

Risk and exposure perception in Europe. The EMF case

20ème Journée Interactions Ondes-Personnes
Jeudi 19 Décembre 2013



Peter M. Wiedemann

Starting point

Objective

The LEXNET project aims to develop effective mechanisms to reduce 50% of the public exposure to EMF, without compromising the quality of service.

-> More acceptance?



Scientific argument

Risk=Hazard + exposure

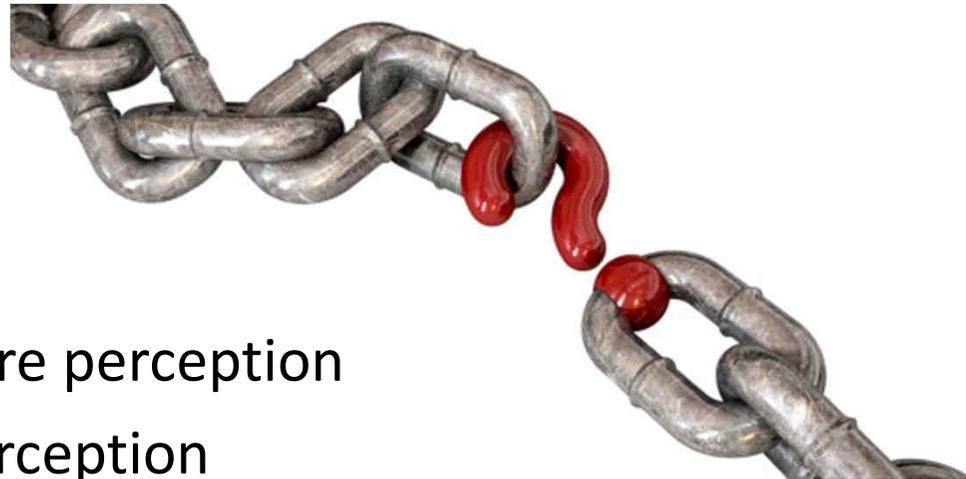
The probability of adverse effects if exposed to a hazard.

Minimization of exposure -> reduction of risk, if there is any



The missing link

- Exposure minimization
- More acceptance



- Exposure perception
- Risk perception

Exposure -> exposure perception -> risk perception -> acceptance

Exposure perception

- Size of the exposure source



Exposure perception

- Size of the exposure source
- Distance to the exposure sources



A17-49121_2019 © www.visuals123.com

Exposure perception

- Size of the exposure source
- Distance to the exposure sources
- Duration of the exposure



Exposure perception

- Size of the exposure source
- Distance to the exposure sources
- Duration of the exposure
- **Number of exposures sources**



Exposure perception

- Size of the exposure source
- Distance to the exposure sources
- Duration of the exposure
- Number of exposures sources
- Time of day of exposure



Exposure perception

- Size of the exposure source
- Distance to the exposure sources
- Duration of the exposure
- Number of exposures sources
- Time of day of exposure
- **Transmitting power**



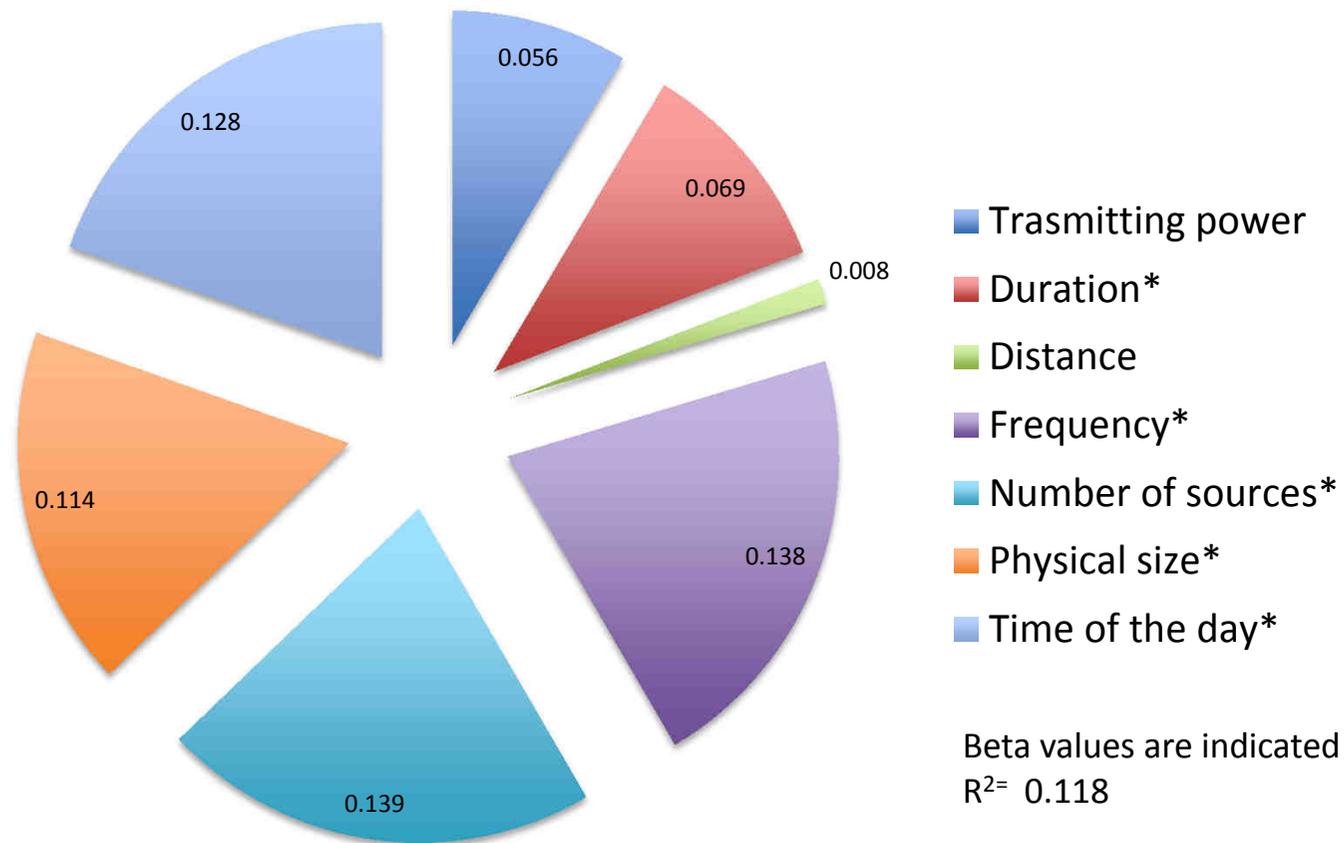
Exposure perception

- Size of the exposure source
- Distance to the exposure sources
- Duration of the exposure
- Number of exposures sources
- Time of day of exposure
- Transmitting power
- Frequency of exposure



How do people link exposure and risk?

Results of a regression analysis of the perceived exposure characteristics on EMF risk perception



Agenda revised

Issue:

Why does exposure perception only marginally impact risk perception?

Questions:

- Do we properly conceptualize and measure risk perception?
 - Is risk perception really perception?
 - Do we have to reconsider our concept of risk perception?
- Does this reconsideration improve our knowledge of appropriate EMF risk communication that supports the Lexnet expectation?

Is risk perception really perception?



Risk perception can be based on perception.

Is risk perception really perception?

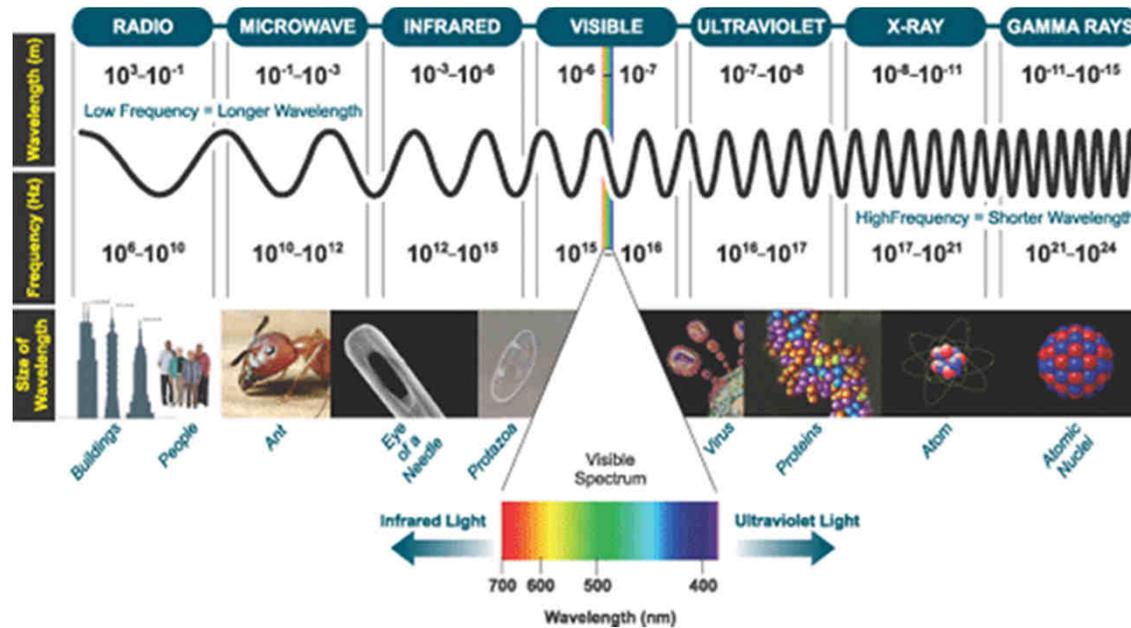
Sometimes we aren't able to perceive risks.



Caution: Genetically modified corn!

Is risk perception really perception?

We are not able to perceive EMF risk potentials.



Interim conclusion 1

- Risk perception can be based on perceptions or descriptions.
- RF EMF Risk perception is based on descriptions.
- However, what means description?
 - Is it statistical information?
 - Scientific information?
 - Other kinds of information?



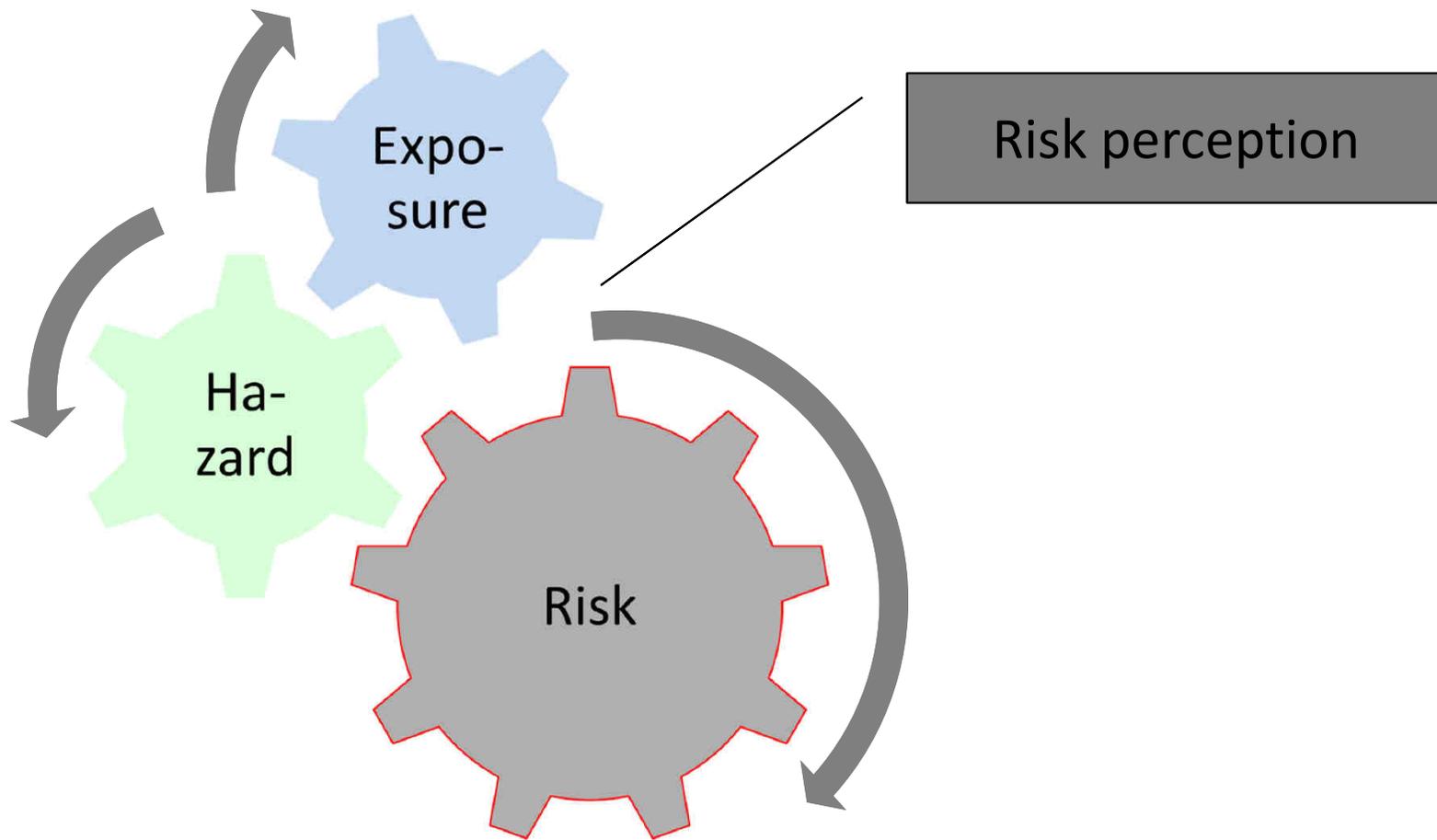
Do we have to rethink our concept of risk perception?

Risk = hazard + exposure

Risk perception = hazard perception + exposure perception?



Do we have to rethink our concept of risk perception?



Do we have to rethink our concept of risk perception?

Risk perception can be based on different psychological foundations

Hazard based risk perception

- Affective heuristics
- Moral heuristics

Risk based risk perception (hazard + exposure)

- Cognitive heuristics

Affective heuristics

Refer to the hazard

Affective heuristics

- Negative affective evaluation
- Outrage
- Probability neglect
- No go!
- Hazard is stigmatized



Affects can hardly be changed by education and information.

Exposure communication can not make any difference.

Moral heuristics

Refer to the hazard

Various moral heuristics:

- Purity (Do not tamper with nature)
- Fairness (Do not ignore citizen's interests)
- Care (Do not knowingly cause a human death)

It is hardly possible to negotiate about morals.

Exposure minimization will not be a crucial argument.



Human beings and all life on this planet evolved in harmony with the earth's natural electromagnetic field and gravity... But unnatural EMF's mess up our bodies...

http://www.loverescue.org/index.php?option=com_content&view=article&id=13:electro-magnetic-pollution-emf&catid=48:health-concerns&Itemid=83

Cognitive heuristics

Refer to the risk

-> exposure and probability of harm

International Agency for Research on Cancer

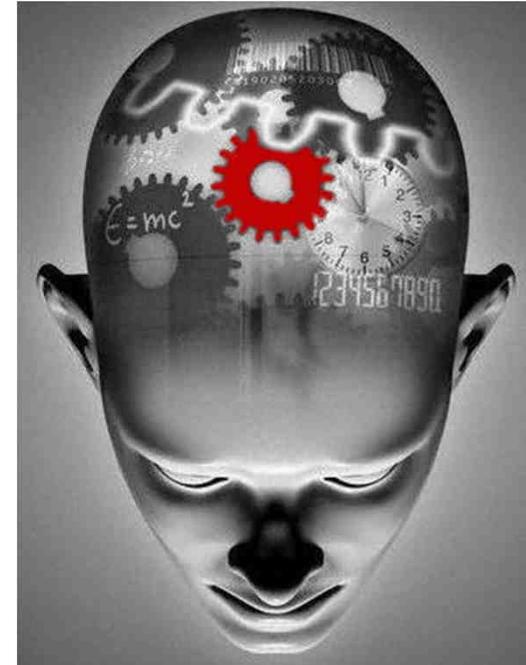
 **World Health Organization**

PRESS RELEASE
N° 208

31 May 2011

**IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS
POSSIBLY CARCINOGENIC TO HUMANS**

Lyon, France, May 31, 2011 -- The WHO/International Agency for Research on Cancer (IARC) has classified radiofrequency electromagnetic fields as **possibly carcinogenic to humans (Group 2B)**, based on an increased risk for **glioma**, a malignant type of brain cancer¹, associated with wireless phone use.



If risk perception is based on risk than communicating exposure minimization will have a chance to be effective.

Interim conclusion 2

- Risk perception - may refer to (1) hazard or to (2) hazard and exposure.
- If risk perception is based on affective or moral evaluation of a hazard than exposure does not play any role.
- Consequently, any information about a change of exposure will not influence risk perception or acceptance.

Implications for risk communication

In the Lexnet project, risk communication should help the general public

- to understand that technological solutions can reduce the exposure,
- to acquire knowledge about the conditions that determine the exposure strength.

In order to reach these objectives, risk communication should focus on the information processing on which risk perception is based.

Implications for risk communication

Precondition:

- Transition from *hazard based* risk perception towards *risk based* risk perception
- Replacement of *affective and moral hazard* evaluation by *cognitive* heuristics, i.e. subjects should take into account exposure characteristics.

Implications for risk communication

Comprehensive communication strategy:

- To prevent negative side effects of communicating exposure minimization strategies,
 - i.e., to prevent the wrong interpretation that efforts regarding the minimization of RF EMF exposure indicates the existence of a RF EMF health risk.
- To support intuitive evaluation of minimization strategies
 - i.e., to foster proper knowledge about most important exposure conditions

Taking home messages

- Minimization of RF EMF without compromising quality of service is an important aim.
- Whether this strategy results in an improved acceptance of wireless technology is an open question.
- It will depend on the accompanying communication efforts in order to prevent negative side effects and increase the right knowledge about exposure conditions.

Thank you, Merci!



The paper is supported by LEXNET, a European Project supported through the Seventh Framework Programme for Research and Technological Development.