Risk and exposure perception in Europe.
The EMF case

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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
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 exposure 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

- Beta values are indicated
- \( R^2 = 0.118 \)

How do people link exposure and risk?
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

<table>
<thead>
<tr>
<th>Hazard based risk perception</th>
<th>Risk based risk perception (hazard + exposure)</th>
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</thead>
<tbody>
<tr>
<td>• Affective heuristics</td>
<td>• Cognitive heuristics</td>
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<tr>
<td>• Moral heuristics</td>
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</tbody>
</table>
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...

Cognitive heuristics

Refer to the risk

-> exposure and probability of harm

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

Caveat

Exposure minimization can be seen as a signal that the hazard is real!
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!

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