From consciousness to denial of risk in social media:

A model for the automatic detection of socio-psychological processes

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The (problematic) issue

Inaction or ineffective action **in front of risks exposing events**, such as

Climate change, Covid-19 pandemic, …

A recent example

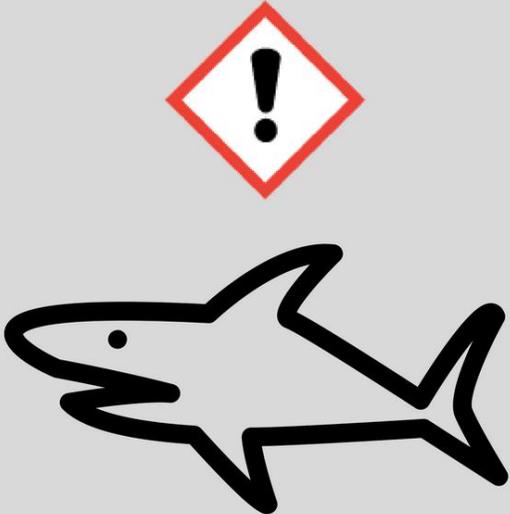"We are on a highway to climate hell **with our foot on the accelerator**"
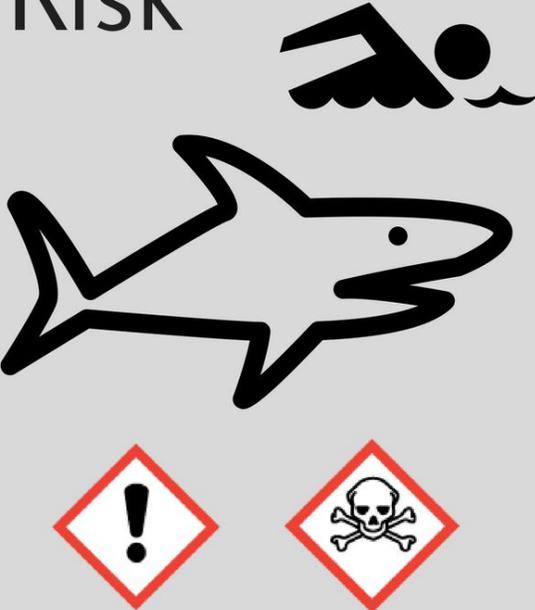
António Guterres,

UN chief at Cop27 climate summit

The concept of «risk» from a psychosocial perspective

Technical perspective (experts)
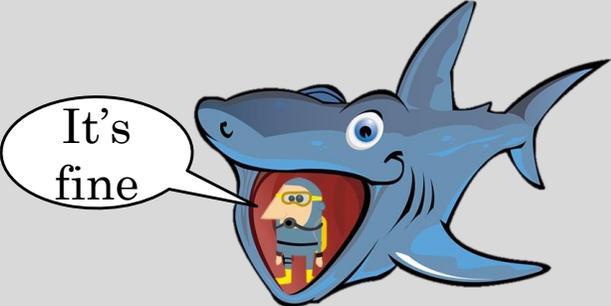
Lay perspective (common sense)

How can we have different constructions of (the same) risk?

Failure to recognise the risk

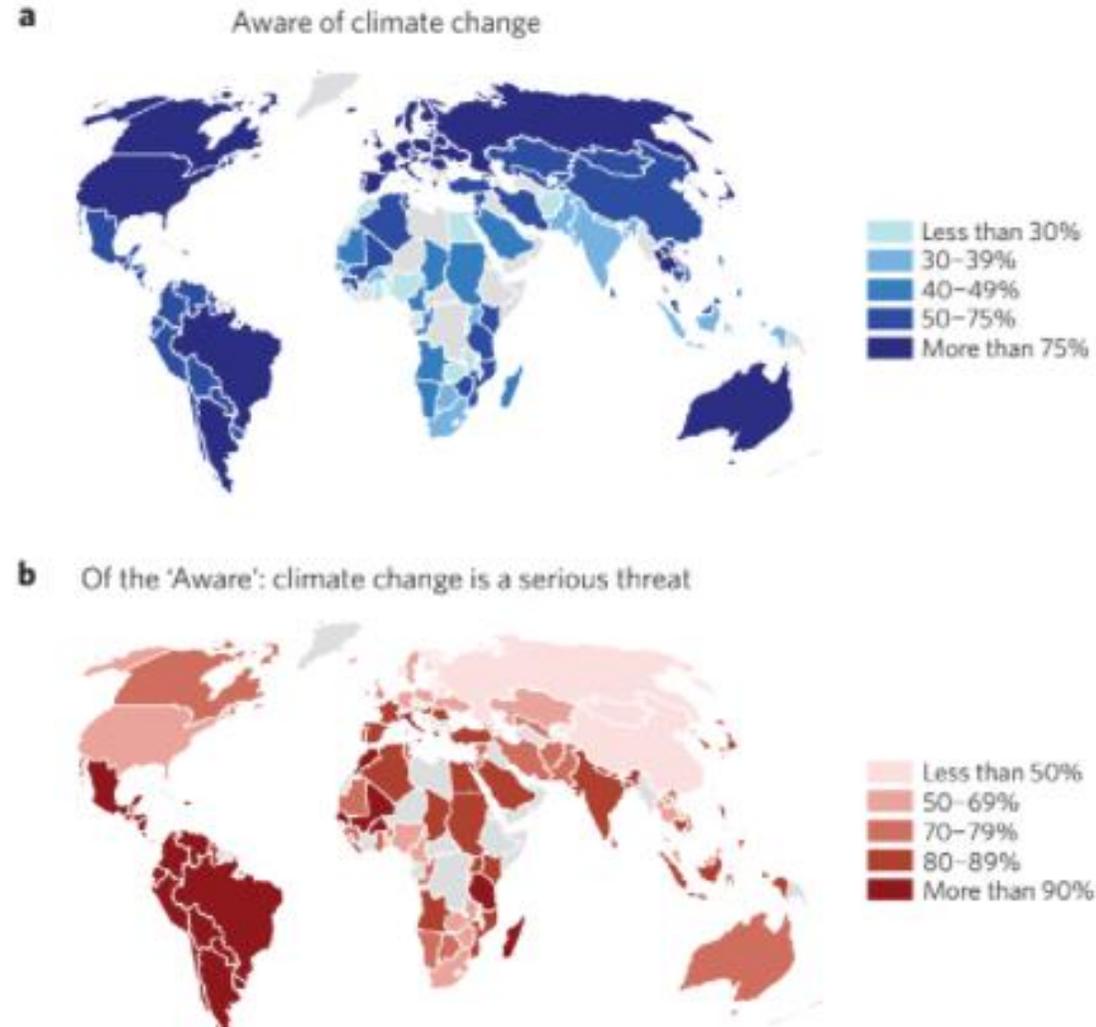The existence of a risk is questioned

Failure to recognise risk as such

Being aware of the presence of a problem…

…does not mean considering it a threat

a   Aware of climate change

Less than 30%
30–39%
40–49%
50–75%
More than 75%

b   Of the 'Aware': climate change is a serious threat

Less than 50%
50–69%
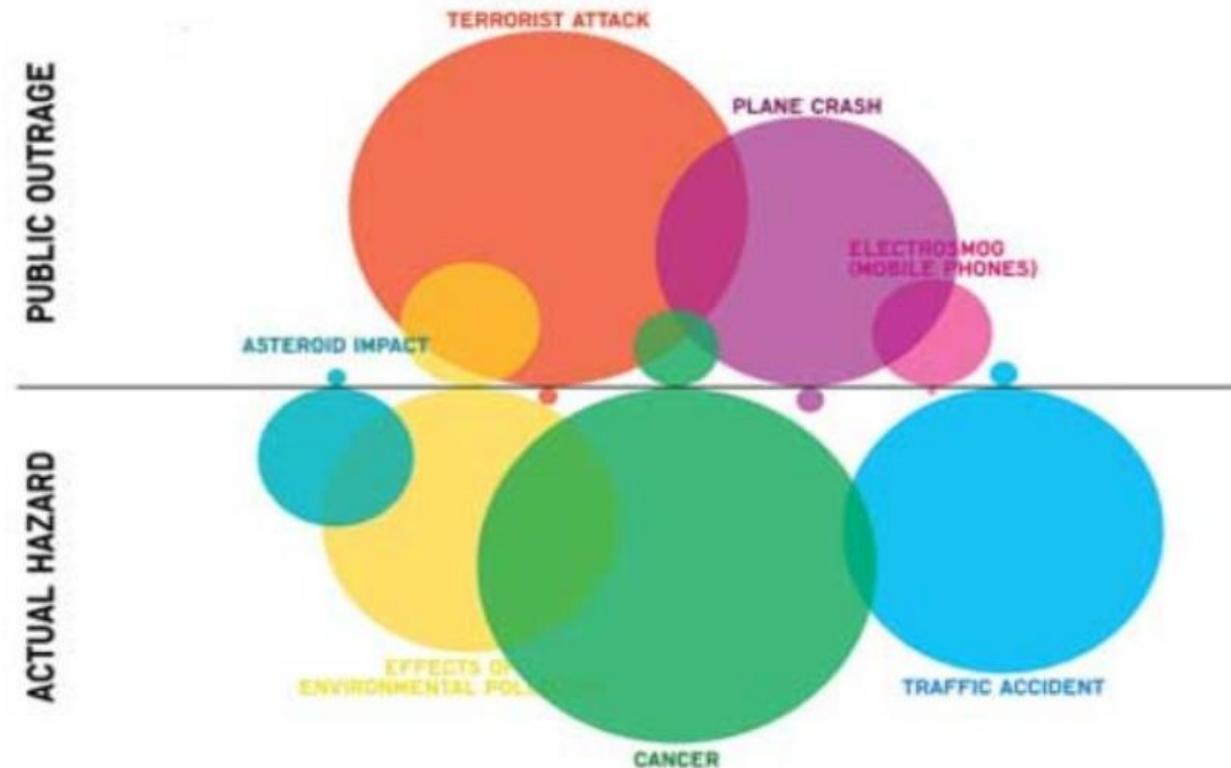70–79%
80–89%
More than 90%

(Lee et al., 2015)

Failure to recognise the risk occurrence

The estimated probability of an event occurring in public opinion

does not necessarily coincide with the experts evaluation

Failure to act

Even when faced with an estimation of the severity of an event (high likelihood of an event happening and impact)

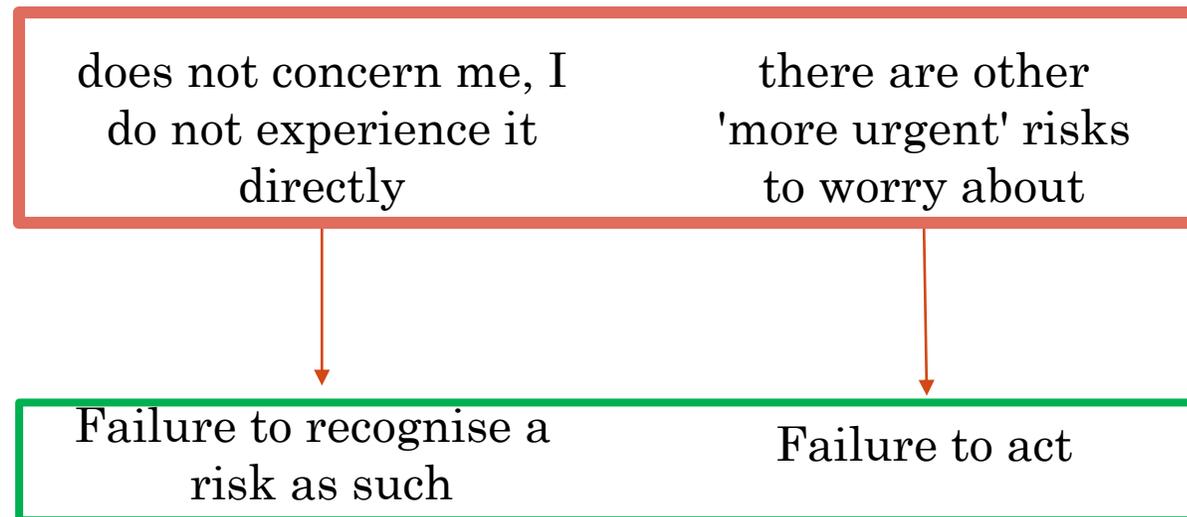We are not necessarily ready to act

(The Global Risks Report, 2021)

A matter of risk construction

✓ **How can we intervene (from humanities and social sciences)** to foster proper risk management?

✓ **Studying the psychosocial processes involved in the construction or perception of risk**

E.g., Psychosocial process

does not concern me, I do not experience it directly	there are other 'more urgent' risks to worry about

Failure to recognise a risk as such	Failure to act

A matter of risk construction

✓ Knowing **how the psychosocial processes involved in the perception of risk work can help to intervene**, e.g., by promoting effective communication
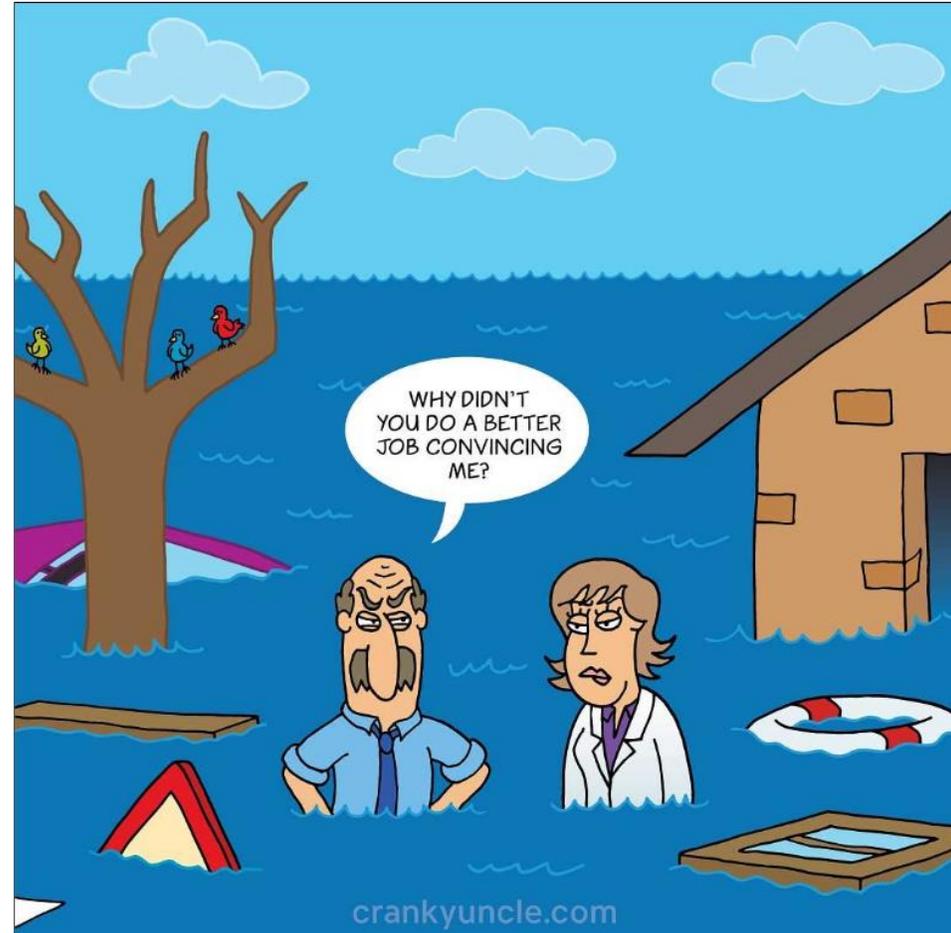
The ongoing research project

- **Which psychosocial processes?**

   Psychosocial processes acting as barriers (according to the literature) which can prevent effective coping behaviours when facing risk exposing events:

   - **moral disengagement** (Bandura, 2016)
   - **psychological distance** (Trope & Liberman, 2010)
   - **denial** (Cohen, 2001)

- **How can we study them?**
   - Premise: language as mean of realty co-construction
   - From the analysis of its expressions (e.g., natural language), it is possible to identify psychosocial processes
   - We can then **analyse social media posts**

The analysis model

CATEGORIES	PSYCHOSOCIAL PROCESSES
Consciousness Recognise (from a cognitive, emotional and value pint of view) the presence of the risk in question as such	Consciousness
Justification Acknowledging the presence of the risk in question, but justifying one's non-commitment to dealing with it	Moral, Social, and Economic Justification
	Advantageous Comparison
	Displacement of Responsibility
Distance Acknowledging the presence of the risk in question, but it does not concern the person, since it is considered (temporally, geographically or socially) distant from oneself	Temporal Distance
	Geographical Distance
	Social Distance
Denial The existence of the risk is called into question or the risk is defined differently from 'what is generally recognised'	Literal Denial
	Interpretative Denial

The posts on social media to be analysed

- Collecting the texts for the processes individuation (i.e., the corpus)

- Italian tweets related to different risk exposing events: Covid-19 pandemic; Climate change; (Russia - Ukraine Conflict)

- Collected through the rtweet package (Kearney, 2019)
  - End of January 2020 (Covid-19 pandemic) – ongoing
  - End of February 2022 (Climate change) – ongoing

- Tweets were chosen and included into the corpora according to hashtags (selected and added over time based on those related to the mentioned risks)

First step: Manual tagging for the creation of the training set

- The downloaded tweets were analysed manually → read the tweets and observe if processes were present and with which expressions

- A label was attached to the tweet if the process was present

- This made it possible to build a training set, i.e., a set of analysed texts from which an algorithm can learn for automatic identification processes

Consciousness

Recognise (from a cognitive, emotional and value perspective) the presence of the risk in question as such

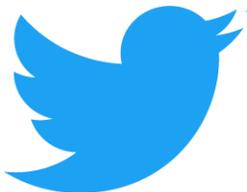**Let's protect the climate let's buy zero-emission buses now**
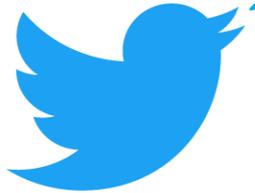
Justification

Acknowledging the presence of the risk in question, but justifying one's non-commitment to dealing with it

Moral, Social, and Economic Justification

Social and moral justifications justify incorrect practices by investing them with honorable purposes. It includes ideological, social, economic, and constitutional justifications.

Remove all restrictions on Covid now or it will be an economic carnage now that there is a war
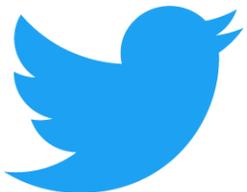
Justification

Acknowledging the presence of the risk in question, but justifying one's non-commitment to dealing with it

Displacement of Responsibility

It operates by obscuring or minimizing one's agentive role in doing something, disclaiming one's responsibility to someone else.

But instead of telling us to switch off the fire when we cook pasta, **the government should do something concrete** Energeticscrisis

Justification

Acknowledging the presence of the risk in question, but justifying one's non-commitment to dealing with it

Advantageous Comparison

The viewing of human behavior is coloured by what it is compared against. Exploiting the contrast principle can make even highly detrimental activities seem righteous. Skillful framing of an issue in an advantageous comparison can make the lesser of two evils not only acceptable but even morally right

The real plague to be defeated is not COVID19italia but kpop
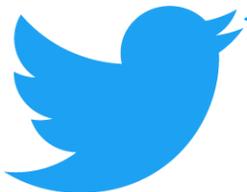
Distance

Acknowledging the presence of the risk in question, but it does not concern the person, since it is considered distant from oneself

Social Distance

The risk affects others (groups, categories,…), not me

If, from what we read, **the coronavirus is dangerous for the elderly with certain diseases**, what has that got to do with children?

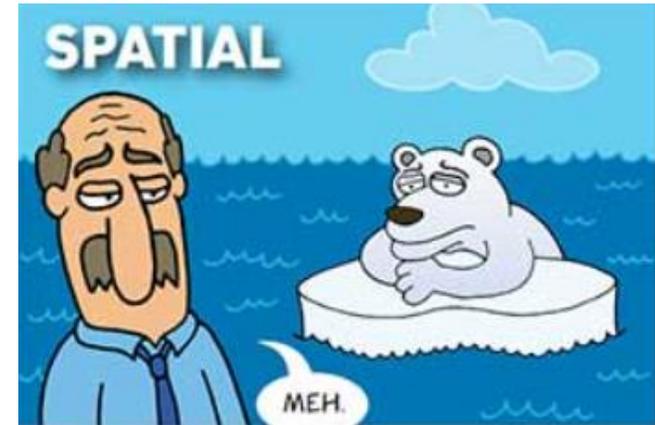# Distance

Acknowledging the presence of the risk in question, but it does not concern the person, since it is considered distant from oneself

Spatial Distance

The risk affects other places

Coronavirus, **Chinese syndrome**

Distance

Acknowledging the presence of the risk in question, but it does not concern the person, since it is considered distant from oneself

Temporal Distance

The risk is far away in time (in the past or in the future)

But **does the Covid emergency still exist**?

Denial

The existence of the risk is called into question or the risk is defined differently from 'what is generally recognised

Literal denial

The assertion that a risk did not happen or is not true.

You're OK because being positive doesn't mean being sick YOU HAVE NOTHING. Enough of this **Covid 19 crap**

Denial

The existence of the risk is called into question or the risk is defined differently from 'what is generally recognised

Interpretive denial

The risk is not being denied. Rather, it is given a different

meaning from what seems apparent to others

WE ARE NOT REALLY BOILING, IT IS A WHIRLPOOL

Finally the truth **flu mistaken for pandemic**

The training set

- If we teach the algorithms the classification model (through the training set) will they be able to automatically detect the presence of the process?

- We tried with the four macro-categories (for now)

PSYCHOSOCIAL PROCSSES (Macrocategories)	(training set) corpus	
	N	%
Consciousness	924	32.8
Justification	833	29.6
Distance	405	14.4
Denial	651	23.1
TOTAL	**2813**	**100**

Second step: Classification through Machine Learning algorithm

Support-Vector Machines (SVM)

Accuracy: 77%		Reference			
		C	De	Di	J
Prediction	C	**9.6**	0.8	1.2	0.4
	De	1.6	**7.4**	0.0	2.0
	Di	0.0	0.4	**3.8**	0.2
	J	1.2	0.4	0.4	**8.4**

Random Forest (RF)

Accuracy: 70%		Reference			
		C	De	Di	J
Prediction	C	**10.4**	1.8	0.6	3.6
	De	0.6	**6.4**	0.0	0.8
	Di	0.4	0.2	**4.2**	1.0
	J	1.0	0.6	0.6	**5.6**

What's next?

- Try a 9-category classification (also with other algorithms)

- Extract the recurrent linguistic characteristics of each process

- Test the effectiveness of the training set on additional tweets (i.e., test set)

- Development of the training sets in other languages

- Make this work available for scientific community and practitioners

- …

Grazie!   Ευχαριστώ!

Thank you!

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