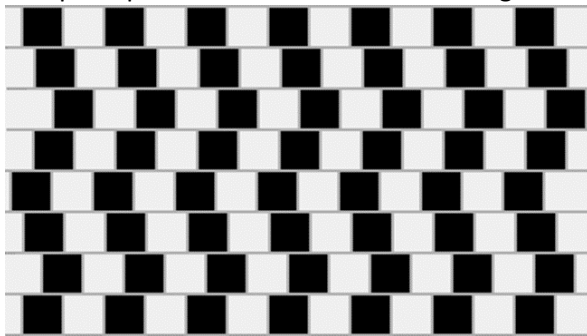


"Risk Perception: From Science to Policy".

The 6th SRA-E Benelux Annual Meeting took place on Tuesday, October 4th, 2022 and was hosted by the Dutch National Institute for Public Health and the Environment (RIVM). The theme was "Risk Perception: From Science to Policy". The conference aimed to bring together researchers, academics, practitioners, and policy makers engaged in risk analysis. It also aimed to promote risk research and knowledge and understanding of risk analysis techniques within the Benelux countries and beyond.

Several decades of research have shown that the way people perceive risks plays an important role in people's decision making and behaviour. Risk perception is as much a process as it is an evaluation. It touches every aspect of our daily lives.

Risk perception influences our choices to get vaccinated, to work safely, and whether we wear our



seatbelt. It affects our choices to buy novel food products, our decisions on what type of treatment to take to combat illness, and whether we accept unfamiliar innovative technologies like genetic modification or cryptocurrency. Furthermore, the COVID-19 pandemic has once again made clear that addressing risk perception and behaviour can be key determinants of effective policy response.

Risk perception thus has implications for an Individual's judgments, decisions and behaviours. It also has implications for the communication about these risks, the acceptance and adherence to policy as well as preventive measures by society.

But what do we know and what can we still learn about, for example, the determinants of risk perception? And what makes people act upon their risk perception in a way that mitigates or increases the risk? How can these insights be used to improve informed and evidence-based decision making? How can these insights be used in communication among members of the general public and policy makers?

In a one day session researcher from Belgium and the Netherlands discussed this interesting topic. Two keynote presentations, seven oral presentations and a round table discussion probed from different angles the relation between risk perception and policy making. In this report we give you a summary of the various presentations and discussions.

The next (7th) Open Conference of the SRA-E-BeNeLux chapter will be held in **Brussels on October 31st 2023**, organized by the KU Leuven. Save the date, hope to see you there!



Overview

- > 10.00 – 10.15 Welcome's address
 - *Charles Wijnker*, Director of Environment and Safety Division, RIVM
- > 10.15 – 11.00 Keynote address 1
- > 11.00 – 11.15 Coffee break
- > 11.15 – 12.30 Oral presentations
- > 12.30 – 13.15 Lunch break
- > 13.15 – 14.00 Keynote address 2
- > 14.00 – 15.15 Oral presentations 2
- > 15.15 – 15.45 Coffee break
- > 15.45 – 16.30 Roundtable discussion
- > 16.30 – 17.00 SRA E Benelux: Future plans and activities
- > 17.00 – 18.00 Drinks

2

KEYNOTES

Key note 1: Talking about risk in the Corona pandemic: about concerned citizens and reassuring politicians

Danielle Timmermans (Amsterdam University Medical Center, Department of public and occupational health, NL)



In the past two years, during the pandemic, citizens' risk perception has been important for policy making on promoting compliance with pandemic containment measures and vaccination. Unfortunately, we have also witnessed many events where politicians and policy makers seem to be ignorant about citizens' perception of risk. This was particularly evident in the communication about the AstraZeneca vaccine and the side effects of blood clots. There are many more examples of other environmental risks where the perspective of politicians does not match the perspective of citizens. Why is this? In this presentation I will discuss with you some reasons and possible solutions to bridge this gap.

The discussion started on the challenges regarding involving risk (perception) science in policy making. Challenges discussed were that risk researchers often not involved in policymaking and that risk science is not necessarily acknowledge as scientific field.

This discussion was followed by a discussion on the role of risk perception in change models. In this context it was posed that risk perception plays only a minor role. Discussion subsequently arose on the operationalization and understanding of the concept of risk perception. Risk (perception) is ambiguous. Risk perception can be about evaluative outcomes (in terms of evaluated severity - as it is generally referred to) but risk perception can also refer to the perception of being 'at risk' and the process in which evaluative outcomes are formed (thereby including all values, beliefs attitudes, associations, etc. someone holds towards a specific risks). In the latter context, it plays a (more) significant role in behaviour change regarding risks.

Key note 2: Indoor air pollutant radon: social science research for better policy making

Tanja Perko (Institute for Environment, Health and Safety, Belgian Nuclear Research Centre; Faculty of Social Sciences, University of Antwerp, BE)



Indoor air pollutant radon: Social science research for better policy making

Tanja Perko, SCK CEN & University Antwerp, Belgium

tperko@sckcen.be

SRA Benelux, 4th of October, 2022, The Netherland

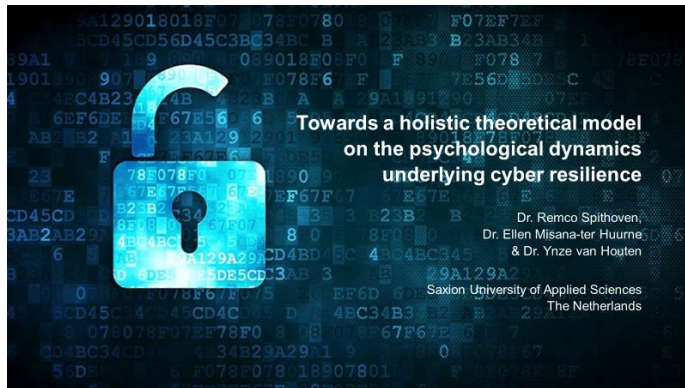
The project has received funding from the European research and training programme Horizon 2020 under grant agreement No 101019718

The presenter outlined a success story in which social science research is called upon to better policy making. In the run-up to the RadoNorm project she has helped to be somewhat activist with regard to the added value of social science in policy making. An approach to connecting with policy makers is to identify and understand (from a policy makers' perspective) the problems that policy makers face and need to be resolved. If you are able to make clear how social science research can help resolve these problems, this can be an incentive to incorporate/invest in social science research in policy making. The discussion again focused on why social scientific (risk) knowledge and research is often disregarded in policy making. Three additional examples were provided: Everybody thinks they can communicate; everybody thinks they know about risk perception; and everybody thinks they can make surveys.

ORAL PRESENTATIONS

Towards a holistic theoretical model on the psychological dynamics underlying cyber resilience

Remco Spithoven, Ellen Misana-ter Huurne & Ynze van Houten (Saxion UAS, NL)



At this point in time, cybercrime has risen high within the top five global threats. With a global estimated worldwide loss of 6 trillion dollar in 2021 the financial impact of cybercrime is held to be comparable or even bigger than the financial impact of the global drug market. More work on the prevention of victimization of cybercrime for both citizens and organisations needs to be done.

The most promising way of fighting back against cybercrime is in strengthening citizens' and organisations' cyber resilience. The SRA holds a rich tradition in explaining how people adapt their behaviour on many different risks of contemporary life, based on risk perception theory and theoretical models such as the Theory of Planned Behavior, Protection Motivation Theory, Health Belief Model, Extended Parallel Processing Model and Risk Information Seeking and Processing Model. These models partly overlap, so the emerging discipline of cyber resilience research will benefit from an integrated theoretical model. In this way we contribute to the research area of cyber resilience, which is both still in its infancies as scattered in theoretical foundations, while there is an urgent need for insights in explanatory factors and effective interventions. With our combination of theories and earlier research we have made an integrated model which can be applied to various specific risks of cybercrime and target audiences.

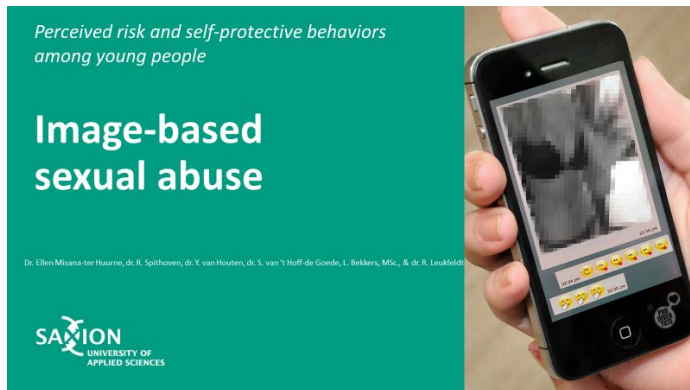
In addition to this integration of the relevant theoretical model stemming from the risk analysis tradition, our research group has developed a holistic theoretical model that also incorporates theories on why people do not change their behaviour towards more cyber resilience. These types of explanatory factors are largely overlooked in both theory and empirical research. In our model we have included the following explanatory factors why people do not change their risky, digital behaviours : (I) we have repeatedly observed rather firm optimistic biases among our respondents in multiple studies among various target audiences that revolved around different cybercrime risks. We also see (II) traces of cyber fatigue. Last but not least (III), we see a possible explanation in psychological defence mechanisms (e.g. denial, suppression, displacement, projection and rationalising) activated by cognitive dissonance as a result of risen risk awareness, leading towards emotion focussed coping instead of target hardening when it comes to risks of cybercrime.

In this contribution we will present our holistic theoretical model and welcome colleagues to provide us with their insightful feedback to further sharpen our model and research based on it.

In the presentation an experimental study was presented in which possible victims of cybercrime were pointed on their vulnerable behaviour. This raised questions on ethical aspects of the study. The study was thoroughly reviewed and approved by an ethical committee, for example because the (setup of the) experiment was only a minor infringement compared to actual risk.

Image-based sexual abuse: Perceived risk and self-protective behaviors among young people.

Ellen Misana-ter Huurne, Remco Spithoven, Ynze van Houten, Susanne van 't Hoff-de Goede, Luuk Bekkers, & Rutger Leukfeldt (Saxion UAS, NL)



Young people (16-25 years) have been acknowledged as one of the most vulnerable groups for victimization of Image-based Sexual Abuse (IBSA), including non-consensual sharing of digital sexual images. Although a significant body of research has focused on victimization and prevalence of IBSA, the relevant cognitive psychological processes in predicting self-protective behaviors among young people have rarely been studied to date. This study aims to fill this gap in research by applying a theoretical model aimed at 1) providing insights into the relevant variables that predispose young people in adopting online self-protective behaviors against IBSA and 2) unravel different target audiences among young people. In doing so, our model pulls together relevant theoretical concepts by extending the Protection Motivation Theory's (PMT) original factors of threat and coping appraisals with subjective norms and affective responses. A questionnaire-based study involving a representative sample (N=1179) of Dutch young people between sixteen and twenty-five years of age was conducted. By means of Structural Equation Modelling (SEM), our results show that the model fits our data well in explaining young people's intended self-protective behaviors against IBSA. Furthermore, we found that determinants of intended self-protective behaviors differ between young people that have and young people that haven't been engaged in sexting behaviors to date. This study sheds light on the determinants of self-protective behaviors among young people against IBSA and our results can also guide future risk communication interventions that should be specifically suited for the type of groups at risk highlighted, as well as future research on resilient behaviors related to IBSA.

In general the existing research on protection motivation suggests that feelings self-efficacy positively correlate with self-protective behaviors. This study found the opposite in the context of preventing image based sexual abuse among young people. The main discussion concerned this interesting outcome – how can this be explained. A suggestion was made to qualitatively explore the relationship further.

The confounding effect of response styles on radiological risk perception estimates in Belgium

Melisa Muric^{1,2}, Peter Thijssen², Catrinel Turcanu¹, Tanja Perko^{1,2} (Belgian Nuclear Research Centre, SCK CEN; ² Faculty of Social Sciences, University of Antwerp, BE)



Surveys enable us to assess people's opinions on a range of radiological risks, and to compare opinions of groups within or between nations. Such comparisons are based on the assumption of measurement invariance – that the instrument works the same way across groups. The other critical assumption is that people sharing a risk perception, respond in the same way. However, well documented response style effects challenge these assumptions. Response styles refer to tendencies of respondents to agree or to disagree with every survey item irrespective of the actual content, or only choose moderate or extreme categories of scales (Van Vaerenbergh and Thomas 2013). This is caused by i.a. the complexity and length of scales, and impacts groups differently. Many risks scales could thus be vulnerable to response bias. Whether this is actually so, how exactly response styles affect observed differences in risk perception, and how bias can be corrected, was evaluated on the case of the Belgian Risk Barometer (SCK CEN).

First, we show how structural equation modeling can be used to identify acquiescence and neutrality effects in risk perception measures. Second, that Walloon respondents are more prone to stylistic responding than Flemish. Third, we demonstrate that these regional differences in response style can distort observed differences in risk perceptions. Here, we conclude that regional-cultural variation in style needs to be considered to ensure comparisons between groups are valid. Lastly, we show that not all risk perception scales are equally affected by response bias; effects are stronger for general risk perceptions than for personal risk perception.

Since public opinion surveys serve as input to inform risk governance policies and communication campaigns, it is essential that documented responses are accurate. This presentation shows that an essential step to ensuring this, is correction for response style.

Main discussion centered on best practices for questionnaire design (e.g. keeping questionnaires short as possible and to interchange tone of voice in phrasing) and on the question whether it would be wise to only use validated questionnaires to provide information for policy making. The practical applicability barriers of such a conclusion was discussed and the problem that even validated questionnaires can't get rid of these effects. Researchers should just be aware and improve validity by controlling for these effects.

Covid and culture: on the importance of risk perceptions in explaining variation in government action.

Frédéric Vandermoere (Universiteit Antwerpen), **Robbe Geerts** (Universiteit Antwerpen), & **Raf Vanderstraeten** (Universiteit Gent, BE)

Covid and culture: on the importance of risk perceptions in explaining variation in government action.

Frédéric Vandermoere*, Robbe Geerts*, & Raf Vanderstraeten**
*University of Antwerp, **Ghent University & LSE

SRA-E Benelux, *Risk Perception: From Science to Policy*. Bilthoven, 4th of October 2022

Abstract. Relative differences between countries were large during this initial phase of the virus, both in terms of epidemiological indicators and governmental measures. Moreover, the strength of the relationship between the two characteristics appeared to fluctuate widely between countries. Against this background, the central question of this presentation is: how can we explain the variation in the number and severity of government measures between countries? In doing so, we focus on the initial response, or pre-convergence phase, on the eve of the WHO declaring the virus outbreak a pandemic. From a stimulus-response model, characterized by a more classical-linear logic of 'science to policy', reference is usually made to epidemiological/virological indicators such as number of infections, deaths, excess mortality and hospitalizations. This is the discourse we often find in the dominant media. Corona policy thereby seems to follow directly and purely from 'the virus'. The goal of this sociological research, however, is to show that this is only part of the story. The extent to which countries differ in their approach to the pandemic must be explained, in addition to 'the nature of the beast', by a complex web of social, cultural, economic, political, and legal factors. The presentation will pay particular attention to the role of differences in national cultures.

That main discussion centered on the interesting finding of the impact of cultural aspects on policy choices. It was interesting to see that while epidemiological/virological indicators are often used to explain policy responses, several cultural indicator (e.g. masculinity) can implicitly account for (differences in) policy response to the covid pandemic.

Values as causes of emotions towards a smart home device; extending the 19 values scale with privacy to understand emotions in digital contexts

Dr. Nicole Huijts (Twente University, NL)



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20 OCTOBER 2022

It has been suggested and found that values influence emotions towards new technologies. This has however not yet been tested in the smarthome context. In this context, privacy and safety can be considered important values. The question, however, is whether consumers realize that these values are at stake when adopting smarthome technology, and thus whether these values indeed influence consumers' emotions about the technology. To test this, we use the Schwartz and colleagues' 19 value measurement scale that measures amongst other personal security as a safety value measurement, and extended it with the value privacy. We further tested whether providing a privacy or safety warning increased the effect of privacy and safety values on emotions. The initial analyses on data of 643 UK participants indeed show that the value privacy negatively influences positive emotions and positively influences negative emotions but that the value personal security does not, independent of the respondents being warned or not. While UK consumers thus perceive the value privacy to be threatened by a smart device, they do not appear to think so for the value personal security even after being warned. Finally, we explored the role of other values and found that the values power-resources, tradition, hedonism and stimulation were also predictive of positive emotions towards the smart device, while no additional values explained negative emotions towards the smart device. This study contributes to finding support for the theory that argues for the effect of values on emotions and shows that the extension of the value scale with privacy is very valuable to understanding emotions in the digital context.

De main question was on the question how the researcher was sure privacy could be consider a value and not an attitude? This was done by asking security as an independent construct, before any stimuli were presented. Additionally, the question was formulated as a general guiding principle in life. Additionally we discussed whether security is a basic human value (cf. Schwartz) or an instrumental value

Life events and changes in personal risk attitudes: lessons for policymakers.

Jona Linde (Netspar and Maastricht University, Department of Microeconomics and Public Economics, NL)



Using a large sample of the Dutch working population, this study investigates whether and how risk preferences are affected by personal life events. More specifically, we investigate whether changes in marital status, parenthood, and employment are associated with changes in risk preferences. We elicit risk preferences using survey questions, where respondents provide self-assessed preferences (stated preferences), as well as methods with financial incentives, where respondents can earn money (revealed preferences). Using register data of Statistics Netherlands, personal life events are linked with the elicited risk preferences of participants. Besides immediate effects of personal life events, we explore how long such effects last.

The results show that some personal life events are associated with changes in elicited risk preferences. Being recently divorced is associated with higher revealed risk aversion than being divorced for a longer time. Individuals who experienced a recent first parenthood show lower revealed risk aversion than individuals without children. Getting married and becoming unemployed seem to have only short-term effects on stated risk preferences.

Risks tend to be judged lower by men than by women and by white people than by people of colour. This findings has been dubbed the 'white-male effect' and suggests that race may influence risk preferences and attitudes. The question arose whether the researcher checked whether this study also showed these differences between ethnicities. However the author put forward that no data was provided to conduct such an analysis.

Too smart to be safe: the unexpected risks of AI-augmented systems at scale

Fabio Massacci, Aurora Papotti, Katja Tuma (Vrije Universiteit Amsterdam, NL)



The current policy narrative in Europe is that our industries, from aviation through health-care to security should introduce intelligent, AI-based components to provide smarter analysis, and thus increase efficiency and reduce costs. The only focus is to make it trustworthy and explainable but is this not enough. When applied at scale, from predicting infections, to planning separation among plane trajectories or supervising the security of cloud systems, the humans on the loop have simply no time to check and possibly mistrust the overall outcome of the system. Unfortunately, we can prove that system pipelines including AI-components may combine failures in unexpected ways. Further, we show that the traditional AI-metrics such as precision and recall of components are not enough to characterize the overall risk. Policy makers must be made aware that AI might deliver but, without robust automatic control measures, smart solutions might be too smart to be safe.

Even well-programmed AI systems can make false positive or false negative decisions Who is (or can be held) liable if fully automated AI systems make a mistake in deciding what is 'good' or 'bad' and this decision has far reaching consequences? The developer? The AI system? Both? Neither? These questions were left unanswered after an interesting discussion.

ROUND TABLE DISCUSSION

Finally, during the round table discussion **Danielle Timmermans** (Amsterdam University Medical Center, NL), **Tanja Perko** (Belgian Nuclear Research Centre, BE), **Marcel van Raaij** (Ministry of Agriculture, Nature and Food Quality, NL) and **Joost van der Ree** (National Institute for Public health and the Environment, NL) discussed the role and implications of risk perception knowledge in policy response to crisis situations.

In context of the enduring covid pandemic and climate change crises the roundtable discussion started off with the statement that the current phase of the covid pandemic and climate change crisis may not be considered crises anymore. Instead it may be better to consider them as wicked problems in which in different populations, different values are at stake. Therefore different narratives about what is at stake apply to every crisis (e.g. medical, cultural or social narrative).

Subsequently the statement was posed that we should not focus on risk perceptions [in terms of perceived severity], but instead focus on the characteristics of the danger. We should not wait for the next crisis but be prepared and proactive in explaining how knowledge on (characteristics that form) risk perception can be of added value to crisis response.

Following this, the view was presented that while in non-crisis situations risk assessment, risk management and policy making may be integrated as separate processes, these are more integrated during crises. During crises risk assessment and policy making has a lot to do with effective risk communication. The value of each message depends on the target audience. For example in the societal discussion on the safety of breast implants the risk assessment information is perceived very differently by patients of faulty implants compared to cancer patients waiting for reconstructive surgery. Key takeaways are that you should know [the perspectives of] your audience and that trust (in the messenger) is important for effective communication.

Following this it was argued that people can live with risks and that communicating about a threat or danger doesn't always hit home. In order to attract attention it is important to convey what is at risk. Resonating the first statement the point was made that in policy response or communication we need to address what people value. This is difficult because people value different things in life and there is not one risk that is equally relevant, concerning or severe for everyone.

Taking together it was discussed that people have a right for individual choices (including for example unhealthy decisions) and policy makers should acknowledge that in communication. This communication should be more value-laden. At the end it was agreed that the key takeaway of the roundtable discussion was that there is a general need for value-based policy making.

Welcome in Brussels on
31 October 2023!

