Factual Divergence and Risk Perceptions: Are experts and laypeople at war?

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Abstract

The communication of information ('facts') by experts to the general public becomes challenging if there is an absence of trust in experts, and in the institutions they represent. There has been a perceived sense of a decline of public trust in expertise and science, an issue of concern highlighted by political leaders such as MP Michael Gove and Former US President Donald Trump. This paper presents a synthesis of differing fields of study to reflect upon the dynamic between expertise, risk and public response in democratic practice. It incorporates studies and theories from the fields of psychology, risk analysis, communication, epistemology and political studies to answer questions such as: what evidence is there that public antipathy toward experts exists? Is a war being waged between laypeople and experts, and what does this mean for public policy? How can risk perception research effectively contribute to the debate on trust in expertise?

The role of heuristics and psychology in decision-making is explored (as well as a brief sojourn into the sociology of risk) with regard to how risk perceptions are formed, and the role that experts play in this dynamic. In this article, I argue that the reports of a decline in trust in expertise are not based in evidence; in fact, experts and scientists are generally trusted by the public at large. However, this trust cannot be taken for granted as it continues to represent an increasingly critical element in communicating risk and upholding democratic principles in governance.

Keywords: risk; cognitive bias; risk perception; laypeople; decision-making; public policy; trust

Introduction

'[The Australian Government] is sick of experts' declared former Australian Department of Human Services Secretary, Renee Leon, noting that 'we have seen an attack on expertise in the last decade where to be an expert was almost to be reviled for being part of an elite of people' (**Rollins, 2020**). If expert advice did not align with the views of the Government, Leon reportedly maintains, government officials preferred to instead rely on 'their more favoured decision-making input, which is anecdote' (**Ibid**). Disturbingly, this rhetoric is not uncommon, and represents statements mirrored by politicians such as the former United States President Donald Trump and prominent UK Minister Michael Gove (**Gadarian et al., 2020, Riechmann & Madhani, 2020**). It is not unusual to see these anti-science narratives framed in a rhetoric of elitism that serves to further cement a harsher distinction between scientific expertise and lay audiences thus rendering mutual understanding increasingly difficult to coalesce.

Reported instances of public dissent and hostility toward expertise may exacerbate issues already at crisis point, as seen in the COVID-19 pandemic (**Calisher et al., 2020, Jaiswal et al., 2020**). A denial of facts and of evidence-based decision-making is troubling at the least, and catastrophic at worst. The seeds of doubt toward expertise that were planted by influential public figures in the pandemic cost thousands of lives due to widespread public inaction to effectively address the health crisis (**Gadarian et al., 2020**). The PEW Research Center acknowledged these dangers of public antipathy toward expertise when recognising that 'a scientific endeavour that is not trusted by the public cannot adequately contribute to society and will be diminished as a result' (Parikh 2021). This is in clear recognition that collective action issues rely on public opinion, as this, rightly, serves to sway policy mechanisms and public responses.

A lack of trust can lead key decision-making officials, as well as the public, to question the 'facts' put forward by subject-matter experts (**Nichols, 2017, Cairney & Wellstead, 2020**), resulting in a perception of 'factual divergence', the term representing a move away from a level of scientific basis. This factual divergence is often thwarted by strong statements from scientists reasserting the expertise hierarchy when addressing misinformation (**Calisher et al., 2020**), or prompting the mere relay of 'clear, honest information to the public', otherwise known as the 'information deficit' model, an approach that many risk communication experts strongly critique (**Mian & Khan, 2020**).

In considering the abundant public discourse heralding a perceived end of friendly relations between experts and laypeople (see for example: **Vinopal, 2020** and **Darhout, 2020**), we must ask: what evidence is there that this antipathy toward experts exists? Is a war being waged between laypeople and experts, and what does this mean for public policy?

This paper contributes to the discussion on our current so-called 'facts crisis' through interlacing and interacting with trust, ideological and risk framings. Fact, trust and disdain for expertise are rarely viewed through these lenses. This article comes at a time when understandings of expertise and personal decision-making are a key focus for the future wellbeing of populations. I seek to bring together distinct fields of research in a transdisciplinary way to include contributions from cognitive psychology, sociology, engineering, media and communications, epistemology and risk science in an attempt to synthesise work across these fields and provide a robust argument of how trust in information sources factors into the risk perceptions of individuals and their subsequent actions.

The structure of the article is presented to first reflect on why risk understandings are imperative in this discussion, then moving to an exploration of the current literature surrounding whether we should be worried about a perceived reduction in public trust in expertise. This then turns to arguing for the importance of relying on expertise in the face of disaster management and collective action problems, and finally the role that local knowledge should place in risk perceptions and therefore, decision-making.

Why Risk?

Diverging viewpoints on credibility of information carry with them an important fundamental factor that is rarely discussed or acknowledged in the public sphere: that underlying personal risk perceptions guide our decisions and actions. These are founded on both our relationship with experts and our underlying personal biases and worldviews.

Seminal works by Tversky and Kahneman (**1973**) have highlighted the impact of our personal risk perceptions on day-to-day decision-making. We are consistently faced with decisions which require us to rapidly conduct a cognitive risk assessment (e.g. should I walk over that grate or go around it) and allow this to drive subsequent actions. A person who perceives flying as being life-threatening and risky may choose to drive rather than catch a flight to a nearby city, without perhaps applying much systematic thought, evidence-seeking or reasoning to the decision. People are also more likely to resort to these decision-making shortcuts (called heuristics) if they are low on knowledge about an issue or if they are under

time pressure (**Wood et al., 1985, Ratneshwar & Chaiken, 1991**). In considering laypeople or non-experts, both factors may underlie the lack of motivation to unpack and systematically assess their risk perceptions on certain issues.

There are two variants of heuristics that are most commonly used in understanding and perceiving risk: the affect and availability heuristics. The 'affect heuristic' is centred on how feelings shape the decisions and opinions one has at a specific point in time (see, for example, **Slovic et al., 2004** and **Waters, 2008**). In understanding risk, personal emotional reaction will play a role in determining perceptions of the extent of the benefits and negative hazards, which ultimately drives one's assessment of that same risk (**Slovic et al., 1982**). The 'availability heuristic' represents a decision-making shortcut that can be based on personal past experiences, or other inputs such as media reporting, which alters perceived riskiness. The availability heuristic is argued to play a role in these assessments, with respondents regarding instances of a particular hazard as more likely if it is easier for the assessor to recall (**Tversky & Kahneman, 2009**). As probabilistic assessments form an enduring aspect of current risk analyses (**Aven, 2017**), (typically formed using probability of the hazard weighed against the consequence of such a hazard occurring), it is not surprising that availability or, the 'ease of recall' of a hazard would alter the ensuing risk perception of an individual. Many (**Fischhoff et al., 1978, Slovic et al., 1979, Slovic et al., 1981, Taylor, 1982, Slovic et al., 1985, Kasperson et al., 2003**) have studied the impact of availability heuristics on laypeople, measuring the personal perceptions of respondents toward differing fatal hazards, concluding that as a result of this heuristic, risk perceptions are often significantly out of line with statistical data. For instance, respondents may regard some incidents as being higher risk when statistically they are low risk, and vice versa. Slovic et al. (**1981**) use the example of a person who has recently experienced a flooding event. For this person, the perceived riskiness of a future flood is increased due to how memorable and easily recallable it is. This also holds true for increased media representation of a hazard. If it is easily brought to mind, we see the risk as heightened (**Ibid**). It is for this reason that the uptake of insurance policies increases directly following a disaster event, despite flood risk profiles remaining unchanged (**Kousky, 2017**). This also works in reverse. If an event has not been experienced over a prolonged period of time, it is perceived to be of a lower risk of occurring in the near future.

The COVID-19 pandemic is no different. In a 2010 Australian study, despite expert consensus predicting a pandemic was on the horizon (**Monto, 2005, Osterholm, 2005, Perez et al., 2005**), only 14.9% of the 2081 respondents stated that a pandemic was likely or extremely likely to occur (**Jacobs et**

al., 2010). The Australian population were not noticeably affected by the SARS or Avian-flu pandemics, and influenza was not a focus of the media at the time, noting the impact of media representativeness on risk perceptions (**Lupton, 2013**). However, a study conducted in 2020 which surveyed over 6,000 participants across Europe, America and Australia found that risk perceptions of future pandemics were high, and were driven by direct experience, trust in science and social amplification (**Dryhurst et al., 2020**). This highlights the impact of affective systems, and the availability heuristic, in the perception of risk.

Debates about risk perceptions are ongoing in the public sphere. Taking a sociological and partly social constructivist stance, society is 'increasingly occupied with debating, preventing and managing risks that it itself has produced' (**Beck, 2006**). Strong public outrage, or resistance to government decisions have been shown to have substantial impact on proposals. An example of this is the prominent action against the 5G network rollout in Switzerland, fuelled by perceptions of unsafe high radiation effects on the general public (**Seal & Torsoli, 2020**). Despite the World Health Organization's claim that 5G operates within safe levels of non-ionising radiation for humans (**World Health Organization, 2020**), as well as a strong consensus among scientists supporting this claim, there have nevertheless been protests held against the implementation of the technology. This resulted in the Swiss government's decision to halt the installation of the 5G towers, as well as an additional testing project to measure radiation levels (**Shields, 2020**). Hence public risk perceptions, and subsequent outcries, have had a notable effect on government policy, despite the safety of the technology being asserted by experts. Risk is often communicated through expert bodies and governments to encourage change in public behaviours for perceived future or current hazards. This is not to presuppose that public swaying of policy is a negative outcome, but rather that a well-informed public is less susceptible to risk misconceptions, and hence will be more able to protest when protest is warranted, effecting change where it is not only justifiable but needed. Therefore, there is a constant feedback loop between public sentiment, governments and public policy regarding societal risk and the reflexive frame that Giddens highlights as the modus operandi of today's political systems (**Giddens, 1991**).

Experts: Rational, or informed ubjectiveness?

As mentioned in the last section, risk assessment is often conducted by evaluating probabilities (**Council of Standards Australia, 2009, International Organization for Standardization, 2019**), a standardised approach which is not impervious to psychological biases such as the previously introduced availability heuristic (**Sjoberg & Sjoberg-Drottz,**

2008, Kosovac et al., 2019). Experts cannot be completely unanimous in their decision-making, and assessments cannot be wholly immune from individual psychological factors underpinning their assessments of risk (**Kosovac et al., 2019, Kosovac and Davidson, 2020**). Studies have also shown experts' risk ratings are also driven by feelings of dread or uncertainty (**Kosovac and Davidson, 2020**). While experts can be swayed by heuristics and other psychological factors, studies have determined that experts are more homogenous in their assessments of risk in comparison to assessments undertaken by the general public (**Drottz-Sjoberg, 1991, Sjoberg and Sjoberg-Drottz, 2008, Ochi, 2021**, **Margolis, 1996**). This was further confirmed in a study by Ochi (**2021**), stating that scientifically trained experts are less vulnerable to be swayed by cognitive and social forces due to their consistent and habitual sourcing of information. Despite these findings, there has nevertheless been an ongoing debate in the last 30 years on the premise of whether experts are the objective, rational decision-makers that many claim them to be (**Slovic et al., 1981, Fischhoff et al., 1983, Nichols, 2017**). Conversely, do we want purely rational decision-makers (assuming this is possible)? A study on chess players showed that they performed better when relying on heuristics than when they purely rely on risk as analysis (**Slovic et al., 2004**). Similar findings have been reported on those conducting security screenings at airports (**Slovic et al., 2004**). This premise is also well encapsulated in a study by Braman et al. (**2006**): '[l]ike members of the general public, experts are inclined to form attitudes towards risk that best express their cultural visions.' The only difference, they argue, is that experts are more likely to use their technical knowledge and rationality in this judgement. It is this knowledge that will also factor into their risk assessments, ensuring experts remain a necessity in decision-making.

Trust, Risk Perceptions and Expertise

Trust in expertise matters in decision-making regarding risk trade-offs in areas such as new technologies, public health and natural disaster management (**Groothuis & Miller, 1997, Siegrist & Cvetkovich, 2000, Zinn, 2008, Siegrist, 2021**). Siegrist et al. (**2005**) sought to determine whether high levels of trust toward authorities reduce risk perceptions in individuals. They consider the role of general trust, the extent to which one believes that people can be usually trusted, and general competence, which considers how 'under control' things are. General trust and general competence were found to be negatively correlated to risk perception (**Siegrist et al., 2005**). That is, the more trust one instils on the organisation/person presenting the information about a proposed low-risk action or technology, then the lower the risk perception felt by the person. Trust is crucial where knowledge is lacking, particularly in the face of uncertainty. Considering there is a consistently incomplete scientific

knowledge in the general population, the impact of trust on risk perceptions is highly influential (**Ibid**). If trust is not present, then the ensuing attempt at conveying risk knowledge is not likely to be received or accepted (**Earle & Cvetkovich, 2001**). In addition to this, what leads a person to develop trust in a company, government or institution? A crucial finding is that value-laden narratives play a key role in trust and therefore, adoption of appropriate risk framings (**Ma et al., 2019**). In particular, the sharing of salient values in the 'stories' a company/government/organisation articulates, and its level of alignment with your own personal values tends to significantly influence your trust in them (**Earle & Cvetkovich, 2001, Siegrist, 2021**).

In considering evidence surrounding trust and risk perceptions, Slovic (**1990**) found that of the US public surveyed, most people viewed X-rays and prescription drugs as being low risk with significant benefits. These findings were linked to the high level of trust reported by these participants toward medical practitioners. However, when considering industrial radiation, it was seen as high risk generally by those being surveyed, despite evidence to the contrary provided by experts (**Ochi, 2021**). This was linked to the low trust in governments and those that manage risks associated with these radiation technologies. Subsequently, those that do have high trust in experts perceived fewer risks and greater benefits associated with a new piece of technology (**Siegrist et al., 2000**). In this way, trust toward expertise plays a direct role in effectiveness of the communication of risk, and the actions taken by individuals to address it.

Attitudes Towards Expertise

Related to issues of trust, there has been a seeming public disregard of science which has heralded perceived decreasing trust in scientists and experts in modern democracies (**All European Academies (ALLEA), 2018**). A dichotomy of 'facts' vs 'untruths' has been utilised in discourse across many issues, whether this be on the radiation impacts of wireless internet in our home, the effects of wind generation farms on local health or even the safety of nuclear power plants. Despite experts playing a critical role in understanding and communicating risks of new technologies and disaster management, public discussions which repudiate facts and information presented by experts are rife (see for example, the COVID vaccine public debates (**Berman, 2020**)). In the absence of trust in experts, people may turn to sources of information that are shared by those they trust and share values with (**Siegrist et al., 2000**). This, combined with the inaccessibility of academic scientific knowledge, often results in a greater reliance on alternative sources of information available through blogs, YouTube videos and other online mechanisms which may not be evidence-

based and may be unverified (**Lewandowsky et al., 2012**). Those who resort to these types of platforms to source their daily news consider them fairer and more credible compared to traditional news sources (**Johnson and Kaye, 2004**).

As a result, there has been increasing pressure placed on social media platforms such as Facebook and Twitter to monitor and reduce misinformation, while promoting 'legitimate' sources in their algorithms, making them more visible to users (**Facebook for Business, 2020, Ghosh, 2020**). There is little point in purely prioritising information from experts, if it so happens that public distrust exists against the institutions that report them (**Ochi, 2021**). Prominent sociologist, Anthony Giddens (**1991**), highlighted this challenge when recognising that 'the nature of modern institutions is deeply bound up with the mechanisms of trust in abstract systems, especially trust in expert systems', a view similarly echoed by Slovic (**1993**). But do these tensions we perceive in public discourse translate to real attitudes towards expertise?

The empirical findings on this topic do not substantiate the perceived conflict and distrust between experts and laypeople. A number of studies highlight that, in fact, there is general public trust towards some experts, particularly medical professionals, engineers and scientists (**Sanz-Menendez and Cruz-Castro, 2019, CONCISE, 2020**). Furthermore, COVID-19 has brought with it a heroisation of medical professionals and epidemiologists in the public eye, which in the case of Australia, is exhibited through mass-produced items such as t-shirts and bedspreads glorifying the Victorian Chief Health Officer, Professor Brett Sutton (**Gillespie, 2020**). This is a global trend that has featured, for example White House Chief Medical Advisor Anthony Fauci in the trend 'Man Crush Mondays' (**Tillman, 2021**) and an 'unofficial Dr Bonnie Henry fan club' in Canada (**Woods, 2020**). Public health experts are valorised in a fashion that is not indicative of a public wariness toward expertise.

For environmental issues such as climate change, there are mixed opinions toward expertise. Studies report on the high levels of trust from the public toward information from climate scientists (**Nisbet & Myers, 2007, Bickerstaff et al., 2008, Malka et al., 2009**) while other studies find that government general science research is trusted generally, yet climate science is less trusted by the public (**Nisbet & Myers, 2007, Myers et al., 2017**).

One area that is overwhelmingly backed by ample evidence is that trust (and credibility) is highly dependent on personal political ideology (**Malka et al., 2009, Brewer & Ley, 2013, Nisbet et al., 2015, Bolsen et al., 2019**). This subsequently affects the efficacy of message (including risk) communication from a variety of sources, in particular that people seek

information from those that are ideologically-aligned. Hmielowski et al. (**2013**) found that in their US study, those that align with conservative values and consume conservative media were more likely to have lower trust in science than their non-conservative counterparts. This is a finding that has been further confirmed by other studies in the literature (see for example, **Nisbet et al., 2015**) particularly in considering the effect of cognitive dissonance: the rejection of information that is contradictory to current beliefs and values. The impact of the psychological practices in cultural cognition and defence motivation also illustrates a role in the likelihood of information acceptance. To elaborate, information that may challenge the beliefs that underpin one's identity may be less likely to be adopted, and more likely to be subconsciously resisted (**Giner-Sorolila & Chaiken, 1997, Nisbet et al., 2015**). As this information may pose a threat to one's own self-perception, particular facts may be avoided that clash with self-proclaimed identity (**Kahan et al., 2009**).

Dissonant information often creates conflicts within the ideological identities of people which can lead to a negative affect toward the scientists delivering the message (**Malka et al., 2009, Dixon & Hubner, 2018, Nyhan, 2021**). This is often exhibited in the context of climate change and environmental degradation. Bolsen et al (**2019**) found that incorporating climate scientists in a national security message on climate change decreased the respondent's perception of the risk of climate change, contradictory to the aims of delivering the message itself. Despite the effect of dissonant information, if the knowledge transferred is provided by those one is ideologically aligned with, they are more likely to accept the information. For example, a Republican voter is more likely to accept climate information from the Republican Party than from other ideologically non-aligned sources (**Bolsen et al., 2019**). As such, individuals seek out and accept information that is in line with their own worldviews (**Kahan et al., 2009**).

Political polarisation around science has the potential to depress trust in science, regardless of where one lies on the ideological spectrum (**Nisbet et al., 2015**). Therefore, although trust in experts does exist, the impact of ideology on these relationships cannot be ignored.

Who Should Make Decisions?

Although experts play a key role in public policy, facts and analytical assessments should not be the only input upon which to base a decision that can impact many. If only statistical information is utilised for decision-making, then this can result in the disregarding of many social outcomes or consequences not considered by experts, which could fuel public disenchantment and ultimately lead to loss of trust (**Healy, 2001**).

For example, the water restrictions of 2008 in the South East of Australia were imposed as a result of years of consecutive droughts (titled the 'Millennium Drought') that was predicted would continue into the future by climate experts (**Bureau of Meteorology, 2015**). In order to safeguard water supply, water experts had conducted balance modelling to determine what levels of restrictions are required to see Melbourne through the predicted drought. Water restrictions were subsequently imposed on the community at a state policy level, which incorporated no irrigation of sports fields and urban open spaces (**Melbourne Water ND**). At a basin level, this was required to reduce demand when purely considering water balance models. By limiting the water being used, there can be an added water security buffer during the summer when there is little replenishment of the dams during the year. The impact of the water restrictions was profound, but not in the way that water experts predicted. Due to the drying of sports fields and green spaces, there was a reduction in social capital within the community (**Weller & English, 2008**) due to the ceasing of Australian football matches being played on weekends, and a reduction in picnics on green spaces, or other outdoor events where people would often gather and socialise. This subsequently led to detrimental mental health impacts on many parts of the community, as they had lost their social connection touch points (**Ibid**). In this circumstance the sole reliance on data modelling did not predict a number of adverse social outcomes (and new risks) from the policy action. Input from the community in decision-making in this instance was paramount (**Syme, 2008**). Incorporating co-determination processes is central to achieving a type of decision-making that integrates public values together with technical expertise (**Renn, 2001 & 2006**).

The nature of our society is pluralist, incorporating differing value systems and worldviews across the spectrum, thus ensuring that it may be difficult to conduct truly representative collective decision-making (**Renn, 2006**). As Braman et al. (**2006**) attest: '[b]ecause citizens' fears express their cultural visions of how society should be organised, the line between 'considered values' and 'irrational fears' often proves illusory'. The nature of the fears expressed within the community and the facts they refute display expressions of their values of how they see the world, a critical component to understanding risk perception.

Conclusion

The implementation of policy surrounding issues of public collective action is highly reliant on risk assessments of both experts and laypeople to inform decision-making. This is not to say that experts purport to hold all relevant knowledge or are purely rational decision makers. As discussed, experts carry their own psychological biases and values which inform their

stances while in much the same way relevant local knowledge can be paramount to supplement existing expertise. Although the rhetoric regarding public disdain for scientists has been rife over the last three decades (see **Slovic, 1992** for similar arguments against experts that we see today in **Nichols, 2017**), the evidence shows that the general public is largely trusting of scientists and experts. Controversial issues such as the implementation of 5G technology, or the construction of nuclear power facilities present key flash point debates where public sentiment has in some instances diverged from expert opinion. But these examples do not highlight the widespread distrust of experts, but rather, the effectiveness of democratic practices in steering public policy.

In creating this synthesis of the fields of risk analysis, expertise, trust and democratic practice, it is apparent that there is no 'war' that is being waged between laypeople and experts but rather a constant co-existence that, at times, carries its own healthy tensions. The argument within this piece does not presuppose that experts are the only legitimate sources of information, nor should their advice act as the only input in key public sector decisions. As has been discussed, the community more broadly provides crucial insight into social matters as well as into value prepositions of policies of public interest. As a society we want to discuss risks, we want to understand risks, and we want to have a say in the risks that we are exposed to. Without experts and the facts they provide, we can never know the true extent of these risks (if a 'real' risk is one's ontological basis) nor can we present a balanced, informed viewpoint. Instead, some key decision-makers, such as those cited in the introduction, find themselves increasingly reliant on anecdote and decision-making 'shortcuts' that may be disserving us all.

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