



University of
Salford
MANCHESTER

Safety Conservation

**Risk Perception, Communication and
Identifying Common OSH Hazards**

Aims



University of
Salford
MANCHESTER

to review and critically evaluate how knowledge of the principles of risk perception and communication can contribute to the identification and control of OSH hazards.

By the end you should be able to:



University of
Salford
MANCHESTER

-
- Explain the principles and models of risk perception and risk communication
 - Critically evaluate the contribution of these models to identifying and controlling OSH hazards
 - Learn from practical examples



Who has done, or would like to do, these activities?



University of
Salford
MANCHESTER











University of
Salford
MANCHESTER



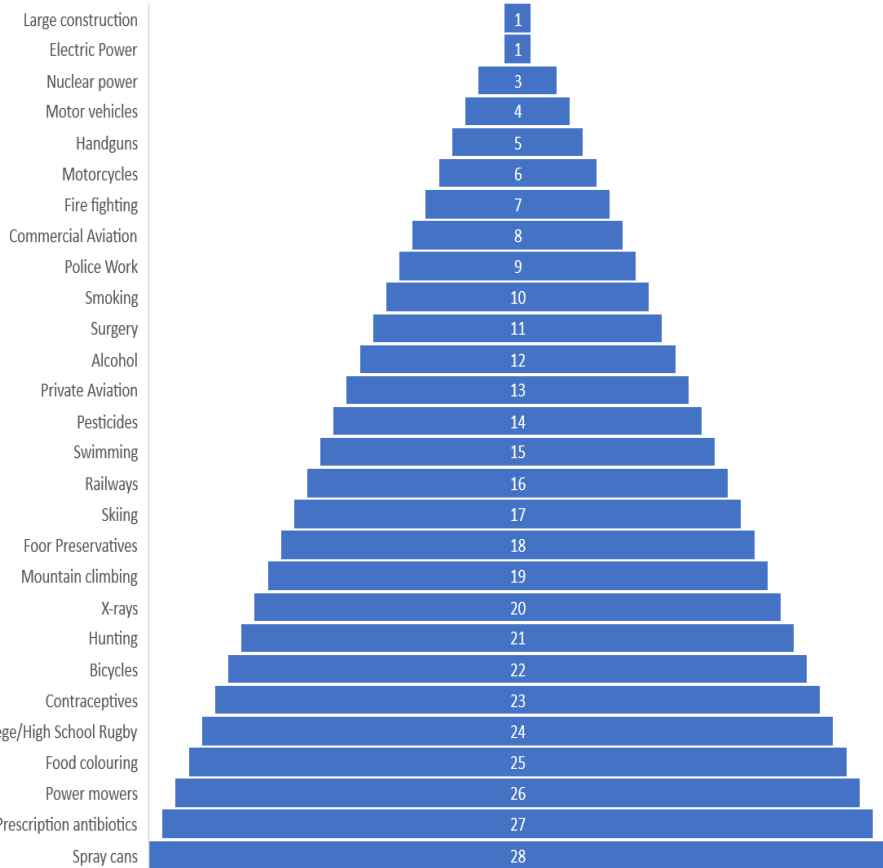




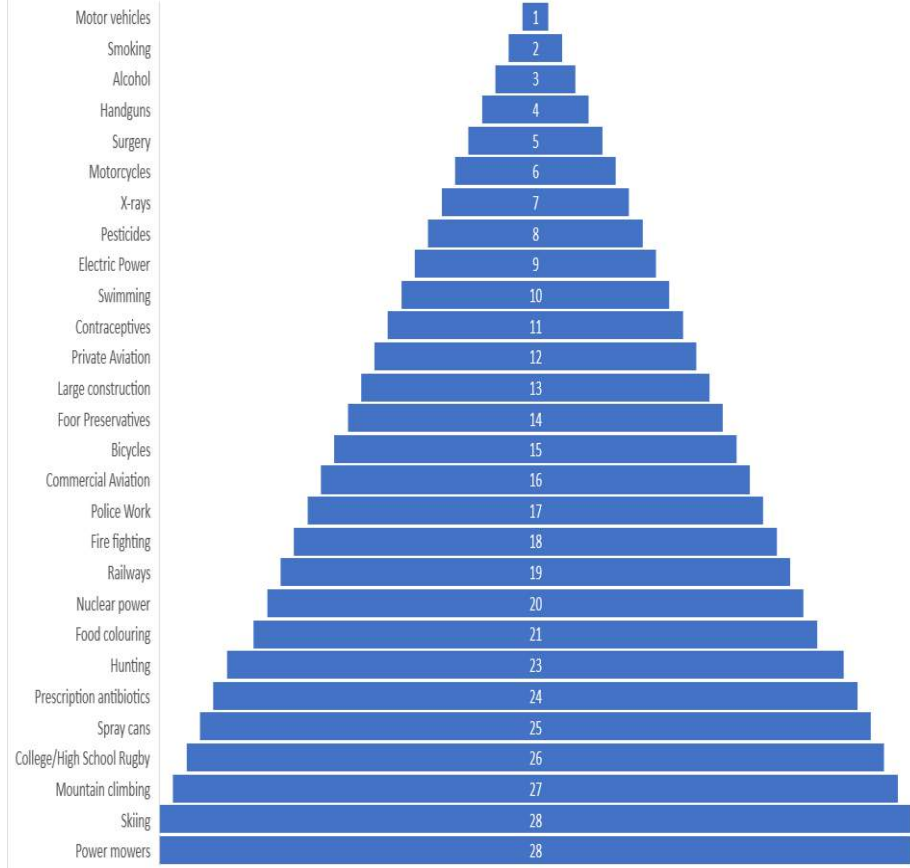
University of
Salford
MANCHESTER

Risk Perception Exercise

Student Risk Perception Ranking



Risk Perception - Experts

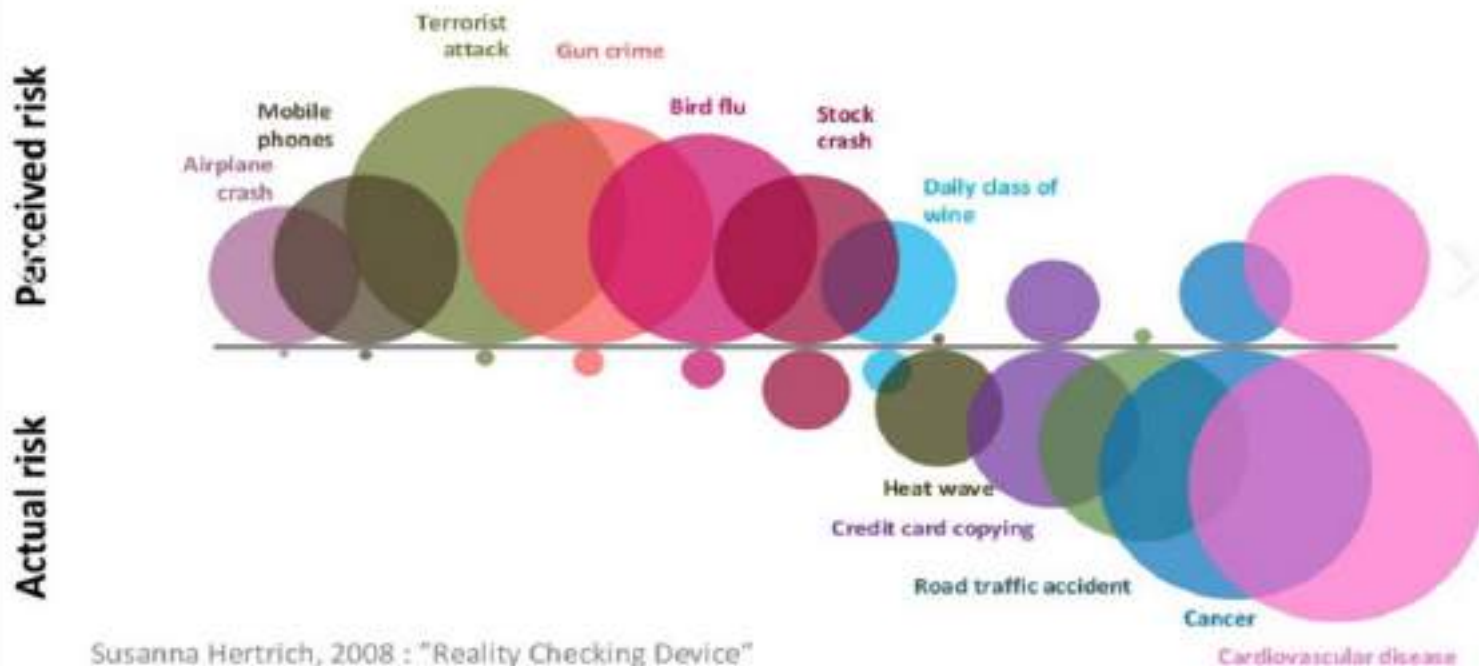


Discussion

- Any surprises?
- What might account for the differences?
- What influenced your own rankings?
- Did you have any difficulty completing the exercise?



Perceived and actual risks



Susanna Hertrich, 2008 : "Reality Checking Device"

Risk Perception



University of
Salford
MANCHESTER

Oscar Wilde (1854-1900) once said:
“A truth ceases to be a truth as soon as
two people perceive it”. (Sutton, I 2014)

What do we think he means by this?

To what extent do you feel that it is true?



Risk Perception



University of
Salford
MANCHESTER

Why is it important?

Risk Perception: definition and importance



University of
Salford
MANCHESTER

Risk perception refers to people's subjective judgements about the likelihood of negative occurrences such as injury, illness, disease, and death (Paek and Hove 2017)

It is important because it determines which hazards people care about and how they deal with them.

Risk Perception: some assumptions



- People are unreliable in perceiving risk
- They are ‘prejudiced’
- They approach each situation with their own opinions, memories, attitudes, and overall world view
- The role of opinions and the ‘Affect Heuristic’ and Availability Heuristic’ (Kahneman, Slovic and Paek and Hove 2017)

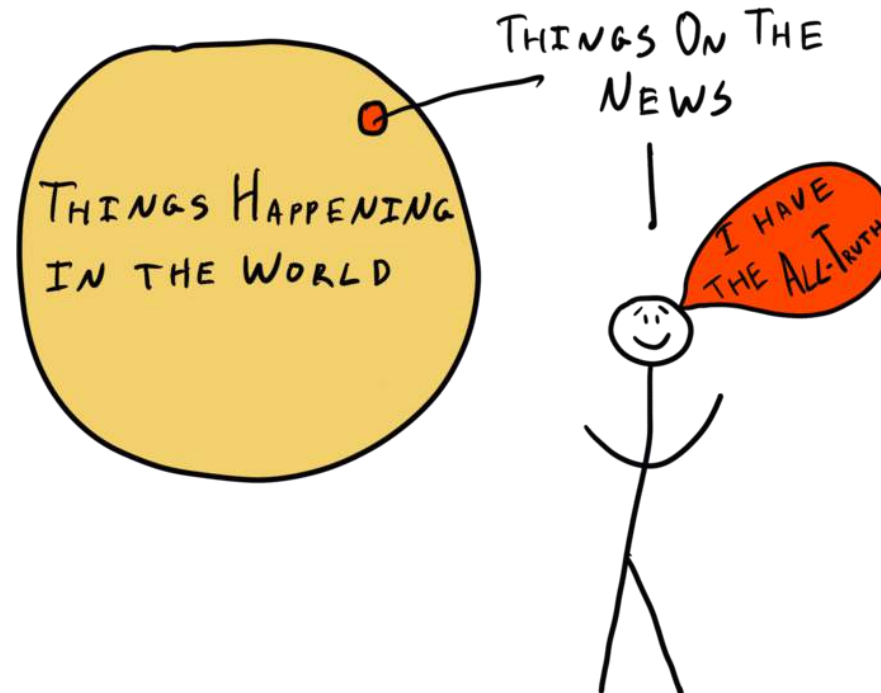
Affect Heuristic



Availability Heuristic



AVAILABILITY HEURISTIC



Risk Perception: experts and lay people



University of
Salford
MANCHESTER

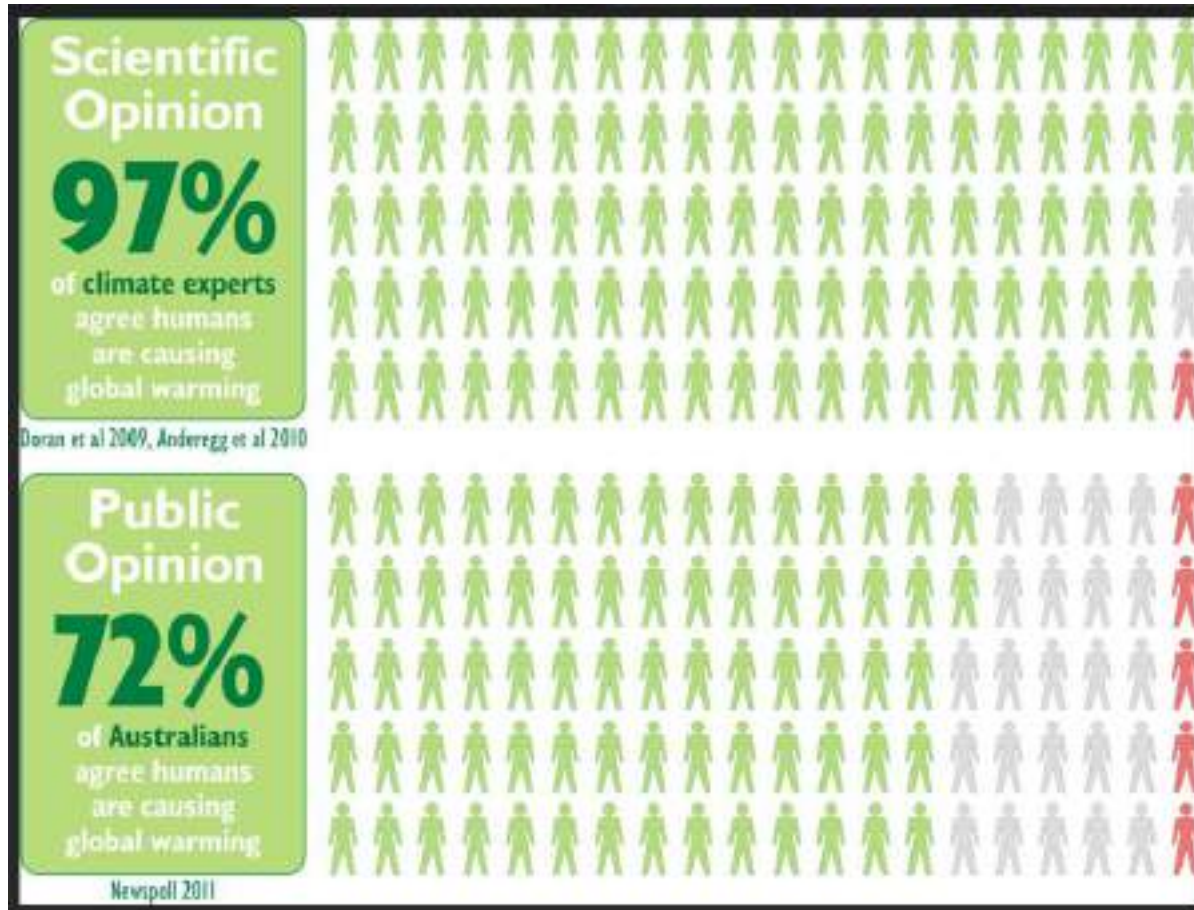
Assumed that:

Experts – make decisions based on scientific information and objective assessment. Rational Choice Model of decision making.

Lay People - form opinion based on subjective perceptions, heuristics and informal thought processes. Role of the **Availability Heuristic** (Kahneman, Slovic and Tversky 1982)

But, is it this binary?

Experts vs Public?



Expert v Layperson Perception

Quantifying Perceived Risk: Expert v. Layperson Perception

Risk of Death	Layperson	Expert
Nuclear Power	1	20
Smoking	4	1
X-Rays	22	7
Electric Power	18	9
Police Work	8	17
Alcohol	6	3
Mountain Climbing	15	29

1=most risky

30 = least risky

Ranking of risks by laypersons and experts. Image source: Federal Emergency Management Agency, 2007. Adapted from Slovic et al., 1979.

Risk Perception: misperceiving risks



University of
Salford
MANCHESTER

Individuals can misperceive risks due to optimistic bias or unrealistic optimism – i.e. the tendency to believe that risks pose a less serious threat to oneself than they do to other people (Weinstein, 1980)

Risk Perception: the Two Dimensions



University of
Salford
MANCHESTER

Cognitive Dimension

worry, or dread that a person feels
about a hazard (Coleman, 1993;
Lee et al., 2010)

Emotional Dimension

risk characteristics of knowledge,
familiarity, and controllability

Risk Perception: theoretical models

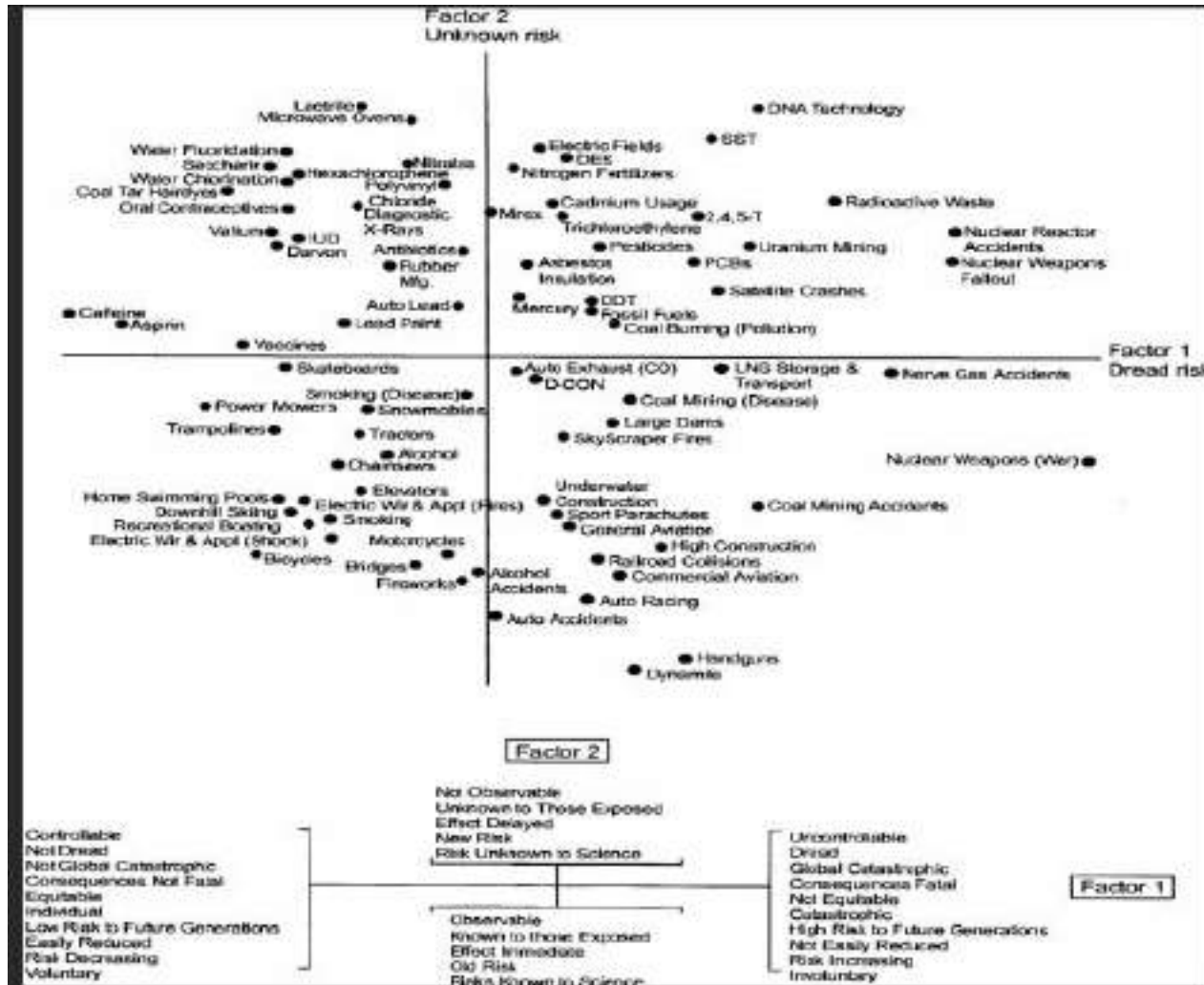


University of
Salford
MANCHESTER

Theoretical models have been developed to explain how people perceive risks, how they process risk information, and how they make decisions about them:

- the psychometric paradigm,
- the risk perception model,
- the mental noise model,
- the negative dominance model,
- the trust determination model, and
- the social amplification of risk framework.

Psychometric Paradigm: Spatial Awareness of 81 Hazards



(Ref: Slovic, Fischhoff and Lichtenstein 2000)

Psychometric Paradigm



Risk characteristics – individuals likely to be more concerned with the risk if:

- uncontrollable
- feel dread
- globally catastrophic
- certain to be fatal
- inequity
- Large numbers exposed
- threaten future generations
- the risk is increasing
- exposure involuntary
- affects us personally
- not observable
- Exposure unclear
- effects are immediate
- New, unfamiliar and unknown to science

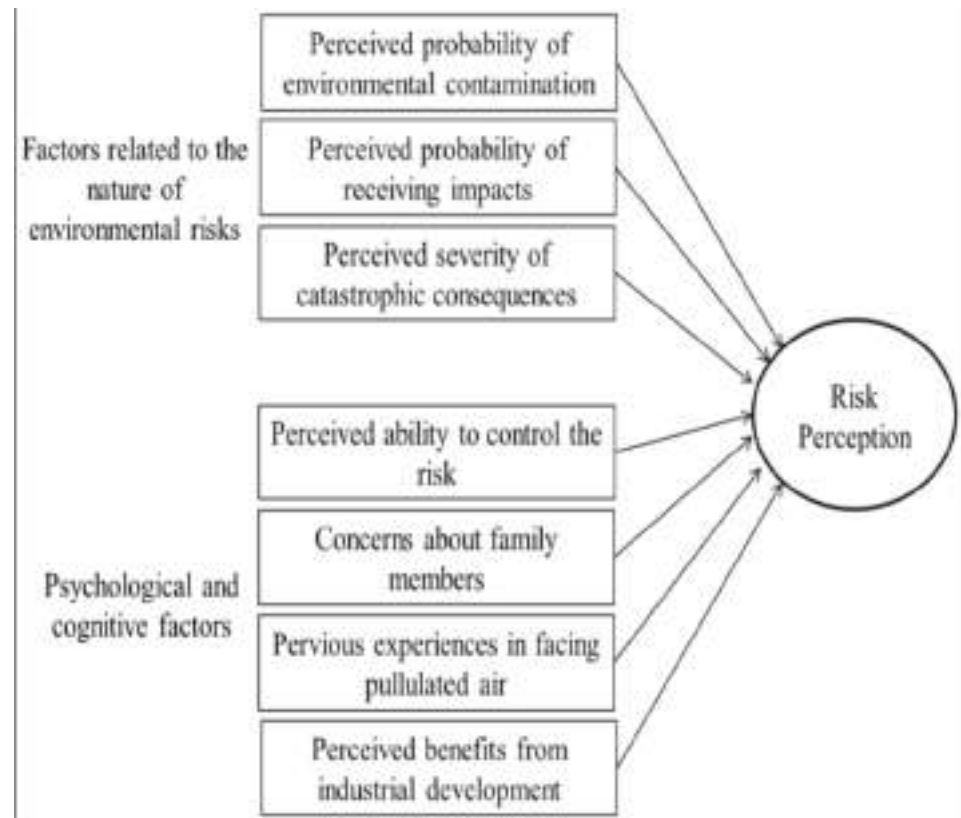
Risk classified as Dread Risk or Unknown Risk

Risk Perception Model



Factors influencing risk perceptions:

- voluntariness,
- controllability,
- familiarity,
- equity,
- benefits,
- understanding,
- uncertainty,
- dread,
- trust in institutions,
- reversibility,
- personal stake,
- ethical/moral nature,
- human versus natural origin, and
- catastrophic potential



Mental Noise Model



Events producing a higher level of mental noise (or stress) reduce people's ability to process risk-related information.

Factors causing a high level of mental stress found to be:

- controllability,
- voluntariness,
- familiarity,
- cause of the disaster (human-made versus natural),
- dread,
- uncertainty, and
- the victim's vulnerability (e.g., child, pregnant woman).

Negative Dominance Model and Trust Determination Model



University of
Salford
MANCHESTER

Negative Dominance Model - model predicts that situations producing risks and subsequent emotions such as fear, dread, and anxiety - create an environment where people are more likely to focus on negative messages.

Trust Determination Model - highlights the importance of perceived trust of the communicator in people's perceptions of and reactions to given risks. Trust determination factors include:

- caring and empathy,
- competence and expertise,
- honesty and openness

Social Amplification of Risk Framework



University of
Salford
MANCHESTER

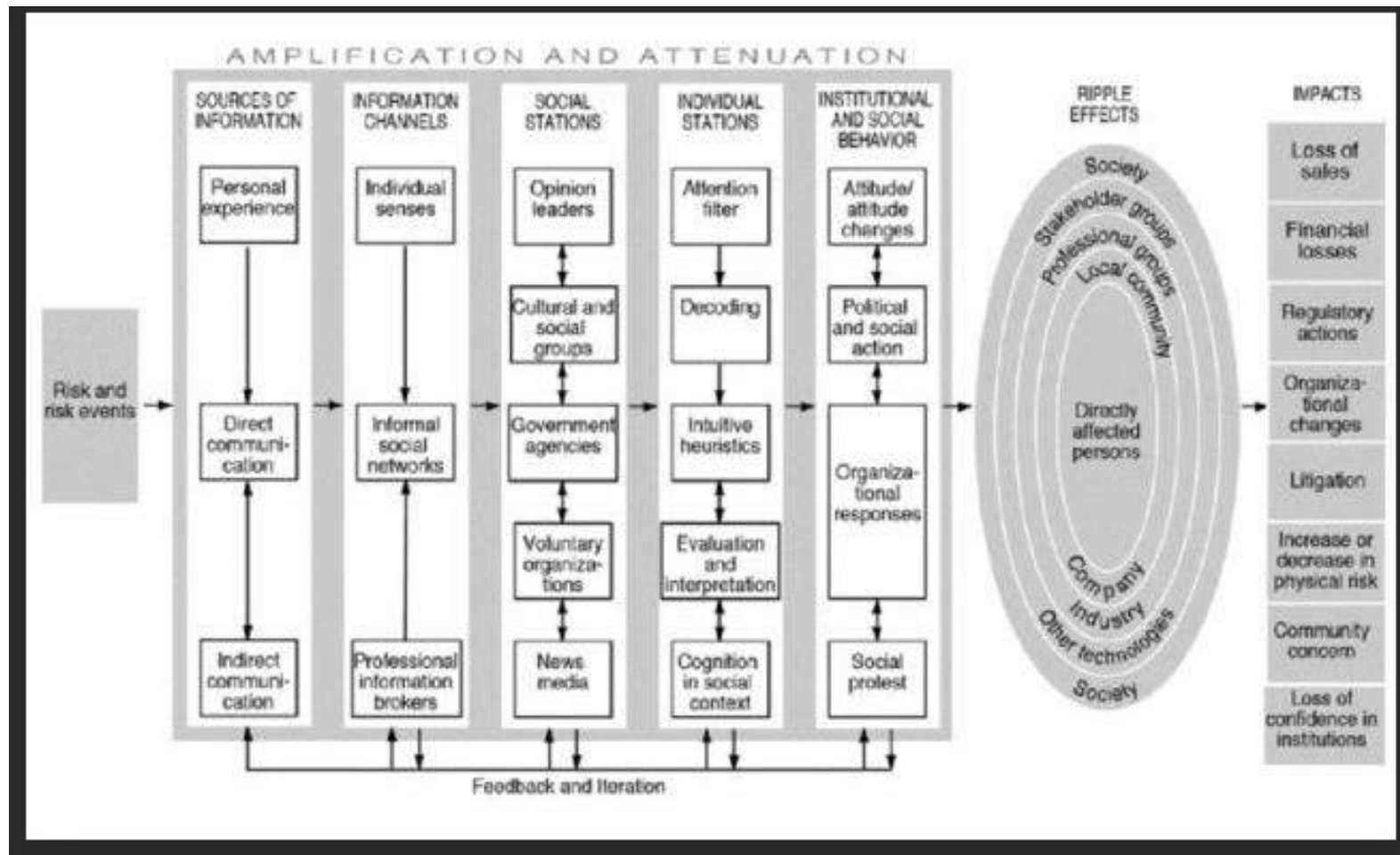
Attempts to show the relations among the technical analysis of risk and the cultural, social, and individual response structures that shape people's experience of risk (Kasperson et al., 1988).

Posited that risk events interact with psychological, social and cultural processes in ways that can heighten or attenuate public perceptions of risk or risk behaviours.

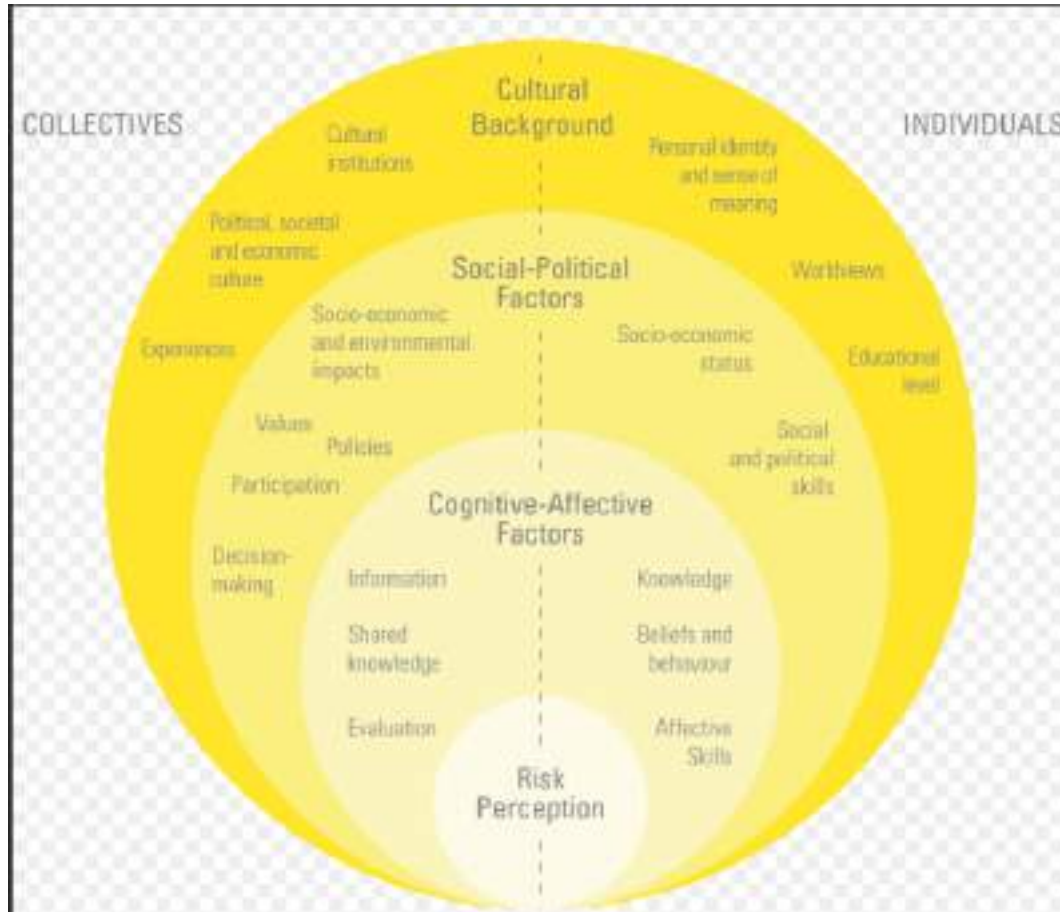
Highlights the roles played by communication channels e.g.

- Informal and inter-personal communication networks
- News media

Social Amplification of Risk Framework: the theoretical model



How we perceive risk?



<http://euaffairs.brussels/enhance/risk-perception.php>

Risk Perception and Health Behaviour Change



Health behaviour change follows an individual's perception of risk.

Models of behaviour change that incorporate the concept of risk perception include:

- the Health Belief Model,
- Protection Motivation Theory,
- the Extended Parallel Process Model, and
- the Risk Perception Attitude Framework (Paek and Hove 2017)

Health Belief Model



Assumption: people want to avoid illness and so adopt behaviours which they believe will protect them from illness.

Four types of determinants of health behaviour:

- perceived susceptibility
- perceived severity
- perceived benefits and
- perceived barriers

Further Models of Behaviour Change Incorporating Risk Perception



University of
Salford
MANCHESTER

-
- *Protection Motivation Theory (Rogers 1983), and*
 - *the Extended Parallel Process Model (Witte 1992)*

Both theories explain that perceived susceptibility and severity constitute people's perceived threat, which is a precursor to adopting a recommended health behaviour

Behaviour not adopted if: low self-efficacy or low response efficacy

- *the Risk Perception Attitude Framework*

Useful for predicting individual motivations and self-protective behaviours

Behaviour Change Cont'd ...



University of
Salford
MANCHESTER

Think about Health Behaviour Change in terms of Risk Perception relating to :

- Smoking Cessation
- COVID-19
- RADON
- '5 a day' – healthy eating
- Climate Change
- Immunisation

The Role of the Media in Risk Perception

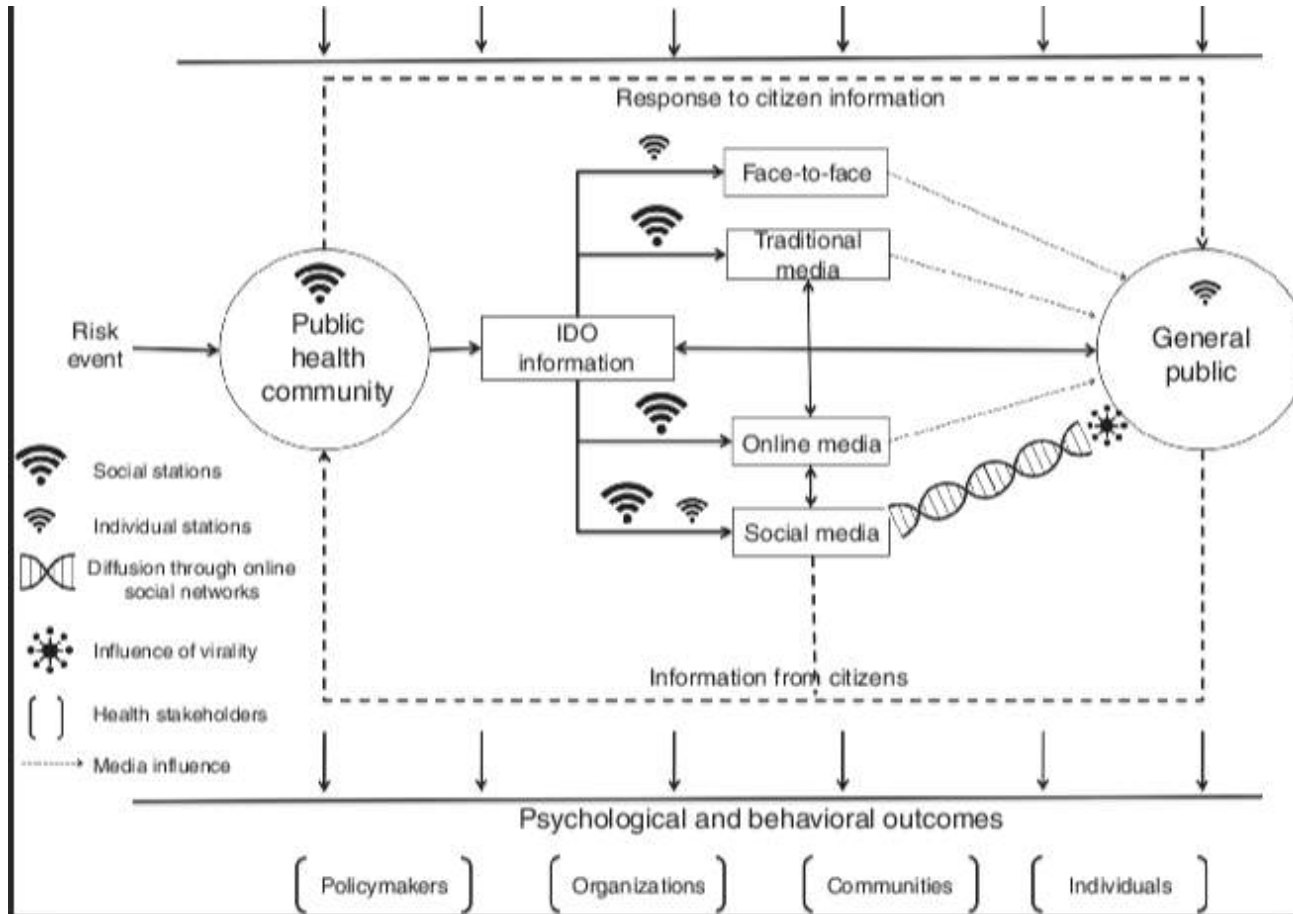


University of
Salford
MANCHESTER

Public risk perceptions are affected by the media in terms of:

- the amount of coverage;
- frames used for describing risks;
- valence and tone of media coverage;
- media sources and their perceived trustworthiness;
- formats in which risks are presented; and
- media channels and types. (Paek and Hove 2017)

Risk Amplification through Media Spread Model (RAMS)



Media Coverage and Framing



University of
Salford
MANCHESTER



Media Valence and Tone



University of
Salford
MANCHESTER

THE TIMES
Thursday 20 March 2020 | 10p
Free delivery for 12 weeks
Get The Times on your doorstep
Reasons to be cheerful
Liberalism
1.14p

Exams cancelled after virus forces schools to shut down

First nationwide closure in history • Emergency grades to replace tests • Deaths across Britain exceed 100

London set for isolation as disease takes hold

London is set for isolation as the disease takes hold, with the city's schools and universities closed and many businesses shut. The government has announced that it will suspend all public examinations, including GCSEs and A-levels, and that it will introduce emergency grades to replace them. The closure of schools and universities is expected to last for several weeks, and the government is urging people to stay at home and avoid public places.

Two people in full protective suits and masks are walking outdoors. They are wearing white suits, blue gloves, and blue face masks. They appear to be in a public area, possibly a park or a street, with trees and a building in the background.

The Guardian
TV

Now it's the schools: PM scraps exams and shuts down classes

Education has led to a fall in virus spread faster than any point
London could face lockdown as death toll rises to 100

A large public square with a fountain in the foreground and a tall monument in the background. The square is paved and has some people walking around. The fountain has water spraying upwards. The monument is a tall, thin column with a statue on top.

Sterling sinks to 35-year low against the dollar

The pound has fallen to its lowest level against the dollar since 1985, as investors flee riskier assets and seek the safety of the greenback. The fall in the pound is seen as a sign of economic uncertainty and a loss of confidence in the UK government's handling of the crisis.

Risk Information Sources



University of
Salford
MANCHESTER



Media Influence Hypothesis



University of
Salford
MANCHESTER

Two competing Media Influence Hypothesis:

- The Impersonal Impact Hypothesis – societal-level risk perceptions – news media important.
- The Differential Impact Hypothesis – individual level – entertainment media may be important.
- What role does Social Media and the multiple - channels available to the consumer play – if any?

Risk Communication: a definition



University of
Salford
MANCHESTER

‘Risk communication refers to the process of informing and persuading the public about risks so that they will be able to perceive them accurately and make appropriate decisions about them’ (Walaski, 2011).

Sandman (1989) defines risk as a combination of “hazards and outrage.” :

- Hazards = technical component of risk
- Outrage = a non-technical component that refers to voluntariness, control, responsiveness, trust, dread, and other non-rational responses (Walaski, 2011).

Risk Communication: World Health Organisation



University of
Salford
MANCHESTER

‘Risk communication is the real-time exchange of information, advice and opinions between experts or officials and people who face a threat (from a hazard) to their survival, health or economic or social wellbeing’ (WHO).

The purpose of risk communication is to enable people at risk to make informed decisions to mitigate the effects of a threat (hazard) – such as a disease outbreak – and take protective and preventive measures.

Risk communication is a core capacity of the International Health Regulations (IHR) 2005 and one of five strategies within the Pandemic Influenza Preparedness (PIP) Framework.

Risk Communication - Getting it wrong: Three Mile Island



University of
Salford
MANCHESTER



<https://www.youtube.com/watch?v=cL9PsCLJpAA>

Trust and Credibility: when is a lie not a lie?



University of
Salford
MANCHESTER

Hurt me with
the truth... ...But
don't comfort
me with a lie.

Models to Facilitate Risk Communication



University of
Salford
MANCHESTER

- Protection Motivation Theory (PMT; Rogers, 1983) understands the underlying mechanism of how ‘fear appeals work’
- Extended Parallel Process Model (EPPM; Witte, 1992) is useful for predicting individuals’ motivations and self-protective behaviours and for segmenting audience characteristics accordingly

W.H.O. Risk Communication and Community Engagement Plan for COVID-19



University of
Salford
MANCHESTER



RCCE ACTION PLAN GUIDANCE

COVID-19 preparedness & response



1. Assess and Collect
2. Co-ordinate
3. Define
4. Identify Key Audiences and Influencers
5. Develop RCCE Strategy
6. Implement
7. Monitor

Risk Communication – an Approach



Background/research

- Scientific basis for the hazard and any uncertainties
- Risk perception of the intended audience
- What risk information is required
- Competing factors.

Preparation/assembly

- Avoid comparisons between familiar risks and new risks
- Recognise/respond to emotional aspects of risk perceptions.
- Express risk in several different ways
- Explain the uncertainty factors which are used in risk assessment and standard setting.
- Maintain an openness, flexibility, and recognition of responsibilities
- Build an awareness of benefits associated with a risk (if possible)

Risk Communication – an Approach



University of
Salford
MANCHESTER

Dissemination/distribution

- Accept and involve the stakeholders as legitimate partners by describing risk/benefit information and control measures in an understandable way.
- Share the public's concern rather than deny it as not legitimate or as unimportant. Be prepared to give people's concerns as much emphasis as the risk statistics.
- Be honest, frank, and open in discussing all issues.
- If explaining statistics derived from risk assessment, explain the risk assessment process before presenting the numbers. Co-ordinate and collaborate with other credible sources.
- Meet the needs of the media.

Risk Communication – an Approach



University of
Salford
MANCHESTER

- Review/evaluation
 - Evaluate the effectiveness of risk messages and communication channels.
 - Emphasise action to monitor, manage, and reduce risk.
 - Plan carefully and evaluate efforts.

United Nations Food and Agricultural Organisation (www.fao.org last accessed 12/9/22)

Keep it Simple



In a crisis audiences:

- Are less tolerant of complexity when upset
- Apathetic people just stop listening
- Interested people ask for clarification
- Frightened or angry people think you're trying to con them – thus become more so

In a crisis sources:

- Speak with more complexity and jargon

Outrage



Factors influencing outrage:

- **Mistrust**
- **Knowability** – expert disagreement, especially with nuclear
- **Control** - powerlessness
- **Dread** – cancer and nuclear waste
- **Memorability** – nuclear a feature of science fiction since 1950's. A film 'The China Syndrome' about nuclear meltdown had just opened in the cinemas!

Get the Word Out – controlling communications.
More difficult today than ever.

Real-World Application – some thoughts ...



University of
Salford
MANCHESTER

- Research, analyse and interpret all information to understand what hazards should be prioritised for action.
- Do not rely on this alone – it will not convince key stakeholders.
- Discuss feelings, thoughts, beliefs of a cross-section of stakeholders. Don't forget the employer.
- Identify what method(s) of risk communication works best and from whom.
- Don't write a policy or new procedures and expect people's behaviours to change.

Summary



- Individuals perceive risk in different ways as they may use heuristics based on their many psychological dimensions.
- It is said that scientific research/application can bring us closer to an objective evaluation.
- Understanding risk perception is important if we want to affect behaviour change – this is known as Risk Communication.
- Risk Communication can provide for an acute, emergency response or in developing an effective way of managing OSH.
- Arguably, workplace OSH Management Programmes may fail, without an understand and application of Risk Perception and Risk Communication.