



## Jean Monnet Module: Disaster Risk Management in the framework of EU Integration

Disaster recovery problems – e.g. political will, economics, uneven distribution of knowledge and resources, education, public awareness, culture, religion, gender  
and ethnicity

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## **Outline of presentation**

### **● Risk Perception**

#### ➤ *Risk Perception Paradigms*

- *Psychometric Paradigm*
- *The Social Amplification of Risk Framework (SARF)*
- *Cultural Paradigm*

#### ➤ *Heuristics and Biases in Risk Judgements- Environmental risk*

#### ➤ *Emotions influence Risk Perceptions*

#### ➤ *Sociodemographic differences in risk perception- Disaster Risk*

### **● Case study : *The Socio-economic and cultural context of information, communication, preparation and attitude towards natural hazards in Albania***



*Bosnia and Herzegovina, Croatia, Serbia*

*May 2014*



- the evacuation/displacement of over 990,000 people
- loss of tens of thousands of homes, livestock, agricultural land, schools, hospitals and businesses
- loss of 79 lives



**Bosnia and Herzegovina**  
**Economic impact € 2.04 billion**



*Macedonia  
August, 2015*



- affecting 85,000 people

Damages- € 30 million





pixtastock.com - 54915295

## *Albania* *November 2019*



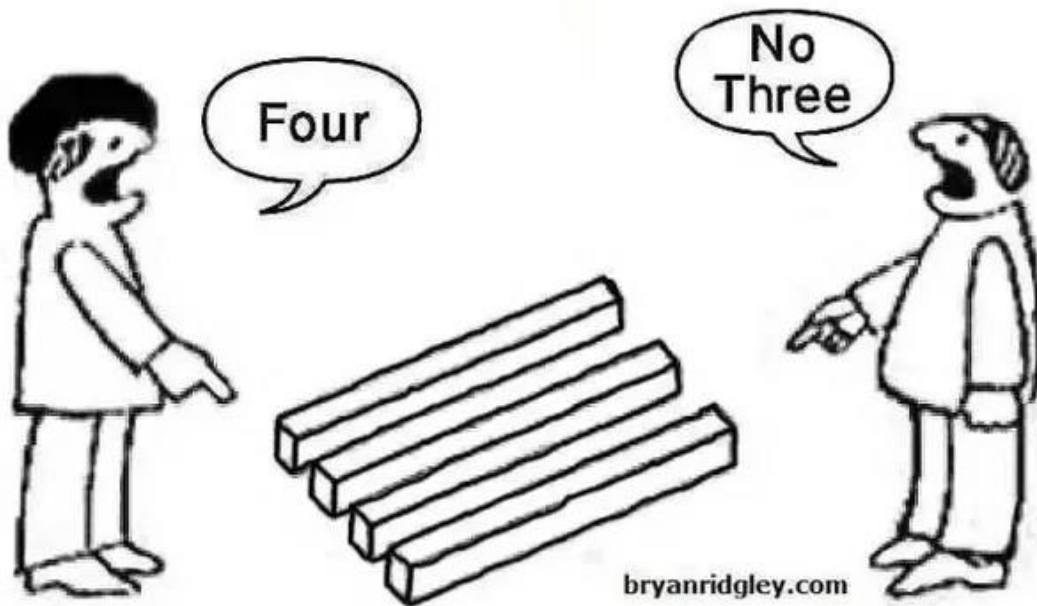
- 202,291 people affected
- 51 fatalities and injured at least 913 people
- 321 educational institutions in the 11 affected municipalities, representing 24% of all educational establishments



Losses **8.76 million EUR**

# *Risk perception*

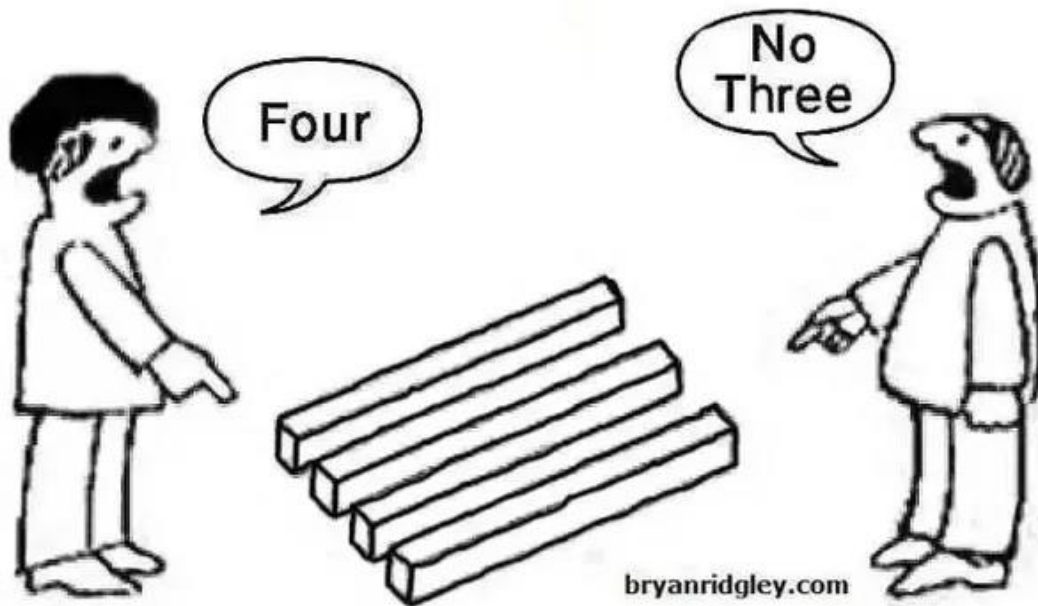
Reality can be so complex that equally valid observations from differing perspectives can appear to be contradictory.



- inherently psychological construct
- influenced by internal factors that often appear to be quite discrepant from objective evidence of actual risk
- “Risk is perceived differently by different people”.

# Risk perception

Reality can be so complex that equally valid observations from differing perspectives can appear to be contradictory.



- Thomas Theorem that says that an objective reality does not always matter; it is one's perceptions that matter
- perceiving rare events as posing more threat to survival than common, everyday, but much more frequent "natural" causes of death or harm.
- consequences of these **nonobjective and distorted risk perception**
- panic and widespread fear of quite unrealistic threats

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# The consequences of nonobjective risk perception

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Public perceptions and concerns can influence the spending priorities of government more than actual risks identified by experts

*risk assessment* make their estimates of actual risk based upon objective information such as frequency data from past events and annual mortality statistics.

*risk perception* incorporates far less objective evidence and relies more exclusively on an individual's emotional intensity or state, his or her history of personal experiences, and sociocultural factors within the community in which the individual resides.



- leading to biases in risk perception.
- one's worldview and perceptions of risk are known to be significant drivers of disaster planning



# *Risk perception*

## Schools of thought on risk perception

### **Psychological approach**

The psychometric paradigm: risk can be understood as a function of general properties of the risk object

Key researcher: P. Slovic

### **Cultural theory**

Risk seen as the joint product of knowledge of the future and consent about the most desired prospects

Key researcher: M. Douglas

### **Social amplification of risk framework**

Concerns about hazards are amplified or attenuated by social, institutional, and cultural processes

Key researcher: R. Kasperson



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# Psychometric paradigm

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- Individual cognitive characteristics that quantify and predict risk
- “How Safe is Safe Enough?,” Fischhoff, Slovic, Liechtenstein, Read, and Combs- 1978
- Why different technologies and activities might inspire such different risk reactions?
- Risk can vary across many characteristics:
  - How immediately do the effects take place?
  - How many people are affected at once?
  - How controllable are the consequences felt?

“expressed preference” approach to risk perception, Fischhoff et al. show that perceptions of risk for everyday activities and technologies tend to load onto two orthogonal dimensions, which they called **DREAD**

**RISK** and **UNKNOWN RISK**.



# Dread Risk and Unknown Risk

## Factor analysis for psychometric tool

**UNKNOWN RISK**  
Not observable  
Unknown to those exposed  
Effect delayed  
New risk or hazard  
Risk unknown to science

**NO DREAD**  
Controllable  
Not catastrophic  
Not fatal  
Equitable  
Low risk to future  
Risk decreasing  
Voluntary

**DREAD**  
Uncontrollable  
Catastrophic  
Fatal  
Not equitable  
High risk to future  
Risk increasing  
Not voluntary

Observable  
Known to those exposed  
Effect immediate  
Old risk  
Risk known to science  
**KNOWN RISK**



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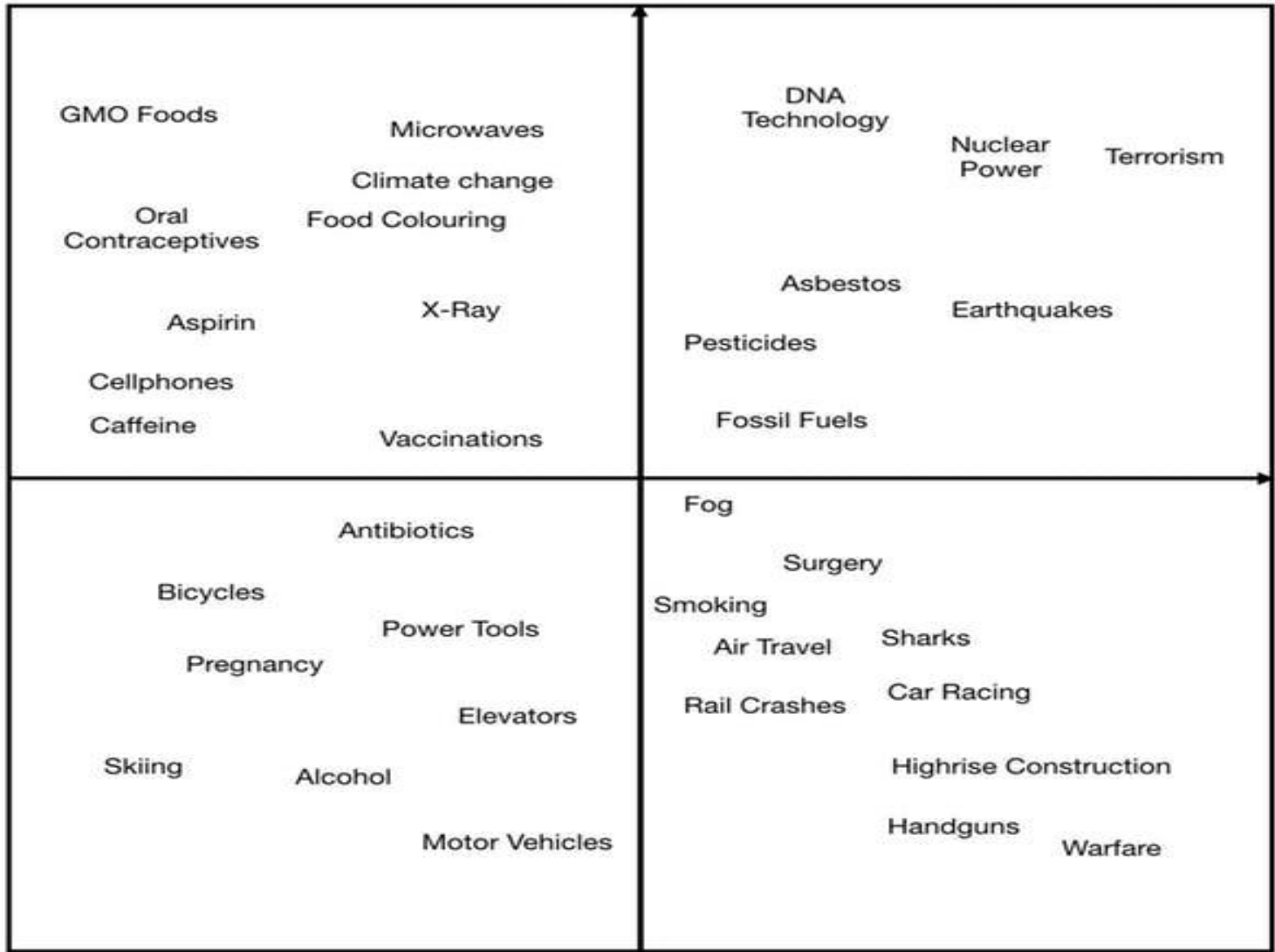
# Psychometric paradigm

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- Relationship between these two factors, the **catastrophic potential** and **perceived control of risk**, largely determines how severely individuals either exaggerate or minimize their judgments of risk.
- The higher the level of **dread and lack of control** the greater the sense of perceived risk and the greater the public concern aroused by an anticipated event.
- 2 factors remarkably **successful** in predicting the distortion of risk across a variety of anticipated hazards
- A direct application to the development of government supported risk prevention and anti-terrorism programs.



*Unknown to science, unobservable, delayed effect, new, unfamiliar*

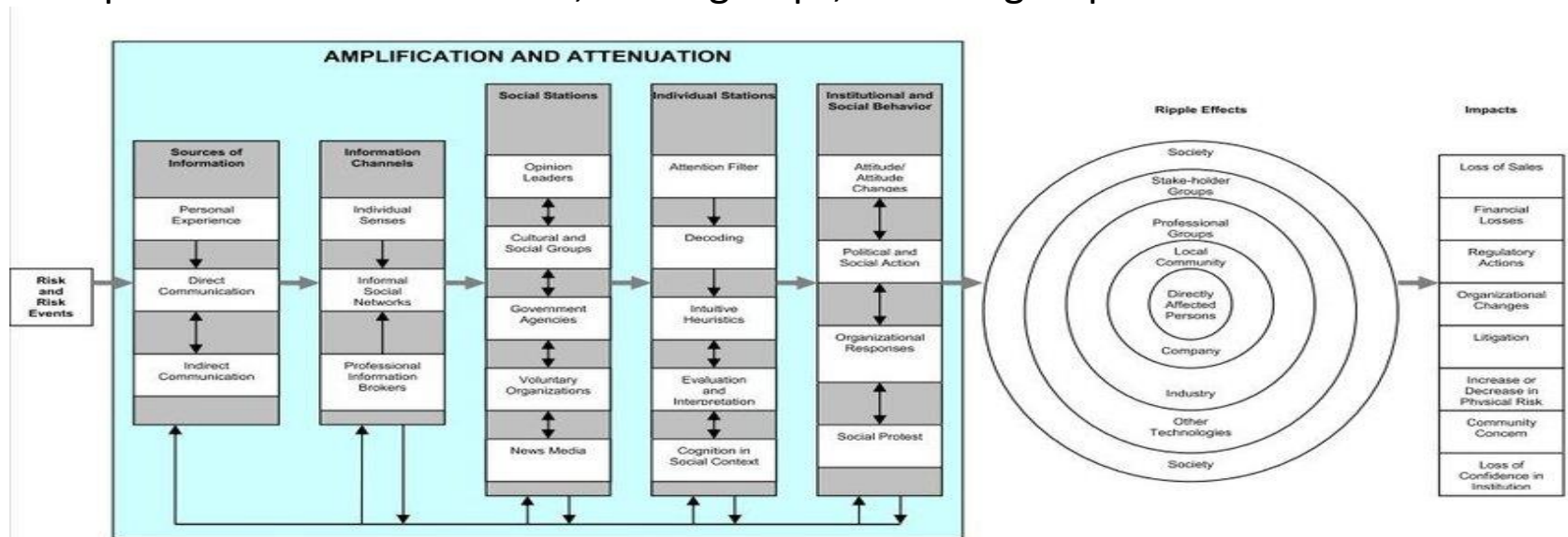


***Dread***  
*catastrophic*  
*fatal*  
*global*  
*inequitable*  
*uncontrollable*  
*involuntary*  
*future generations*  
*hard to reduce*  
*increasing*



# The social amplification of risk framework (SARF)

- Kasperson et al. (1988)- hazardous event leads to direct and indirect societal impacts
- physical event
- Interpretations becomes messages that are communicated to others
- amplification stations- media, social groups, cultural groups



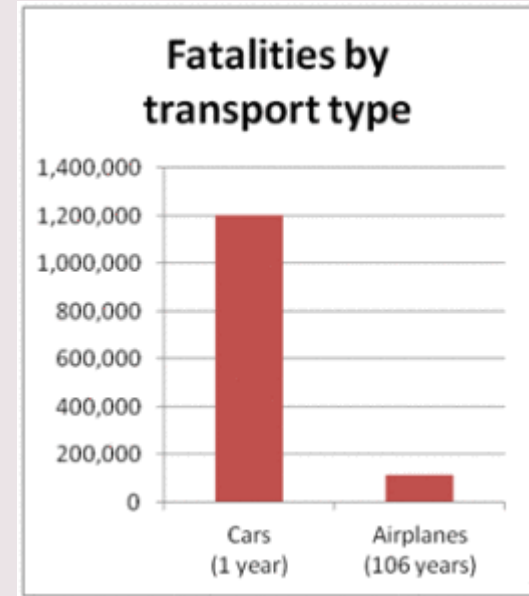
# The social amplification of risk framework (SARF)

## •Amplification Vs Attenuation

- amplification refers to the process by which a risk is deemed unlikely by analysts yet goes on to have significant secondary consequences,

- attenuation occurs when a risk that is to be considered significant is not given enough societal attention and concern

- driving is far riskier than flying, most people do not approach driving with the same level of fear as they approach the prospect of flying on commercial airplanes. These attenuated risks are a result of the events themselves and the particular culture where they reside.



## Cultural paradigm

‘Why is one technology feared in one society or social context and not in another?’

Douglas and Wildavsky (1982) started a discussion about the impact of values and cultural settings on the perception of risks

This paradigm views interpretation of environmental risk and danger as “socially and culturally framed” and shaped by social structure within which individuals are entrenched.

Developed group/grid typology, 4 prototypical patterns

Grid-control

Group-social commitment





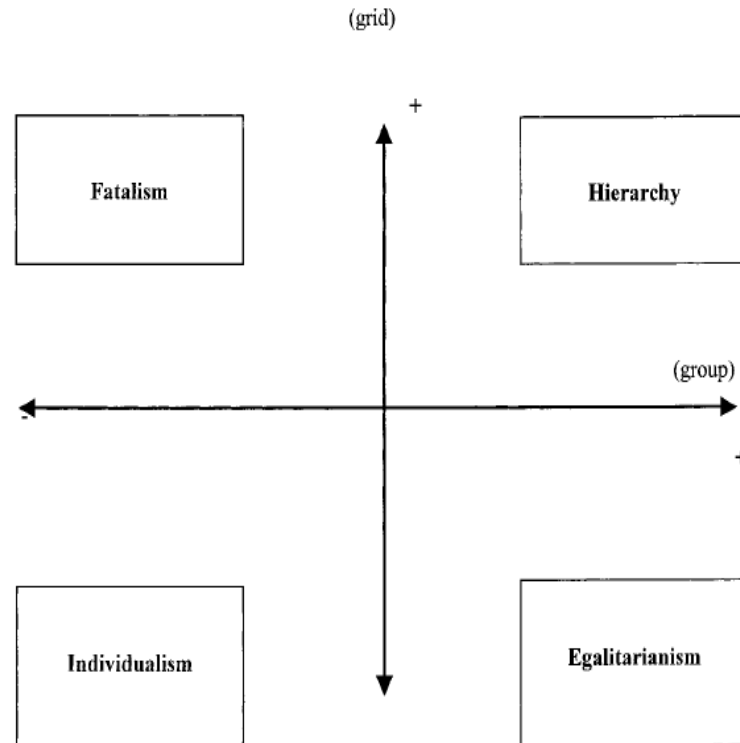
## Cultural paradigm

### *Hierarchic orientations*

accept risks as long as those risks are justified by governmental authorities or experts.

Fear- Social order risk ,

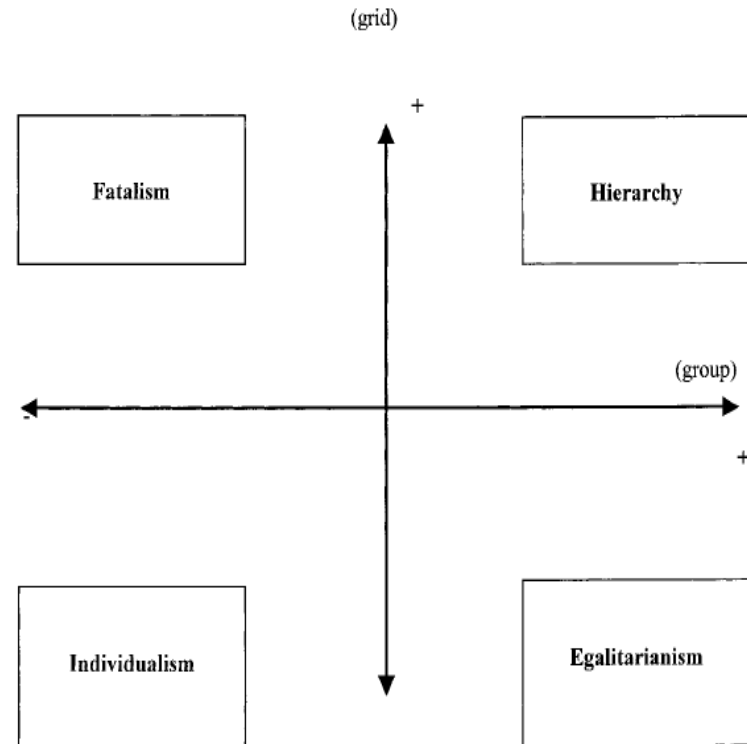
*Egalitarians* are assumed to oppose risks that will inflict irreversible dangers on many people or on future generations. They distrust risks that are forced on them by the decisions of a small elite of experts or governmental authorities.



## Cultural paradigm

**Fatalists** have a strong orientation toward socially assigned classifications, but without a group identification. They try not to know and not to worry about things that they believe they can do nothing about.

**Individualists** perceive risk as opportunity. They fear risks that could limit their freedom.



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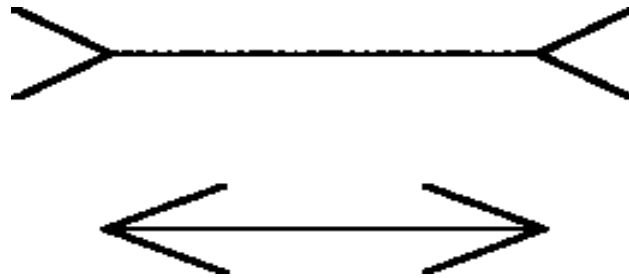
# Heuristics and Biases in Risk Judgements

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how people use their experience to find answers to questions that arise or to improve their skills

as a quick way or a **shortcut** to more efficient judgments

*Which of the two segments is longer?*



Heuristics that have evolved over the years can be thought of as the central unit of the brain (hardware). But unlike programs, heuristics are such an important tool that cannot be reprogrammed. Just as optical illusion illustrated heuristics, when used wrongly, can cause mental errors, in the case of the risk management process.

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# Heuristics and Biases in Risk Judgements

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## Availability heuristic

1. indicates that events that are **easily** perceived by the mind are more likely **to occur**  
people were more concerned about global warming on days warmer than usual
2. frequency of an event leads people to **exaggerate the likelihood** of its occurrence.  
Therefore, media coverage of an accident or catastrophic event may affect the perceived probability.



# Heuristics and Biases in Risk Judgements

## The anchoring-and-adjustment heuristic

1. when making estimates, people often start out **from a reference point** that is salient in the situation (the anchor) and then adjust this first estimate to arrive at a final judgement.
2. In most cases, the adjustment is insufficient, and the final estimates are biased towards the anchor

People who were exposed to a high (10 °F) compared to a low (1 °F) initial anchor not only gave higher estimates for the increase in the Earth's temperature but were also more likely to believe in global warming and were "Willing To Pay" more to reduce global warming



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# Heuristics and Biases in Risk Judgements

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## Optimistic Bias

1. The tendency to perceive oneself **as less at risk of negative** events than others

2. Overestimate the risk to others

People tend to perceive risks of climate change, mobile phones, radioactive waste, and genetically modified food to be smaller for themselves than others

3. Can greatly affect the **risk management** process as they may fail to take action to prevent a personal risk even

4. Personal experience with a hazard also diminishes the optimistic bias

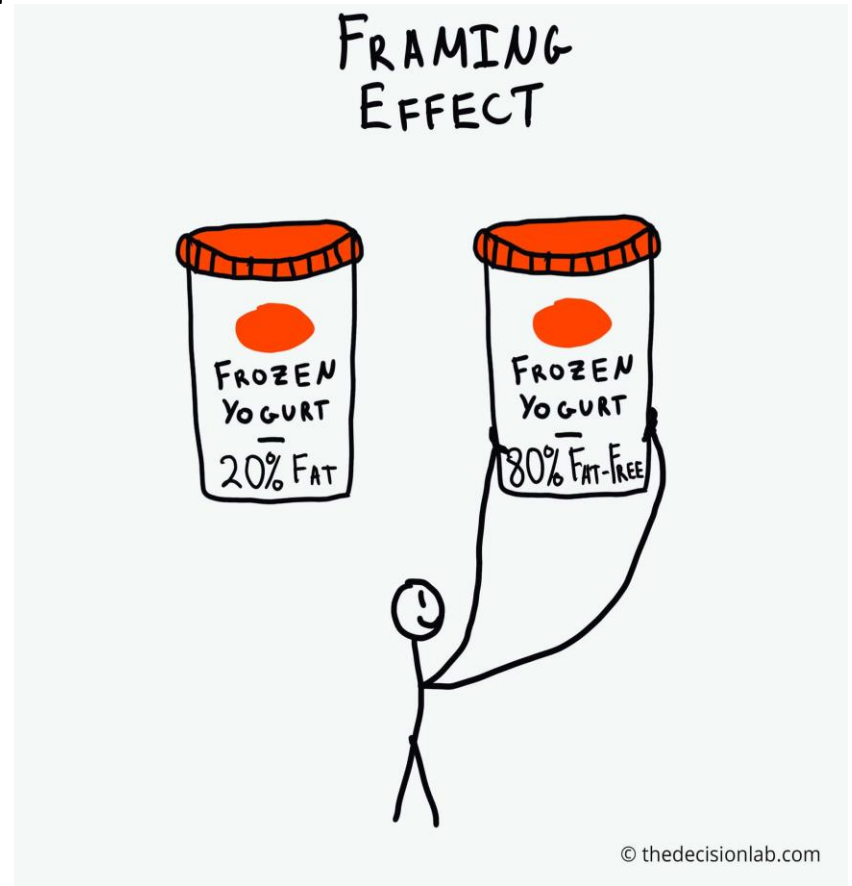


# Heuristics and Biases in Risk Judgements

## Framing of a problem

1. Framing effects refer to the finding that different descriptions of otherwise identical problems can alter people's decisions
2. One common explanation for framing effects is that a loss is subjectively experienced as more devastating than the equivalent gain is gratifying

people perceived environmental problems (e.g. river quality, air quality) as more important when the opportunity of restoring a previous better state (i.e. undoing a loss), rather than improving the current state (i.e. producing a gain), was given



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# Heuristics and Biases in Risk Judgements

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## Framing of a problem

Participants were asked to choose one of **two airline tickets**. The tickets were identical except that the 'green' option was more expensive, because it included a carbon fee. This fee was framed either negatively (as a tax) or positively (as an offset).

As expected, the green option was chosen more frequently when it was framed as an offset rather than as a tax.

Strikingly, this effect was moderated by political affiliation. In particular, when framed as a tax, the preference for the green option declined from Democrats to Independents and to Republicans, seemingly reflecting Republicans' dislike of taxes.





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# Emotions influence risk perceptions

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## Importance of emotions for risk evaluations and decision-making

people focus on the consequences of a risk, they experience consequence-based emotion

judge risks **as higher** when we feel **negative** about an activity, but we judge risks **as lower** when we feel **positive** about.

different specific emotions can have differential impacts on perceived risks

- ✓ **fear is associated with evaluating situations as uncertain and uncontrollable, leading individuals to perceive events as more risky.**
- ✓ **anger predisposes individuals to evaluate events as highly certain and controllable, leading them to perceive events as less risky.**



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# Emotions influence risk perceptions

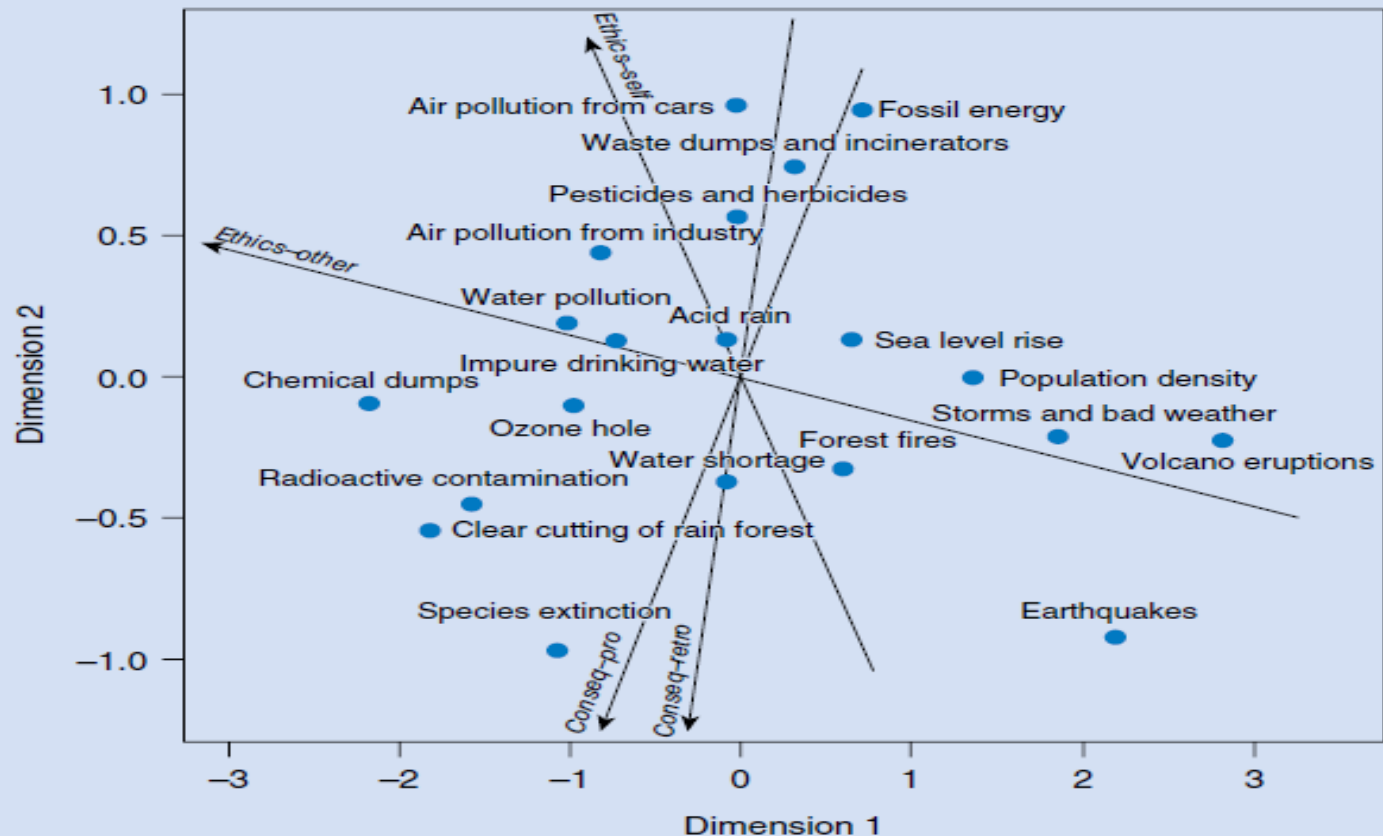
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## Importance of emotions for risk evaluations and decision-making

1. people focus on the consequences of a risk, they experience consequence- based emotions.
  - **prospective** (e.g. fear arising from the anticipation of harm)
  - **retrospective** (e.g. sadness triggered by an experienced loss)
2. focus on moral rightness, they experience ethics-based emotions
  - **towards oneself** (guilt when taking blame)
  - **towards other people** (outrage when blaming others)



# Emotions profile of risk



**Figure 2.1** Emotional reactions to environmental risks. Display of a multidimensional scaling of hazards based on emotional reactions to them. Vectors fitted into the configuration constitute emotion types. Source: Reprinted from Böhm (2003), with permission of Elsevier.

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# Emotions influence risk perceptions

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## Importance of emotions for risk evaluations and decision-making

- Emotional reactions to natural risks (e.g. earthquakes) are generally weaker than those to risks that are caused by humans.
- Positive emotions are also important in how people perceive and respond to environmental risks (Böhm and Pfister 2015).
- support for climate change policies has been found to be strongly associated not only with worry but also with hope



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# Sociodemographic factors

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## 1. Age

Armas and Avram (2008) conducted a study of earthquake risk perception in Bucharest, Romania, and found that age was negatively correlated with ability to predict events and positively associated with the potential impacts on life and personal security.  
while older ages are more tolerant

## 2. Education

Armas (2007) shows that grown-ups and individuals with higher levels of education are less tolerant of natural risk

## 3. Religion

Religious subjects generally perceived greater possible disaster impacts and had an overall greater level of concern with potential disasters than did non-religious respondents



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# Sociodemographic factors

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## Gender

1. One of the most important demographic variables for research of risk perception
2. Gustafson reviewed several quantitative and qualitative studies in risk perception, and suggested that gender differences may differ among various hazards.
3. Males may concern more about health and safety risks, industrial accidents, and physical violence, although females may worry more about environmental risks, overexertion injuries, infectious diseases, and sexual assault.
4. Armas, studied risk perception of residents in Romania, found that, compared with males, females had higher risk perception.
5. Furthermore, for the three natural disasters of flood, storm, and earthquake, Plapp found that earthquake was the only one that females' risk ratings were higher than those for males.



# Case Study

*The Socio-economic and cultural context of information, communication, preparation and attitude towards natural hazards in Albania*

***Pojani & Hudhra 2018***

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# Case –Study

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## Objectives

1. Level of awareness of disaster risk, and the factors that affect risk perception
2. Disaster risk perception and risk communication

## Methodology

Case study - qualitative and quantitative data analysis.

Four flood prone areas of Albania have been chosen for this purpose:

Dajç area in Northern Albania,

Fier and Novosela area in South Albania,

Lana's river zone in Tirana (Central Albania).

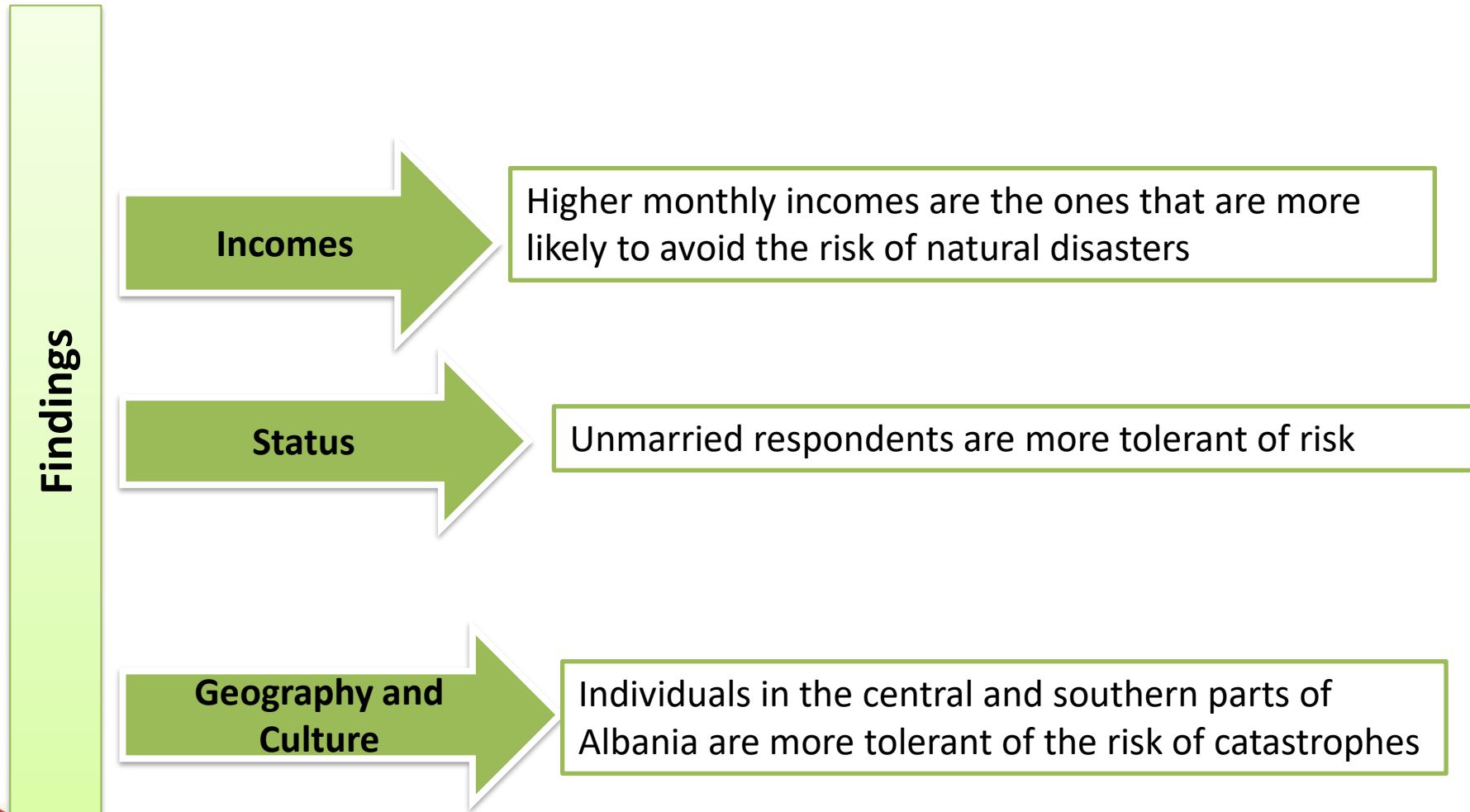
Observation and semi-structured interviews and public reports review was used to triangulate the findings.

A total of **104 interviews** were completed.

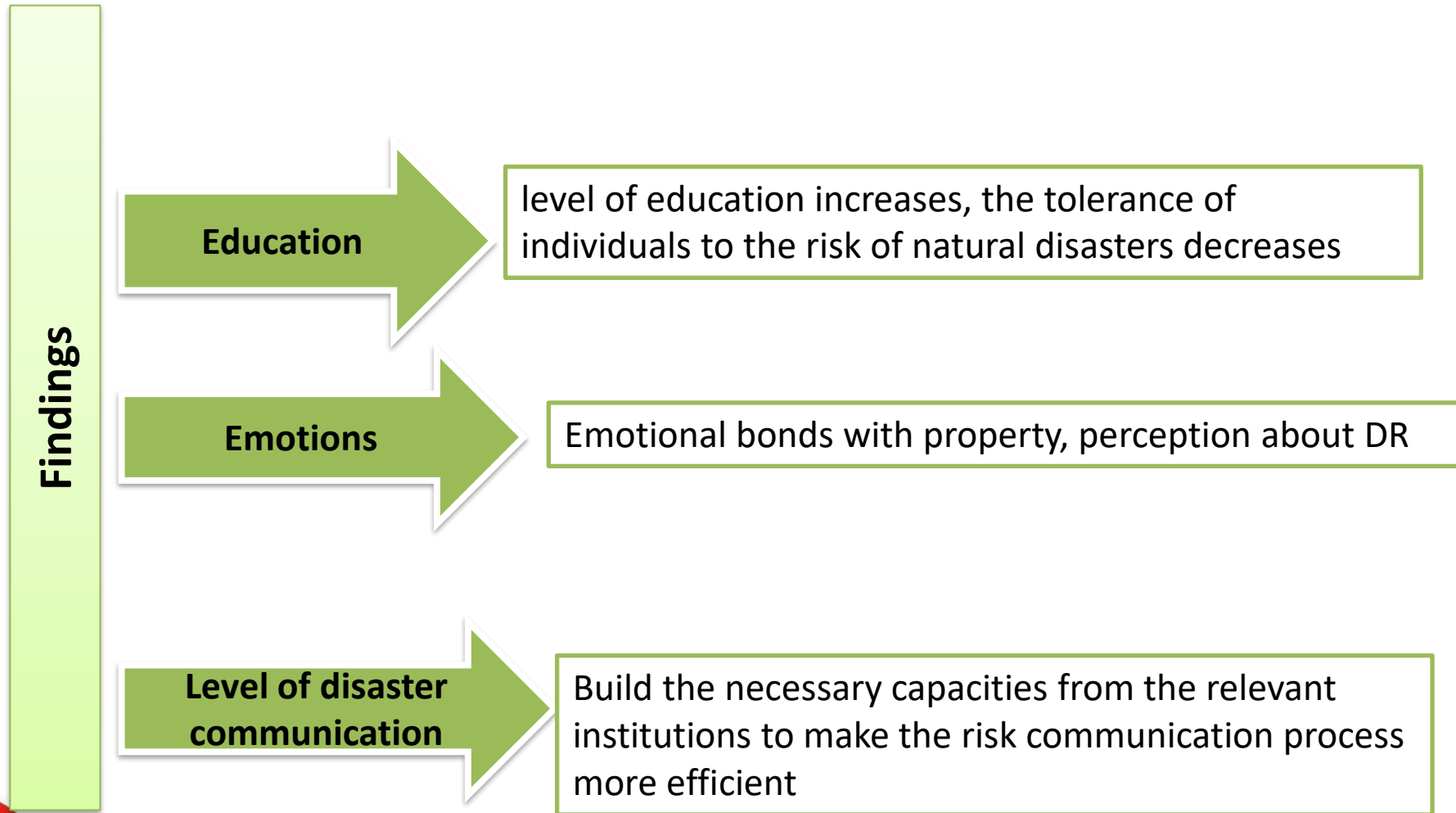




# Case Study



# Case Study



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# Conclusion

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- ❑ risk perception plays an important role in the human response to natural and man-made disasters
- ❑ contributes to decision making for risk management and disaster mitigation
- ❑ effective public education in regard to individual, family, and community mitigation and coping could benefit greatly from the research evidence on risk perception
- ❑ related public policy making national disaster-insurance program or implementation of public disaster-warning systems and evacuation plans should be informed by a better understanding of factors related to risk perception



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Thank you  
for your attention

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