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Drawing on fire: children's knowledge and needs after a wildfire disaster in Portugal

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Abstract

There is growing international concern about the impact of natural hazards and disasters on children and young people. However, very little research has explored children's views of their wildfire experiences. Using creative methods with two groups of primary school children from an inland area, this qualitative study examines Portuguese children's experiences of a wildfire disaster that affected their community in 2017. An inductive qualitative approach was used to explore the children's interpretations of this particular event. The children reported high levels of exposure to the wildfire, either directly (in confronting the actual fire) or indirectly (by observing its impact on nature and their community). The implications of these findings are considered in relation to children's roles in wildfire risk reduction and response.

Introduction

Wildfires have had a devastating impact on Europe recently, particularly in the Mediterranean area and inland Portugal. The massive wildfire that occurred between 17 and 24 June 2017 in the Pedrogão Grande area (inland central Portugal) constituted a unprecedented tragedy for the country, where several died. Later, on 15 October of the same year, an equally destructive wildfire occurred, resulting from more than 500 ignitions in one day that led to simultaneous fires spread over a larger area, affecting several municipalities and again causing multiple losses. In 2017, the burnt area in Portugal was 539 921 ha., a much higher figure than in any other European country (San-Miguel-Ayaz et al. 2018). In both wildfire events, at least 117 people died, 9 of whom

were under 20 years old (Viegas et al. 2017; Comissão Técnica Independente et al. 2017; Viegas et al. 2019; Comissão Técnica Independente et al. 2018).

Literature focusing on the impact of natural hazards and disasters on children is increasing all over the world (Dyregrov, Yule and Olf, 2018). However, to date, very little is known about Portuguese children's perspectives on wildfire disasters. Addressing this gap in the literature and focusing on the wildfires that occurred in October 2017, this paper outlines children's experiences of the wildfire event and gathers their suggestions for coping with similar events in the future. Recognising that children have a right to participate and express their views on issues that affect them, we used a "draw and write" technique with children from one affected municipality to generate data. Our findings document and explore how children experienced the fires and the post-disaster recovery process. The literature on child-centred disaster risk reduction (Amri et al. 2018; Haynes and Tanner 2015) has clearly demonstrated the value of including children's views and voices in disaster management policy and practice. This research therefore provided an opportunity to ensure Portuguese children's views were captured. We argue that although children affected by fire need care, their recommendations for adults can be incorporated into local plans for wildfire disasters in their communities.

The article begins with an overview of current research on children and disasters and explores the potential value of using drawings in child-centred disaster research. It then describes the methodology of the study and presents the children's drawings, focussing specifically on their direct and indirect experiences of the wildfire and their knowledge and recommendations for wildfire risk reduction. We conclude with a discussion of the study's implications for policy and practice.

Children and disasters: the state of the art

Children and disasters is a rapidly expanding subfield of disaster studies. According to Peek et al. (2018), initial research in this area focused on psychological reactions and the vulnerability factors that contribute to children's exposure to disaster, but more recent research has begun to focus on children's resilience, capacities and perspectives. While the new sociology of childhood (Baraldi and Cockburn 2018; Nunes de Almeida, Ribeiro, and Rowland 2018) already acknowledges children as social actors in their own right, this new focus on children's voices and capacities is rooted in what Amri et al. (2018) define as Child Centred Disaster Risk Reduction (CCDRR). This approach conciliates both the child's right to protection and their right to participation, as expressed in the Convention on the Rights of the Child (UN General Assembly 1989). In this fashion, CCDRR recognises children's vulnerabilities and specific needs in disaster situations, and empowers them through supportive environments, enabling them to be active agents in disaster prevention and response in their communities. This acknowledgement of children and young people as capable members of their communities has been further reinforced by the Sendai Framework for Disaster Risk Reduction, which identifies them as "agents of change", who "should be given the space and modalities to contribute to disaster risk reduction, in accordance with legislation, national practice and educational curricula" ("Sendai Framework for Disaster Risk Reduction 2015-2030" UNISDR, 2015, 23). Following these trends, we will discuss some of the literature that focuses on children's knowledge and its contribution to disaster risk reduction. Since European projects and literature focussing on children's participation in DDR are scarce (Rodriguez-Giralt, Lopez, and Arenas 2016) and, despite the recent inclusion of a risk education framework in the official citizenship curricula, involving children as agents in disaster risk reduction is still incipient in Portugal (Delicado et al. 2017), we have concentrated on studies from geographical areas in the global North, for contextual similarity. For relevance, we have

also focused on the few key studies dealing with wildfire disasters and children, particularly on Towers (2015).

Children's knowledge of disaster stems from their direct experiences, often mediated by trauma (Peek 2008), or from education (Rashid, Ronan, and Towers 2016). Drawing on a project that investigated children's resilience and recovery from floods in several locations in the UK, Lloyd Williams et al. (2017) and Mort et al. (2018) conducted an in-depth participatory study of children affected by floods. The study highlights the impacts children experienced (such as confusion about different types and levels of warning, lack of preparedness for evacuation, loss of material goods and isolation), but it also shows they played an active role during the floods. Children derived satisfaction from being helpful, either by assisting to clean up or by checking up on neighbours. Furthermore, children developed flood manifestos with suggestions for policy makers, addressing their need to be heard. In the USA, Fothergill and Peek (2015) produced an ethnographic longitudinal study of children affected by Hurricane Katrina, identifying the effect of cultural diversity (class, age, gender and race) in post disaster trajectories, emphasizing how disaster impacts were worse for children who were already disadvantaged prior to the storm. The study also stresses that although children are vulnerable to disasters, they are also capable of developing their own resilience cultures and strategies for coping with such events. In New Zealand, Freeman, Nairn, and Gollop (2015) interviewed families and children in the aftermath of an earthquake and found out that based on their experience, children could provide sound advice regarding types of assistance needed, improvement of safety procedures or communication. In Australia, Harwood et al. (2014) examined how seasonal changes affected children's daily lives, showing that children not only develop adaptive behaviours according to dry and wet seasons, but also that their perceptions contrast with those of adults, and must be examined in order to develop

targeted messages promoting safety (flooding, for instance, can be seen as positive due to certain games they can play with the water, whilst risking their lives).

Research concerning wildfires and CCDRR is rare, as most studies focus on psychological impacts of wildfires on children (Papadatou et al. 2012; Kulig et al. 2018).

In Canada, recent studies address the need for creating activities that help children to express their emotions and experiences of wildfire disasters, as well as providing opportunities for them to voice their own needs for recovery from this type of disaster, in specific places where they feel comfortable and through supportive networks (Cox et al. 2017; ResiliencebyDesign Research Innovation Lab 2018) .

From Australia, Towers (2015) ground-breaking study showed that children can contribute significantly to reducing risk in their households and communities and “*also demonstrated a capacity for understanding the fundamental principles of safe emergency response, particularly when they had been involved in household bushfire planning*” (Towers 2015, 187). Since some families may resist this idea, Towers notes that minor activities, such as packing a firebox with valuable belongings, can be enough to boost a child’s sense of usefulness, and provide some trauma protection against material and affective losses caused by fire. On the other hand, Towers also warns that children’s misconceptions of wildfire risk must not be repressed, but understood and deconstructed in a two-way dialogue, and taken into account in developing effective bushfire risk education programmes, Towers’ research is of particular significance for our study, since it not only focuses on children’s knowledge of wildfires, but also stresses the value of their participation, for the children themselves and for their communities. Lastly, Towers also used drawing as a means of collecting data, a creative methodology that we will discuss further in the next section.

The use of drawings in children's disaster research

Art-based methodologies are frequently used in disaster research involving children. Several of the above-mentioned studies have used photovoice, participatory video, collages or drawings, either as the main methods of data collection or as tools to prompt conversations with children and young people. As Fothergill and Peek (2015) have noted, children frequently express emotions and embodied knowledge of disasters through singing, performance or poetry. Drawings in particular present several advantages as a descriptive and analytical tool. As Ganesh (2011, 238) argues, *“they can be projective; they permit expression of feeling and imagery; they allow for defining and redefining shared attitudes held by society; and they can be analysed using psychological, sociological, and cultural lenses with attention to the phenomena or concepts under study.”* They also facilitate the inclusion of children with language barriers or low verbal repertoires and empower children in the research process, allowing them to use codes of communication that are more familiar to them (Theron, Mitchell, and Smith 2011; Mitchell 2006).

In the context of disaster studies, using drawings serves multiple purposes. In certain cases, drawing can be a therapeutic tool that allows children to access and process traumatic memories, providing a window for their experiences; in others, drawings can provide a means by which the social impacts on children can be understood and their knowledge evaluated. However, the usefulness of drawings also depends on the children's technical competence. They may choose to draw what they can instead of what they intended. They can also be influenced by peers. In a classroom context, for example, particularly attractive drawings from one child may inspire others to produce similar work. Hence, a critical balance is necessary when analysing these representations (Spyrou 2011).

As drawings mainly showcase a subjective representation of the meaning of a given topic or situation, their full message cannot be understood without clarification from the artist. For this reason, children's written or oral accounts of their drawings are critical pieces of the puzzle, enabling the researcher to confirm, question or reject their interpretation of the visual data (Ganesh 2011). In addition, even though drawings may refer to a 'real situation', such as the wildfires explored in this study, their value lies not so much in the accuracy of the information portrayed, but more in the way in which they provide insights into how children construct the meaning of a given situation (Hall 2015).

Methodology of this study

In all the wildfires of 15-17 October, at least 51 people died, most of them over 65 years old. Many of these deaths occurred while people were evacuating on foot or in a car, or inside the home, during sleep (Viegas et al. 2019; Comissão Técnica Independente et al. 2018). A particular climacteric condition (Storm Ophelia) brought strong winds which, combined with severe drought and high temperatures, caused multiple ignitions to develop quite rapidly in several municipalities in Centre and North regions of the country. The National Civil Protection system and local volunteer firefighters' associations were unable to cover so many simultaneous outbreaks. A recent psychological evaluation indicates that some children from the affected areas may be suffering from post-traumatic stress disorders (Rijo et al. 2018). Although wildfires are common in the inland central region in summer, a wildfire of this size was new, and no specific programme of self-protection measures was in place at the time. After the wildfire disasters of 2017, the Government made several changes to the civil protection system (San-Miguel-Ayanz et al. 2018).

Our exploratory visual research is based on drawings and texts produced by 25 children aged between 6 and 11 years old from two different parishes in the municipality of Gouveia. The municipality of Gouveia has an area of approximately 300 km² and is located next to the Serra da Estrela, the highest mountain range in mainland Portugal. In 2017, it had 12,711 inhabitants, 1,125 of whom were under 14 years old. Although Gouveia is located near a protected UNESCO geopark which preserves some of its native forestland, wildfires are recurrent in the area, due to unregulated burning of debris and poor forestry management, among other structural causes. In Gouveia, the wildfire that started on 15 October remained out of control for over 24 hours; one man died, 24 houses were burned to the ground and 19 others were partially destroyed. Apart from the damage to the forest and to cultivated and uncultivated land, there was also significant loss of livestock and wild animals, as well as material losses in factories and shops.

We approached the children approximately three months after the event, in the period designated as short-term recovery. Consent and assent forms were provided to both children and their parents. Following ethical recommendations for disaster research and psychological intervention with children affected by disasters (Phillips 2014; C. M. Serra et al. 2015), one of the authors is both a member of the local community and a trained psychologist. This pre-existing trusted relationship was crucial to gaining access to the children and to motivating them to participate in the research. Pseudonyms were used to protect children's privacy. The sample was gender balanced.

Our use of drawings in this research followed the draw-and-write technique as described by Nomakhwezi Mayaba and Wood (2015). We asked the children to make a drawing of the wildfire event and then write a small text explaining it. A script provided some guidelines, such as:

- What was the fire like?

- What did you feel?
- Who or what helped you during the fire?
- Can you recall something bad or good that happened during the fire?
- What can we do to prepare better for disasters? Do you have any ideas?

The data was collected in in two sessions each lasting two hours. Since some children feel more comfortable talking rather than writing, in a third session we asked selected children to clarify some elements in their drawings. Not all the children wrote or said something substantial about their drawing. In some cases, the situations described were potentially traumatic. To avoid causing any distress, we respected the children's wishes when they indicated that they did not want to share further information.

Our inductive qualitative content analysis looked for the meaning(s) of this particular wildfire disaster for the children. Following Hall's (2015) insight into the contextual richness of drawings, we aimed to preserve the unity between the child and the drawing. We specifically focused on what Rose (2001) describes as the compositional and social modalities for understanding the many, sometimes contradictory, meanings of a given image. We coded the elements in the drawings and written accounts in a grid, combining content analysis to identify patterns and themes with more contextual information that we had acquired from the children's written and oral accounts. Attention to social context requires insight not only from the point of view of the conscious participants, but also the broader patterns of visual culture and communication related to the event described. In this case, the wildfires were extensively covered in the Portuguese media, which may have shaped the children's perceptions of the event. Nevertheless, we found common

themes encompassing children's experiences and recommendations, which we will now discuss.

Facing the wildfire: self, emotions and agency

As previously mentioned, the destructive force of the wildfire in the area took everyone by surprise. Some of the children, particularly those living in isolated areas, were forced to confront the fire directly, in the company of their families, neighbours, friends and animals.

That was the case for Joana (9 years old, 4th year), who drew an image of her family fighting the fire. It shows her grandfather's backyard burning, while he tries to extinguish the fire. Joana, her grandmother, brother, mother, cousin and the dog express fear through raised arms and open, screaming mouths. Joana is crying and the sun and the clouds have also been given sad expressions to stress the drama of the scene.

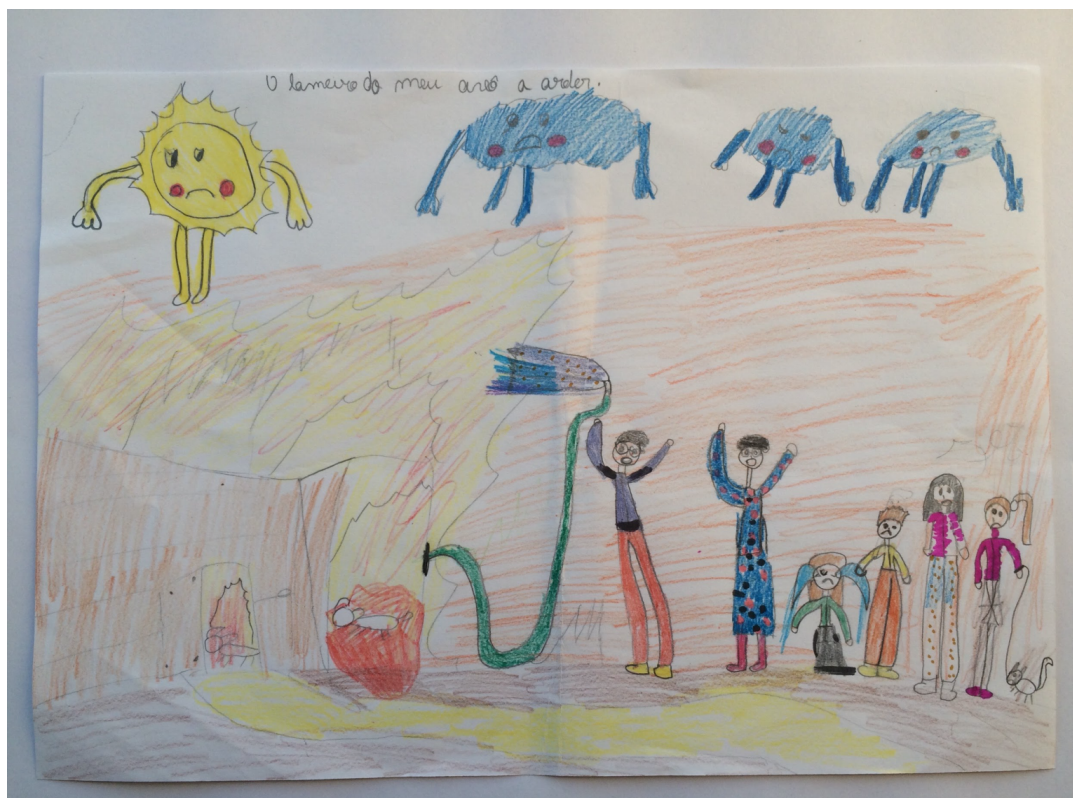


Figure 1: Drawing of Joana (9 years old) and her family facing the fire

In her written account, Joana described the trauma she had experienced:

“The fire was yellow and orange and very scary. I have seen many things that left me traumatised. I will tell you about it. It was morning and my brother went to the porch and saw sparks and smoke in the air. We went to my grandmother's house and when my mother was serving the soup, she saw the orange sky and it seemed that it was night. We were inside the house and then we went out into the street and there was a fireman outside to take us away. We went to the village road junction to wait. It passed, but my dogs almost burned to death. They didn't want to leave because it was their place.”

She also notes the danger that her animals faced because they did not want to leave “their place”. This sense of belonging projected through animals confirms Ratnam and Drozdewski's research (2018) into place attachment and how it is constructed through our repeated interactions with the home and its surroundings, explaining why humans still choose to live in locations at risk of bushfire. Other drawings also showed nature as a metaphor for human grief, with bending trees being consumed and sun and clouds displaying the sadness felt by the artists.

A different story told by Rafael, (9 years old, 4th year), centred on how he fought the fire with his cousin Bruno (18 years old). The drawing depicts Rafael and Bruno with water buckets and shovels facing a huge fire in front of a house, with a small dog standing beside them. This dog was extremely important to Rafael: he later told us, “he was always

by my side, even when I tried to set him free, he came back”. Again, relationships with animal companions are extremely important to children (Tipper 2011) and they can also act as a protective factor in emergencies, since the moral duty of caring for animals may encourage people to adopt safety procedures (Thompson 2015).



Figure 2: Drawing of Rafael (9 years old) fighting the fire with his cousin

In his short statement about the drawing, Rafael also stated:

"The fire was terrible, and it was a very stupid person who started it. I saw hell in front of my eyes. Me and the other people from the village felt pain when we saw the fire destroying everything. I picked up the hoe and the bucket and went to my uncle's house to help. The villagers helped me. My neighbour José was taken to hospital because he had inhaled smoke. The wind was in our favour when we were fighting the fire. In future we could have water tanks and hoses in my village."

Other children also drew themselves fighting the fire with relatives and neighbours. As we stressed earlier, the value of children's drawings does not lie on their truthfulness: however, in this instance it should be emphasised that adult members of the community confirmed that these children, who were mostly boys, had been actively involved in firefighting. Hence, these drawings document real events as remembered by their protagonists.

Not all of the children depicted themselves actively fighting the fire. Rui (8 year old, boy, 2nd year), drew his house up on the hill, with him hiding inside. As Rui explained, when the fire reached his house, he felt paralysed by fear:

"I was with my father and then I went to my aunt's house because it was burning in front of my house. It was very smoky. I had a tummy ache, I was afraid. It was my aunt who helped me: she made me lunch, because my father did not eat because he was putting out the fire. The fire made a lot of noise. I wanted to sleep but I could not because I was nervous. It was difficult to see other people putting out the fire and I could not because I was afraid. Something that was good was that the firemen and other people came and managed to put out the fire."

What is remarkable in Rui's account is that, despite the somatization of his vulnerability, he regrets not being able to participate in the firefighting, as a full member of his community, even though he is just a child. Moreover, the evocation of the sound of fire conveys the embodiment of memory in disaster situations.

Watching the wildfire: others, nature and place

The second category of visual narratives features large-scale representations of the fire scene, giving a broad impression of the fire in the landscape while the artists themselves are absent from the scene, suggesting a more distant relationship with the event. This was the case with Filipa, (girl, 11 years old, 4th year), who drew what seems to be an aerial picture of an emergency scene. The perspective of the drawing may represent the drone footage that was frequently shown in the heavy media coverage of the wildfires. Her written statement does not describe the scene in her drawing; instead it describes how she was directly engaged in the firefighting:

“On the day of the fire the flames were ugly, very red. I saw that a lot of people were crying. I felt sad, but at the same time angry. Why angry? Because the bad people that started the fire shouldn't have done that. I called the firemen and I helped to put out the fire. My mother, grandfather and grandmother, helped me... it was difficult to put out the fire and what was good was that the people and I managed to put out the fire. I went with the hose and that was my day in the fire.”



Figure 3: Aerial view of a firefighting operation (drawn by Filipa, 11 years old)

Although Filipa assures us she was fighting the flames with her family, she chose to tell us about the messiness of the emergency and rescue space. Her story voices her sadness but also her anger towards those who started the fire. Looking for explanations for a disaster whose causes were both human and natural can be quite confusing for children. In our research, many children stated that *“bad people started the fire”* or that *“the sun was too hot and that is why it started to burn”* (there was a heatwave at the time). Others stated that *“a better world is one where bad people don’t start fires”* (José, 6 years, 1st year). The urge to find culprits may also echo adults’ opinions that assume there should be someone to blame for the disaster, as in this particular community many people believed that wildfires are started deliberately.

Some children were not in direct contact with the fire because they were in a safe place at the time, although their parents were out fighting the flames. That was the case with Miguel (8 years old, 3rd year), who drew a big wildfire scene in which his father is trying to prevent their house from burning. In the air, a blue helicopter and a yellow firefighting aircraft pour water onto black trees through an atmosphere of grey smoke.

Miguel writes:

“I was at my grandmother's house and I saw a fire in the mountains, and I was not worried and went to lunch. Then I went to the window to see the fire and saw it start on one person's farm. Agricultural machinery, tractors, a car, barns for cows and sheep burned. There were few firefighters and no air support. The people in the village lined up at the foot of the well, and I was afraid. At night, there weren't many firemen and I was very sad and worried about the victims of the fires. Some people were without a house and family, homeless.”



Figure 4. An adult throws water onto the flames (drawing by Miguel, 8 years old)

Miguel's account stresses the lack of resources to fight the fire and how he feels sad for the victims of the fire, suggesting that he does not see himself as a victim. In fact, he portrays a happy father fighting the flames, showing some control over the situation. On the other hand, although he stated that there was no air support, he drew a plane and a helicopter. Miguel's contribution exemplifies how contradictory drawings can appear, particularly those depicting a situation that one did not directly experience. Adult's stories mixed with media images present a subjective narrative of what might have been. On the other hand, the drawing may have suffered from peer influence, since other children in the session also drew planes and helicopters.

Besides portraying the emergency rescuers in action, some children chose to draw the landscape after the fire. These drawings not only depict black, leafless trees but also electric and mobile phone towers burned to the ground and their broken, tangled wires. These stories highlight the consequences of the wildfires, such as the loss of electricity and communication systems, situations that isolate children and instil fear. As the children explained:

“The fire was very big, there were firemen and houses burned. Some people were without houses because they were in the middle of the fire. In my house the light melted (went off). And there were also ambulances. ...I saw in the news that the fire was everywhere.”

(Maria, 10 years old, 3rd year)

“There were no cell phones. The lights went on and off all the time”. (Susan, 8 years old, 2nd year).

Children’s knowledge and recommendations for wildfire risk reduction

Our discussions with the children also included questions about what they thought could be done to reduce the risk of wildfire in their community. Our aim was to understand their perspectives on risk reduction, based on their own experience of the wildfire disaster. Not all the children responded to these questions; most of their responses explained their drawings or feelings about the event. However, amongst the children who did share their views on risk reduction, some strong themes emerged.

Considering their own knowledge of this particular event, some children highlighted the importance of water supplies:

“To prepare better for the fires we must have food, water, hoses, buckets with water.” (Carlos, 6 years old, 1st year)

“In future we can have water tanks and hoses in my village.” (Rafael, 9 years old, 4th year)

“To prepare ourselves better we could save more water. We could install an automatic irrigator. It would be better to have the electricity cables tucked into the pipe so they would not burn out” (Gil, 9 years old, 3rd year)

This response-focused perspective suggests that these children believe that there will be more wildfires in the future and people should be ready to fight them. One boy proposed that communities should join together to face the threat:

“If it happens again, we have to prepare ourselves with the things we used in the other fire, fill water tanks, and unite to face the fire.” (Gabriel, 8 years old, 3rd year).

It is also worth noting that at the time of the fire, the local area was experiencing a major drought, and this was reflected in the emphasis on water storage.

Other statements underlined the importance of vegetation management and fire prevention:

“For the next time, it is better to cut down the eucalyptus and mimosas, not dump trash and clean the forests (Tiago, 9 years old, 3rd year)

“To prepare for the next fires, we have to clean the land, not pour chemicals or inflammable residues into the forest, not plant trees that hurt the planet and uproot the eucalyptus, mimosa and pine trees. ” (Miguel, 8 years old, 3rd year)

“We can prepare better for other fires by clearing the woods and looking after the land every day”. (Natalia, 9 years old, 4th year)

“We can clear the woods and not throw matches or lit cigarettes into the woods.” (Joana, 9 years old, 4th year)

Such ideas highlight the accurate knowledge children already have of particular tree species that are more flammable and demonstrate an awareness of the importance of managing fuel loads by not allowing debris to accumulate. Moreover, one girl (Marcia, 9 years old, 3rd year) suggested that children could go door to door encouraging adults to take responsibility for fuel and forestry management:

“We can better prepare by cleaning the forests and not allowing people that do not like nature to start fires. Children can ask people to clean up, by knocking on their door”.

After the 2017 wildfire disasters, the Portuguese government and the media had promoted land cleaning and sanctions were introduced for those who do not clear the area around their houses. These recommendations could also have sparked the children’s environmental awareness. Overall, their recommendations indicate their willingness to play an active role in wildfire risk reduction and reflect the degree to which they perceive themselves to be fully capable members of their local communities.

Conclusion

Our goal in this research was to understand the children’s experiences of the 15-16 October 2017 forest fire disaster in one municipality. Given that disasters are defining moments when collective emotions and fragilities emerge, these drawings illustrate dramatic scenes of destruction and fear. Children are often considered vulnerable beings who should be protected from disturbing events such as this. However, the scale of the wildfire placed some children in the position of actively fighting the fire alongside their families and communities. Other children escaped in time but were very aware of the

danger they were exposed to, gathering knowledge from their peers and from the media. Hence, the drawings could be categorised into two groups: those that told stories of direct contact with the fire and those which came from children who had not been in direct contact with it. For ethical reasons, we did not explore the narratives exhaustively with the children, as that could cause them to relive traumatic moments. The analysis presented here corresponds to a small-scale study and is merely exploratory as we have concentrated only on the meanings the children were able to construct with us. As Ingold (2011, 114) recalls, “*drawing shapes the world in which we dwell, at the same time as it shapes our own humanity*”, and as such, drawings not only describe but also transcend the reality they refer to. Other more psychoanalytical or speculative interpretations are possible, and we aim to explore them in future research.

Despite the exploratory nature of the research, the narratives produced by the children in this study suggest some recommendations for disaster risk education and practice. When faced with disaster, children will take action, collectively or individually. It is our duty to make sure that the actions they take increase their safety rather than put them in danger. Thus, in line with the Sendai Framework for DRR (UNISDR, 2015), it is time to consider children as active agents in disaster scenarios and to prepare them with age-appropriate self-protective measures that allow them to respond safely and confidently in these situations. This could be done by creating a pilot wildfire resilience programme such as “Survive and Thrive” in Australia (Towers, Perillo, and Ronan 2018). This programme was targeted at primary school children and established partnerships between schools, local brigades and other emergency stakeholders for the delivery of specific contents through place-based experiential and student led inquiry-based approaches. Concerning child-led disaster risk reduction, a useful framework was recently developed by the

CUIDAR project (CUIDAR 2018), together with its Portuguese partners. Serra and Ferreira (2017) have also explored children's involvement in the management of common forest lands, with the creation of a useful pedagogical kit.

As stated in the literature, children need to feel actively engaged in the places where they live and by helping others, they are able to contribute to their own recovery, as well as the recovery of those around them. These assumptions do not undermine children's needs and rights to protection and care. In fact, we recommend initiatives for following up on the children who were caught up in the wildfire and helping them to respond adaptively to these type of events, particularly younger children who may lack the language to express their feelings, as verified in our study. It is also important to monitor the coping behaviour of parents and other adults who influence children's own coping responses. Initiatives that emphasize parent training and support would have significant value (Miller et al. 2012; Dyregrov, Yule, and Olf 2018). Lastly, following Amri et al. (2018), through its team this paper reinforces the idea that collaborations between academia and non-governmental organisations can be valuable in promoting child-centred disaster risk reduction policies, as the context and specific, experiential nature of disaster inquiry requires fully developing local knowledge and allies.

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