Risk Perception and Nuclear Energy

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Over the past three decades a considerable amount of research addressed the antecedents and consequences of public perception and acceptance of both large scale technological risks and more personal risks. Generally this research focused on cognitive factors as determinants of the overestimation of some risks, and the underestimation of other risks. More vivid, sensational risks tend to be overestimated, while more mundane risks tend to be underestimated.

Acceptability of large scale technological risk has been related to qualitative factors such as the catastrophic potential, newness, and perceived controllability of the risks. All of these factors tend to be related to concern, worries, and anxiety about possible adverse consequences. Generally, controllability of large scale technological risks tends to be underestimated, while the controllability of more personal risks tends to be overestimated. Not surprisingly, the latter are generally not accompanied by high levels of anxiety. Communication about large scale technological risks often needs to combat unwarranted high levels of fear and anxiety, while communication about more personal health-related risks frequently attempts to increase concern, worries and anxiety in the hope to receive more attention from the general public, and hence be more effective in fostering behavioral change.

Both research on large scale technological risks and research on more personal, health-related risks have a long history on how to communicate risks to help public understanding, educate the public, foster behavioral change to mitigate or prevent risks, and to help policy decision-making about risks.

The major difficulties of risk communication can be summarized as follows:

Complexity. Risk information is often highly technical and complex. Quantitative risk information is difficult to comprehend for the average lay person. Complexity is further increased by the need, sometimes the habit, to present this information in scientific, legalistic and formal language. All these factors can lead to the view that risk communication efforts are evasive and not to the point. Suspicion and confusion are two of the most likely consequences.

Uncertainty. Limited experience with newly introduced technologies, insufficient data bases and shortcomings of available methods and models often lead to substantial uncertainties. This has also led to disagreement about the validity of risk assessments between experts. These, in turn, tend to create discontinuity and confusion in the general public.

Frame of reference. Lay people and experts often use different definitions of risks and use a different frame of reference when evaluating risks. Lay people tend to focus on factors such as catastrophic potential, fairness of the risk-benefit distribution, voluntariness and controllability. Experts, on the other hand, tend to define risks primarily in terms of expected annual mortalities.

Trust and credibility. Experts, governmental agencies and industry sometimes lack public credibility and trust. Recent history has shown examples of the provision of limited information about technological risks and/or deliberate withholding of information, usually because agencies feared emotional reactions and/or panic. This has severely damaged public trust and credibility.

Involvement and concern. Sometimes it is difficult to predict public involvement with and concern about specific risk issues. Risk communication is particularly hard in highly charged situations.

Some progress has been made and psychology could help to make further progress by investigating the frame of reference of the various groups involved, but also by pointing to other important factors that determine the effectiveness of risk communication.

In the final part of my presentation I turn to affect as a determinant of the perception and acceptability of risk. The main focus will be on the impact of more specific emotions. The added value of incorporating emotions in our attempts to explain people’s reactions risks, is that emotions seem to serve an important mediating role between cognition and behavior. Feelings and emotions not only determine the action tendencies people experience when confronted with environmental risks, anticipated emotions can also have a direct impact on behavior. Recent developments in areas such as biotechnology, global risks such as the greenhouse effect, and recent public scares about issues such as BSE, are firm reminders of the need to increase our knowledge of people’s reactions to personal and large scale risks.