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## Article

# Place Identity and Traumatic Experiences in the Context of Wildfires

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**Abstract:** Climate change represents a threat to life; as such, it is associated with psychological disorders. The subjective perceptions of life impacts from different traumatic experiences develop understanding and the enable predictions of future consequences. This psychological impact also tends to increase the risk perception of climate change and the intention to prevent it. Greater emphasis on place identity can promote resilience and prevent psychological distress. The aim of this descriptive cross-sectional study is to describe the ontological life impact of fires, based on socio-demographic variables, risk perception, self-perceived resistance (SPR), and place identity. The sample consisted of 210 residents of areas affected by forest fires in Gran Canaria (Spain), who answered a questionnaire consisting of multiple scales and an assessment of the traumatic experience through the VIVO (Spanish initials of Ontological Vital Impact Assessment) questionnaire. The clustering of areas according to SPR and neighbourhood was considered a new variable, referred to as territorial resistance. This variable was useful in describing the different profiles of ontological life impacts and risk perceptions. The ontological life impact of the extreme experience differed between unaffected and affected people. Feeling that they had been judged for the occurrence was associated with lower psychological adjustment and a greater perception of control over the risk. Control also increased with place identity and the number of experiences. Emphasising risk, recognising the local knowledge of residents, and including them in decision-making and future action plans contributes to a sense of community, and thus, can improve coping.

**Keywords:** place identity; risk perception; trauma; territorial resistance; wildfire



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## 1. Introduction

Climate change has significantly increased the frequency and severity of natural disasters [1], including the number and intensity of wildfires. According to the Ministry for Ecological Transition and the Demographic Challenge (MITECO), in 2021, Spain recorded 2914 forest fires (>1 ha). In particular, the fire that occurred in 2019 on the island of Gran Canaria was the worst forest fire in Spain since 2012. More than 10,000 people were evacuated and a total of 10 municipalities were affected; over 40 days, more than 10,000 ha burned. Traces of the fire are still visible in the midlands. These are areas that live in constant risk, with small fires occurring every year, as well a high frequency of alerts for extreme weather conditions throughout the year.

The impact of natural disasters is significant, considering the multiple dangers they pose to the population, including post-traumatic stress disorder and depression [2–5]. In such extreme situations, psychological coping mechanisms are often not available, and contingency plans do not always include a specific mental health approach. An increased risk of suicide has been identified, which may be related to a loss of identity due to changes in living environments and forms of life [6]. Exposed people feel that not only is their physical integrity at risk, but they also fear losing their homes and environments [7]. In fact,

feeling a loss of place is one of the most important impacts of these events, impacting psychological well-being and jeopardizing the ability to cope with environmental changes [8,9]. The prevalence and persistence of these disorders varies from victim to victim: in some cases, they decrease with the return to normality; however, in other cases, they continue to be present even years after the event, especially in those victims who are most vulnerable financially or lack social support [10]. The adoption of a clinical symptomatology perspective in the approach to trauma, leaving out the impacts on identity and worldview in the affected population, may explain why studies on the long-term consequences of disasters have been inconclusive to date.

Clinical psychology traditionally defines trauma as a psychological wound that exceeds the usual coping mechanisms [11], which can be generated by different situations, such as natural disasters, wars, sexual abuse, and interpersonal violence. These events or situations are experiences in which a person's physical or psychological integrity may be threatened, changing the living conditions of the person or the people in their environment, resulting in the person questioning their reality and that of their environment [12,13]. This imbalance does not always have to subsequently lead to negative or destructive consequences for well-being. There are other perspectives in which trauma is conceptualised from a positive point of view, where the victim is able to respond resiliently to the traumatic experience and adapt to the changes that the situation has brought about [14]. Pérez-Sales et al. [12] called these circumstances that disrupt the balance of people in their environment "extreme experiences", and validated the VIVO questionnaire (Spanish initials of Ontological Vital Impact Assessment) as a tool to analyse the impact of extreme experiences on worldviews, identity, and basic beliefs from a multi-dimensional perspective. This questionnaire is composed of 10 conceptual blocks (Worldviews; Attitude Towards the World; View of Human Beings; Coping; Impact of Past Situations; Emotions; Telling the Experience; Consequences; Social Support; Identity), with 35 subscales in total.

Although the nature of a disaster and the associated environmental factors, such as the severity of the hazard, the number of deaths, and material vulnerability, can help to understand its differential impacts on the population, other subjective variables, such as the subjective explanation of the experience, attributions of responsibility, or the perception of loss of control, are essential for understanding the psychological consequences [15]. The subjective perception of the life impact of an event facilitates understanding of the differential response to trauma, as well as predicting subsequent consequences [13], and will be determined by multiple psychosocial elements, such as the loss of control experienced by displaced persons or their emotions. Self-perceived resistance (SPR) [13] measures the intersection of subjective experience and the threatening characteristics of extreme situations. It involves the interaction of a perception of physical life threat (PT) and perception of life Impact (PI) variables, with four categories: non-affected, vulnerable, survivor, and resistant. If a person reports low PT and low PI, they are considered to be non-affected; however, if this person considers that the experience had a significant impact on their life (high PI) but a low PT, they are considered as vulnerable. If the affected person perceives a high PT and low PI, this person is perceived as resistant. Finally, if both PT and PI are reported as high, the person is considered as a survivor. A study of more than 700 people who had experienced natural disasters [5] revealed that 'Survivor' and 'Vulnerable' participants had higher post-traumatic stress disorder (PTSD) scores than 'Non-affected' participants, as measured by the PTSD Checklist—Civilian Version (PCL-C). In terms of the dimensions, the 'Survivor' group scored more highly than the 'Non-affected' and "Resistant" groups in re-experiencing and activation, as well as the "Vulnerable" group compared with the "Non-affected" group.

Natural disasters represent a threat to quality of life, health and, potentially, life itself. People bring meaning to the places they inhabit, and form attachments and feelings of belonging to them. It is they who, through their daily experiences, have made the place their home. When people are affected by traumatic events, such as forest fires, eruptions, floods, or earthquakes, there is a loss of place of residence, as well as a social fracturing

that alters collective narratives and interrupts their life trajectory [16,17]. Nonetheless, victims of natural disasters tend to experience greater post-traumatic growth, especially those who have established a strong connection to the place [18] and those communities that are empowered to participate in the reconstruction of an affected area. In this sense, resilience to natural disasters could be seen as a process focused in place [19].

Being a victim of a catastrophe associated with climate change can mean increased susceptibility and perceptions of risk [20]. Adequately understanding how people perceive risk is necessary to guide disaster risk management, improve emergency responses, and encourage people to prevent disasters [21,22]. Risk perception can be defined as a subjective evaluation of a risk [23]; therefore, it is different for each person and is influenced by factors such as the qualitative characteristics of the risk (e.g., voluntariness or control), socio-demographic characteristics, or knowledge of associated risks (e.g., climate change). Victims of a natural disaster may have different narratives about the same event [24]. The past experience of hazard-affected residents increases their risk perception and preparedness intentions [25]. In the study by Bernardo et al. [26], participants affected by the wildfires were more afraid and considered themselves more knowledgeable about the risks than those who were not affected. Knowledge and awareness influence preparedness for extreme events [27]. Due to the different perceptions that residents and government agencies responsible for risk communication might have, it is recommended to engage the community from the beginning [28]. In addition, creating a sense of social cohesion and incorporating knowledge about the landscape in fire-prone areas can facilitate planning and management [29].

The connection to place stimulates adaptation strategies that consider local conditions and increases resilience [30]. This bond may have a mediating effect between risk perception and coping [31]. Individuals with a high degree of place attachment underestimate risk, whereas unattached individuals perceive future hazards as more threatening. However, contradictory results are reported in the literature on the relationship between place attachment and risk perception [32]; for example, it has also been found that greater linkages to place increase the perception of risk [26,33].

The psychological impact of an hazard event, such as a fire, also tends to increase the perceived risk of climate change [32] and influences the intention to prevent it, as well as leading to a re-evaluation of identity and worldview [20]. Even so, few studies have explored the relationship between experiencing a specific natural disaster, such as a wildfire, the perception of climate change, and its impacts on identity; however, as far back as 1991 (cited in [34]), Feitelson published an article in *Global Environmental Change* proposing the importance of place attachment and identity in understanding human responses to climate change. Greater emphasis on place can promote resilience and prevent psychological distress in climate-related events [18].

The aim of this study was to describe the ontological life impact of fires, based on socio-demographic variables, risk perception, perceived resistance, and place identity. Our specific objectives were:

1. To analyse place identity in terms of socio-demographic variables, including age, gender, and place of residence;
2. To link local and island place identity with the risk perception of climate change and wildfire;
3. To describe the vital ontological impact of the extreme experience (VIVO) as a function of self-perceived resistance (SPR) and place of residence;
4. To analyse the relationship between place identity, VIVO, and SPR;
5. To describe the risk perception of climate and wildfire as a function of SPR and analyse its relationship with the differential vital ontological impact.

The proposed hypotheses that correspond to each of the objectives above are as follows:

**Hypothesis 1 (H1).** *There is higher place identity with increasing age, even more so in those residing in more affected municipalities [18] and who experienced a high number of evacuations [35].*

**Hypothesis 2 (H2).** Greater place identity is associated with a greater risk perception of climate change [34] and wildfire risk [26].

**Hypothesis 3 (H3).** The place of residence combined with SPR determines a differential ontological life impact [5].

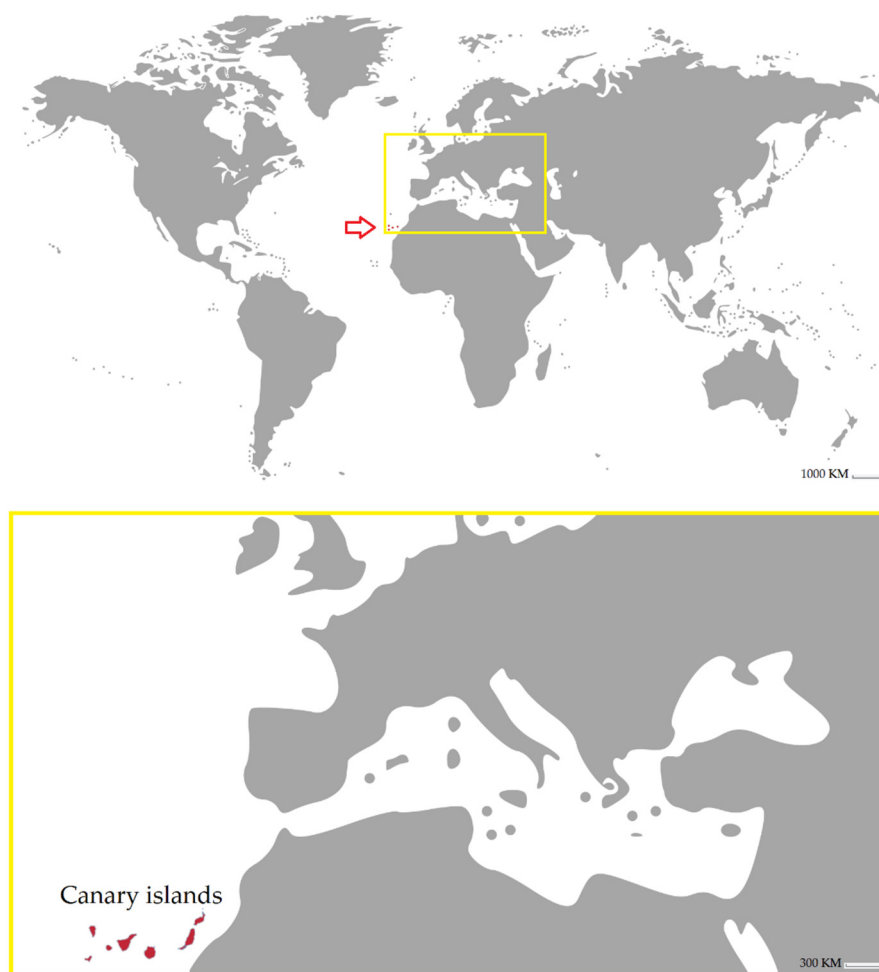
**Hypothesis 4 (H4).** The place of residence is also expected to link greater long-term psychological adjustment to greater local identity [18].

**Hypothesis 5 (H5).** Experience (SPR and VIVO) will increase the perception of fire risk [36] and climate change risk [37].

## 2. Materials and Methods

### 2.1. Participants

A total of 210 participants took part in this study. The sample was obtained from areas affected by the last major wildfire in Gran Canaria, who were either evacuated or confined and lived there at the moment of its occurrence. This island forms part of the Canary Islands archipelago (Spain), located in the Atlantic Ocean off the Moroccan coast (Figure 1).

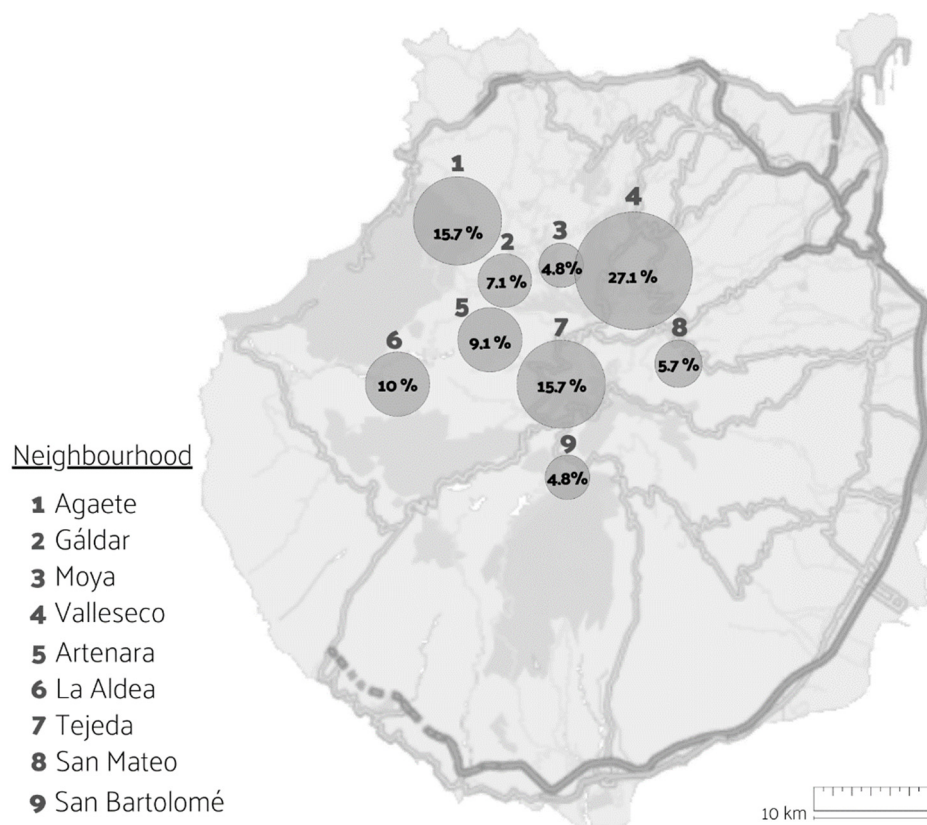


**Figure 1.** Location of the Canary Islands.

A convenience sampling approach was used, due to the specificity of the sample, keeping the percentage of participants per neighbourhood similar to the number of affected inhabitants in each area (Figure 2). The average length of residence in the neighbourhood



was 38.7 years, and that on the island was 45.2 years. A proportion of 60% of the participants were men; 40% were women. No participant was identified with another gender. The average age was 48.4 years. According to the declared socio-economic level, most participants were classified as low (34.8%) or medium (65.2%), and most of them had children (65.7%) and animals (67.1%).



**Figure 2.** Sample location and percentages.

## 2.2. Instruments

The questionnaire was divided into 6 sections, consisting of a total of 156 items. A total of 11 questions were used to explore the main socio-demographic variables, such as gender or years of residence in the neighbourhood. We decided to use ‘neighbourhood’, instead of ‘town of residence’, because the distribution of residents in Gran Canaria means that the same town could have neighbourhoods several kilometres away from each other which would be unequally affected by a wildfire. In addition, it is common for the inhabitants of the region to choose this name to refer to their place of residence.

**Place Identity Scale.** The three identity scale items developed by Hernández et al. [38] were applied in two contexts: neighbourhood and island. The island adaptation, translated into Portuguese, was used by Bernardo et al. [26] with good psychometric properties (in this study, neighbourhood identity  $\alpha = 0.95$ ; island identity  $\alpha = 0.94$ ).

**Risk perception.** Perceptions of climate change risk and fire risk were assessed independently. Participants were asked to rate each of the risks on a 7-point semantic differential scale, according to 9 risk perception attributes (voluntariness of risk, immediacy of effect, knowledge for those exposed and for science, control over risk, newness, number of people affected, dread and severity of the consequences). This scale was based on the psychometric paradigm [23] and the risk characteristics were Puy’s Spanish adaptation [39] of the scale developed Fischhoff et al. [40].

**Information about the experience of the fire.** Participants selected the answers that best described their situation from a set of 10 possible responses. For example: ‘I had to be evacuated because of the fire’, ‘My house was partially or totally damaged’, and/or ‘I

was indirectly affected by the environmental damage'. The number of evacuations suffered over time was also queried.

Self-Perceived Resistance [13]. This is an indicator based on the interaction of PT and PI. As described above, it classified the population into four groups: non-affected, vulnerable, survivor, and resistant.

VIVO questionnaire [12]. Divided into two parts, 72 items were directed to the general population and 43 items were directed to the victims, in which they responded to questions regarding the fire experienced. This questionnaire was detailed in the Introduction.

### 2.3. Procedure

Both an online and a paper questionnaire were used to facilitate the participation of people with different socio-demographic characteristics. Snowball sampling was performed, with two main phases: The first was the identification of potential participants on the internet following the method and considerations described by Eiroa-Orosa [41], through an advanced search of Twitter posts using a combination of the hashtags generated during the fire ({#ifvalleseco OR #ifartenara OR #ifcumbregc OR #ifgrancanaria OR #iftejeda} lang:es until: 25 September 2019 since: 10 August 2019). This social platform was chosen because it is the most frequently used to follow fires in real time. Many tweets are posted with images, affected areas, reactions, etc., enabling us to identify those who were affected and contact them through private messages. Twitter is useful for assessing the damage caused by a natural disaster, and can be used to predict the economic impacts [42]. Potential participants were also reached through forums and publications in social groups in the affected areas, as well as by emails sent to the neighbourhood associations. Subsequently, face-to-face sampling was conducted in all affected locations, in order to identify affected people who do not have an internet presence, requesting the participation of neighbours in randomly selected streets and houses. Participants were informed of our objectives and the possible risks of the research, and were asked at the end for informed consent regarding whether they agreed to participate freely. In the online version, which did not include identification data in the consent form, only ticking an acceptance box allowed the content of the questionnaire to be viewed. The questionnaire required approximately 20 min to complete, although it took up to 50 min when conducted with elderly people who were assisted when completing it. Responses were collected in the period between 24 July and 30 October 2021.

The database was prepared in an Excel file. Descriptive statistics were calculated and SPSS Statistics software (version 25.00. IBM Corp., Armonk, NY, USA) was used for hypothesis testing. The tests used were correspondence analysis, Pearson correlations, ANOVA for mean differences in place identity, and MANOVA in the case of VIVO and risk perception variables. Finally, post hoc analysis using the Scheffé test for significant differences was conducted.

## 3. Results

### 3.1. Place Identity and Socio-Demographic Variables

First, we analysed the differences in local place identity and island place identity, according to the principal socio-demographic characteristics. Table 1 presents the descriptive statistics. Using Student's *t*-tests, no significant differences were found between men and women, in terms of either local identity ( $t = -0.03$ ; ns) or island identity ( $t = -0.04$ ; ns). Place of residence showed differences in local place identity when assessed by ANOVA ( $F = 9.21$ ;  $p < 0.00$ ), with an adequate observed power (1.00) but a small effect size (0.27). Island identity exhibited no significant differences ( $F = 1.58$ ;  $p > 0.05$ ).

**Table 1.** Socio-demographic characteristics.

Variables	Local Place Identity			Island Place Identity			
	N	M	SD	N	M	SD	
Gender	Men	126	4.97	1.14	126	5.57	0.64
	Women	84	4.98	1.16	84	5.53	0.83
Municipality	Valleseco	57	4.19	1.21	57	5.69	0.65
	Agaete	33	4.53	1.19	33	5.46	0.76
	Gáldar	15	5.47	0.70	15	5.60	0.66
	La Aldea	21	5.49	0.76	21	5.49	0.69
	Moya	10	5.60	0.58	10	5.63	0.48
	Artenara	19	5.63	0.58	19	5.63	0.57
	Tejeda	33	5.42	0.97	33	5.57	0.65
	San Mateo	12	5.17	1.07	12	5.56	0.63
	San Bartolomé	10	5.50	0.55	10	4.87	1.41
Total		210	4.97	1.14	210	5.55	0.72

N, number of participants; M, mean; SD, standard deviation.

Pearson correlations were used to analyse the relationships between the island and local identities, age, years of residence, and the number of evacuations. The local and island identities were significantly correlated ( $r = 0.188$ ;  $p < 0.01$ ); both were also significantly correlated with years of residence on the island ( $r = 0.355$ ;  $p < 0.00$  and  $r = 0.200$ ;  $p < 0.005$ , respectively). Length of residence in the neighbourhood only correlated with local identity ( $r = 0.427$ ;  $p < 0.00$ ). Age and the number of evacuations also correlated only with local identity ( $r = 0.294$ ;  $p < 0.00$  and  $r = 0.228$ ;  $p < 0.005$ , respectively).

### 3.2. Local and Island Place Identity and Risk Perception of Climate Change and Fire Risk

Five of the nine climate change risk perception attributes were significantly correlated with local identity; in particular, the knowledge of people exposed was positively correlated, whereas voluntariness, control, catastrophism, and severity were inversely correlated. Island identity was only inversely correlated with fear. As for fire risk perceptions, significant correlations were only found between local identity and control. The correlation coefficients are shown in Table 2.

**Table 2.** Pearson correlation coefficients between local identity, island identity, and risk perceptions of climate change and fire.

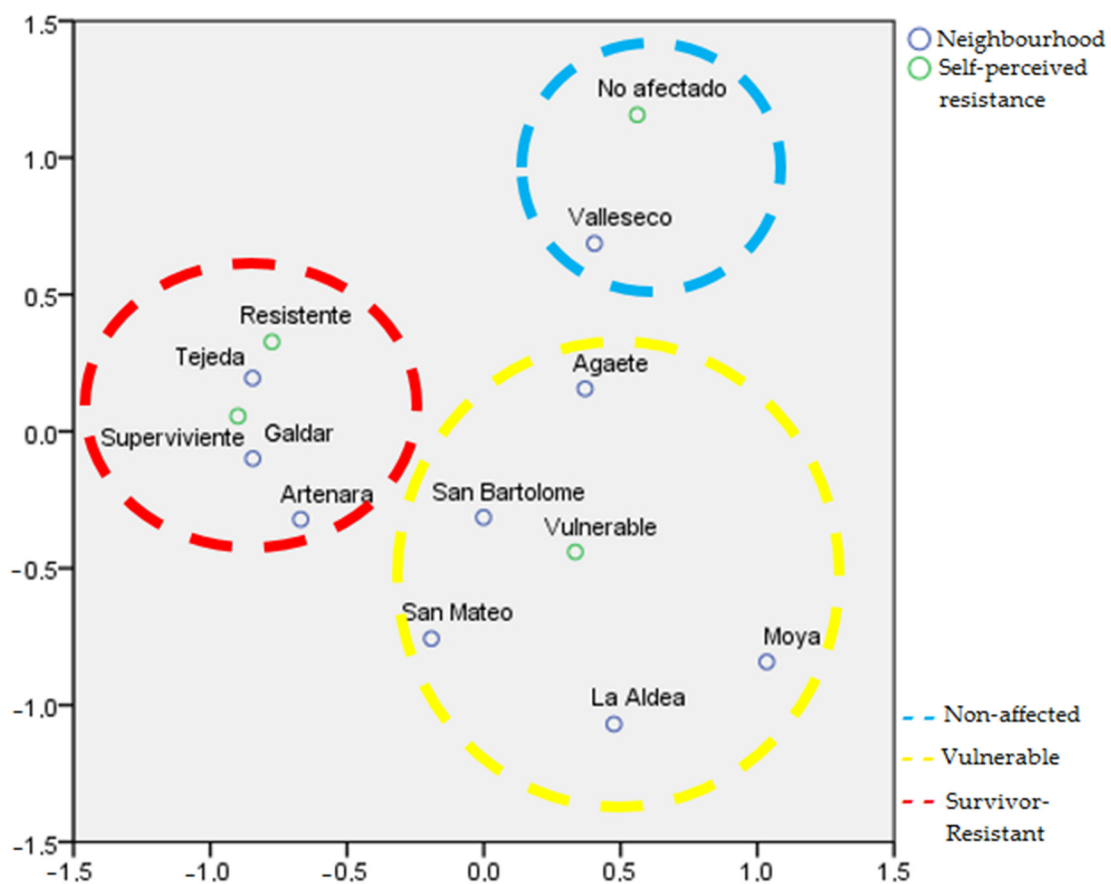
Risk Perception		Local Identity	Island Identity
Climate change	Voluntariness	−0.194 **	−0.122
	Immediacy	0.041	−0.004
	Knowledge	0.213 **	0.084
	Knowledge science	0.093	0.031
	Control	−0.163 *	0.046
	Newness	0.101	−0.036
	Catastrophism	−0.219 **	0.004
	Dread	0.062	−0.167 *
	Severity	−0.195 **	−0.008
	Fire	Voluntariness	−0.037
Immediacy		0.011	0.109
Knowledge		0.049	0.125
Knowledge science		0.009	−0.012
Control		−0.182 **	0.033
Newness		0.001	0.106
Catastrophism		−0.043	−0.101
Dread		−0.044	−0.055
Severity		0.073	0.145 *

Note: \*\*,  $p < 0.01$ ; \*,  $p < 0.05$ .



### 3.3. Description of the Vital Ontological Impact (VIVO) as a Function of Self-Perceived Resistance (SPR) and Place of Residence

Based on the responses given regarding the level of perceived threat and life impact, participants were classified according to the four SPR categories: non-affected (16.7%); vulnerable (52.4%); resistant (7.6%); and survivor (23.3%). In terms of their perceptions of physical life threat (PT) and life impact (PI), 7.1% of the participants indicated that the experience had not affected them vitally; 61.9% indicated that it had affected them at the time, but not in the present; 25.2% responded that there were still aspects of the experience that affected them very much; and finally, 5.7% reported that the event had changed their view of life. In terms of threat, 1.9% considered it mild, 24.3% deemed it moderate, 89.9% perceived it as severe, and 11% believed it to be extreme. Simple correspondence analysis was carried out by combining the municipality and perceived resistance variables (Figure 3).



**Figure 3.** Correspondence analysis plot.

Three groups were differentiated according to self-perceived resistance. Inhabitants of Gáldar, Tejada, and Artenara were classified as survivor-resistant (high PT and moderate-high PI). Inhabitants of Agaete, San Bartolomé, San Mateo, La Aldea, and Moya were classified as vulnerable (low PT, high PI). Finally, inhabitants of Vallesesco were considered non-affected (low PT and PI). The clustering of areas according to SPR created by the correspondence analysis was considered as a new variable, referred to as territorial resistance in the following analyses.

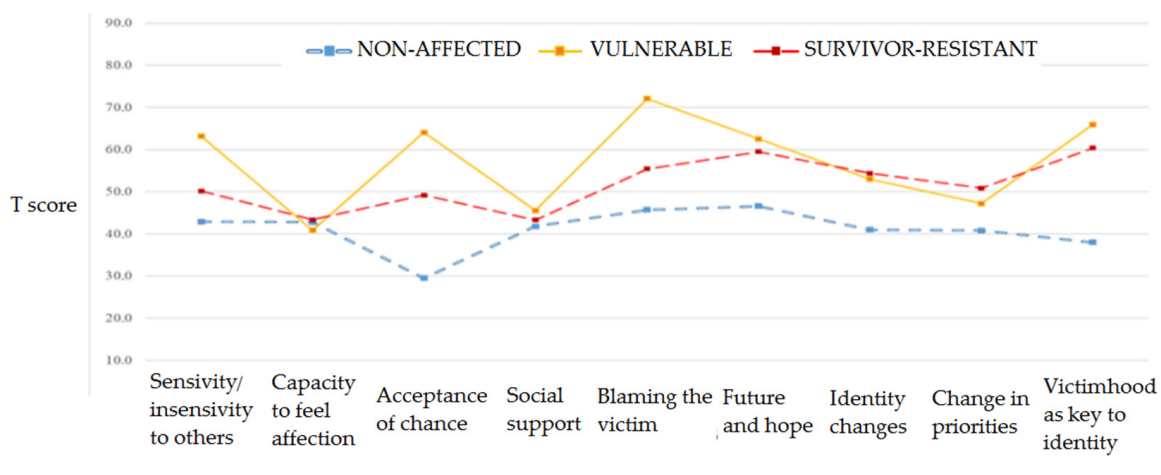
MANOVA of the 10 main VIVO blocks in the three groups was carried out, and the results indicated that the interaction was significant ( $p < 0.000$ ), with adequate power (0.998) and a high effect size ( $\eta^2 = 0.12$ ). Table 3 presents the results, showing which blocks showed significant differences.

**Table 3.** VIVO differences by territorial resistance group.

VIVO Block	1		2		3		MANOVA				
	M	SD	M	SD	M	SD	F	Sig	$\eta^2$	1 – $\beta$	Post hoc
Worldviews	2.26	0.49	2.20	0.57	2.15	0.55	0.53	0.59			
Attitude towards the World	2.65	0.46	2.74	0.38	2.66	0.40	1.58	0.21			
View of Human Beings	2.52	0.52	2.69	0.51	2.65	0.52	1.75	0.18			
Coping	3.03	0.62	3.07	0.70	2.98	0.69	0.34	0.80			
Impact of Past Situations	2.36	0.45	2.32	0.53	2.30	0.47	0.18	0.84			
Emotions	2.38	0.88	2.80	0.88	2.67	0.79	3.97	0.02	0.04	0.71	1 < 2
Telling the Experience	3.11	0.58	3.10	0.64	3.11	0.59	0.02	0.99			
Consequences	1.93	0.65	2.33	0.67	2.21	0.76	5.96	0.01	0.56	0.87	1 < 2 2 > 1 2 > 3
Social Support	2.18	0.55	2.43	0.47	2.19	0.6	6.31	0.00	0.06	0.89	1 < 2 1 < 3
Identity	2.27	0.67	2.55	0.62	2.6	0.62	4.65	0.01	0.04	0.79	1 < 2 1 < 3

Note: 1, non-affected; 2, vulnerable; 3, survivor-resistant; M, mean; SD, standard deviation; Sig, significance level; F, Fisher’s F-distribution;  $\eta^2$ , partial eta squared (effect size); 1 –  $\beta$ , observed power.

Statistically significant differences were observed in the Consequences block. In the post hoc tests, it was observed that the non-affected group scores were significantly lower than those of the vulnerable group. There were also differences in the Social Support block. Post hoc tests indicated that the vulnerable group scores were significantly higher than those of the non-affected and survivor-resistant groups. Finally, differences were also observed in the Identity block, with the non-affected group scoring lower than the vulnerable and survivor-resistant groups. Figure 4 shows the VIVO profile, including the scores in the subscales of the blocks where significant differences were observed, for three subjects with extreme scores in each of the groups. Therefore, MANOVA was applied to determine which subscales of the block best explained the differences (Table 4).



**Figure 4.** VIVO profiles of three representative participants from each group on the subscales of the significantly differing blocks.

The Wilks’ lambda values of the MANOVA test results for the subscales in all the blocks were significant. In the Consequences block, significant differences with adequate power were found in the subscales of sensitivity/insensitivity with others and acceptance of chance, with the post hoc tests showing that the non-affected group scores were lower than those of the vulnerable group. In the Social Support block, there was a significant difference in the blaming the victim subscale. Post hoc tests indicated differences between the non-affected and vulnerable groups and vulnerable and survivor-resistant groups, with vulnerable scoring significantly more highly. Finally, the significant differences that

reached adequate power in the Identity block were in the future and hope and victimhood subscales. In the former, according to the post hoc tests, non-affected group scores were significantly lower than those of the vulnerable and survivor-resistant groups. Finally, differences in victimhood were found in the non-affected group, which scored lower than those in the vulnerable group.

**Table 4.** Differences in means between subscales corresponding to the Consequences, Social Support, and Identity blocks.

Block	Subscale	1		2		3		MANOVA				
		M	SD	M	SD	M	SD	F	Sig	$\eta^2$	1 - $\beta$	Post hoc
Consequences	Sensitivity/insensitivity with others	1.87	0.49	2.24	0.76	2.14	0.73	5.02	0.01	0.05	0.81	1 < 2
	Capacity to feed affection	1.42	0.76	1.42	0.67	1.50	0.68	0.23	0.80			
	Acceptance of chance	2.49	1.27	3.33	1.45	3.03	1.50	5.91	0.00	0.06	0.87	1 < 2
Social Support	Social Support	1.90	0.63	1.89	0.73	1.87	0.74	0.09	0.92	0.00	0.06	
	Blaming the victim	2.40	0.83	2.97	0.51	2.52	0.88	11.11	0.00	0.10	0.99	1 < 2 2 > 3
Identity	Future and hope	1.71	0.57	1.99	0.58	2.00	0.58	4.83	0.01	0.05	0.80	1 < 2 1 < 3
	Identity changes	2.74	0.83	3.04	0.72	3.08	0.75	3.61	0.03	0.03	0.66	
	Change in priorities	2.08	1.08	2.15	0.99	2.47	0.94	2.69	0.07	0.03	0.53	
	Victimhood	2.55	0.91	3.03	0.86	2.85	0.91	4.89	0.01	0.05	0.80	1 < 2

Note: 1, non-affected; 2, vulnerable; 3, survivor-resistant; M, mean; SD, standard deviation; Sig, significance level; F, Fisher’s F-distribution;  $\eta^2$ , partial eta squared (effect size); 1 -  $\beta$ , observed power.

### 3.4. Place Identity, Vital Ontological Impact, and Territorial Resistance

The ANOVA test of place identity by territorial resistance indicated significant differences (Table 5). The relationship between place identity and ontological life impact was explored by Pearson correlation coefficient analysis (Table 6).

**Table 5.** Difference in means of place identity by territorial resistance.

Place Identity	1		2		3		ANOVA				
	M	SD	M	SD	M	SD	F	Sig	$\eta^2$	1 - $\beta$	Post hoc
Local	4.19	1.21	5.09	1.05	5.49	0.81	25.78	0.00	0.20	1.00	1 < 2 1 < 3
Island	5.69	0.65	5.43	0.82	5.59	0.63	2.41	0.09			

Note: 1, non-affected; 2, vulnerable; 3, survivor-resistant; M, mean; SD, standard deviation; Sig, significance level; F, Fisher’s F-distribution;  $\eta^2$ , partial eta squared (effect size); 1 -  $\beta$ , observed power.

**Table 6.** Pearson correlation coefficients of place identity and VIVO blocks.

VIVO Block	Local	Island
Worldviews	-0.133	-0.134
Attitude towards the World	0.131	-0.061
View of Human Beings	0.039	0.009
Coping	-0.098	-0.114
Impact of Past Situations	-0.081	0.117
Emotions	-0.017	-0.084
Telling the Experience	0.009	-0.044
Consequences	0.059	-0.096
Social Support	-0.026	-0.074
Identity	0.137 *	-0.006

Note: \*,  $p < 0.05$ .

Statistically significant differences were observed in local identity, with a medium effect and adequate power. The post hoc Scheffé results indicated that the non-affected group scored lower in local identity than the vulnerable and survivor-resistant groups.

Correlations with the main VIVO blocks (Table 6) were only significant between local identity and the Identity block ( $r = 0.137$ ;  $p < 0.05$ ).

### 3.5. Experience and Risk Perception

To explore the relationship between self-perceived resistance and neighbourhood, as a result of differences in wildfire exposure, a novel territorial resistance variable was used. A mean difference analysis was performed on scores of the risk attributes of climate change risk as well as fire risk with respect to territorial resistance. The Wilks' lambda statistics of both MANOVA tests were significant, with adequate power and high effect sizes ( $\eta^2 > 0.12$ ); see Tables 7 and 8.

**Table 7.** Mean differences in attributes of climate change risk perception.

Attributes	1		2		3		ANOVA				
	M	SD	M	SD	M	SD	F	Sig	$\eta^2$	1 – $\beta$	Post hoc
Voluntariness	4.77	1.53	4.12	1.61	4.28	1.60	3.93	0.02	0.04		
Immediacy	4.13	1.68	4.00	1.59	4.14	1.48	0.14	0.87			
Knowledge	3.34	1.67	3.35	1.51	3.93	1.72	3.37	0.04	0.03	0.63	
Knowledge science	2.55	1.61	2.65	1.58	2.94	1.64	1.00	0.37			
Control	4.38	1.57	3.6	1.45	3.75	1.35	4.02	0.02	0.04	0.71	
Newness	3.89	1.70	3.64	1.55	4.01	1.85	0.99	0.37			
Catastrophism	5.14	1.46	4.17	1.51	4.24	1.81	9.18	0.00	0.08	0.98	1 > 2 1 > 3
Dread	3.27	1.64	3.98	1.41	3.99	1.81	4.09	0.02	0.04	0.72	
Severity	4.02	1.35	4.24	1.37	4.36	1.39	9.93	0.00	0.09	0.98	1 < 2 1 < 3

Note: 1, non-affected; 2, vulnerable; 3, survivor-resistant; M, mean; SD, standard deviation; Sig, significance level; F, Fisher's F-distribution;  $\eta^2$ , partial eta squared (effect size); 1 –  $\beta$ , observed power.

**Table 8.** Mean differences in attributes of fire risk perception.

Attributes	1		2		3		ANOVA				
	M	SD	M	SD	M	SD	F	Sig	$\eta^2$	1 – $\beta$	Post hoc
Voluntariness	4.37	1.79	3.44	1.81	3.74	2.01	4.69	0.01	0.04	0.79	1 > 2
Immediacy	2.61	1.46	2.67	1.43	3.33	1.72	3.82	0.02	0.04	0.69	
Knowledge	2.82	1.48	2.33	1.44	3.23	1.97	5.78	0.00	0.05	0.87	2 < 3
Knowledge science	2.16	1.08	2.3	1.29	2.52	1.45	1.56	0.21			
Control	4.16	1.42	3.77	1.27	3.32	1.34	5.11	0.01	0.05	0.82	1 > 3
Newness	5.53	1.38	5.45	1.59	4.94	1.72	3.18	0.04	0.03	0.60	
Catastrophism	5.04	1.50	4.88	1.58	4.77	1.70	1.00	0.37			
Dread	5.51	1.30	5.6	1.08	5.23	1.46	2.15	0.12			
Severity	4.47	1.12	4.35	0.96	4.7	1.23	1.60	0.20			

Note: 1, non-affected; 2, vulnerable; 3, survivor-resistant; M, mean; SD, standard deviation; Sig, significance level; F, Fisher's F-distribution;  $\eta^2$ , partial eta squared (effect size); 1 –  $\beta$ , observed power.

Post hoc tests indicated that the non-affected group scored significantly more highly in catastrophism and significantly lower in severity than vulnerable and survivor-resistant groups.

The attributes that showed differences between the three groups, with moderate effect sizes and adequate power, were voluntariness, knowledge of exposed persons, and control. Post hoc tests indicated significant differences between the non-affected and vulnerable groups, with the former scoring more highly. The vulnerable group scored significantly lower than the survivor-resistant group. Finally, the non-affected group scored significantly more highly than the survivor-resistant group.

Finally, the differences in risk perception with respect to the ontological life impact subscales were analysed in terms of the correlations. Table 9 shows that the VIVO subscales were correlated with each other, and that the sensitivity/insensitivity with others

was inversely correlated with the catastrophic climate change risk perception attribute. Acceptance of chance was also inversely correlated with that attribute, as well as with the fire risk perception attribute of voluntariness. Blaming the victim was inversely correlated with willingness, knowledge, and control of fire risk. The future subscale was inversely correlated with both attributes of climate change risk perception; finally, victimhood was inversely correlated with fire risk voluntariness and climate change catastrophism.

**Table 9.** Pearson correlation coefficient.

	1	2	3	4	5	6	7	8	9
1. Sensitivity/insensitivity with others	1								
2. Acceptance of chance	0.337 **	1							
3. Blaming the victim	0.182 **	0.317 **	1						
4. Future	0.431 **	0.598 **	0.300 **	1					
5. Victimhood	0.213 **	0.639 **	0.315 **	0.640 **	1				
6. Severity CC	−0.105	−0.121	−0.106	−0.139 *	−0.135	1			
7. Catastrophic CC	−0.180 **	−0.179 *	−0.123	−0.159 *	−0.155 *	0.503 **	1		
8. Voluntariness Fire	−0.061	−0.167 *	−0.143 *	−0.090	−0.186 **	0.125	0.168 *	1	
9. Knowledge Fire	−0.008	−0.112	−0.236 **	0.021	−0.043	0.109	−0.010	0.339 **	1
10. Control IF	0.011	−0.005	−0.175 *	−0.040	0.024	0.107	0.127	0.184 **	0.260 **

Note: \*\*,  $p < 0.01$ ; \*,  $p < 0.05$ .

In terms of correlation with the number of evacuations experienced and age, age was inversely correlated with the control ( $r = -0.149$ ;  $p < 0.05$ ) and voluntariness ( $r = -0.166$ ;  $p < 0.05$ ) of fire risk perception, as well as the severity ( $r = -0.347$ ;  $p < 0.01$ ) and catastrophism ( $r = -0.308$ ;  $p < 0.01$ ) of climate change. The number of evacuations experienced was only correlated with the control ( $r = -0.142$ ;  $p < 0.05$ ) of fire risk perception and the severity ( $r = -0.176$ ;  $p < 0.05$ ) of climate change.

#### 4. Discussion

According to the proposed hypotheses, local place identity would increase with the age and years of residence in the neighbourhood of the participants. It would also differ depending on the municipality of residence, increasing in areas that experienced more evacuations and decreasing in areas less affected by fires. Therefore, risk situations can increase the connection with a place [18].

No relationship was found between island identity and fire risk perception, and only local place identity was correlated with the control attribute. Residents with a stronger local place identity perceived the fire risk to be more controllable. Attachment to place provides a sense of security to residents [31,43], who are unlikely to leave the place despite the high risk, instead engaging in preventive activities [26,44]. Previous studies which had found that an increase in the perception of risk was not a determinant of mitigation [45] did not explore the different attributes that comprise risk. The results of this study demonstrated that identity can provide a sense of control, and it would be interesting to test whether it is a determinant of mitigation.

Five of the nine climate change risk perception attributes were significantly correlated with local identity. People who had higher place identity perceived themselves as more knowledgeable and evaluated risk as being more controllable, voluntary, and individual, as well as less severe. Rooted local identities influence the perceptions of climate change risk, and are relevant for awareness and adaptation [34]; however, the literature has still insufficiently explored this question.

Using perceived resistance to relate the subjective perception of an experience to its psychological impact has been effective in previous studies [5,13]. In this study, the classification of the sample into three groups according to self-perceived resistance and the municipality of residence was operationally useful in describing the different profiles of risk perception and ontological life impact. Furthermore, these groups differed in their local identity, but not in their island identity. The survivor-resistant group, comprising those with the highest physical threat, were the most frequently identified and lived in the most-affected locations, in terms of losses, according to official data. The values of subsidies

to compensate damage to homes, farms, and the closure of businesses were highest in Tejada, Gáldar, and Artenara (Quesada, 13 August 2020). The lowest amount spent was in Valleseco, coinciding with the group classified as non-affected and the least locally identified. The vulnerable group (low physical threat and high vital impact) experienced an intermediate level of losses.

Ecological and landscape losses must be included with the direct and indirect economic losses and the emotional impact of wildfires on the people affected, which sometimes remains for decades. Rodríguez-Carreras et al. [46] reported how most of those affected by fires almost two decades ago still expressed feelings of consternation, frustration, and powerlessness. In this study, the ontological life impacts of the extreme experience differed, according to the perceived resistance. In particular, significant differences were found between the non-Affected and vulnerable groups. Therefore, life influences appear to be more influential than physical threats, in agreement with the study by Pérez-Sales et al. [13]. According to the results in the acceptance of chance subscale, those in the vulnerable group asked themselves more about why it had happened to them, corresponding to a higher impact in the subscale. They tended to blame the victim, felt that they had been judged for the event, and considered that the experience had distanced them from others, according to the subscale. Finally, in the Identity block, differences were found in all subscales, but only those in future and victimhood were significant, with an adequate effect size. Affected persons view the future with more pessimism and hopelessness, and recognise themselves as victims as an important part of their identity. The non-affected hold more hope for the future, and effectively do not refer to themselves as victims.

Non-affected participants who experienced the wildfire also significantly differed in their perceptions of climate change, in the attributes of catastrophism and severity. Affected individuals considered climate change to be less severe and more individual; the same relationship as that found with greater local identity and with the future subscale. Perceptions of the catastrophic power of a risk and the severity of a hazard are associated with protective behaviours [47]. Emphasising local manifestations of the climate crisis and its connections to individual livelihoods can help to engage individuals in mitigation actions and moderate the risk of extreme events [48]. For this, it is also necessary that the population considers that they can do something to improve the future, which they currently conceive with hopelessness and pessimism.

In relation to the perceptions of fire risk, those affected consider that they have more knowledge and that the risk is more controllable than those not affected. This higher perception of control was also associated with the feeling of being judged and a higher place identity, as well as age and the number of evacuations experienced. Previous studies have found that the experience of residents is a determinant of perceived risk, providing a better understanding and knowledge of risk [49]. It has also been associated with the intention to prepare [25]. However, feeling more control can cause people to engage in risky situations, such as burning or operating forbidden machinery on high-temperature alert days. Other studies have found that those affected by wildfires who are aware of the likelihood of risk tend not to undertake the recommended protective actions, because they do not consider them effective or relevant to them [48]. It has also been found that people exposed to a constant risk may perceive it as more controllable, due to experience [50], in line with the psychometric paradigm that associates high risk familiarity and control with a better perception of risk [23,40]. Years of exposure to wildfires, with proper evacuation protocols that prevent fatalities, lead to the consideration of fire as an old and known hazard, thus contributing to a sense of control [51]. On the other hand, control has also been related to the voluntariness of risk [52] (cited in [50]). The results of this study also suggested a correlation between voluntariness and control.

Disaster preparedness education for adults is based on their initiative and motivation. Emphasising risk, recognising the local knowledge of residents, and including them in decision-making and future action plans contributes to a sense of community [46]. This can help them feel listened to, rather than judged, and improves the coping and psychological



impacts described in terms of their worldview and others. In addition, providing a space for them to share testimonies about their experience can also improve their psychological adjustment. Previous studies on fires have found that vicarious experience through the testimonies of local victims can also increase awareness and prevention actions in the general population [51].

This study provides arguments that justify the need to include people exposed to risk in management and prevention plans. However, it is important to consider certain limitations of the study. First, non-probabilistic sampling was used, which may limit the representativeness of the sample. Moreover, not having previous measures of place identity or assessing it two years after the fire did not allow us to determine whether it had been affected by the event. However, previous studies have demonstrated that identity is a construct of connection to place which is more stable than attachment; therefore, it is more difficult to modify in a short period of time [53]. During the last few years, the global population has been affected by the COVID-19 pandemic, which may have affected their responses to the questionnaire regarding traumatic experiences, especially in terms of perceiving the future with more pessimism. Finally, some studies have indicated that an experience may only increase the risk perception for a short period of time [51]; thus, it may be that this perception had diminished during the two years since the wildfire.

## 5. Conclusions

Residents of rural areas must learn to coexist with fire, knowing the risks to which they are exposed and participating in fire prevention [54]. Collective actions in environmental management are fundamental for adaptation and environmental conservation. To reduce vulnerability to fire risk, management policies must include analysis not only of the landscape, but also the inhabitants, incorporating their perceptions, psychological barriers, and the means to strengthen their interactions [1]. Planning strategies collaboratively considering the livelihoods, community conflicts, and land-uses of residents reduces the probability of risk propagation and threats to people [46].

Acting on climate change not only requires addressing environmental or climate issues, but also influences all aspects related to the exposed people. Experiencing a weather-related natural disaster can induce people to re-evaluate their vulnerability, as well as their worldview and their view of others. It also has an influence on their perceptions of climate change, and may increase the intention of adopting adaptive behaviours. However, studies have typically only focused on linkages to residential places, and it is probable that place identity for recreational spaces (e.g., natural spaces) is also relevant in understanding disaster prevention behaviours [55]. Further studies should consider this aspect, as well as exploring how the perceptions of life impact experiences influence perceived control and how this relates to coping strategies, including the role that place identity has in the perception of control.

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