zoonotic representation of China, in addition to distancing the infectious disease, opposes the 'civilized self' against the 'primitive self' found in representations of HIV/AIDS around the world (Joffe & Staerke, 2007).²

This antagonism is also in line with several different theoretical models that clearly describe a marked orientation of human beings to preserve the ingroup (see Burke & Stets, 2000, for Social Identity Theory), which is stronger when death becomes more salient (see Solomon, Greenberg, & Pyszczynski, 1991, for Terror Management Theory; see also Murray & Schaller, 2016, for the Behavioral Immune System).

Another important discourse has given rise to representations aimed at just punishment for what humans have done to the planet. In several interviews, the renowned anthropologist Jane Goodall has blamed the abuse of natural resources as the primary reason for this pandemic: "It's because we disregard our place in the natural world and we disrespect the environment

² Chan and Montt's (2020) newspaper article accurately describes the arguments described above regarding this pandemic. The division between 'us' and 'you' in the US and China has consequences beyond the two countries, because for many observers, the 'war' is between the West and the East. On the one hand, China is criticized for censoring doctors who wanted to warn the government and citizens of the pandemic, while at the same time, the Chinese culture is blamed for eating bats and other unusual animals that have been suggested as the cause of the spread of the virus. Even for some people who do not hold these opinions, Eastern culture – which sometimes contrasts, and sometimes equates Chinese people, the Chinese government, and communism – should change its savagery and its orientation towards authoritarianism. Indeed, this was even suggested by Mario Vargas Llosa who put it this way: "none of this could be happening in the world if People's China was a free and democratic country and not the dictatorship that it is" (Chan & Montt, 2020, para. 4). The perception is that China is an epicenter of disease or the place where viruses 'belong' and according to this logic, what happened in China and Asia would not happen in Europe or the Americas.

and animals that COVID-19 happened” (Wray, 2020, para. 3). The disease is thus attributed to modern social structures and practices (e.g., mass tourism and over-exploitation of wildlife). In turn, this SR can be anchored in post-materialistic values (e.g., see Steel, Lovrich, & Pierce, 2005) and in the differentiation between ecological, civilized vegan and clean (i.e., ‘we’) and environmentally irresponsible, carnivorous and dirty (i.e., ‘they’) – the ingroup-outgroup differentiation.

Conspiracy-related Social Representations

From a more polemic and conspiracy-related viewpoint, political propaganda has also proposed that the virus is a biological weapon generated by the United States (or China) to weaken China and the European Union (or the United States) (Agence France-Presse & Agencia EFE-Pekín, 2020). Other SRs emphasize similar ideas related to the pandemic and blame powerful groups from abroad for a conspiracy. These SRs focus on beliefs about the manipulative role of governments, big pharmaceutical companies, and the utilitarian use of the pandemic to provide a ‘solution’ for different social problems that have appeared³. All in all, during seriously threatening and uncertain times, people need explanations to these phenomena and thus, conspiracy SRs are born and spread to give meaning to those happenings (Franks, Bangerter, & Bauer, 2013). By doing so, they can gain a sense of control.

In fact, conspiracy beliefs are associated with psychosocial traits and motivational goals. For instance, anxiety (Grzesiak-Feldman, 2013); the need to exercise control over one’s social environment (Knight, 2000); the need to make sense of the world (Ali, 2020); or with obedience and agreement with authoritarian policies, a mentality rooted in traditional values, and a general opposition towards governmental establishment (Imhoff & Lamberty, 2020). This latter orientation – Right-Wing Authoritarianism (RWA) (see Duckitt, Bizumic, Krauss, & Heled, 2010) – is further linked to the belief on the existence of deviated and high power group members, such as Jewish or communists. In addition, Social Dominance Orientation (SDO) (i.e., the preference for maintenance of inequality among social groups; see Pratto, Sidanius, Stallworth, & Malle, 1994) is also associated with conspiracy theories, particularly those implying deviations of low-status members (e.g., homosexuals or ethnic minorities) since they also threaten the *status quo* (Goreis & Voracek, 2019).

³ In the French case, these theories of the plot can be appreciated in this journalistic note of Febbro (2020), where the author describes the union of shared sensations of deception and conspiracy, the (Jewish) plot of big pharmaceutical companies and the possibility of future coups d’état.

Heroes and villains in Social Representations

Previous studies suggest that, in crises such as epidemics, heroes, villains and victims are commonly personified through the application of the common narrative scheme of folktales, which is a cultural tool available in all societies (Páez & Pérez, 2020). Heroes are scientific experts (e.g., epidemiologists and researchers) and health-care personnel, who are mainly perceived as credible, trustworthy, and carrying the burden of healing the sick (Martín-Aragón & Terol-Cantero, 2020). This objectification is present in the current pandemic. However, in some cases, the labels have been exchanged. For instance, a polemic physician openly promoted campaigns against governmental plans (see Febbro, 2020), and health-care workers have been stigmatized and discriminated against as a risk factor, just as has happened in previous pandemics (Taylor, 2019).

On the one hand, the villains, for many, are the journalists, who are accused of using fear for their own interests, and perceived as subordinates of the powerful (e.g., Idoiaga Mondragon, Gil de Montes & Valencia, 2016). The media is also accused of stirring up fear, panic, and collective hysteria, and spreading sensational news to gain a larger audience. On the other hand, the role of the villains is also attributed to businessmen in general and the pharmaceutical industry in particular, who profit from the sale of preventive and curative materials and vaccines (Páez & Pérez, 2020). Finally, critical representations of the government for the mismanagement of new threats to human health, for the corruption and the concealment of the problem and/or the limitations of resources to prevent and cure the spread of the disease are frequent – although more in some countries than in others (Washer, 2006). These critical representations of the economic, media and political elites have been manifested during the COVID-19 pandemic and have been also influenced by misinformation and propaganda. Nonetheless, there is a great deal of consensus in believing that governments reacted late, badly, with a significant cost in human lives, and an overburdening of health workers (Martín-Aragón & Terol-Cantero, 2020).

Finally, the actual people who are suffering and dealing with the pandemic can be portrayed in terms of villains versus heroes. In critical phases of pandemics, predictions and descriptions of panic are issued, and it is suggested that we are facing a collective lack of control. The selfish and irrational behavior of many people (e.g., panic buying and subsequent shortages, such as toilet paper) is criticized, and cases of excessive shopping and riots are named and shamed (Eicher & Bangerter, 2015). This negative and *LeBonian* view of the masses legitimizes

social control and the need for authoritarian government intervention (Páez & Pérez, 2020; Sabucedo, Alzate, & Hur, 2020), and permeates scientific discourses⁴. Conversely, there is also the generation of a discourse of collective resilience, with an emphasis on prosocial behaviors, an absence of panic and selfishness, and an emphasis on solidarity and self-control (Chen & Bonanno, 2020; Smith, Ng & Ho Cheung Li, 2020).

In all, this last thought line would undoubtedly attribute the causes of disease to individual behaviors and responsibilities (see Moscovici, 2020). As health systems inform people of what they should do to avoid contagion, they reinforce the belief of individual responsibility for health/disease. This happens regardless of the actual effectiveness of the preventive behaviours and the difficulties that people may have (e.g., due to their living conditions) in carrying them out (i.e., maintaining physical distance, regular handwashing, etc.). The person who is careless and has little control will be considered ‘a full-blown villain’, and in this sense, the label of ‘bad person’ has been used extensively, even to the point of public lynching amid growing tensions (Montalto Monela & Crowcroft, 2020).

THE PRESENT RESEARCH

This study seeks to answer the following questions: How does the current COVID-19 pandemic affect the SRs held by people from different parts of the world? Further, what are the variables that can explain this relationship? The first general objective seeks to understand the prevalence and structures of beliefs and their relationship to contextual variables – particularly, the subjectively felt severity. We propose (H1) the psychological anchoring of representations in the perception of threat (i.e., the perception of impact and subjective risk) will be associated with the SRs of the pandemic, particularly externalizing, conspiracy and elite and mass villains SRs. In addition, anchoring in sociopolitical values and orientations will be examined; concretely, we propose (H2) that SDO and RWA beliefs are positively associated with the SRs of the pandemic – particularly, externalizing, conspiracy and elite political and mass villains SRs – and negatively with the heroic mass representations. In the latter, we do foresee a particular relationship between RWA and the elite economic villains because of its characteristic economic conservatism. Finally (H3), we will contrast whether the perception of impact, severity and risk, as well as sociopolitical beliefs, predict agreement with the externalizing and

⁴ Van Bavel and colleagues (2020) outline the fact that, in the context of this pandemic, there could be even further spreading of conspiracy theories, fake news and misinformation. A somewhat similar line is discussed in Salas’ (2020) article, where the author presents how different biases affect people even though they are more likely to be attributed to laypeople.

conspiratorial SRs, and those of the elite and mass villains of the pandemic, controlling for the interrelationship between the variables and the real threat (i.e., number of infections and deaths). The pre-registration of these hypotheses can be consulted at <https://osf.io/dp5zt>

METHOD

Participants and Design

The final sample consisted of 4,430 participants ($M = 34.05$, $SD = 14.23$, 66.45% female, 30.45% male, and 3.09% who identified as non-binary or did not want to respond) from 21 different geographical zones (17 countries) from the Americas, Europe and Asia (see Supplementary Table A). Participants took in a survey (see <https://osf.io/es8qx/> for materials) conducted via the online platform Qualtrics. Data collection was conducted in the participants' languages (10 different languages), primarily during May 2020, and took about 25 minutes. The present analyses only include data from participants who completed at least 70% of the survey.

Instruments

We assessed *Impact and Severity Perception* with 3 items ($\omega = .74$; e.g., 'Do you feel that your life was disrupted by the coronavirus pandemic?' or 'Has this pandemic marked a turning point in your life?'), on a 7-point scale (1 = *Not at all*; 7 = *Severely*)⁵.

Risk Perception related to COVID-19 was measured by a two-factor structure ($\omega = .66$). The first 4 items aimed at examining the infection-related risks (e.g., 'I am afraid of falling ill with the coronavirus, or I am afraid I would pass it on to others'). On the other hand, the consequence-related anxiety was measured with 3 items (e.g., 'I am worried of losing my job and/or that a close one does', or 'I am worried about having more conflicts with someone in my household'). They were measured on a 7-point scale (1 = *Strongly disagree*; 7 = *Strongly agree*).

Agreement with *Social Representations of COVID-19* was evaluated by 15 items, on a 5-point scale (1 = *Completely disagree*; 5 = *Completely agree*). The set of beliefs were proposed from the literature review and were grouped in the following types: (a) *Hegemonic Viral* (1 item: 'The virus is an infectious disease generated by the mutation of a virus'); (b) *Emerging - Externalizing Zoonotic Chinese* (1 item: 'The virus is a product of the unhygienic habits of

⁵ We conducted McDonald's Omega (1999) for reliability analyses due to its sensibility to recognize possible sub-dimensions in the constructs analyzed which were previously explored through parallel and exploratory factor analyses.

eating wild animals such as bats in China’) and *Ecological* (1 item: ‘The virus is a product of the overexploitation of the planet’); (c) *Polemic Conspiracy* (2 items, $\omega = 0.74$: ‘The virus is used to kill old people and ‘fix’ the retirement problem’ and ‘The virus is a biological weapon created by one superpower to attack another’); (d) *Objectification on Political Elite Villains* (3 items, $\omega = 0.62$: ‘The government deceives us and hides information about the Coronavirus’, ‘The problems are the product of corruption by government officials who have squandered the money’ and ‘Ineffective hospital management has exacerbated the coronavirus pandemic’); (e) *Objectification on Economic Elite Villains* (3 items, $\omega = 0.73$: ‘The pharmaceutical industry is taking advantage of the Coronavirus epidemic to make money’, ‘Entrepreneurs in general and in the pharmaceutical industry in particular are making money from the sale of medical equipment at the price of gold’, and ‘The media feeds fear, giving negative and alarmist news in order to have more audience’); (f) *Objectification on Mass or Underdog Villains* (1 item: ‘People have acted selfishly and irrationally (e.g., excessive purchases, hoarding resources, etc.)’); (g) *Objectification on Mass Heroes or Collective Resilience* (2 items; $\omega = 0.60$: ‘People have respected the rules of hygiene and social distance’ and ‘People have been supportive and have helped others’); and finally, (g) *Personal Responsibility* (1 item: ‘The neglectful person, who does not respect the rules of hygiene and social distance, receives what he deserves if he gets sick’).

We evaluated *Social Dominance Orientation* (Pratto et al., 1994) through 3 items ($\omega = .65$, e.g., ‘It’s ok if some groups have more of a chance in life than others’) on a scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*). *Right-Wing Authoritarianism* (Duckitt et al., 2010) was measured as follows: through 2 items we evaluated the individual orientation to support and submit to authorities that employ hostility and aggression to people ($\omega = .73$, e.g., ‘Our society needs a tougher government and stricter laws’).

Finally, we asked for general *Demographic information*. We also accompanied the survey with questions about gender (1 = *Male*, 2 = *Female*, 3 = *Non-binary*, 4 = *I don’t want to respond*), age, and education (1 = *Less than 6 years*, 2 = *Primary school*, 3 = *Secondary school*, 4 = *University, no degree*, 5 = *University graduated*, 6 = *Master*, 7 = *Doctor*).

Data Analysis

First, to examine organization of the beliefs, we assessed the factorial structures of the used scales through parallel analysis, exploratory and confirmatory factor analysis (EFAs and CFAs), as well as their reliability (McDonald’s Omega). Then, *t*-test pairs and mean comparisons were

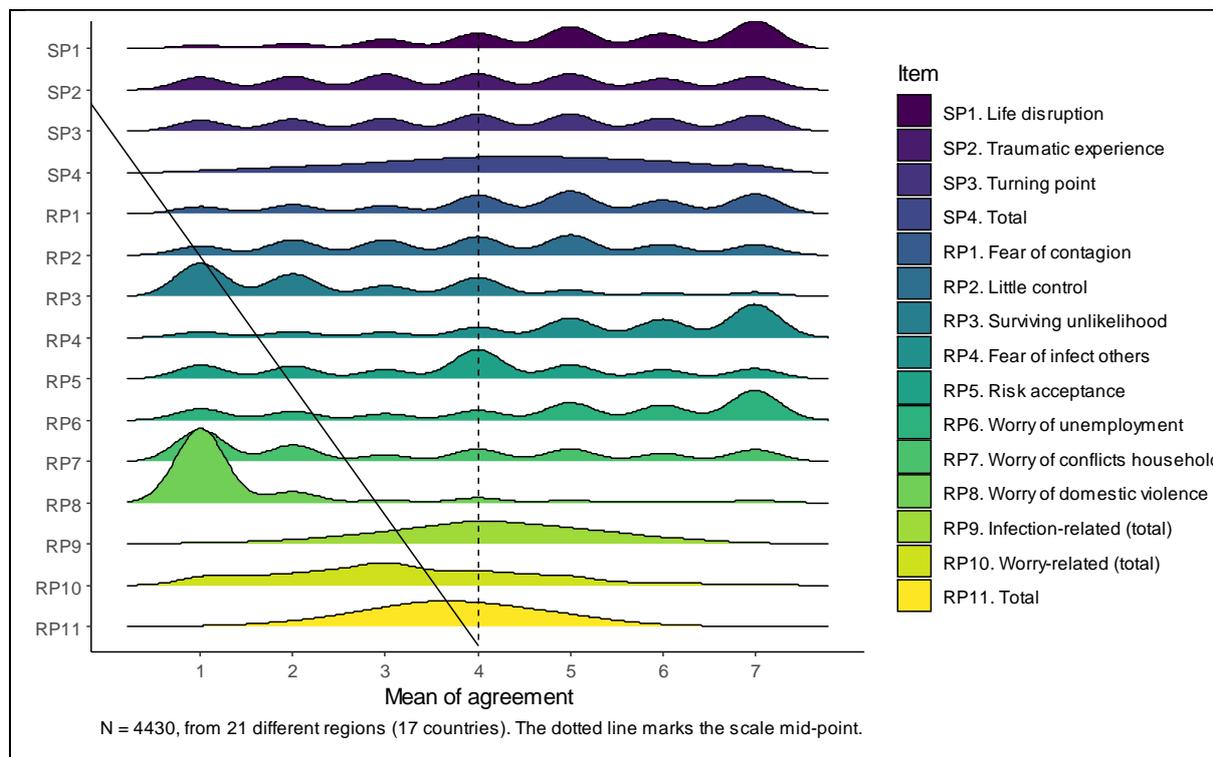
carried out to examine prevalence of beliefs. Third, correlational analyses were conducted between belief, and individual and contextual variables. Fourth, correlations between impact or perceived risk and the SRs were meta-analyzed using a random model. Finally, we predicted the agreement with the SRs in different multi-level regression models. All analyses were conducted both in SPSS.25 and in R (R Core Team, 2014) with RStudio (RStudioTeam, 2015). For CFAs and reliability analysis, we used the packages *lavaan* (Rosseel, 2014) and *semTools* (Jorgensen, Pornprasertmanit, Schoemann & Rosseel, 2019). For correlations, *apaTables* (Stanley, 2018) was used; for meta-analysis, *metafor* (Viechtbauer, 2015) was used; for multilevel-analyses, *lme4* (Bates et al., 2014) was used; and for recursive binary partitioning, *party* (Hothorn, Hornik & Zeileis, 2006) was used (supplementary analyses can be seen at <https://osf.io/p8ycx>).

RESULTS

Severity Impact and Risk Perception

Figure 1 shows the distribution of responses of Severity and Risk Perceptions for the complete sample. A great proportion of participants stated that the pandemic has had a severe impact in their lives (more than 50% scoring 4.3 or higher). Furthermore, most participants indicate higher scores regarding the fear of the infection (e.g., being infected or infecting others, with more than the 50% scoring 4.25 or higher), than the consequences to lose their job or having more arguments in their household (more than 50% with 3 or less).

Figure 1. Perceptions of Severity and Risk Perception (SP and RP, respectively) about the COVID-19 pandemic.



As seen in Figure 1, and despite most responses indicating that COVID-19 has marked their lives (i.e., Item SP1) and that they have fears of a possible contagion, most people agree that they do not think they would die in case of being infected (i.e., item RP3). It is interesting to point out that there is indeed a significant number of participants who indicate being worried about conflicts in their household, and – though to a lesser extent – about suffering from domestic violence.

Regarding the content of SRs, Supplementary Table B shows descriptive analyses for each item regarding beliefs of SRs. The scale construction – based on parallel analysis, EFAs and CFAs – allowed grouping these SRs as described in the Instrument section, and can be compared based on word regions in Figure 2.

Level of Agreement with SRs

To examine the prevalence of beliefs, descriptive analyses and paired *t*-test comparisons were performed between the sample mean and the theoretical mean (i.e., 3), as well as between beliefs. The results show that people (see Supplementary Table B for items' means and standard deviations) agree with the dominant hegemonic representation that COVID-19 is a viral disease

(67 % according to scores 4 and 5; $t = 49.65, p < .0001$) and disagree with the Chinese Zoonotic SRs (i.e., product of the unhygienic habits of eating wild animals: 34.5% agree, $t = -22.54, p < .0001$). However, there is neither agreement nor disagreement with an Emerging Ecological SR (i.e., overexploitation of the planet: 39% agree; $t = 1.64, p = .10$). In addition, participants express general disagreement with controversial conspiracy SR as a biological weapon (i.e., virus as a biological weapon: 26% agree; $t = -22.54, p < .0001$) and as a way to ‘solve problems’ (i.e., used to kill old people: 16% agree; $t = -49.06, p < .0001$). With respect to the SRs of objectification in Political Elite Villains, there was a slight majority agreement with two items (i.e., government deceives us: 52% agreement; $t = 21.51, p < .0001$; and the problems are the product of corruption: 52% agreement, $t = 23.32, p < .0001$) and an important agreement with another (i.e., ineffective hospital management: 46% agreement; $t = 11.12, p < .0001$).

With regard to the SRs of Objectification Economic Elite Villains, there was majority agreement on all items (i.e., The pharmaceutical industry profiting: 57% agreement; $t = 30.74, p < .0001$; Entrepreneurs in general and in the pharmaceutical industry in particular profiting: 67% agreement; $t = 55.7, p < .0001$; and The media feeds fear: 63% agreement; $t = 41.7, p < .0001$). With respect to the RRSS objectified in the masses as villains (i.e., people acted selfishly and irrationally) there was majority agreement (68% agreement; $t = 57.14, p < .0001$).

Regarding SRs of objectified masses as heroes, people were discouraged from respecting hygiene rules and social distance (24% agreement; $t = -15.38$), although there was relative agreement that people were supportive and helped others (48% agreement; $t = 28.21, p < .0001$). Finally, regarding the individualistic representation of responsibility within the pandemic, there was general disagreement (28% agreement; $t = -47.88, p < .0001$) – exploratory models that predict the highest scores (i.e., *Totally agree* vs the rest) through recursive binary partitioning can be seen in the supplementary materials.

As a general tendency (Figure 2), we observe that participants from the Americas (i.e., Argentina, Brazil, Chile, Colombia, Mexico and Peru) present the highest means of agreement with SRs about all the pandemic Villains, the worst perception of people and an above-the-mean score regarding individual responsibility. In contrast, participants from the South of Europe (i.e., Italy, Portugal and Spain) are those with the greatest agreement with a positive view of people (i.e., Mass Heroes) and the lowest agreement with Polemic externalizing and conspiracy SRs and about individual responsibility.

Figure 2. Agreement with the different types of Social Representations by world regions.

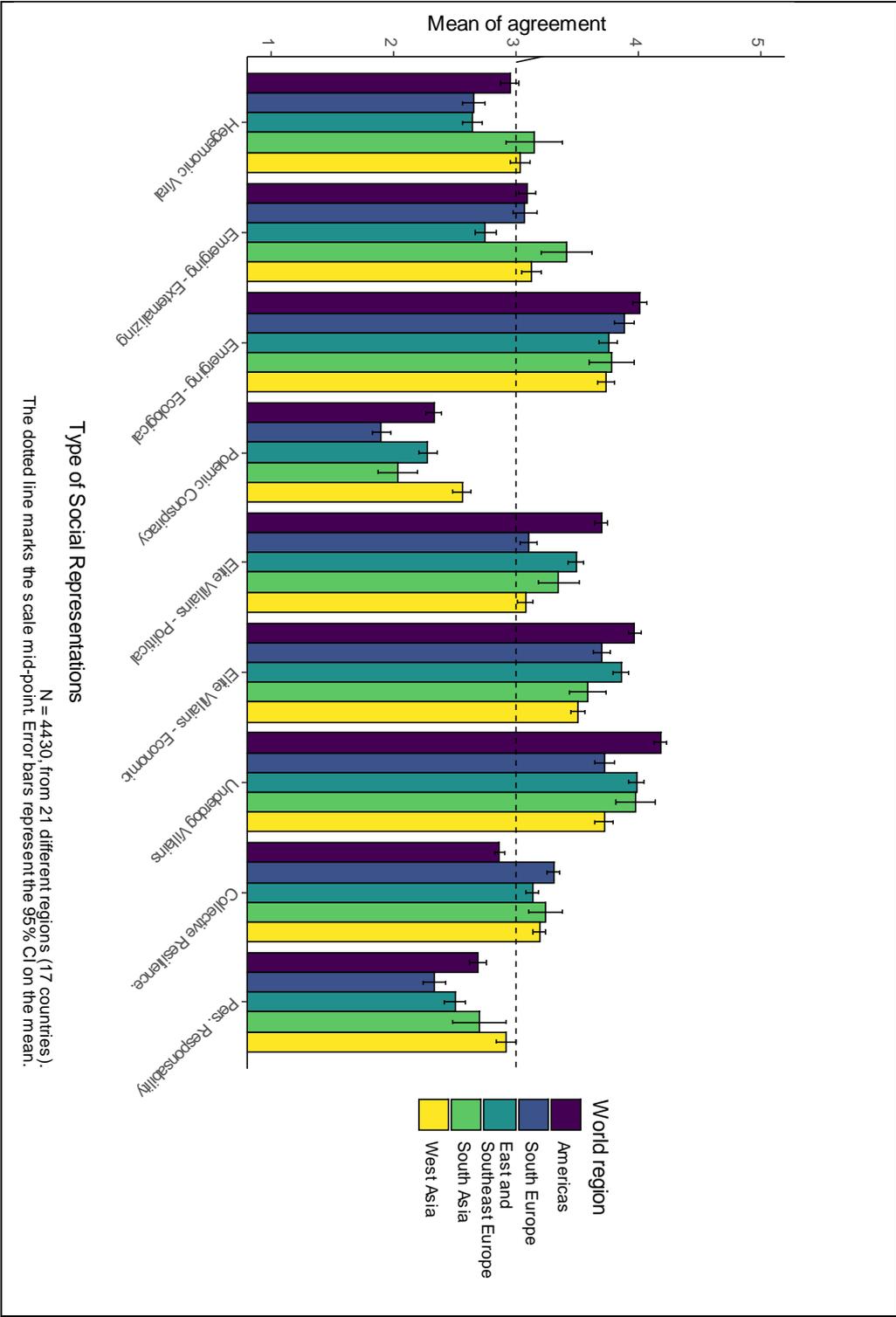


Table 1. Descriptive and Correlation Analyses of Interest Variables.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1. Gender ¹	-	-																		
2. Age	34.05	14.23	-.07**																	
3. Ed. Lvl.	4.76	1.16	-.00	.36**																
4. New cases ²	47.23	80.26	-.01	-.11**	-.15**															
5. New deaths ²	1.89	3.78	.04**	-.03	-.05**	.47**														
6. Sub. Per.	4.42	1.49	.04*	.07**	.00	.09**	.08**													
7. Risk Per.	3.75	1.01	.05**	-.09**	-.08**	.17**	.08**	.41**												
8. SRs HV	3.86	1.17	.03	-.00	.04*	.05**	.04*	.08**	.14**											
9. EEx	2.86	1.38	-.02	-.12**	-.06**	.01	-.01	.09**	.13**	.08**										
10. EEc	3.03	1.39	.03*	.04*	.05**	.02	.01	.10**	.13**	.14**	.25**									
11. PC	2.29	1.20	.05**	-.04*	-.12**	.06**	-.04**	.12**	.10**	-.07**	-.07**	.02								
12. EVP	3.39	1.05	.04*	-.13**	-.10**	.18**	.08**	.10**	.19**	.07**	.02	.13**	.29**							
13. EVE	3.78	0.98	.03	-.01	-.02	.13**	.02	.06**	.09**	.04**	-.02	.11**	.31**	.44**						
14. UV	3.94	1.10	.05**	-.19**	-.08**	.07**	-.02	.07**	.15**	.11**	.06**	.09**	.12**	.21**	.32**					
15. CR	3.09	0.83	.05**	.17**	.13**	-.14**	-.04*	-.00	-.08**	.02	.02	.02	-.05**	-.15**	-.04*	-.18**				
16. PR	2.64	1.38	-.07**	-.02	-.08**	-.03	-.07**	.06**	.08**	.04*	.15**	.03	.11**	.04**	-.00	.11**	-.03			
17. SDO	2.27	1.27	-.12**	-.09**	-.05**	-.10**	-.13**	-.08**	-.01	-.08**	.06**	-.04**	.14**	-.01	-.01	.01	.00	.17**		
18. RWA	3.58	1.85	.02	-.03*	-.07**	-.17**	-.17**	.01	.05**	.02	.11**	-.01	.18**	.00	.03*	.12**	-.04*	.24**	.24**	

Note. ¹ Gender was dummy coded as 1 for Masculine and 2 for Feminine. ² New cases and new deaths are for 1 million inhabitants. *M* and *SD* are used to represent mean and standard deviation, respectively. Risk Per. = Risk

Perception; Sub. Per. = Subjective Perception of Risk; HV = Hegemonic Viral; EEx = Emerging Externalizing; EEc = Emerging Ecological; PC = Polemic Conspiracy; EVP = Elite Villains – Political; EVE = Elite Villains Economic; UV = Underdog Villains; CR = Collective Resilience; PR = Personal Responsibility; SDO = Social Dominance Orientation; RWA = Right-Wing Authoritarianism; Ed. Lvl. = Educational level. Values in square brackets indicate the 95% confidence interval for each correlation. * indicates $p < .05$. ** indicates $p < .01$.

Contextual Variables, Severity and Risk Perception, SDO, RWA and SRs

Correlation analyses in Table 1 shows the associations between contextual variables, Severity and Risk Perceptions, SDO and RWA with the different types of SRs. First, we can see that national rates of new cases of contagion and death during data collection was associated to Severity and Risk Perception ($r = .09$ and $.17$, respectively; $ps < .01$) and to most SRs. In detail, the rates are positively and significantly associated with Emerging Ecological, Political Conspiracy, Elite Villains (Politics and Economic), underdog Villains ($r = .05, .06, .18, .13$, and $.07$; $ps < .01$), and inversely with Collective Resilience ($r = -.14$; $p < .01$). These associations suggest the congruence between contextual objective variables and individual beliefs about the pandemic.

Table 2. Meta-Analyses of the Relationship of Risk Perception and the different types of SSRRs.

Type of SSRR	Meta-Analysis	
	Pooled r s [95% CI]	Heterogeneity tests
Hegemonic Viral	.12 [.09, .15]	$Q_{(16)} = 17.468, p = 0.356; I^2 = 0.00\%$
Emerging Externalizing	.11 [.08, .15]	$Q_{(16)} = 22.864, p = 0.117; I^2 = 30.77\%$
Emerging Ecological	.12 [.08, .16]	$Q_{(16)} = 31.992, p = 0.010; I^2 = 42.55\%$
Polemic Conspiracy	.08 [.05, .12]	$Q_{(16)} = 22.488, p = 0.128; I^2 = 29.33\%$
Elite Villains - Political	.18 [.14, .22]	$Q_{(16)} = 26.309, p = 0.049; I^2 = 41.91\%$
Elite Villains - Economic	.10 [.06, .14]	$Q_{(16)} = 30.314, p = 0.016; I^2 = 49.54\%$
Underdog Villains	.15 [.11, .19]	$Q_{(16)} = 28.867, p = 0.025; I^2 = 42.96\%$
Collective Resilience	-.04 [-.07, -.01]	$Q_{(16)} = 25.885, p = 0.056; I^2 = 10.64\%$
Personal Responsibility	.08 [.04, .11]	$Q_{(16)} = 24.131, p = 0.087; I^2 = 18.71\%$

Note. Analyses were performed using random-effect model across the countries ($k = 17$; $N = 4430$), using Pearson's r as an effect size.

In order to have a more precise test of H1, we conducted random-effects meta-analyses and these are summarized in Table 2. The analyses show that pooled effects are significant for each association, being the highest for the perception of Political Elite Villains and the smallest, for Collective Resilience. Homogeneity analyses with the Q and the I^2 statistics further indicate

that there is no considerable source of heterogeneity in most of the associations; more specifically, in the associations with Hegemonic, Emerging Externalizing, Polemic Conspiracy, Mass Heroes (i.e., Collective Resilience) and Individual Responsibility. However, analyses do show possible sources of heterogeneity in the relationship with Emerging Ecological, Political Elite Villains, Economic Elite Villains, and Masses or Underdog Villains.

The meta-analyses suggest that the most adequate way of analyzing predictive models between Risk Perception and SRs are conducted through a random model that allows for varying the relationship among the different samples (H3). Table 3, Table 4, Table 5, Table 6 and Table 7 show the last step of several multi-level regressions predicting agreement with SRs of COVID-19 using descriptive information (i.e., Gender, Age, Educational Level), information of real risk (i.e., New Cases and Deaths for 1 million inhabitants), Risk Perception, SDO and RWA (full analyses can be seen in supplementary materials online).

Table 3. Multilevel-linear regressions: Effects of Risk Perception on Hegemonic, and Emerging Externalizing SRs.

Variable	Hegemonic Viral			Emerging Externalizing		
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>b</i>	<i>SE</i>	<i>t</i>
Intercept	3.149	0.155	20.346***	2.409	0.188	12.786***
Gender ¹	0.009	0.042	0.220	-0.066	0.049	-1.340
Age	-0.001	0.001	-0.570	-0.009	0.002	-5.198***
Ed. Lvl.	0.047	0.019	2.507*	0.012	0.022	0.531
New Cases ²	0.000	0.000	-0.453	-0.001	0.000	-1.434
New Deaths ²	0.000	0.006	-0.060	0.007	0.007	0.931
Risk Perception	0.157	0.019	8.116***	0.143	0.023	6.246***
SDO	-0.076	0.016	-4.770***	0.050	0.019	2.651**
RWA	0.037	0.011	3.216**	0.059	0.014	4.327***
BIC	12069.29			13254.59		
AIC	12000.58			13185.9		
-2 x Log(lh)	11978.58			13163.9		
<i>Df</i>	11			11		
<i>R</i> ² _m	.028			.033		
<i>R</i> ² _c	.042			.067		

Notes. *R*²_m and *R*²_c represent marginal and conditional *R*², respectively. ¹ Gender was dummy coded as 1 for Masculine and 2 for Feminine. ² New cases and new deaths are for 1 million inhabitants. Ed. Lvl. = Educational level; SDO = Social Dominance Orientation; RWA = Right-Wing Authoritarianism; BIC = Bayesian Information Criterion; AIC = Akaike Information Criterion; -2 x Log(lh) = -2 log likelihood. *Df* = Degrees of freedom. *R*²_m and *R*²_c = Marginal and conditional *R*², respectively. The analyses were based on 3809 observations grouped in 20 different country regions. * *p* < .05; ** *p* < .01; *** *p* < .001.

Table 4. Multilevel-linear regressions: Effects of Risk Perception on Emerging Ecological and Polemic Conspiracy SRs.

Variable	Emerging Ecological			Polemic Conspiracy		
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>b</i>	<i>SE</i>	<i>t</i>
Intercept	1.741	0.184	9.467***	1.545	0.168	9.219***
Gender ¹	0.150	0.0501	2.999**	0.151	0.041	3.675***
Age	0.003	0.002	1.540	0.003	0.001	1.836
Educ. Lvl.	0.077	0.022	3.445***	-0.092	0.018	-4.992***
New Cases ²	0.000	0.000	0.148	0.000	0.000	0.282
New Deaths ²	-0.009	0.007	-1.259	-0.010	0.006	-1.635
Risk Perception	0.169	0.023	7.306***	0.070	0.019	3.673***
SDO	-0.008	0.019	-0.430	0.104	0.016	6.586***
RWA	-0.004	0.014	-0.291	0.083	0.011	7.272***
BIC	13399.64			11896.46		
AIC	13330.94			11827.75		
-2 x Log(lh)	13308.94			11805.75		
<i>Df</i>	11			11		
<i>R</i> ² _m	0.022			.052		
<i>R</i> ² _c	0.034			.129		

Notes. *R*²_m and *R*²_c represent marginal and conditional *R*², respectively. ¹ Gender was dummy coded as 1 for Masculine and 2 for Feminine. ² New cases and new deaths are for 1 million inhabitants. Ed. Lvl. = Educational level; SDO = Social Dominance Orientation; RWA = Right-Wing Authoritarianism; BIC = Bayesian Information Criterion; AIC = Akaike Information Criterion; -2 x Log(lh) = -2 log likelihood. *Df* = Degrees of freedom. *R*²_m and *R*²_c = Marginal and conditional *R*², respectively. The analyses were based on 3809 observations grouped in 20 different country regions. * *p* < .05; ** *p* < .01; *** *p* < .001.

Table 5. Multilevel-linear regressions: Effects of Risk Perception on Elite Villains (Political and Economic) SRs.

Variable	Elite Villains - Politic			Elite Villains - Economic		
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>b</i>	<i>SE</i>	<i>t</i>
Intercept	2.851	0.165	17.272***	3.308	0.151	21.960***
Gender ¹	0.043	0.036	1.186	0.031	0.034	0.922
Age	-0.006	0.001	-4.400***	0.002	0.001	1.905
Educ. Lvl.	-0.009	0.016	-0.533	-0.002	0.015	-0.143
New Cases ²	0.000	0.000	-0.860	-0.001	0.000	-1.607
New Deaths ²	0.000	0.005	0.088	-0.002	0.005	-0.360
Risk Perception	0.174	0.017	10.414***	0.091	0.016	5.816***
SDO	0.013	0.014	0.950	0.015	0.013	1.196
RWA	-0.006	0.010	-0.652	0.008	0.009	0.857
BIC	10873.28			10353.69		
AIC	10804.57			10284.98		
-2 x Log(lh)	10782.57			10262.98		
<i>Df</i>	11			11		
<i>R</i> ² _m	.034			.011		
<i>R</i> ² _c	.202			.165		

Notes. *R*²_m and *R*²_c represent marginal and conditional *R*², respectively. ¹ Gender was dummy coded as 1 for Masculine and 2 for Feminine. ² New cases and new deaths are for 1 million inhabitants. Ed. Lvl. = Educational level; SDO = Social Dominance Orientation; RWA = Right-Wing Authoritarianism; BIC = Bayesian Information Criterion; AIC = Akaike Information Criterion; -2 x Log(lh) = -2 log likelihood. *Df* = Degrees of freedom. *R*²_m and *R*²_c = Marginal and conditional *R*², respectively. The analyses were based on 3809 observations grouped in 20 different country regions. * *p* < .05; ** *p* < .01; *** *p* < .001.

Table 6. Multilevel-linear regressions: Effects of Risk Perception on Underdog Villains and Collective Resilience SRs.

Variable	Underdog Villains			Collective Resilience		
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>b</i>	<i>SE</i>	<i>t</i>
Intercept	3.956	0.142	27.942***	2.663	0.113	23.571***
Gender ¹	0.040	0.036	1.103	0.085	0.029	2.907**
Age	-0.012	0.001	-9.509***	0.007	0.001	6.298***
Educ. Lvl.	-0.052	0.016	-3.174	0.048	0.013	3.696***
New Cases ²	0.000	0.000	-0.493	-0.001	0.000	-2.334*
New Deaths ²	-0.009	0.005	-1.807	0.004	0.004	0.915
Risk Perception	0.132	0.017	7.852***	-0.025	0.014	-1.845
SDO	-0.032	0.014	-2.269*	0.015	0.011	1.329
RWA	0.074	0.010	7.354***	-0.022	0.008	-2.731**
BIC	10947.88			9.307.178		
AIC	10879.18			9238.47		
-2 x Log(lh)	10857.18			9216.47		
<i>Df</i>	11			11		
<i>R</i> ² _m	.077			.034		
<i>R</i> ² _c	.124			.076		

Notes. *R*²_m and *R*²_c represent marginal and conditional *R*², respectively. ¹ Gender was dummy coded as 1 for Masculine and 2 for Feminine. ² New cases and new deaths are for 1 million inhabitants. Ed. Lvl. = Educational level; SDO = Social Dominance Orientation; RWA = Right-Wing Authoritarianism; BIC = Bayesian Information Criterion; AIC = Akaike Information Criterion; -2 x Log(lh) = - 2 log likelihood. *Df* = Degrees of freedom. *R*²_m and *R*²_c = Marginal and conditional *R*², respectively. The analyses were based on 3809 observations grouped in 20 different country regions. * *p* < .05; ** *p* < .01; *** *p* < .001.

Table 7. Multilevel-linear regressions: Effects of Risk Perception on Personal Responsibility SRs.

Variable	Personal Responsibility		
	<i>b</i>	<i>SE</i>	<i>t</i>
Intercept	2.043	0.181	11.274***
Gender ¹	-0.163	0.048	-3.402***
Age	0.002	0.002	1.127
Ed. Lvl.	-0.058	0.021	-2.701**
New Cases ²	0.000	0.000	-0.140
New Deaths ²	-0.012	0.007	-1.703
Risk Perception	0.074	0.022	3.326***
SDO	0.130	0.018	7.090***
RWA	0.145	0.013	11.071***
BIC	13047.45		
AIC	12978.75		
-2 x Log(lh)	12956.75		
<i>Df</i>	11		
<i>R</i> ² _m	.079		
<i>R</i> ² _c	.107		

Notes. *R*²_m and *R*²_c represent marginal and conditional *R*², respectively. ¹ Gender was dummy coded as 1 for Masculine and 2 for Feminine. ² New cases and new deaths are for 1 million inhabitants. Ed. Lvl. = Educational level; SDO = Social Dominance Orientation; RWA = Right-Wing Authoritarianism; BIC = Bayesian Information Criterion; AIC = Akaike Information Criterion; -2 x Log(lh) = - 2 log likelihood. *Df* = Degrees of freedom. *R*²_m and *R*²_c = Marginal and conditional *R*², respectively. The analyses were based on 3809 observations grouped in 20 different country regions. * *p* < .05; ** *p* < .01; *** *p* < .001.

Final multi-level models show that, while controlling for demographics and ‘real risks’, Risk Perception is a significant predictor of all but one SR (i.e., Collective Resilience – Table 6). Furthermore, scores of SDO and RWA were significant predictors of different types of SRs. Specifically, both were significant and positive predictors of Emerging Externalizing, Polemic Conspiracy and Personal Responsibility SRs (Table 3, Table 4 and Table 7). Differentially, on the other side, SDO negatively predicted Hegemonic Viral and Underdog Villains, while RWA did it positively (Table 3 and Table 6); further, the latter was a negative predictor of Collective resilience (Table 6).

DISCUSSION

The aim of this work was to understand the psychosocial impact of the COVID-19 pandemic in different countries in Europe, Asia, and the Americas. We analyzed the way in which individuals and groups perceive and socially represent the pandemic and its consequences, and how this relates to preconceived sociopolitical values and beliefs. Findings strongly support our hypotheses and suggest that a majoritarian SR is shared among virtually all countries. However, there is significant agreement on the opportunistic use of economic and media elites, the critical view of the political elite as poor managers of the pandemic, and the selfish and irrational behavior of the masses who do not respect the rules of hygiene and social distance – although there is agreement that they have been supportive. A major rejection of externalizing SRs, as well as conspiracy-related and individual responsibility-related SRs, is seen. Although, a significant percentage of people – two or three out of ten – do agree with them. Furthermore, overall differences between geographical zones suggest that the relatively higher socioeconomic level might buffer the impact of the pandemic.

Globally, H1 is confirmed, and we can see that Severity and Risk Perception anchor SRs, particularly those that allow the defence of an in-group social identity and the management of uncertainty (Smith et al., 2015). Further analyses show that, while controlling for demographics and real risks (i.e., real numbers of contagion and death) as well as individual orientations (i.e., SDO and RWA), Risk Perception is still a significant predictor for all but one SR. In all, the analyses support the view that perceived risk and a lack of control psychologically anchor these agreements and externalize the disease on others (e.g., Idoiaga Mondragon, Gil de Montes, & Valencia, 2018). Empirically, people tend to make attributions about manipulations by the powerful and reinforce their agreement with beliefs about mismanagement among the economic, media and political elites. In addition, our data also shows the reinforcement of a negative view of the ordinary person, who is ultimately responsible for the disease.

In addition (H2), correlational and multi-level analyses confirmed the proposed influence of SDO and RWA with a greater agreement with externalizing, conspiracy-related and individual responsibility-related SRs. What is more, RWA was positively associated with SRs of people and elite villains, and negatively associated with mass heroes (i.e., collective resilience). In contrast, SDO was not associated with SRs of elite villains or mass villains, as was expected among those who believe in the superiority of dominant groups. Further analyses indicated that SDO significantly and positively predicted Polemic Conspiracy, as well as Emerging Externalizing. In this sense, SDO was less of an anchoring variable for these SRs,

suggesting that those who rank higher on right-wing conservatism are more threatened by the pandemic, and pursue the positive maintenance of in-group identity – that is, engage in greater attributions of externalizing SRs.

In a similar vein, they also agree more with a sense of causality and manipulation from the powerful and the use of the virus as a tool. Altogether, these results are coherent with previous studies that show RWA and SDO are more associated with greater prejudice to outgroups as well as conspiracy-related visions of social problems (Goreis & Voracek, 2019). Finally, individuals higher on RWA also share a more negative view of people in general, which can legitimize an authoritarian response from the authorities. Conversely, those oriented to a greater SDO minimize the pandemic threat, and reject the overexploitation of the planet resources. This also converges with studies showing people high in SDO have a competitive worldview, while those high in RWA view the world as a dangerous place (Duckitt et al., 2010). The general idea is that, in the current context, authoritarian people are those who perceive the pandemic as generating irrational and non-solidary responses in people.

Finally (H3), and in line with theoretical proposals, we could see quite clearly that the subjective perception of risk is a powerful variable that explains the agreement with different SRs. Taking into account a global perspective for this study, we suggest that the need to make sense and gain control could indeed provoke a more authoritarian turn in those who are more threatened by the pandemic. This is particularly stronger among those who have more traditional values and who do not care too much about subordinate and stigmatized groups.

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AUTHORS' CONTRIBUTIONS

Cakal, Pizarro, Navarro-Carrillo, Méndez, da Costa and Gracia-Leiva, participated in the planning and supervision of the overall project and all authors participated in the data collection. Pizarro conducted the data analyses and wrote a preliminary version of the manuscript, which was then reviewed and accepted by all authors.

CONFLICT OF INTEREST

The authors state that this research was conducted in the absence of competing interests.

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