

## 1: Human-Wildlife Conflict: Sharks, the media, and risk perception

*Introduction Public empowerment in risk management decisions poses strong challenges to risk communication for several reasons. First, the technical issues inherent in risk analysis and assessment are well.*

Risk perception subjectivity IRM member quoted: Carolyn Williams Risk Perception: The goal is to arrive at a decision based on the most rational analysis of the best available evidence. Environmental health scientists are exploring new ways to strengthen the integrity of this process using principles of systematic review. For one, the human brain is hard-wired to react quickly and defensively to perceived threats of any kind. For instance, threats that are uncontrollable, involuntary in nature, or cause a potential risk to future generations tend to cause more anxiety among the general public than threats that can be controlled or undertaken voluntarily. Of all the emotional aspects of risk communication, trust is perhaps the most pivotal. Scientists and other experts who routinely speak to lay groups about environmental health issues find that people will come to an issue with a great deal of fear, anger, and mistrust if they feel their concerns have already been mishandled. The spill contaminated the drinking water of some , people, 11 and for days health officials had few firm facts to share with angry, alarmed residents. Sharyle Patton is director of the Biomonitoring Resource Center for Commonweal, a nonprofit health and environmental research institute in Bolinas, California. She often brings in scientists to speak to community groups concerned about local environmental exposures. They want to know, they want to be informed consumers. And Rachel Morello-Frosch, a professor in the School of Public Health at the University of California, Berkeley, says it misplaces the burden to expect individuals to do their own risk assessment. The Institute of Risk Management teaches its students to gather the most reliable information and consult experts before making risk decisions. Sometimes that intuition leads researchers to invoke the Precautionary Principle, to wit, when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if causal relationships have not been fully established. The challenge, then, is not so much to eliminate emotion as to harness its power without distorting the scientific evidence. Fischhoff B, et al. How safe is safe enough? A psychometric study of attitudes towards technological risks and benefits. Policy Sci 9 2: Risk Assessmentâ€”Basic Information [website]. Environmental Protection Agency updated 31 July Woodruff TJ, Sutton P. The Navigation Guide systematic review methodology: Environ Health Perspect Rooney AA, et al. Systematic review and evidence integration for literature-based environmental health science assessments. Environ Health Perspect 7: Rethinking the emotional brain. Starr G, et al. Environmental Health Risk Perception in Australia. Slovic P, et al. Expert and lay judgments of chemical risks in Canada. Risk Analysis 15 6: Tversky A, Kahneman D. Kahan DM, et al. Cultural cognition of scientific consensus. J Risk Res 14 2: The Charleston Gazette, online edition 10 January Crisis and emergency risk communication: Environ Health Perspect 8: Aâ€”A ; doi: Peters E, et al. Numeracy skill and the communication, comprehension, and use of riskâ€”benefit information. Health Aff Millwood 26 3: Mercury and Air Toxics Standards [website]. Environmental Protection Agency updated 27 March Oken E, et al. Which fish should I eat? Perspectives influencing fish consumption choices. Environ Health Perspect 6: Trust, emotion, sex, politics, and science: Risk Anal 19 4: Cambridge University Press

## 2: The Assessment of Risk and Potential Benefit

*If the evaluation is done accurately, based on a deep understanding of the conflict parties' risk perception, and if the assessment is updated regularly, mediation measures can be well targeted and tailored in order to properly address the needs and concerns of the conflict parties.*

This chapter discusses some of the conceptual and practical problems that arise not only for IRBs, but also for investigators and potential subjects who must make judgments about the acceptability of risk in relation to the prospect of benefit. Next, it discusses some of the difficulties in defining benefits. Finally, it comments on the difficulties of assessing research risks in relation to potential benefits. In particular, this discussion focuses on the protections that should be required for research involving greater than minimal risk that holds out the possibility of direct medical benefit to subjects, and for research involving greater than minimal risk that does not hold out the possibility of direct medical benefit to subjects. The final section of this chapter also proposes procedures to minimize risks to subjects.

### Defining and Assessing Risk

The concept of risk is generally understood to refer to the combination of the probability and magnitude of some future harm. According to this understanding, risks are considered "high" or "low" depending on whether they are more or less likely to occur, and whether the harm is more or less serious. In research involving human subjects, risk is a central organizing principle, a filter through which protocols must pass; research evaluated by IRBs that presents greater risks to potential research subjects will be expected to include greater or more comprehensive protections designed to reduce the possibility of harm occurring. The Common Rule does not specify that IRBs use three categories of risk in making judgments about the acceptability of risks in relation to potential benefits, nor do the regulations specific to pregnant women or prisoners specify that IRBs use three categories of risk. The Common Rule categories are only for the purposes of establishing minimum protections. NBAC recommends that IRBs use their existing authority to determine whether to add protections above the minimal regulatory requirements for all research involving greater than minimal risk.

### Minimal Risk and Greater than Minimal Risk

According to the Common Rule, a study presents minimal risk if "the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests. For example, when a research protocol is determined to involve minimal risk, IRBs are given the latitude to waive certain consent requirements, so long as certain conditions are met. For example, a "typical" minimal risk encountered in everyday life or in clinical care may be perceived differently by some individuals with certain disorders. It is important, therefore, to establish a practical level of minimal risk against which IRBs can measure proposed research protocols in order to decide which protocols require additional protections. The level of minimal risk will change in one direction or another over time, as experience and additional knowledge alter the way the research community, IRBs, and research subjects perceive the acceptability of various research risks. Under the current system, IRBs have complete discretion to apply none or only some of the added protections to protocols that they believe to be of greater than minimal risk. Indeed, they are entitled to add additional protections for protocols involving minimal risk as well. The DHHS addressed the issue of IRB latitude in its regulations on research involving children by permitting IRBs to approve research presenting no greater than minimal risk as long as requirements for parental permission and child assent are satisfied. Even in this case, an IRB could add further protections if it thought it was appropriate to do so. However, the regulations stipulate that studies presenting greater than minimal risk must meet additional requirements. Like the DHHS regulations for children, many proposals on research involving impaired or incapable adults employ the concepts of minimal risk and minor increase over minimal risk. Indeed, many public comments suggested that NBAC group research protocols involving persons with mental disorders into three categories of risk: The ostensible purpose of this tripartite division is to allow protocols involving only a minor increase over minimal risks to proceed with only minimal additional protections. Three categories of risk, it has been argued, provide IRBs with more flexibility in requiring certain protections. Two categories of risk, it has been suggested, would prevent certain protocols from going forward since IRBs may believe that

the additional protections would effectively bar research involving greater than minimal risk without the prospect for direct medical benefit. In several of these examples, research was considered to involve minimal risk or a slight increment above minimal risk. NBAC did not find these concerns convincing. As explained above, the key point is that IRBs should focus on the need for a continuous range of protections that are related to the perceived level of risk, and whether there are two or more levels should make little difference. In short, NBAC is not persuaded that three categories of risk are necessary for accomplishing the twin goals of providing protection for persons with mental disorders while allowing important research to go forward. Because persons with mental disorders often undergo treatment and tests involving some discomfort and risk, a study presenting similar procedures and potential for harm may qualify as presenting a minor increase over minimal risk to them. In its Report on Research Involving Children, the National Commission defended this approach to greater than minimal risk research on grounds that it permitted no child to be exposed to a significant threat of harm. Further, the National Commission noted that the approach simply permits children with health conditions to be exposed in research to experiences that for them are normal due to the medical and other procedures necessary to address their health problems. An example is venipuncture, which may be more stressful for healthy children than for sick children who may be more accustomed to the procedure. Loretta Kopelman provides perhaps the most detailed critique. First, she finds the notion of "risks of everyday life" too vague to provide a meaningful comparison point for research risks. Kopelman argues that the phrase "minor increase over minimal risk" should be replaced or supplemented by a clearly defined upper limit on the risk IRBs may approve for any child subject. This approach would allow classifying research risks as minimal if they were reasonably equivalent to those the subject encountered in his or her ordinary life or routine medical care. Using this approach with persons with mental disorders who face higher-than-average risks in everyday life and clinical care, a research intervention could be classified as minimal risk for them, but classified as greater than minimal risk for healthy persons. If this was the intention of the drafters of the regulations, it is not at all clear in the current Common Rule. In August, the major federal funding agencies in Canada developed a policy statement on "Ethical Conduct for Research Involving Humans" that explicitly adopts the standard of relativizing risk to the potential subject in question. It defines "normally acceptable risk" as "when the possible harms e. Therapeutic risks can be considered as minimal for patient-subjects, since they are inherent in therapy and thus the everyday life of the subject. In some cases, procedures presenting greater than minimal risks to people with mental disorders might be treated as such, while in other cases e. A procedure classified as minimal risk at one institution could be classified as higher risk at another, or even from one study to another in the same institution. Also needed is further clarification of acceptable risk in research involving incapable adults whose ongoing health problems expose them to risks in their everyday clinical setting. Because some persons with mental disorders who are accustomed to certain procedures may experience fewer burdens when undergoing them for research purposes, some would argue that it may be defensible to classify the risks to them as lower than would be the case for someone unfamiliar with the procedures. We must guard against assumptions like these. The psychological context of illness may well make some research procedures, however familiar, more burdensome than they would be to someone who enjoys good health. These procedures must not be classified as lower risk for subjects who have had the misfortune of enduring them in the treatment setting. What is required is a focus on the "package" of reasonably interpreted risks, on the one hand, and a correspondingly appropriate set of protections, on the other. One way to reduce variation in risk classification would be to provide examples of studies that ordinarily would be expected to present a certain level of risk to members of a certain research population. For example, the Maryland draft legislation includes in its definition of "minimal risk" research those "types of research that are. This is consistent with federal regulations; however, it should be noted that while current federal regulations permit studies involving MRI to be reviewed on an expedited basis, this does not always imply that such studies always involve minimal risk. Perhaps over time, if there is adequate communication and disclosure, it will become evident to the IRB community that protocols tend to cluster in certain ways. For example, one author proposes that lumbar punctures and PET "can be reasonably viewed as having greater than minimal risk for persons with dementia because 1 both procedures are invasive, 2 both carry the risk of

pain and discomfort during and after, and 3 complications from either procedure can require surgery to correct. The protocol involved a challenge study which entailed a higher than standard dosage of the challenge agent, although the investigator described the study as minimal risk in the consent form. The expert evidently advised the IRB that the risks were in fact greater than minimal due to the increased dosage and that the dosage should be reduced and properly identified in the consent form. An IRB that seeks expert opinion, where necessary, can dramatically improve both research design and the bases for subjects to provide informed consent. The debate about the meaning of minimal risk will surely persist because of the philosophical and practical difficulties of defining it precisely. But this does not mean that research involving persons with mental disorders cannot be conducted. Rather, it means that research procedures that would entail minimal risk for a general population must be assessed in light of the specific research population. In no case, however, should procedures classified as greater than minimal risk for the overall population be classified as minimal risk for this population. Therefore, research proposals should be more highly scrutinized if they involve persons with mental disorders, and special care may be required to understand particular risk levels for this population. NBAC believes that these special considerations are important and should not prevent the most valuable research from continuing within such constraints.

Assessing Risk Strictly speaking, risk assessment is a technique used to determine the nature, likelihood, and acceptability of the risks of harm. Moreover, few IRBs conduct formal risk assessments, and there may be good reasons for this: First, reliable information about risks or potential benefits associated with the relevant alternative interventions is often lacking. As a result, highly accurate risk assessment is difficult and in many cases impossible. The "objectivist" school argues that quantitative risk assessment should be a value-free determination limited only by the technical ability to derive probability estimates. What may be a small inconvenience to ordinary persons may be highly disturbing to those with decisional impairments. Thus, for example, a diversion in routine can, for some dementia patients, "constitute real threats to needed order and stability, contribute to already high levels of frustration and confusion, or result in a variety of health complications. Difficult as it may be, careful risk assessment is the key to deciding on the appropriate level of protections.

Defining Benefits Research involving adult subjects can yield three types of potential benefit: Direct Medical Benefit Particular research protocols may hold out the prospect of direct medical benefit to the subjects themselves, even though such benefit can never be assured. The studies may evaluate somatic or behavioral therapies, such as research designed to determine differential responsiveness to a particular drug therapy, or to match particular clients with the most effective treatment. Studies may also assess the efficacy of techniques for remedial education, job training, elimination of self-destructive and endangering behaviors, and teaching of personal hygiene and social skills. Such direct benefits include those resulting from diagnostic and preventative measures. Furthermore, the protocols reviewed by NBAC reflected some confusion about the definition of direct medical benefit. One protocol referred to the challenge procedure as the "treatment phase. Benefits of the treatment phase may include decreases in the. Instead, these possible benefits must be considered in relation to the risks involved. Even though a research protocol may offer potential direct medical benefits to individual participants, it cannot be justified by the possibility of that benefit alone. Indirect Benefit Subjects may obtain other forms of benefit from research participation. As the National Commission noted, "[e]ven in research not involving procedures designed to provide direct benefit to the health or well-being of the research subjects. The benefits of financial incentives for the subject are indirect in the strict sense that they do not stem from the research interventions themselves, but the subject may view them as very important. A secondary concern here, as with research on other potentially vulnerable populations, is who actually receives and controls the funds: The problem is complex because both healthy volunteers as well as some who are ill may agree, for example, to pharmaceutical testing as an important supplement to their income if not their sole income source as their main reason for participating. Remuneration must be appropriate to justify their commitment of time and their submission to discomfort, but not be so great as to lead them to take unreasonable risks. Similarly, some who are suffering from an illness, especially those who are uninsured, may be tempted to join a study if it appears that the ancillary medical care will be superior to what they can otherwise obtain. When such research is invasive and presents no realistic possibility of direct health benefit to

the subject, it "poses in the most dramatic form the conflict between the societal interest in the conduct of important and promising research and the interests of the potential subject. Balancing Risks and Potential Benefits The National Commission was fully aware of the problems inherent in making risk-benefit assessments when it wrote that: It is commonly said that the benefits and risks must be "balanced" and shown to be "in a favorable ratio. Only on rare occasions will quantitative techniques be available for the scrutiny of research protocols. However, the idea of systematic, nonarbitrary analysis of risks and benefits should be emulated insofar as possible. Most researchers and IRBs take the position that adults who lack decisionmaking capacity may be involved in studies presenting little or no risk, as long as requirements for third party consent are met and the research protocol offers a reasonable prospect of advancing knowledge or benefiting the subject, or both. There is substantial support, however, for adopting additional restrictions and review requirements for studies presenting higher risk, particularly for higher-risk studies that fail to offer subjects a reasonable prospect of direct benefit. The first category is research offering subjects the prospect of direct medical benefit. The second category is research that is not designed to offer the prospect of direct medical benefit to subjects.

### 3: Conflict Resolution (II): A Risk Evaluation Tool for Mediators | Global Risk Affairs

*Risk perception is a highly personal process of decision making, based on an individual's frame of reference developed over a lifetime, among many other factors. A body of research from the past several decades makes it clear that when it come to making decisions about health and safety, we don.*

By Ibrakowski on January 16, By Sara Gorman In the s, a rapid rise in nuclear technologies aroused unexpected panic in the public. Despite repeated affirmations from the scientific community that these technologies were indeed safe, the public feared both long-term dangers to the environment as well as immediate radioactive disasters. The disjunction between the scientific evidence about and public perception of these risks prompted scientists and social scientists to begin research on a crucial question: Early research on risk perception assumed that people assess risk in a rational manner, weighing information before making a decision. This approach assumes that providing people with more information will alter their perceptions of risk. The psychological approach to risk perception theory, championed by psychologist Paul Slovic, examines the particular heuristics and biases people invent to interpret the amount of risk in their environment. In a classic review article published in *Science* in 1980, Slovic summarized various social and cultural factors that lead to inconsistent evaluations of risk in the general public. Experts judge risk in terms of quantitative assessments of morbidity and mortality. Slovic masterfully summarizes the key qualitative characteristics that result in judgments that a certain activity is risky or not. People tend to be intolerant of risks that they perceive as being uncontrollable, having catastrophic potential, having fatal consequences, or bearing an inequitable distribution of risks and benefits. Slovic notes that nuclear weapons and nuclear power score high on all of these characteristics. Also unbearable in the public view are risks that are unknown, new, and delayed in their manifestation of harm. These factors tend to be characteristic of chemical technologies in public opinion. The higher a hazard scores on these factors, the higher its perceived risk and the more people want to see the risk reduced, leading to calls for stricter regulation. Slovic ends his review with a nod toward sociological and anthropological studies of risk, noting that anxiety about risk may in some cases be a proxy for other social concerns. Many perceptions of risk are, of course, also socially and culturally informed. The fact that there are so many automobile accidents enables the public to feel that it is capable of assessing the risk. In other words, the risk seems familiar and knowable. There is also a low level of media coverage of automobile accidents, and this coverage never depicts future or unknown events resulting from an accident. On the other hand, nuclear energy represents an unknown risk, one that cannot be readily analyzed by the public due to a relative lack of information. Nuclear accidents evoke widespread media coverage and warnings about possible future catastrophes. In this case, a lower risk phenomenon nuclear energy actually induces much more fear than a higher risk activity driving an automobile. Importantly, Slovic correctly predicted 25 years ago that DNA experiments would someday become controversial and frighten the public. Although the effects of genetically modified crops on ecosystems may be a cause for concern, fears of the supposed ill effects of these crops on human health are scientifically baseless. Today, although biologists insist that genetically modified crops pose no risk to human health, many members of the public fear that genetically modified crops will cause cancer and birth defects. Such crops grow under adverse circumstances and resist infection and destruction by insects in areas of the world tormented by hunger, and therefore have the potential to dramatically improve nutritional status in countries plagued by starvation and malnutrition. Yet the unfamiliarity of the phenomenon and its delayed benefits make it a good candidate for inducing public fear and skepticism. The article calls for assessments of risk to be more accepting of the role of emotions and cognition in public conceptions of danger. The goal of this research is a vital one: In the end, Slovic argues that risk management is a two-way street:

## 4: How do we perceive risk?: Paul Slovic's landmark analysis | ScienceBlogs

*In order to integrate risk assessment and perception, the paper analyses the strengths and weaknesses of each approach to risk analysis and highlights the potential.*

Risk Perception and Terrorism: While expert risk analyses are based on calculations of probability and damage, public estimates of risk are more often based on qualitative factors. It is important to understand how the public, not just homeland security experts, perceive and react to the threat of terrorism. Risk perception research in general, and the psychometric paradigm in particular, offer a basis for empirically examining attitudes toward potential terrorism. This article discusses the benefits of such an approach and specific research recommendations. Applying the Psychometric Paradigm. Business grinds to a halt as both consumers and workers take cover. However, many residents wait several more days before returning, while others do not return at all. Business continues to wane as tourism stalls and factories and shops close down. It will be several months before the city fully recovers. This illustration demonstrates the importance of perceived risk regarding terrorism. The perception of risk "whether or not risk is actually present" is sufficient to cause real and long-term damages. Understanding how specific factors drive the perception of risk is essential to understanding how people will respond to threats of terrorism. There are many benefits to the empirical study of risk perception among the general populace. This research provides a better understanding of how risk perception influences political attitudes; it provides insight into how risk perception impacts various behaviors; it allows the mapping of social processes such as risk amplification and attenuation; it informs the development of effective communication and education programs; and it is useful for identifying which situational factors contribute to perceived risk. Each of these benefits will be discussed in turn, along with an examination of previous contributions in this field and explanations of how they inform homeland security research and policy. The concept of risk is a psychological one. Risk, as opposed to danger, is a socially constructed phenomenon. He further posits that no single attribute defines the risk of a particular hazard; neither are specific attributes equally influential across different hazards. Perhaps the best illustration of the subjective nature of risk is the discrepancy between expert and lay evaluations of a hazard. When judging the risk of a hazard, experts rely much more heavily on mortality estimates and probabilities than do laypersons. Slovic and his associates reported that expert judgments of risk corresponded to objective statistical data, whereas layperson judgments did not. The inconsistency between expert and lay judgments of risk demonstrates the psychological nature of risk. This inconsistency also creates a debate about the appropriateness of using expert evaluations alone for policy decisions. In most cases, government and business policy makers rely almost exclusively on quantitative risk assessment to guide policies. In many cases the involved public fails to accept such assessment. One example is nuclear power generation, which has been largely rejected in this country even though it is both safer and cleaner than fossil fuel alternatives. Another example is the decrease of property values near toxic waste sites, despite repeated assurances that the materials have not and will not impact local residents. Participants in a study conducted by Donald MacGregor and Paul Slovic considered the standard cost-benefit analysis used by experts to be morally insufficient for evaluating and regulating risk, but acceptable as part of a more subjective evaluation process. First, quantitative risk assessments are based on a number of assumptions that introduce uncertainty into the process; second, the credibility of the risk assessors may be suspect; and third, expert assessment often fails to consider issues that are important to the public interest. In summary, the concept of risk is socially constructed and psychologically oriented. Comparisons of expert and lay judgments of risk illustrate that public assessments of risk are tied to qualitative, rather than quantitative, characteristics of a hazard. The relative importance of these qualitative characteristics varies across people or across hazards. Risk perception research techniques can identify which characteristics are important and when. The question of using only expert judgments for policy decisions involving risk is especially salient in the area of terrorism. The Department of Homeland Security is engaged in various projects designed to objectively assess risk. Whether such assessments will be adequate to provide public support for policy decisions is far from certain. By itself, keeping people safe is not sufficient:

The importance of this point in implementing homeland security and emergency preparedness programs is difficult to overstate. Such a potential action is not just a political threat; it can have a serious negative impact on legitimate programs that are effectively reducing risk, and divert money to programs that increase the feeling of safety without increasing actual safety. The answer, from the standpoint of authorities attempting to minimize risk and maximize recovery, is to find a middle ground between measures that reduce objective risk and measures that reduce perceived risk. Risk perception research can inform policy makers on how to balance objective assessments with public opinion regarding security priorities. Benefits of Risk Perception Research Slovic uses the Ford Pinto as a case study to illustrate the value of understanding risk perception. After producing and selling the Pinto, Ford discovered that a defect in the fuel tank could cause the car to catch fire. Ford did a cost-benefit analysis and concluded that a recall would be too expensive. If Ford had considered perceived risk in the analysis they might have made a different decision. The mere perception of a threat was enough to cause severe problems. The same holds true for terrorism. If a terrorist organization provided a credible threat that a nuclear bomb would detonate in New York Harbor, the resulting evacuation and general atmosphere of the city would cripple the state and perhaps the national economy, independent of whether the danger was real. Understanding risk perceptions and responses to risk is vital to understanding "and ultimately affecting " public responses to terrorism. Risk Perception and Political Attitudes The study of risk is important in several ways. The first benefit to studying risk is that it allows psychologists to better understand political attitudes. Perceptions of risk drive public priorities. This phenomenon is demonstrated in cases of environmental hazards. Brian Gerber and Grant Neeley studied how perceived risk of routine hazards was related to attitudes about government regulation. They found that increased perceived risk of a hazard was positively related to support for regulation of that hazard, even when the cost of such regulation was stated to be significant. Two other variables affected this relationship: If respondents considered themselves to be ill-informed on an issue, there was no relationship between perceived risk and support for regulation. Trust moderated the relationship between perceived risk and support for regulation; if the respondents did not trust the regulators, then they were less likely to support regulation, even if perceived risk was high. Leonie Huddy and associates found that levels of perceived risk were linked to willingness to support aggressive anti-terrorist policies. In our democratic society understanding public priorities is essential to developing a politically acceptable action plan. Risk Perception and Behaviors The second benefit of studying risk is that researchers can understand how perception of risk impacts behaviors. Sherwood Williams and others, in a study of urban adolescents, found that fear of crime was an important predictor of defensive behaviors such as going out in groups, learning self-defense, carrying spray, or carrying a safety whistle. Risk Amplification and Attenuation The third benefit to studying risk is that it can clarify the conditions under which perceptions of risk either increase or decrease. Risk researchers have developed a descriptive mechanism known as risk amplification. Risk amplification is concerned with factors, both personal and social, that create either a heightened or lowered sense of risk within a society. The social amplification of risk framework can be a useful tool for tracing the social evolution of attitudes toward terrorism. Consider that several major terrorist attacks occurred that involved U. Embassy bombings in Kenya and Tanzania. Risk Perception and Communication The fourth benefit of studying risk is that an understanding of risk perceptions is vital to developing proper communication and education strategies. Educational initiatives must also build an accurate and useful public awareness base. Neither of these goals can be accomplished unless communicators understand how risk is defined and perceived by the public. In the case of terrorism, communication is particularly important because any major warning must be accompanied by instructions, and those instructions must be heeded by the public at large. Several factors are known to impact risk perception. The first and most important is trust, which has been repeatedly linked to perceived risk. Margaret Heldring identified credibility as the first requirement for effective risk communication. It is vital that agencies and persons responsible for communicating terrorism information to the public maintain this trust, or any directions concerning evacuation, sheltering, et cetera, stand a fair chance of being ignored by the public. These influences are noticeably present in the arena of terrorism. One, failures are more noticeable than successes. This is especially true for the war on terror, where most successes cannot be identified or publicized because such information might compromise intelligence

sources. Two, failures are given greater weight than successes, even if salience is equal. With regards to terrorism, the costs of failure are much more noticeable than are the benefits of success, because success merely preserves the status quo. Three, once an audience loses trust, it screens future perceptions. Failures become even more noticeable, because people tend to retain information consistent with their attitudes. While trust is an extremely important variable in risk communication, it is also a very fragile one. Specificity is another communication factor that impacts perceptions of risk. Risk communications that are not specific are more likely to increase anxiety without increasing awareness. For law enforcement officials, this alert system is marginally useful, if each level of alert is accompanied by specific actions and procedures. Such procedures are developed at the local level, however, so the DHS system by itself is only useful if the local jurisdictions have attached their own set of specifics. For the general public, the DHS color-coded system is rightfully criticized for being counterproductive, precisely because it offers no useful information to a public audience. Heldring outlined criteria for risk communication to be considered useful: But risk research provides insight into how terrorist warnings should ideally be constructed and relayed. Barnett and Breakwell postulated a mechanism by which past risk communications influence the response to further risk communications. The series of previous hazard notifications a hazard sequence impacts the way a hazard is normalized; this normalization results in a hazard template – a social heuristic that speeds the processing of information related to the hazard. Situational Factors A fifth benefit to studying risk is to identify situational factors that influence risk perception. Psychological research has identified four situational factors that influence how people judge risk: In the case of terrorism, such information assists researchers or public officials – given specific information about the characteristics of a terrorist threat – to predict how people might react to that threat. Personal Factors Several intra-personal factors have been linked to risk perception. In the health psychology literature, three factors have been associated with risk perception:

## 5: Cultural theory of risk - Wikipedia

*perceptions of risk that reflect and reinforce values that they share with others (Douglas & Wildavsky ). Public dissensus over climate change, according to this view, originates in a more basic conflict.*

A Risk Evaluation Tool for Mediators June 11, The second part of the article on conflict resolution draws the conclusions from the previously developed argument, that mitigating the risks of peace negotiations, as perceived by the conflict parties, is the key to ending protracted conflict see Conflict Resolution I: The risk evaluation tool introduced below, aims to identify and assess the critical barriers to making peace, and might therefore be particularly useful to third parties who are engaged as mediators. Factors of risk aversion and holistic mediation strategy Given the powerful factors of risk aversion which often keep conflict parties from settling their issues at the negotiation table, mediators may consider a holistic strategy of tackling the respective risk dimensions simultaneously. The cognitive factors of risk aversion, especially the negative framing effects, will have to be neutralized by Positive reframing of peace prospects B. The rational-strategic factors of risk aversion that are connected to the uncertainty of the negotiation process and outcome, should be diminished by a Reduction of ambiguity of negotiations C as well as a Control of ambivalences in a peace agreement D. Since conflict resolution does not end with an agreement, and conflict parties are well aware of post-settlement risks, International assurances for peace implementation E should be integral part of the mediation strategy from the beginning. The table below provides a detailed check-list of the risks attached to a peace process, which need to be managed in order to advance the mediation strategy in all dimensions A to E. Based on the expertise acquired over the course of some 15 years of comparative conflict studies, as well as practical experience in developing mediation strategies, the author believes that there will be no sustainable peace agreement if any one of these dimensions is neglected. The risk-based approach to conflict resolution Consider, how interrelated the socio-psychological, cognitive and rational-strategic risk dimensions really are. For example, if a conflict party still feels hostility towards the opponent and does not trust the other party, this means that the socio-psychologically induced risks have not been mitigated and the normalization of relations failed. This is bad enough, but the parties will then also be less ready for a positive cognitive reframing of the peace prospects. Furthermore, given the strong psychological risk aversion, it is not very likely that they will take the rational-strategic risk of engaging in ambiguous negotiations either. Or, let us assume that a conflict party unilaterally begins a cognitive reframing process, which means that the prospect of potential benefits to be gained through a peace agreement will become more prominent. Having positive peace prospects will then also influence the socio-psychological risk dimension, by increasing the readiness to reduce the tensions with the other party, and thus improving the relationship. It must be noted, however, that if just one party lacks any positive prospect and does not clearly see what it could substantially gain through a peace settlement, this might already suffice to block the normalization of relations and the reduction of the rational-strategic risks attached to a negotiation process. In sum, progress or failure in mitigating the risks in each dimension will positively or negatively reinforce the risk perception of the conflict parties in the other dimensions. The risk evaluation tool set out here, ensures that a mediator implementing it really does assess the risk perception and will of the conflict parties for peace. Eventually, this is what counts for the strategic goal of conflict resolution, which is defined by a voluntary agreement and effective implementation by the parties conflict resolution is therefore not to be confused with enforcing a settlement by third party intervention. Critical variables of risk mitigation in the peace process The table is structured in four columns. The first column displays the already discussed risk dimensions in the five main categories A to E, including the subcategories of risk areas 16 in total and the risk variables within each area 50 variables in total. The second, third and fourth column serve to evaluate the variables and aggregate the values on the higher levels of the risk areas and dimensions. Each dimension comprises three to four subcategories of risk areas numbered 1, 2, 3, and each risk area contains a number of risk variables sorted a, b, c, d. The assessment of the variables indicates in how far risk mitigation of the peace process in the individual areas and dimensions has progressed, stagnated or regressed. The variables are phrased as questions, which the analyst using the tool can answer with not true,

partly true, or mostly true. This assessment will often indicate the identification of a critical barrier for the peace process. In contrast, the answer mostly true, indicates that the variable in question is no longer seen as a major risk factor by the parties, allowing for progress in the peace process. However, the risk evaluation of such a variable might deteriorate again, due to certain incidents or a shift of perceptions and preferences. The evaluation tool is meant for continuous monitoring, in order to keep track of improvement or deterioration over time. The answer partly true means that although the risk attached to the variable has been reduced, the respective matter is undecided and must still be regarded as a factor of risk aversion on part of the conflict parties. The colors red, orange and yellow marking the evaluation columns, represent the messages alert, for no risk mitigation, warning for risk ambiguity, and vigilance for currently reduced risk. The way, the evaluation system is set up, enables the analyst to apply two different aggregation procedures. The first approach would consist of building a risk evaluation index. Further aggregation of the values for the risk dimensions is not favored here, in order to ensure the development of a meaningful profile. A more radical risk assessment would, however, focus on those adverse variables with zero values, and transfer the same value to the entire risk area concerned. Urgent action for managing the risks identified would be the adequate response within that context. In any case, a mediator or the analyst assigned with the task of using the risk evaluation tool, will get both a detailed and comprehensive account of the causes for regression, stagnation, or progress in a conflict resolution process.

### 6: Risk Perception: Itâ€™s Personal

*the risk to people in general from domestic nuclear power. The response distributions are shown in Figure 1. The figure shows drastic differences in risk perception.*

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