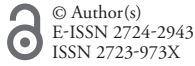




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# The influence of cultural worldviews on the association between wildfire risk perception and preventive behaviors

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## Abstract

*Wildfire prevention is one of the most important contemporary environmental challenges. Risk perception appears to be a relevant variable in influencing preventive behaviors, and this association is influenced by several variables. In this regard, cultural worldviews directly influenced environmental risk perception, although, in the context of wildfires, research has not investigated their role in the association between risk perception and preventive behaviors.*

*This study aimed to investigate the relationship between wildfire risk perception and preventive behaviors, and to examine the extent to which this relationship was affected by different cultural worldviews.*

*A survey was administered to 108 Italian participants to assess cultural worldviews, wildfire risk perception and prevention behaviors.*

*Results showed that higher levels of wildfire risk perception were associated with higher prevention behaviors, and that this association was stronger in people with the optimistic engaged worldview than in people with the cautiously engaged worldview.*

*The results suggest that the development of specific policies and interventions on particularly prudent and conservative people could increase enactment of wildfire prevention behaviors.*

**Keywords:** wildfire, risk perception, prevention, worldviews, culture

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## Introduction

The presence of wildfires even beyond the traditional summer months and the expansion of affected areas are a signal of their increasing intensity and geographic scope (San-Miguel-Ayaz et al., 2023; United Nations Environment Programme UNEP, 2022). More than 1,600,000 hectares of land were burned in the European Union in 2022 (San-Miguel-Ayaz et al., 2023), and in Italy, more than 170,000 hectares of forest were destroyed by wildfires in 2021 alone (WWF Italia, 2022). These numbers are of concern when one considers that forests, by absorbing CO<sub>2</sub>, play a crucial role in stabilizing the climate and reducing global warming (Legambiente, 2022). In addition, wildfires have a powerful impact on natural resources, ecosystem services, and various economic activities such as agriculture, tourism, and transportation (Mancini et al., 2018), as well as posing a significant safety risk to citizens (Legambiente, 2022).

Wildfire management strategies have traditionally focused on suppression (Dipartimento della Protezione Civile, 2022; Mancini, Corona and Salvati, 2018; Moreira et al., 2011) but such an approach is not sufficient (Xanthopoulos et al., 2019), whereas, in some cases, it has even led to the accumulation of fuel, which contribute to increasing long-term wildfire risk rather than reducing it (McCaffrey et al., 2020). Coherently, suppression actions need to be complemented by proactive and preventive measures (Concu, Detotto & Vannini, 2021).

Active involvement of citizens in preventive practices appears to be a key factor (Federal Emergency Management Agency FEMA, 2011; McCaffrey et al., 2011), as individual behaviors can determine or limit wildfire hazard conditions (Hamilton et al., 2018). At the individual level, prevention relies on activities such as pruning tree branches, thinning vegetation, removing dead matter and excess ground cover (McCaffrey et al., 2020), covering roofs with fire-resistant material, and cleaning roofs of fallen branches (Brenkert-Smith et al., 2015). These actions serve to reduce the likelihood of high-intensity fire burning near structures and of a structure catching fire due to embers or radiant heat (Hamilton et al., 2018).

Thus, previous research focused on understanding the proneness of people in engaging preventive activities to increase citizen participation in these activities (McCaffrey et al., 2011; Wolters et al., 2017). Interestingly, research on the psychological determinants of preventive behaviors has shown that risk perception appears to be an important factor in influencing or refraining from preventive actions (Faulkner, Mcfarlane and Mcgee, 2009; Koksai et al., 2019; McCaffrey, 2015). Indeed, some authors found that higher levels of wildfire risk perception were associated with greater preventive behaviors (Brenkert-Smith, Champ and Flores, 2012; Champ, Donovan & Barth, 2013; Gordon, Al Luloff and Stedman, 2012; Nagle, 2018); however, others have not found such association (Nox & Myles, 2017; Olsen et al., 2017).

McCaffrey (2015) suggested that this difference in findings could be due to the intervention of additional variables and, coherently, further studies have found that several variables, such as subjective knowledge, self-efficacy (Martin et al., 2009), past wildfire experience (Brenkert-Smith et al., 2013;

Ghasemi et al., 2020), sources of information, and social interactions (Brenkert-Smith et al., 2013; Dickinson et al., 2015), influenced wildfire risk perception.

Interestingly, it was found that cultural worldviews, understood as “sets of beliefs and assumptions that describe reality” (Koltko-Rivera, 2004, p. 3), influenced perceptions of environmental risk (Palmer, 1996; Xue et al., 2014; Yuan et al., 2023), such as hurricanes (Morss et al., 2020). In the context of wildfires, previous studies have examined the direct influence of cultural worldviews on preventive behaviors, highlighting that people with egalitarian worldviews acted more preventive behaviors than those with hierarchical, individualistic, and fatalistic worldviews (Wolters, 2020).

Despite these results, to date, there are no studies that have investigated the possible role of cultural worldviews in the association between risk perception and preventive behaviors in the context of wildfires. Therefore, the present study aims to make a contribution in this direction by investigating the relationship between wildfire risk perception and preventive behaviors and to examine the extent to which this relationship is affected by different cultural worldviews. To this end, the following hypotheses were assumed: wildfire risk perception will be positively associated with preventive behaviors (H1); positive cultural worldviews will strengthen the association between wildfire risk perception and preventive behaviors compared to moderate or negative cultural worldviews (H2).

## Methods

### *Procedure*

A survey was administered using the Psytoolkit platform (Stoet, 2010, 2017) and disseminated through social media to recruit participants. Inclusion criteria included being 18 years of age or older, living in Italy, and understanding the Italian language.

This study received ethical approval from the Ethical Committee of the Department of Dynamic and Clinical Psychology, and Health Studies, Sapienza University of Rome (Protocol no. 0000472, 25/03/2022). The research adhered to the guidelines outlined in the Declaration of Helsinki, which was adopted by the World Medical Association (WMA) during the 18th WMA General Assembly held in Helsinki, Finland in June 1964. Furthermore, the study complied with the amendments made to the Declaration during the 64th WMA General Assembly in Fortaleza, Brazil in October 2013.

### *Measures*

An ad hoc questionnaire was adopted to gather information on socio-demographic data: gender, age, education level, and region.

*Cultural worldviews:* The short version of the View Of Context questionnaire (VOC; Ciavolino et al., 2017) was used to identify cultural worldviews. The VOC questionnaire conceives worldviews as generalized, affect-based patterns of meanings that direct people’s sensemaking process

(Kerušauskaitė, Reho, Mannarini, 2023). The 29 items, with a response format ranging from 1 = totally disagree to 4 = totally agree, are constructed to detect the worldviews active in the sample based on how people represent the significant aspects of their micro- and macro-social contexts (for methodological details see Salvatore et al., 2019). These aspects relate to interpersonal bonds (e.g., *Sometimes one has to break the rules to help one's loved ones*), institutions (e.g., *There's little use in writing to public officials because often they aren't really interested in the problems of the average man*), society as a whole (e.g., *Nowadays a person has to live pretty much for today and let tomorrow take care of itself*), local context (e.g., *I feel I am a member of this community*), social strategies for success (e.g., *For success in life, how important is: Sharing*), values (e.g., *Immigrants are a source of cultural enrichment*), sense of agency (e.g., *Those who succeed in life have luck on their side*) and power (e.g., *My life is determined by my own actions*). The VOC questionnaire has already been used in the Italian context (Andreassi et al., 2023; Cordella et al., 2023), as well as internationally (Salvatore et al., 2019), and proved to have satisfactory construct validity and internal consistency ( $\alpha = 0.70$ ) (Ciavolino et al., 2017).

*Wildfire perceived probability (WPP)*: One of the ways through which wildfire risk perception is conceptualized concerns the perception of the probability of a wildfire occurring in the future (Adger et al., 2013; Meldrum et al., 2019; Olsen et al., 2017). For this reason, the subscale employed by Xu et al. (2016) for flooding was used in the present study and adapted to the wildfire phenomenon using the back-translation procedure (Beaton et al., 2000). The subscale consisted of 4 items (i.e., *In the next decade, there is a great possibility that a wildfire will occur around your house; You have the constant feeling that a wildfire will happen one day; Compared to others, there is a higher possibility that a wildfire will attack your house; There is more and more obvious signals of wildfires in recent years*) measured through a 5-point Likert (1 = strongly disagree to 5 = strongly agree). In this study, the scale showed good internal consistency (Cronbach's alpha = 0.77).

*Prevention behaviors (PB)*: The scale used by Absher and Vaske (2011) was translated using the back translation procedure (Beaton et al., 2000) and employed to measure preventive behaviors. Participants were asked to indicate, through a 5-point Likert scale (from 1 = not at all, to 5 = very much), how well they implemented seven useful actions to protect homes and property from fire (e.g., *I used non-flammable building materials such as tile, slate, brick, heavy wood, or stone; I have planted fire-resistant plants to protect the home; I have cleaned roof surfaces of vegetation to protect the home; I have reduced density of trees within 100 feet (30.5 m) of the house to protect it*). In this study, the scale showed excellent internal consistency (Cronbach's alpha = 0.89).

### Data analysis

A preliminary stage of data analysis involves the detection of cultural worldviews active in the sample through the procedure used by Salvatore and colleagues (2018), which analyzes responses to the VOC questionnaire through multiple correspondence analysis (MCA) and cluster analysis (CA). The

main factors extracted from the MCA analysis are used for aggregation in the CA, which in turn identifies a particular way of combining the responses of a group of respondents (i.e., a cultural worldview). These analyses were performed using SPAD v5.5 software (Decisia, Pantin, France).

Hypotheses 1 was tested using Partial Least Squares - Structural Equation Modelling (PLS-SEM) (Hair, Ringle and Sarstedt, 2013; Hair et al., 2016; Sarstedt, Ringle and Hair, 2021). Data analysis involved the evaluation of the reflective measurement model and the structural model. A post hoc power analysis, performed by SmartPLS 4 software (Ringle, Wende & Becker, 2022) - which used the inverse square root method -, served to confirm that both the complete sample and the samples related to the different worldviews achieved acceptable power.

All estimates were validated through 5000 bootstraps using the bias-corrected and accelerated (BCa) bootstrap procedure (Hair et al., 2016). The data were analyzed using the SmartPLS 4 software (Ringle, Wende & Becker, 2022).

Hypotheses 2 was tested through multigroup analysis (MGA).

## Results

A total of 108 responses were collected. The sample was composed of 65 women and 43 men with a mean age of 35.27 years ( $SD = 12.69$ ). Geographically, 16.19% of respondents lived in the North, 18.75% in the Center, 54.68% in the South, and 10.38% in the Islands. In addition, 5.60% of respondents held a middle school diploma, 23.10% a high school diploma, 57.30% a bachelor's degree, and 17.60% a master's degree.

### Cultural worldviews

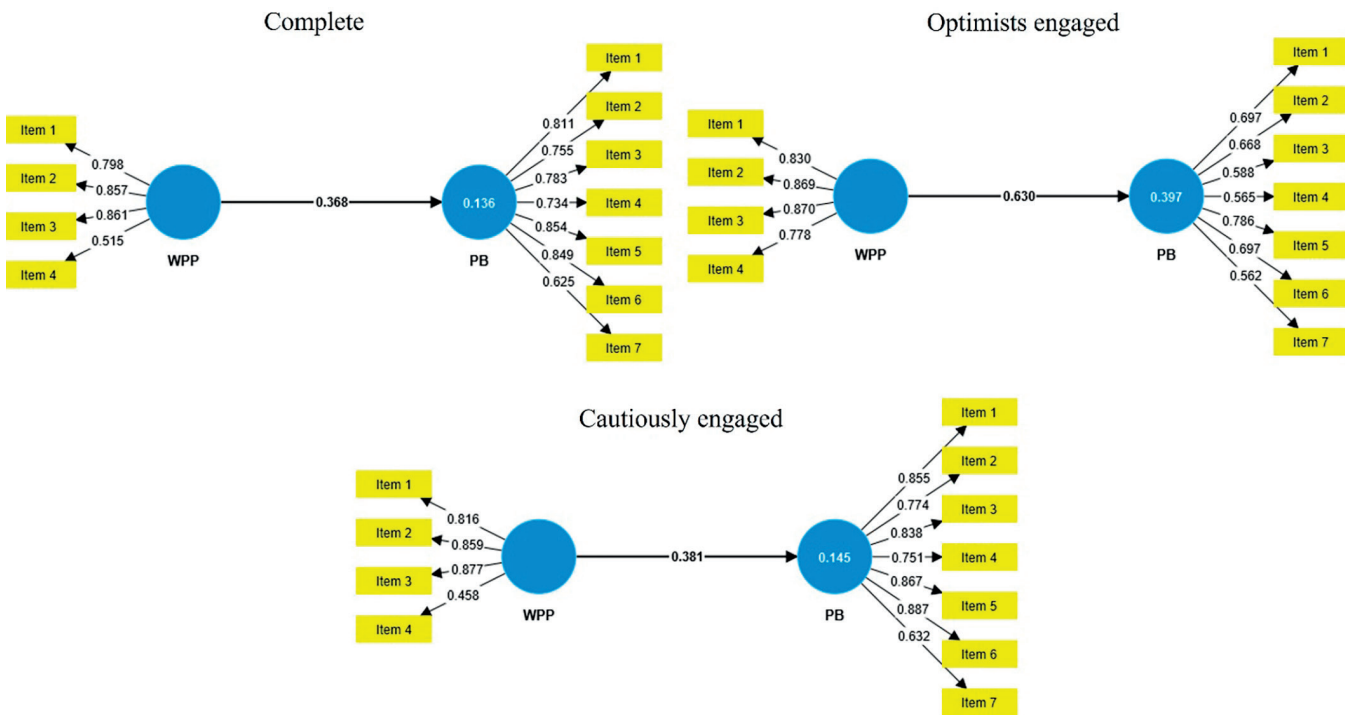
The MCA extracted seven factors that contributed more than 10 percent to cumulative inertia. These factors explained 79.81% of the total inertia (Benzecri, 1992) and were used as classifying criteria in the CA, which identified three clusters. The clusters (whose response profiles are shown in Table SM1; see supplementary material) were interpreted by the research team through a consensus procedure (Harris et al., 2012; Schielke et al., 2009) as follows:

Cultural worldview 1: *optimists engaged* ( $N = 22$ ). Rejection of fatalism, trust in people, strong agency, and commitment to civic rules. The respondents of this cluster do not accept negative aspects or values and approach the world as something to actively engage with.

Cultural worldview 2: *cautiously engaged* ( $N = 74$ ). Rejection of fatalism, moderate commitment to civic rules, as well as moderate distrust in people. For these respondents the world is a place to be approached with caution despite the desire to confront it by adhering to certain rules and principles.

Cultural worldview 3: *cynical fatalist* ( $N = 12$ ). Extreme distrust in institutions, distrust in people, as well as extreme fatalism, and a low commitment to ethical rules. These respondents tend to see the world as a gloomy and untrustworthy place.

Fig.1. Outer loadings of the complete sample, optimists engaged sample and cautiously engaged sample.



Note. WPP: wildfire perceived probability; PB: preventive behaviors.

The chi-square test showed no significant associations between socio-demographic characteristics (gender, education level) and cultural worldviews. The Kruskal-Wallis’s test showed no significant differences between cultural worldviews concerning age.

Measurement model

A post hoc power analysis, performed through the inverse square root method (Kock & Hadaya, 2018), showed that the complete sample (N = 108), the optimist engaged worldview sample (N = 22), and the cautiously engaged worldview sample (N = 74) exceeded the required minimum sample size (N = 46, N = 16, N = 43, respectively) to perform the analyses with a power level of 80%. The cynical fatalist worldview sample (N = 12) did not reach the required minimum sample size (N = 15), so, as suggested by (Matthews, 2017), it was excluded from further analysis.

To determine the validity and reliability of the latent constructs, indicator reliability, internal consistency reliability, convergent validity and discriminant validity were checked (Hair et al., 2013).

Despite a recommended threshold of 0.70 for indicator reliability (Hair et al., 2013), items with outer loadings between 0.40 and 0.70 can be retained if construct validity and reliability are not compromised (Hair et al., 2019).

The re-evaluation of the measurement model showed that all the outer loadings for both constructs exceeded the 0.70 threshold or fell within the 0.40-0.70 range (see Table SM2 in supplementary material) for the complete sample and for the cultural worldview’s samples (Figure 1).

Construct reliability and convergent validity for the complete sample and the different cultural worldview’s samples are presented in Table 1. Cronbach’s alpha and composite reliability (CR) values for both constructs were higher than the recommended value of 0.70 (Fornell & Larcker, 1981) for the complete sample and for the different cultural worldview’s samples. The average variance extracted (AVE) for both constructs was above 0.50 (Fornell & Larcker, 1981) for the complete sample and for the different cultural worldview’s samples. The only exception concerned the PB measure in the optimists engaged sample. However, Fornell & Larcker (1981) stated that if AVE is less than 0.50, but CR is greater than 0.60, the construct’s convergent validity may be adequate.

Discriminant validity was assessed through cross-loadings. The results confirmed that the items’ factor loadings on their underlying construct were greater than their cross-loadings on the other construct in each sample (see Table SM3 in supplementary material).

Structural model and multigroup analysis (MGA)

To determine the significance of the path coefficient of the structural model, 5000 bootstraps were applied using the (BCa) bootstrap procedure (Hair et al., 2016).

The results (Table 2) showed that higher levels of WPP were associated with higher levels of PB for the complete sample ( $\beta = 0.36, p < .001, 95\% CI: 0.27; 0.52$ ), the optimist engaged ( $\beta = 0.63, p < .001, 95\% CI: 0.53; 0.85$ ) and cautiously engaged ( $\beta = 0.38, p < .001, 95\% CI: 0.28; 0.57$ ) samples.

The results reported in table 2 showed that the association between WPP and PB was stronger in the optimist engaged

( $\beta = .63$ ) than in the cautiously engaged worldview ( $\beta = .38$ ). The MGA showed that the difference in the path coefficient of these cultural worldviews was statistically significant (*Difference* = .25,  $p = .038$ ).

## Discussion

The present work aimed to investigate the relationship between wildfire risk perception and preventive behaviors and to examine the extent to which this relationship is affected by different cultural worldviews.

The SEM model used to test the first hypothesis showed that the wildfire risk perception was associated with preventive behaviors. So, having the perception that wildfires have a high probability of occurring and causing property damage results in people engaging in preventive activities such as cleaning their house gutters and surrounding vegetation to prevent the accumulation of dead leaves and plants, or planting fire-resistant plants near their homes. This result is consistent with studies in the literature showing that greater risk perception results in greater acted prevention, both for wildfires (Brenkert-Smith, Champ and Flores, 2012; Meldrum et al., 2019; Nagle, 2018) as well as for other preventive behaviors related to climate change (O'Connor, Bard & Fisher, 1999), such as sustainable consumption (Saari et al., 2021).

Considering that culture has emerged as an important factor in wildfire mitigation (Christianson, Mcgee, and L'Hirondelle, 2014; McCaffrey et al., 2011; Wolters, 2023), the present study aimed to shed light on this aspect by investigating the role played by cultural worldviews. Specifically, three different cultural worldviews were mapped within the sample of the present study: optimist engaged, the world is something to be actively engaged with; cautiously engaged, the world is a place to be approached with caution; cynical fatalist, the world is a bleak and unreliable place. Although it was not possible to analyze the effect of the latter worldview because of its underrepresentativeness, consistent

with the second hypothesis it was interestingly found that the relationship between wildfire risk perception and preventive behaviors became stronger in people with an optimist engaged worldview. This result is consistent with a recent study that has found positive worldviews to be associated with a greater propensity for preventive behavior toward fire (Wolters, 2023), as well as greater adherence to vaccination in the Covid-19 emergency context (Cordella et al., 2023). The present study also showed that the relationship between wildfire risk perception and preventive behaviors was weaker in people with a cautiously engaged worldview. This result is coherent with a previous study which found that a negative cultural worldview reduced the effect of trust in institutions on vaccination acceptance (Cordella et al., 2023). This different influence is congruent with the different levels of complexity characteristic of cultural worldviews. While the worldview of the cautiously engaged is characterized by greater affective salience (i.e., a limited capacity of dimensions useful in the interpretation of reality [Salvatore et al., 2019], whereby the interpretation of reality occurs through simplification (Salvatore et al., 2019), on the contrary, the lower affective salience that characterizes the worldview of engaged optimists fosters more complex, articulate and reflexive ways of interpreting reality, which some authors call semiotic capital (Cremaschi et al., 2021), which would translate into people's ability to experience the common good (in the case of the present study, wildfire prevention) as something important, thus in the terms of a superordinate framework rooted in one's identity.

Finally, as found in a previous study (Andreassi et al., 2023) none of the cultural worldviews mapped were found to be associated with the demographic characteristics recorded (age, gender, and educational level). This result is relevant as it would confirm that worldviews are highly generalized modalities of interpreting experience (Salvatore & Freda, 2011). Rather than being abstract ideas about the world, cultural worldviews represent embodied systems of assumptions that channel and foster the subjective way of being-in-the-world; in other words, a way of relating to reality underlying personal and social identity (Kerušauskaitė, Reho, Mannarini, 2023) independent of people's socio-demographic characteristics.

Tab. 1. Reliability and convergent validity of the measures for the complete sample, optimists engaged sample and cautiously engaged sample.

	Complete			Optimists engaged			Cautiously engaged		
	Alpha	CR	AVE	Alpha	CR	AVE	Alpha	CR	AVE
WPP	0.76	0.85	0.59	0.85	0.90	0.70	0.77	0.84	0.59
PB	0.89	0.91	0.60	0.79	0.83	0.43	0.91	0.92	0.64

Note. Alpha: Cronbach's alpha; CR: composite reliability; AVE: average variance extracted; WPP: wildfire perceived probability; PB: preventive behaviors.

Tab. 2. Structural model results.

Sample	$\beta$	M	STDEV	T	p	CI		
						2.5%	97.5%	
Complete	WPP -> PB	0.36	0.39	0.06	5.68	< 0.001	0.27	0.52
Optimists engaged	WPP -> PB	0.63	0.70	0.14	4.21	< 0.001	0.53	0.85
Cautiously engaged	WPP -> PB	0.38	0.42	0.08	4.33	< 0.001	0.28	0.57

Note. M: sample mean; STDEV: standard deviation; T: T statistics; CI: confidence interval.

Overall, the findings of the present study have several practical implications. Indeed, understanding the relationship between wildfire risk perception and the preventive behaviors would guide the choices of different stakeholder groups (e.g., policy makers, firefighters) on how to effectively calibrate interventions that can promote greater preventive behaviors in the population, as reported in Food and Agriculture Organization of the United Nations FAO (2011) recommendations.

Since the impact of wildfire perceived probability on preventive behaviors differs according to people's different worldviews, designing information and awareness campaigns by calibrating them according to the worldviews present within a specific cultural context can contribute to the effectiveness of preventive efforts.

Specific interventions for people with a cautious worldview could involve the life experiences of people who have faced fire situations, to sensitize on how prevention can make a difference in protecting people and property. Since professional and local knowledge seem to support people's adaptive capacity, therefore the implementation of preventive measures (Newman et al., 2014), local authorities could provide regular updates on the status of fire hazards, and guidelines based on specific seasonal conditions, and help cautious people to develop customized emergency plans for their family and property. Collaborations with fire departments and volunteers, organizing evacuation drills or simulated fire situations could help cautious or fatalist people to get involved in efficacious preventive actions.

### Limitations and Future Research

Despite the interesting results, the use of self-report scales could have led to a social desirability bias affecting the responses of the participants in the present study. In addition, the measures used to evaluate wildfire risk perception and preventive behaviors were not validated for the Italian population. Moreover, the cross-sectional design of the study did not allow to infer a causal relationship between the variables. Lastly, the small sample size of the cynical fatalist did not allow to explore the effect of this worldview on the relationship between wildfire perceived probability and preventive behaviors. Future longitudinal studies should replicate the results of the present study in a larger sample, using more objective and validated measures. Moreover, future models could consider additional dimensions in an attempt to understand how other variables, such as past experiences, sense of community belonging, attachment to place, and trust in institutions (Bihari and Ryan, 2012; Ghasemi, Kyle and Absher, 2020; Martin, Martin and Kent, 2009; Vaske, Absher, Bright, 2007), influence preventive behaviors and their complex intertwining over time, allowing causal relationships to be accurately delineated.

### Supplementary Materials

Supplementary data to this article can be found online at <https://osf.io/tzwmk/>

### Ethical approval

This study received ethical approval from the Ethical Committee of the Department of Dynamic and Clinical Psychology, and Health Studies, Sapienza University of Rome (Protocol no. 0000472, 25/03/2022).

### Data availability statement

The dataset generated/analyzed during the current study is available from the corresponding author upon reasonable request.

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### Authors' contribution

Conceptualization: MR, AG, SS and CL; Methodology: MR, AG, SS and CL; Investigation: MR, GV and CC; Data Curation: MR, GV and CC; Formal analysis: MR, GV and CC; Visualization: MR, GV and CC; Writing - Original Draft: MR, GV, CC and CL; Writing - Review & Editing: all authors; Supervision: AG, SS and CL; Project administration: CL.

### Declaration of Conflicting Interests

CL is Co-Editor of this journal. To avoid any potential conflict of interest, he was excluded from the review process and was not involved at any stage in the editing of this manuscript. The authors have no other conflicts of interest to disclose.

### References

- Absher, J. D., & Vaske, J. J. (2011). The role of trust in residents' fire wise actions. *International Journal of Wildland Fire*, 20(2), 318-325. <https://doi.org/10.1071/WF09049>
- Adger, W. N., Barnett, J., Brown, K., Marshall, N., & O'brien, K. (2013). Cultural dimensions of climate change impacts and adaptation. *Nature climate change*, 3(2), 112-117. <https://doi.org/10.1038/nclimate1666>
- Andreassi, S., Signore, F., Cordella, B., De Dominicis, S., Gennaro, A., Iuso, S., Kerusauskaite, S., Kopic, A., Mannarini, T., Reho, M., Rocchi, G., Rochira, A., Scharfbillig, M., & Salvatore, S. (2023). Identity and Symbolic Universes in Voting Behavior. A study of the Italian society. *Psychology Hub*, 40(2), 69-80. <https://doi.org/10.13133/2724-2943/17900>
- Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*, 25(24), 3186-3191.
- Benzecri, J. P. (1992). *Correspondence Analysis Handbook*. 1st ed. CRC Press
- Bihari, M., & Ryan, R. (2012). Influence of social capital on community preparedness for wildfires. *Landscape and urban planning*, 106(3), 253-261. <https://doi.org/10.1016/j.landurbplan.2012.03.011>
- Brenkert-Smith, H., Champ, P. A., & Flores, N. (2012). Trying not to get burned: Understanding homeowners' wildfire risk-mitigation behaviors. *Environmental Management*, 50, 1139-1151. <https://doi.org/10.1007/s00267-012-9949-8>
- Brenkert-Smith, H., Dickinson, K. L., Champ, P. A., & Flores, N. (2013). Social amplification of wildfire risk: the role of social

- interactions and information sources. *Risk analysis*, 33(5), 800-817. <https://doi.org/10.1111/j.1539-6924.2012.01917.x>
- Brenkert-Smith, H., Meldrum, J. R., & Champ, P. A. (2015). Climate change beliefs and hazard mitigation behaviors: homeowners and wildfire risk. *Environmental Hazards*, 14(4), 341-360. <https://doi.org/10.1080/17477891.2015.1080656>
- Champ, P. A., Donovan, G. H., & Barth, C. M. (2013). Living in a tinderbox: wildfire risk perceptions and mitigating behaviours. *International Journal of Wildland Fire*, 22(6), 832-840. <https://doi.org/10.1071/WF12093>
- Christianson, A., Mcgee, T. K., & L'Hirondelle, L. (2014). The influence of culture on wildfire mitigation at Peavine Métis settlement, Alberta, Canada. *Society & Natural Resources*, 27(9), 931-947. <https://doi.org/10.1080/08941920.2014.905886>
- Ciavolino, E., Redd, R., Evrinyomy, A., Falcone, M., Fini, V., Kadianaki, I., ... & Salvatore, S. (2017). Views of Context. An instrument for the analysis of the cultural milieu. A first validation study. *Electronic Journal of Applied Statistical Analysis*, 10(2), 599-628. <https://doi.org/10.1285/i20705948v10n2p599>
- Concu, G. B., Detotto, C. & Vannini, M. (2021). Drivers of intentions and drivers of actions: willingness to participate versus actual participation in fire management in Sardinia, Italy. *Working Papers 018, Laboratoire Lieux, Identités, eSpaces et Activités (LISA)*. Retrieved from: <https://ideas.repec.org/p/cns/cnscwp/202301.html>
- Cordella, B., Signore, F., Andreassi, S., De Dominicis, S., Genaro, A., Iuso, S., ... & Salvatore, S. (2023). How socio-institutional contexts and cultural worldviews relate to COVID-19 acceptance rates: A representative study in Italy. *Social Science & Medicine*, 320, 115671. <https://doi.org/10.1016/j.socscimed.2023.115671>
- Cremaschi, M., Fioretti, C., Mannarini, T., & Salvatore, S. (2021). *Culture and policy-making*. Springer International Publishing.
- Dickinson, K., Brenkert-Smith, H., Champ, P., & Flores, N. (2015). Catching fire? Social interactions, beliefs, and wildfire risk mitigation behaviors. *Society & Natural Resources*, 28(8), 807-824. <https://doi.org/10.1080/08941920.2015.1037034>
- Dipartimento della Protezione Civile. (2022). *Attività antincendio boschivo per la stagione estiva 2022. Individuazione dei tempi di svolgimento e raccomandazioni per un più efficace contrasto agli incendi boschivi, in zone di interfaccia urbano-rurale e ai rischi conseguenti*. Retrieved from: <https://www.protezionecivile.gov.it/it/normativa/attivita-antincendio-boschivo-la-stagione-estiva-2022-individuazione-dei-tempi-di-svolgimento-e-raccomandazioni-un-piu-efficace-contrasto-agli-incendi-0/>
- Food and Agriculture Organization of the United Nations (FAO). (2011). Community-based fire management. A review. *FAO Forestry Paper 166*. ISBN 978-92-5-107094-9
- Faulkner, H., Mcfarlane, B. L., & Mcgee, T. K. (2009). Comparison of homeowner response to wildfire risk among towns with and without wildfire management. *Environmental hazards*, 8(1), 38-51. <https://doi.org/10.3763/ehaz.2009.0006>
- Federal Emergency Management Agency (FEMA). (2011). *A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action*. FDOC 104-008-1. December. FEMA, Washington, DC.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 18(1), 39-50.
- Ghasemi, B., Kyle, G. T., & Absher, J. D. (2020). An examination of the social-psychological drivers of homeowner wildfire mitigation. *Journal of environmental psychology*, 70, 101442. <https://doi.org/10.1016/j.jenvp.2020.101442>
- Gordon, J. S., Luloff, A., & Stedman, R. C. (2012). A multi-site qualitative comparison of community wildfire risk perceptions. *Journal of Forestry*, 110(2), 74-78. <https://doi.org/10.5849/jof.10-086>
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long range planning*, 46(1-2), 1-12. <https://doi.org/10.1016/j.lrp.2013.01.001>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, 31(1), 2-24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Hamilton, M., Fischer, A. P., Guikema, S. D., & Keppel-Aleks, G. (2018). Behavioral adaptation to climate change in wildfire-prone forests. *Wiley Interdisciplinary Reviews: Climate Change*, 9(6), e553. <https://doi.org/10.1002/wcc.553>
- Harris, C. B., Barnier, A. J., & Sutton, J. (2012). Consensus collaboration enhances group and individual recall accuracy. *Quarterly journal of experimental psychology*, 65(1), 179-194. <https://doi.org/10.1080/17470218.2011.608590>
- Kerušauskaitė, S., Reho, M., Mannarini, T. (2023). A Tool to Analyze the Cultural Milieu: View of Context (VOC). In S. Salvatore, G. A. Veltri, T. Mannarini (Eds.), *Methods and Instruments in the Study of Meaning-Making* (pp. 127-153). Cham (Switzerland): Springer. [https://doi.org/10.1007/978-3-031-21995-5\\_6](https://doi.org/10.1007/978-3-031-21995-5_6)
- Kock, N., & Hadaya, P. (2018). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. *Information systems journal*, 28(1), 227-261. <https://doi.org/10.1111/isj.12131>
- Koksal, K., McLennan, J., Every, D., & Bearman, C. (2019). Australian wildland-urban interface householders' wildfire safety preparations: 'Everyday life' project priorities and perceptions of wildfire risk. *International journal of disaster risk reduction*, 33, 142-154. <https://doi.org/10.1016/j.ijdrr.2018.09.017>
- Koltko-Rivera, M. E. (2004). The psychology of worldviews. *Review of general psychology*, 8(1), 3-58. <https://doi.org/10.1037/1089-2680.8.1.3>
- Legambiente. (2022). *L'Italia in fumo. Gli incendi del patrimonio naturale, i fattori di rischio e le proposte di Legambiente*. Retrieved from: <https://www.legambiente.it/rapporti-e-osservatori/report-incendi-italia-in-fumo/>
- Mancini, L. D., Corona, P., & Salvati, L. (2018). Ranking the importance of Wildfires' human drivers through a multi-model regression approach. *Environmental Impact Assessment Review*, 72, 177-186. <https://doi.org/10.1016/j.eiar.2018.06.003>
- Martin, W. E., Martin, I. M., & Kent, B. (2009). The role of risk perceptions in the risk mitigation process: The case of wildfire in high risk communities. *Journal of environmental*

- management, 91(2), 489-498. <https://doi.org/10.1016/j.jenvman.2009.09.007>
- Matthews, L. (2017). Applying multigroup analysis in PLS-SEM: A step-by-step process. In: Latan H, Noonan R (eds), *Partial Least Squares Path Modeling: Basic Concepts, Methodological Issues and Applications*, Springer International Publishing (pp. 219-243). [https://doi.org/10.1007/978-3-319-64069-3\\_10](https://doi.org/10.1007/978-3-319-64069-3_10)
- McCaffrey, S. (2015). Community wildfire preparedness: A global state-of-the-knowledge summary of social science research. *Current Forestry Reports*, 1, 81-90. <https://doi.org/10.1007/s40725-015-0015-7>
- McCaffrey, S. M., Stidham, M., Toman, E., & Shindler, B. (2011). Outreach programs, peer pressure, and common sense: what motivates homeowners to mitigate wildfire risk?. *Environmental Management*, 48, 475-488. <https://doi.org/10.1007/s00267-011-9704-6>
- McCaffrey, S., McGee, T. K., Coughlan, M., & Tedim, F. (2020). Understanding wildfire mitigation and preparedness in the context of extreme wildfires and disasters. In: Tedim F, Leone V, McGee TK (eds), *Extreme Wildfire Events and Disasters: Root Causes and New Management Strategies*, Elsevier (pp. 155-174). <https://doi.org/10.1016/B978-0-12-815721-3.00008-4>
- Meldrum, J. R., Brenkert-Smith, H., Champ, P., Gomez, J., Falk, L., & Barth, C. (2019). Interactions between resident risk perceptions and wildfire risk mitigation: evidence from simultaneous equations modeling. *Fire*, 2(3), 46. <https://doi.org/10.3390/fire2030046>
- Morss, R. E., Lazrus, H., Bostrom, A., & Demuth, J. L. (2020). The influence of cultural worldviews on people's responses to hurricane risks and threat information. *Journal of risk research*, 23(12), 1620-1649. <https://doi.org/10.1080/13669877.2020.1750456>
- Nagle, M. G. (2018). Wildfire Risk Perception and Homeowner Mitigation: Evidence from Montana. Dissertation, University of Montana, Missoula. <https://scholarworks.umt.edu/etd/11158>
- Newman, S., Carroll, M., Jakes, P., & Higgins, L. (2014). Hurricanes and wildfires: generic characteristics of community adaptive capacity. *Environmental Hazards*, 13(1), 21-37. <https://doi.org/10.1080/17477891.2013.841090>
- Nox, R., & Myles, C. C. (2017). Wildfire mitigation behavior on single family residential properties near Balcones Canyonlands Preserve wildlands in Austin, Texas. *Applied geography*, 87, 222-233. <https://doi.org/10.1016/j.apgeog.2017.08.010>
- Olsen, C. S., Kline, J. D., Ager, A. A., Olsen, K. A., & Short, K. C. (2017). Examining the influence of biophysical conditions on wildland-urban interface homeowners' wildfire risk mitigation activities in fire-prone landscapes. *Ecology and Society*, 22(1). <https://doi.org/10.5751/ES-09054-220121>
- Palmer, C. G. (1996). Risk perception: An empirical study of the relationship between worldview and the risk construct. *Risk Analysis*, 16(5), 717-723. <https://doi.org/10.1111/j.1539-6924.1996.tb00820.x>
- Ringle, C. M., Wende, S., & Becker, J-M. (2022). SmartPLS 4. Oststeinbek: SmartPLS. Retrieved from <https://www.smartpls.com>
- Saari, U. A., Damberg, S., Frömbling, L., & Ringle, C. M. (2021). Sustainable consumption behavior of Europeans: The influence of environmental knowledge and risk perception on environmental concern and behavioral intention. *Ecological Economics*, 189, 107155. <https://doi.org/10.1016/j.ecolecon.2021.107155>
- Salvatore, S., Fini, V., Mannarini, T., Valsiner, J., & Veltri, G. A. (2019). *Symbolic Universes in Time of (Post) Crisis*. Springer International Publishing.
- Salvatore, S., Fini, V., Mannarini, T., Veltri, G. A., Avdi, E., Battaglia, F., Castro-Tejerina, J., Ciavolino, E., Cremaschi, M., Kadianaki, I., Kharlamov, A. N., Krasteva, A., Kullasepp, K., Matsopoulos, A., Meschiari, C., Mossi, P., Psinas, P., Redd, R., Rochira, A., Santarpia, A., Sammut, G., Valsiner, J., & Valmorbida, A. (2018). Symbolic universes between present and future of Europe. First results of the map of European societies' cultural milieu. *PLoS one*, 13(1), e0189885. <https://doi.org/10.1371/journal.pone.0189885>
- Salvatore, S., & Freda, M. F. (2011). Affect, unconscious and sensemaking. A psychodynamic, semiotic and dialogic model. *New ideas in psychology*, 29(2), 119-135. <https://doi.org/10.1016/j.newideapsych.2010.06.001>
- San-Miguel-Ayanz, J., Durrant, T., Boca, R., Maianti, P., Libertà, G., Oom, D., Branco, A., De Rigo, D., Ferrari, D., Roglia, E., and Scionti, N. (2023). *Advance Report on Forest Fires in Europe, Middle East and North Africa 2022*. EUR 31479 EN, Publications Office of the European Union, Luxembourg. ISBN 978-92-68-02143-9, doi:10.2760/091540, JRC133215.
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial Least Squares Structural Equation Modeling. In: Homburg C, Klarman M, Vomberg A (eds), *Handbook of Market Research*, Springer International Publishing (pp. 1-47). [https://doi.org/10.1007/978-3-319-05542-8\\_15-2](https://doi.org/10.1007/978-3-319-05542-8_15-2)
- Schielke, H. J., Fishman, J. L., Osatuke, K., & Stiles, W. B. (2009). Creative consensus on interpretations of qualitative data: The Ward method. *Psychotherapy Research*, 19(4-5), 558-565. <https://doi.org/10.1080/10503300802621180>
- Stoet, G. (2010). PsyToolkit: A software package for programming psychological experiments using Linux. *Behavior research methods*, 42, 1096-1104. <https://doi.org/10.3758/BRM.42.4.1096>
- Stoet, G. (2017). PsyToolkit: A novel web-based method for running online questionnaires and reaction-time experiments. *Teaching of Psychology*, 44(1), 24-31. <https://doi.org/10.1177/0098628316677643>
- United Nations Environment Programme (UNEP). (2022). *Spreading like Wildfire – The Rising Threat of Extraordinary Landscape Fires*. A UNEP Rapid Response Assessment. Nairobi
- Vaske, J. J., Absher, J. D., & Bright, A. D. (2007). Salient value similarity, social trust and attitudes toward wildland fire management strategies. *Human Ecology Review*, 223-232. <https://www.jstor.org/stable/24707708>
- Wolters, E. A. (2023). Homeowner firewise behaviors in fire-prone central Oregon: an exploration of the attitudinal, situational, and cultural worldviews impacting pre-fire mitigation actions. *Journal of environmental management*, 327, 116811. <https://doi.org/10.1016/j.jenvman.2022.116811>
- Wolters, E. A., Steel, B. S., Weston, D., & Brunson, M. (2017). Determinants of residential Firewise behaviors in Central



- Oregon. *The Social Science Journal*, 54(2), 168-178. <https://doi.org/10.1016/j.soscij.2016.12.004>
- WWF Italia. (2022). *Spegnere oggi gli incendi di domani. Dalla gestione dell'emergenza a gestione e prevenzione del rischio*. Retrieved from: <https://www.wwf.it/cosa-facciamo/pubblicazioni/incendi-il-nuovo-report-wwf-italia/>
- Xanthopoulos, G., Leone, V., & Delogu, G. M. (2020). The suppression model fragilities. In: Tedim F, Leone V and McGee TK (eds), *Extreme Wildfire Events and Disasters: Root Causes and New Management Strategies*, Elsevier (pp. 135–153). <https://doi.org/10.1016/B978-0-12-815721-3.00007-2>
- Xu, D., Peng, L., Su, C., Liu, S., Wang, X., & Chen, T. (2016). Influences of mass monitoring and mass prevention systems on peasant households' disaster risk perception in the landslide-threatened Three Gorges Reservoir area, China. *Habitat international*, 58, 23-33. <https://doi.org/10.1016/j.habitatint.2016.09.003>
- Xue, W., Hine, D. W., Loi, N. M., Thorsteinsson, E. B., & Phillips, W. J. (2014). Cultural worldviews and environmental risk perceptions: A meta-analysis. *Journal of Environmental Psychology*, 40, 249-258. <https://doi.org/10.1016/j.jenvp.2014.07.002>
- Yuan, M., Yang, Y., & Yi, H. (2023). Environmental condition, cultural worldview, and environmental perceptions in China. *Journal of Risk Research*, 1-29. <https://doi.org/10.1080/13669877.2023.2208134>

