



Understanding an Ebola outbreak: Social representations of emerging infectious diseases

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**Nahia Idoiaga Mondragon,
Lorena Gil de Montes and Jose Valencia**

Abstract

This study examined the collective image of the 2014–2015 Ebola outbreak, to understand how people incorporate this epidemic in their everyday thinking. A free association exercise elicited by Ebola was answered by 294 people from Spain and the content was analysed using Alceste software. First, results showed that Ebola was represented as inherently African. Second, it was also depicted as a global threat creating fear. People also felt anger, and they blamed political authorities and the mass media for the failure to manage this crisis. Finally, this research underlines the importance of the social representations to understand how current outbreaks are cognitively represented and emotionally faced as a key factor to appropriately manage future epidemics.

Keywords

Ebola, emerging infectious diseases, emotions, risk, social representations

This study examined the collective image of the 2014–2015 Ebola outbreak, to understand how people incorporate this epidemic in their everyday thinking. A free association exercise elicited by Ebola was answered by 294 people from Spain and the content was analysed using Alceste software. First, results showed that Ebola was represented as inherently African. Second, it was also depicted as a global threat creating fear. People also felt anger, and they blamed political authorities and the mass media for the failure to manage this crisis. Finally, this research underlines the importance of the social representations to understand how current outbreaks are cognitively represented and emotionally faced as a key factor to appropriately manage future epidemics.

In recent decades, emerging infectious diseases (EID) have frequently appeared all over

the world. They are particularly feared because they expand rapidly and are considered a physical (in some cases) but mostly a symbolic threat for citizens. The most widespread Ebola epidemic in history is currently ongoing in several West African countries and has undermined their already fragile health-care systems (Laverack and Manoncourt, 2015). Countries worldwide have been alarmed by this epidemic, due to the

The University of the Basque Country UPV/EHU, Spain

Corresponding author:

Nahia Idoiaga Mondragon, Departamento de Psicología Social y Metodología de las Ciencias del Comportamiento/ Facultad de Psicología Universidad del País Vasco, The University of the Basque Country UPV/EHU, Avenida Tolosa 70, 20018 San Sebastián, Spain.

Email: nahia.idoiaga@ehu.es; nahia.idoiaga@gmail.com

possibility of it spreading and also because of the high mortality rate that characterizes it. However, the global public health response has been criticized as 'too little, too late' (Sanders et al., 2015). But how is Ebola represented in the everyday thinking of Westerners? In this article we will answer these questions to promote a better understanding of current and future epidemics involving EID.

Since the 1980s, EID have been a part of media and political agendas, and have consequently been occupying space in the collective imaginary (Washer, 2010). The Ebola epidemic in 2014–2015 was the largest outbreak of the Ebola virus so far and presented new challenges to the global society (Laverack and Manoncourt, 2015).

From the perspective of Social Representations Theory (SRT), it is argued that beyond scientific knowledge about diseases, people understand and share common ideas through social representations (Jodelet, 1984, 1989; Moscovici, 1984, 1989). The SRT claims that one of the ways in which the unknown becomes known is through the anchoring process where new phenomena are named and classified on the basis of an existing order of concepts that are meaningful to the public (Bauer and Gaskell, 1999; Moscovici, 1973; Moscovici and Duveen, 2000; Wagner, 2007). In the case of new diseases, the relationship between new and previous diseases is often formed by an anchoring mechanism that integrates the understanding of a new disease through its configuration in terms of previous epidemics (Joffe, 1999; Vizeu and Bousfield, 2009). Therefore, when society must face a new EID, people usually use representations created in previous epidemics. That is, the process of anchoring links contemporary and past EID to one another in the public consciousness and precipitates an emotional response (Höijer, 2011; Joffe et al., 2011). So, the kind of analysis of current epidemics that this research undertakes provides a key to better understanding of new cases in the future (Sherlaw and Raude, 2013).

From this theoretical basis, Joffe and Haarhoff (2002) analysed how the British press and its readers understood the Ebola epidemic

of 1995 in Zaire. Their work revealed that the press and readers had a common image in which Ebola was represented as African, associated with African practices and seen as posing little threat to Britain. Readers also perceived the West, thanks mainly to its medical system, as impervious to Ebola. However, this study did not take place in the middle of the 'hot crisis' stage, so it might be argued that the responses are therefore in keeping with the sense of containment that might follow (Joffe, 2011).

It is to be noted that post-epidemic articles actually retain the idea of otherness, with the notion that conditions in the poorest countries may lead to an outbreak of future epidemics. Following this idea of otherness, extensive research by Joffe and colleagues (Joffe and Bettega, 2003; Joffe and Haarhoff, 2002; Joffe and Lee, 2004; Washer, 2004) has shown how disease outbreaks around the world have been viewed as originating in out-groups or 'the others' (Wagner-Egger et al., 2011). Furthermore, these studies found that out-groups in EID are construed as being at fault and accountable for dirty practices and immoral behaviour (Joffe and Staerke, 2007), and responsible for intentionally and malevolently plotting to disseminate the disease (Joffe, 1999).

The problem begins when people such as 'ourselves' start being affected by the new disease. In *The Risk Society*, the German sociologist Ulrich Beck (1992) argues that in post-modern society, the quality of the type of risks that we face is different from those faced previously. Compared to the risks faced by people in the past, the dangers we face today potentially have no limits, either geographic or temporal, increasing in turn the feeling that the epidemic can affect us (Washer, 2010). So when the threat becomes global, and people have no possibility of blaming others, governments are then blamed not only for the emergence of the new threat to human health, but also for the corruption and concealment of the problem which facilitated the spread of the disease (Washer, 2006).

Similarly, basing their approach on the idea of collective actors in relation to epidemics, Wagner-Egger et al. (2011) analysed the 2009

swine flu outbreak. They looked for representations of heroes, victims and villains in connection with swine flu. They concluded that the heroes of this epidemic were the experts. The health and political authorities received a positive valuation at the start, but were later perceived as ineffective. The villains of this health crisis were, on the one hand, the media, accused of using the risk communication for their own interests and, even worse, perceived as being puppets of evil powers at the highest level. On the other hand, the pharmaceutical industry was blamed for using the risk representation to its own economic benefit. Finally, the victims were seen to be the poorest and least developed countries. Notwithstanding, no really innocent victims were perceived to exist, as the latter countries were also blamed for their lack of hygiene, discipline and culture.

Finally, research in the field of social representations (Smith and Joffe, 2013) and EID highlights the role that the emotional context plays in symbolic thought and its relevance in making a topic recognizable and understandable. The SRT proposes that emotions do not distort cognition, but understands that both risk representation and emotions are a multifaceted risk response (Höijer, 2011; Joffe and Lee, 2004) in health crises. It has also been claimed that when perceived risk is high, so is the emotional response of individuals or groups, and this includes anger emotions (Millstein, 2003). Nevertheless, there is scarce research that analyses what is the particular emotional response created in representations of EID or identifies the emotions linked to each actor in the epidemic.

Objectives and hypotheses

The main goal of this article is to study the impact that the 2014–2015 Ebola outbreak had on public consciousness and the surrounding emotional response. To this end, this research examines the social representations developed in Ebola's global 'hot crisis' moment.

Due to the dimension of this Ebola crisis and the global perception of the risk society (Beck, 1992), the current outbreak is expected to be

represented as a global threat. People are likely to emphasize the possibility of a global spread of the epidemic. This global view of the risk is likely to create a strong emotional response in the public linked to fear emotions.

As in previous Ebola outbreaks, Ebola is expected to be linked with Africa (Joffe and Haarhoff, 2002). This is the result of 'the otherness' process, according to which westerners will probably feel that Ebola is more intensely linked with 'other people' (the Africans) than with themselves. In this way, people feel detached from the epidemic and this protects their identity.

In the same vein, the Ebola outbreak is likely to promote a blaming process (Washer, 2006), initiated particularly by the first infections in the Western countries. First, governments and political leaders will probably be blamed for the Ebola spread. They will not only be blamed for the emergence of the new threat to human health but, furthermore, for failing in the political management which facilitated the spread of the disease. This blaming process is likely to be especially linked with anger emotions and accusations towards the authorities. Other actors blamed will be the mass media and the pharmaceutical industry. They might be accused of using people's risk response for their own narrow economic interests.

Method

Sample

In this research, 294 people participated. The sample was gathered with students, professors and other employees of the University of the Basque Country, Mondragon University and Deusto University. A total of 76.2 per cent of the sample were women and the average age of the participants was 32.38 years, standard deviation (SD)=15.75 with an age range of 17–76 years. The questionnaires were carried out from August 2014 (when the World Health Organization (WHO) declared the Ebola epidemic a Public Health Emergency of International Concern) to the end of November 2014 (just before Spain

was declared free of Ebola), the time period when the Ebola crisis was at a 'hot crisis' point. The investigation was carried out in Spain because the first case of contagion in Europe occurred in that country in October 2014.

Design

To proceed with a content analysis of shared representations of Ebola, the technique of free word association was used. The theory of social representations argues that analysis of free associations across groups (Joffe and Elsey, 2014; Pereira de Sa, 1996) and contexts (Wagner, 1997) provides a clear procedure to identify the 'figurative nucleus' of the representation of epidemics. To perform this exercise, participants were asked in a questionnaire to provide a free response to the following question: 'What comes to your mind when you hear the word Ebola?'

Alceste software for lexical analysis (Reinert, 1983, 1990) was used to analyse the corpus of the texts, eliminating problems of reliability and validity in the text analysis (Klein and Licata, 2003, Reinert, 1996). Previous studies have shown that this technique of lexical analysis is usefully apt for analysing the content of social representations (Lahlou, 1996), concluding that the emergent results are consistent with those proposed by classic research in this area.

First, the initial corpus is broken down into Elementary Contextual Units (ECUs), which have the approximate length of a sentence or two (30–50 words) (Kronberger and Wagner, 2000). The corpus is analysed in terms of the presence of the whole words in the ECUs. ECUs and the reduced forms are used to create a contingency table, which shows the distribution of vocabulary per ECU. From this contingency table, a squared distances matrix is generated, meaning that two ECUs are close if they share some of the words analysed (Reinert, 1996).

Subsequently, a descending hierarchical cluster analysis is performed on this distance table, which yields classes of ECUs that best differentiate the vocabulary. In so doing, this software assists in the interpretation of texts. It

extracts classes of words that co-occur and that are best differentiated from other classes.

Following previous research with Alceste (Vizeu and Bousfield, 2009), the most significant vocabulary in each class was directed under three criteria: (1) an expected value of the word greater than 5, (2) proof of association of the Chi-square tested against the class ($\chi^2 \geq 3.89$ ($p=0.05$); $df=1$) and (3) the word is mainly in that class with a frequency of 50 per cent or more. Finally, as a complementary analysis Alceste also makes a multiple correspondence factor analysis produced from the descending hierarchical cluster analysis.

Results

The 'Results' section is structured into two sections. First, the shared representations about Ebola are examined focusing on the results of the free association exercise. Then, the emotional response and the risk representation linked to those representations are specified.

Shared representations of Ebola

The responses of the free association were analysed by the Alceste software. The full corpus had 17,572 words, and 2433 were unique words. Specifically, the descending hierarchical analysis divided the corpus into 622 ECUs and six kinds of ECUs were extracted from the most significant vocabulary in each class. Results of the analysis can be observed in Figure 1.

Results showed two main clusters, the first more closely linked to the West (classes 1, 5 and 2) and the second more linked with Africa (classes 3, 4 and 6). Following the division of the cluster analysis, in the first main cluster, the first class 'Fear of the spread of Ebola in the West' (28.25%) reflects apprehension about the possibility that Ebola may reach the West, as described in the next ECU: 'And if it arrives here, to the West, to Europe, what shall we do? It scares me and I am not the only one' (ECU58). Furthermore, the idea that people are more concerned about Ebola spreading to the West than about African victims is repeatedly stated:

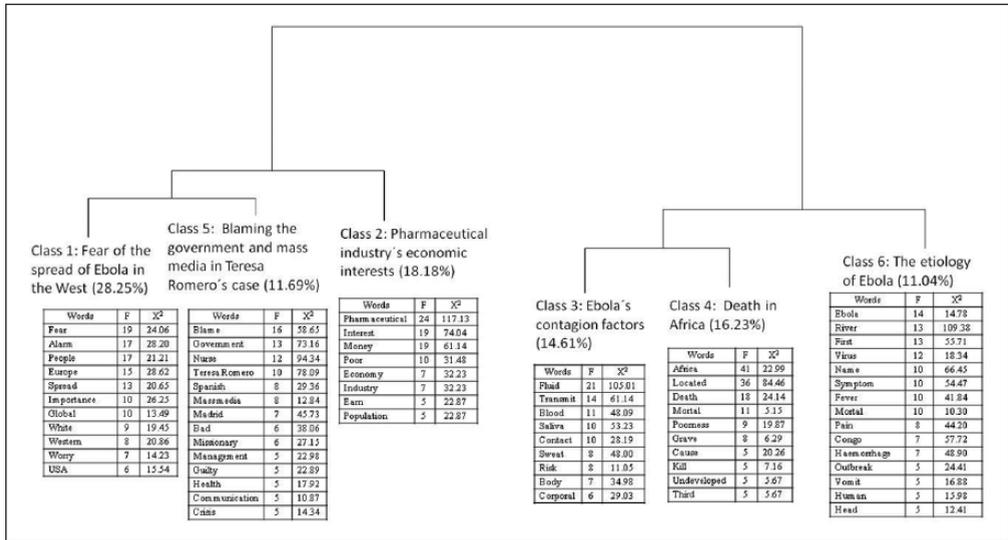


Figure 1. The hierarchical clustering dendrogram of the free association with the most frequent words and the words with the greatest association $\chi^2(1)$, $p < 0.001$.

‘Actually we do not care how many people die in Africa, all we want is Ebola not to reach Europe or America, where white people live. We keep serums and vaccines especially for whites, for ourselves’ (ECU197). Even so, some people still see this risk of a spread as something distant, like a science-fiction film: ‘It looks like a science fiction movie, everyone who is infected dies and if Ebola comes here ... I don’t know ... it seems like the apocalypse or something like that. We will all have to wear astronaut suits’ (ECU257).

Linked to the first class appears the ‘Blaming the government and mass media in Teresa Romero’s case’ (11.69%) class. This class refers to the first transmission of Ebola in Europe, the case of the Spanish nurse Teresa Romero. In fact, the results show that the Spanish government is blamed for this contagion and for the epidemic’s expansion caused by the government’s failure to manage the crisis: ‘I think that Spanish politicians are crooks and culprits. Ebola has come to Spain because of all the economic cuts that were made in the health system while they were stealing money; they are to blame for this crisis’ (ECU490). In addition, this class also

questions the mass media and their coverage of this crisis: ‘The media are selling everything as if it was the apocalypse. I link Ebola to government mismanagement and media misinformation’ (ECU618).

To finish with this first cluster, the classes about fear of Ebola and blame on the authorities are linked with the class ‘Pharmaceutical industry’s economic interests’ (18.18%). People feel that the pharmaceutical industry uses the fear of expansion spread of the disease in their own interest: ‘All this is a trick of the pharmaceutical industry to make money by spreading panic. I am afraid, with the ghost of fear they are able to threaten a part of the population while they are getting richer’ (ECU101).

The second main cluster is much more strongly linked to Africa than the first. In this second cluster, as a first step the classes ‘Ebola’s contagion factors’ (14.61%) and ‘Death in Africa’ (16.23%) are linked. In the class ‘Ebola’s contagion factors’, the epidemic is described quite scientifically, underlining the ways whereby it is transmitted: ‘It is a virus that usually spreads through saliva, sweat, and fluids that the body emanates. It is a very dangerous

disease and it first spread to humans through people eating bats' (ECU521). In the class 'Death in Africa', Ebola is linked with Africa, specifically as a poor, underdeveloped third world continent. Africa is related to dirt and poverty, as a devastated country far away from the West. People believe that these elements might be the cause of the high mortality rate of the epidemic in Africa: 'It is a disease that has been killing many people in Africa for years. Africa=poverty=death' (ECU211). Finally, the class 'The etiology of Ebola' (11.04%) is linked to this second cluster. This class focuses on Ebola's origin in Africa and its symptoms: 'It was transmitted to humans by bats. The name comes from a river called Ebola in Africa. It is a hemorrhagic fever which is accompanied by a high mortality rate' (ECU392). Thus, in the second cluster the nature of Ebola is intrinsically linked with Africa's poverty.

Shared emotional response to and risk representation of Ebola

To more deeply analyse the emotional response and representation of risk linked with Ebola, we first identified emotional words significantly linked to each class. Results showed that the first main cluster is more strongly related to emotions, such as fear and blaming processes (classes 1, 5 and 2), and the second cluster has a more descriptive perspective (classes 3, 4 and 6). Starting from the first main cluster, fear ($F=19$; $\chi^2=24.06$), terror ($F=6$; $\chi^2=66.67$), alarm ($F=17$; $\chi^2=28.20$) and worry ($F=7$; $\chi^2=14.23$) were linked to the class 'Fear of the spread of Ebola in the West'. Blame ($F=16$; $\chi^2=58.65$), anger ($F=5$; $\chi^2=12.79$), risk ($F=4$; $\chi^2=6.73$), dread ($F=2$; $\chi^2=5.76$) and guilt ($F=3$; $\chi^2=22.89$) were linked to the class 'Blaming the government and mass media in Teresa Romero's case'. Finally, fear ($F=13$; $\chi^2=3.35$), anger ($F=2$; $\chi^2=3.35$) and risk ($F=4$; $\chi^2=2.53$) were linked to 'Pharmaceutical industry's economic interests'. In the second main cluster, only the class 'Ebola's contagion factors' appeared to be linked with the word risk ($F=8$; $\chi^2=11.05$), but neither 'Death in Africa' nor 'The etiology of Ebola' were related to risk or

emotional words. Therefore, analysis of the risk and emotional words shows that the emotions and the risk representation are mainly linked with the first main cluster, that is, with the West, and the relationship with Africa is softer.

The multiple correspondence factor analysis derived from the descending hierarchical cluster analysis (Figure 2) illustrates the previous results.

The words that most prominently contribute to the factors are projected on the factor plane that intersects factors 1 (X axis) and 2 (Y axis). Factor 1 polarized, on the one hand, the Ebola epidemic as a disease, with words that describe the aetiology of the epidemic: causes, symptoms, contagion factors, geographical location, medical description and so on. On the other hand, the actors in the epidemic: the pharmaceutical industry, Africans, Westerners, the mass media and the government are polarized. In factor 2, it is possible to see more clearly the distribution of the actors in the epidemic and to analyse exactly what emotional response or words are linked to each actor. Therefore, Africa or Africans are represented at a close distance from the words suffer and pity, whereas Westerners (America, Europe) appear on the figure near the words fear, worry, terror and alarm. The mass media is located close to the words risk, blame and anger. Finally, the Spanish government, in the context of the case of Teresa Romero, lies close to the words blame, anger, dread and guilty.

On balance, the emotional response is mainly linked with the West and Western actors. First, the emotions of fear, terror or dread are linked with the global expansion of Ebola and especially with its arrival in the West (as in the case of Teresa Romero). Second, there is a strong emotional response of anger linked to the blaming process directed especially towards the governments but also towards the mass media. Furthermore, people seem to feel angry with the pharmaceutical industry, even though they do not blame it directly. Finally, people feel pity for Africans and their suffering.

Where risk representation is concerned, participants seem to link it with contagion factors

and the contagions in the West created a strong emotional response of fear, even though only three contagions took place in Europe and the United States.

Ebola is also inherently linked to Africa (Joffe and Haarhoff, 2002). Indeed, the image of the disease is linked with a stereotyped Africa, an underdeveloped or third world region where diseases spread rapidly due to poverty conditions. Indeed, it is noteworthy that participants in the study describe the whole continent as a death land. They neither specify African countries where Ebola is active, nor even the zone where Ebola is located (West Africa). Africa is represented as a whole and as the seed bed for future epidemics (Cooke, 1996), far away from the west, in the land of 'the others'. So, as in previous studies (Joffe and Bettega, 2003; Joffe and Haarhoff, 2002; Joffe and Lee, 2004; Washer, 2004), the 'othering' process emerges in this study through the association of Ebola with Africa. EID such as Ebola are still linked with others and detached from the self. The image of Ebola as a science-fiction film is a symbol of that detachment produced to protect self-identity.

There is also an emotional response linked to the othering process, expressed in pity towards the African victims. Pity is an ambivalent emotion, comprising both compassion and sadness, and it results from appraising another's negative outcome as uncontrollable (Weiner, 2005). Previous research has found that groups stereotyped as low on competence but high on warmth elicit pity (Cuddy et al., 2007). So, it is not only that people link Ebola with an underdeveloped Africa, but they further assume that Africans are not sufficiently competent to cope with EID.

Participants' responses indicate that the main actors in the epidemic are involved in a process of blaming. First, the Spanish government is considered guilty of the arrival of Ebola in Spain and of nurse Teresa Romero becoming infected. People blame it not only for the emergence of the new threat to human health, but also for its corruption and for not having invested enough money in the health system which facilitated the spread of the disease (Sanders et al., 2015;

Washer, 2006). Consequently, as predicted by the third hypothesis, anger messages against the authorities clearly emerged in the discourse. Second, the mass media were also linked with the risk representation and were blamed both for disseminating inappropriate information and contributing to spread sensationalizing risk messages. Finally, pharmaceutical companies are considered as actors who take advantage of people's fear and risk representation to their own benefit. In post-modern capitalist countries, it is assumed that pharmaceutical companies will pursue their own economic interests at any cost. This assumption creates anger in society even though the pharmaceuticals do not seem to be directly blamed for it.

The literature indicates that this pattern of accusations against the villains of EID is becoming frequent and recurrent. It can seriously influence how the authorities' information is transmitted in future health epidemics since both the authorities and the media are perceived as villains who use risk representation and fear to their own benefit. Some authors (Joffe, 2011), for instance, have pointed out that members of the public may feel that they have been conned by the authorities who are more interested in pleasing big industrial lobbies (such as pharmaceuticals) than in protecting their fellow citizens. This idea emerges together with the feeling that the media have exaggerated the disease risk (Rubin et al., 2010). So, neither the authorities nor the media can be trusted to convey the magnitude of potential dangers that affect citizens and this produces 'EID fatigue' (Joffe, 2011). 'EID fatigue' is a consequence of having experienced so many health alarms that eventually affect only a few people (Joffe, 2011; Sherlaw and Raude, 2013).

In a nutshell, as we feel ourselves to be part of a global risk society, Ebola's expansion and the possibility of contagion are of particular concern to us, and this is what creates the emotional response to EID and how their risk is represented. Furthermore, Westerners link Ebola with a stereotyped Africa as a way of protecting their self-identity, representing Africa as an underdeveloped country with little ability to

cope with EID. Moreover, the authorities and mass media are blamed for the spread of epidemics, reinforcing the possibility of creating fatigue due to EID. This pattern of emotional response is becoming habitual in the case of new EID, and it should be analysed in more depth if we are to propose new ways of channelling it. In addition, this study suggests that the emotion of anger should be added to the 'EID fatigue' theory, because it could multiply the effects of fatigue due to EID on the public.

The public in modern societies is facing and will repeatedly face the threat of emerging diseases such as Ebola. Understanding the patterns linked to the current epidemics and knowing how they are cognitively represented and emotionally faced give us a tool with added value for understanding how people incorporate EID in their everyday thinking and provide information about how to appropriately manage future epidemics.

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