Risk communication and COVID-19 in Europe: lessons for future public health crises

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ABSTRACT
Risk communication is key to engaging with the public on non-pharmaceutical interventions (NPIs) to promote acceptance, compliance and policy support. This article outlines the considerations needed for effective risk communication to promote support for and compliance with NPIs alongside building trust, before assessing the hazard characteristics of COVID-19 on public perceptions. Highlighting examples of risk communication successes and failures in five European case study countries: France, Germany, Sweden, Switzerland and the UK, this article aims to underline the impact of risk communication on public trust and confidence in respective government COVID-19 strategies, and outline recommendations for future public health crises.

Introduction
The COVID-19 pandemic has continued for over a year, resulting in over 500,000 deaths in the EU/EEA and over 120,000 deaths in the UK alone as of late February (European Centre for Disease Prevention and Control 2021; Public Health England 2021). To tackle the infection rate of COVID-19, non-pharmaceutical interventions (NPIs) including mask-wearing and physical distancing have been enforced globally. NPIs rely on public understanding, acceptance and compliance for their success especially when not mandatory (Seale et al. 2020). Strategic public communication of risk can aid in achieving this goal and has therefore been a fundamental tenet of government COVID-19 risk prevention strategies across Europe (Bish and Michie 2010; Krause et al. 2020; Warren and Lofstedt 2021).

This article aims to evaluate government COVID-19 risk communication in five nations: France, Germany, Sweden, Switzerland and England within the UK. A background and categorisation of risk communication is proffered, focusing on three elements: the ‘audience’, ‘messengers’, and the ‘message attributes’ (Rickard 2021, 4). This article examines how COVID-19 characteristics influence risk perceptions. Following this, using examples from the five nations as case studies, we aim to highlight areas of best-and worst-practice in risk communication strategies during the COVID-19 pandemic from a review of recent literature and case study examples, before offering recommendations for risk communicators for future pandemics and public health crises.
Background: risk communication

Leiss (1996, 86) defines risk communication as ‘the flow of information and risk evaluations back and forth between academic experts, regulatory practitioners, interest groups, and the general public’. As well as being the ‘right thing to do’, it can be a crucial part of risk management, especially when relying on public support for policy or motivating individual behavioural change (Balog-Way, McComas, and Besley 2020, 2242; Brewer 2011; Lofstedt 2005; Pidgeon 2021). Social trust in communicating actors and risk managers can mediate risk communication’s impact (Cvetkovich and Lofstedt 1999; Lofstedt 2005; McComas 2006; Slovic 1993). Trust is also a key consideration to ensure public acceptance of COVID-19 policy responses and increasing adherence (Habersaat et al. 2020).

As Rickard (2021, 4) states, there are three fundamental elements of the pragmatic function of risk communication: ‘audience’, ‘messengers’ and ‘message attributes’. The impact of any given risk communication strategy is highly likely to be mediated by characteristics belonging to these elements.

Audience risk perceptions shape, and indeed are shaped by, risk communication strategies (Brewer 2011; see Morgan et al. 2002; Wardman 2008). Understanding influences on risk perceptions is pivotal due to their importance in determining behaviours (Siegrist and Árvai 2020). Siegrist and Árvai (2020) propose three primary groupings to consider when evaluating audience risk perceptions: hazard characteristics, characteristics of the risk perceivers and heuristics.

Balog-Way et al. (2020, 2240) describe messengers as ‘individuals, groups and organizations purposefully engaging in risk communication’. Considering who communicates to the public is essential, as messages are mediated by trust, influencing their reception and acceptance (Bord and O’Connor 1990; Wynne 1991). Many authors have debated the components that make up trust, however, the elements proposed by Renn and Levine (1991) are used in this article. They are: (1) Perceived competence; (2) Objectivity; (3) Fairness; (4) Consistency and (5) Faith or ‘good will’ (Renn and Levine 1991, 179–80).

When discussing message attributes, Rickard (2021) highlights the potentially persuasive impact of different frames on message reception through their ability to appeal to emotions such as fear (Witte 1994) or empathy (Campbell and Babrow 2004; Shen 2011) that may change or strengthen a response. Other content-based methods of improving message effectiveness involve the use of visuals rather than simply text or spoken word (Lipkus 2007), seen in the use of traffic light messaging and heat maps (Bostrom, Anselin, and Farris 2008; Fagerlin et al. 2017; Hieke and Wilczynski 2012), and pictographs for health risk and benefit communication (Fagerlin, Zikmund-Fisher, and Ubel 2011).

Risk perception of COVID-19

Public risk perceptions are integral as they mediate individual COVID-19 decision-making, behaviours and policy support (Cori et al. 2020). As with all risks, COVID-19 has its own characteristics that can be analysed in terms of dread and unknown qualities (see Slovic 1987). The unique features of COVID-19 are discussed below, alongside implications for communication.

Dread characteristics of COVID-19

Dread risks influence risk perceptions (Slovic 1987). Dread includes a number of characteristics, such as controllability, voluntariness and catastrophic risk potential. These variables are explored, applied to COVID-19:

- **Controllability and voluntariness**: Increased perceived controllability can result in a more optimistic view of risk impacts, seen in activities such as contracting HIV, obesity
and sunbathing (Keller and Gollwitzer 2017; Slovic, Fischhoff, and Lichtenstein 1982). Conversely, risks perceived as less controllable such as landslides, nuclear power and chemical/technical food risks increase risk perceptions (Ho et al. 2008; Meagher 2019; Prati and Zani 2013). COVID-19 is characterised by Cori et al. (2020) as an uncontrollable risk to the individual. Mækelæ et al. (2020) find a significant relationship between perceived lack of control of the outbreak and greater distress. However, Sobkow et al. (2020) find that higher perceived controllability was linked with more negative risk perceptions and greater individual action on COVID-19. Further research must unpick exactly what is meant by controllability, or ‘command over the outcome of a risk’ (Nordgren, Van Der Pligt, and Van Harreveld 2007, 533), as against volition, or ‘command over exposure to the risk itself’ (Nordgren, Van Der Pligt, and Van Harreveld 2007, 533), for COVID-19. For COVID-19 risk perceptions, this could be the difference between fear about the virus impact after infection (controllability) compared to fear about simply catching the virus, which may be perceived as more voluntary.

- **Catastrophic potential**: People fear multiple-fatality risks more than a series of smaller events (Renn 1989; Slovic 1987). The public displays higher risk perceptions of airplane crashes compared to motor vehicle accidents, even if many more people die in motor vehicles every year (Slovic, Lichtenstein, and Fischhoff 1984). COVID-19 is both objectively a catastrophic risk, and is perceived as a risk with catastrophic potential in a psychometric study by Gerhold (2020) in Germany.

**Unknown risk characteristics of COVID-19**

The unknown characteristics of risks also influence public perceptions (Slovic 1987). Unknown characteristics include observability and immediacy, levels of actual or perceived knowledge, and novelty:

- **Observability and immediacy**: People worry less about visible hazards (Slovic 1987). Conversely, non-observable risks garner higher levels of worry. COVID-19 is not observable and can transmit asymptomatically between subjects who may not know they are infected (Gandhi, Yokoe, and Havlir 2020). Delayed risk effects can also increase perceptions (Slovic 1987). The full impact of COVID-19 may take some time to be realised and symptom onset is not immediate (He et al. 2020). Cases of extended symptoms of COVID-19 could increase fear and uncertainty in low-risk groups (Carfì, Bernabei, and Landi 2020).

- **Knowledge levels and novelty**: Greater public knowledge of a risk can attenuate perceptions, and people tend to worry less about risks that are known to science (Slovic 1987). Low public knowledge can lead to greater reliance on trusted actors such as experts and scientists to inform decision-making (Siegrist and Cvetkovich 2000). Although coronaviruses are not new, the COVID-19 strain is novel. Public knowledge at the beginning of the pandemic was low, with high scientific uncertainty (Malecki, Keating, and Safdar 2021). Public uncertainty due to lack of knowledge caused by a novel virus has likely increased COVID-19 risk perceptions. This may change as COVID-19 becomes a more familiar risk (Caserotti et al. 2021; Fischhoff 2020).

**Summary: impact of risk characteristics on risk perceptions**

COVID-19 is characterised as a dread risk with debatable levels of controllability, with catastrophic potential, and as involuntary. COVID-19 was an unknown risk, especially at the start of the pandemic, with low knowledge levels and high scientific uncertainty about its impact and how it was spread due to its novelty (Malecki, Keating, and Safdar 2021). Alongside other non-risk
factors, general risk perception of COVID-19 is high due to its individual risk characteristics, especially at the beginning of the pandemic.

COVID-19 has therefore received a large amount of public attention, resulting in wide-sweeping policy and restrictions. Uncertainty about the spread and impact of the virus has led to mixed messages (Malecki, Keating, and Safdar 2021). Government communication and policy has been highly precautionary in most nations, even if these NPIs are justified from a public health perspective (Aven and Bouder 2020; Wardman 2020; Warren, Lofstedt, and Wardman 2021).

European risk communication in the COVID-19 pandemic

Messenger attributes in the COVID-19 pandemic

Precisely who communicates to the public is important in ensuring public message acceptance, retention, and action (Bord and O’Connor 1990; Wynne 1991). The UK government has primarily communicated through public press briefings with a minister and at least one scientist or expert. This show of alignment with scientific expertise can promote trust and increase the legitimacy of the government strategy by promoting perceived competence and objectivity (Bogliacino et al. 2021; Jong 2020; Renn and Levine 1991). In Germany, Chancellor Angela Merkel filled the role of being both a politician and someone with a scientific background early on and was lauded for a trustworthy and effective communication style when explaining COVID-19 risks and the need for action (The Economist 2020; Miller 2020). Alongside Chancellor Merkel, decisions were informed by the Robert Koch Institute (RKI), a respected expert government public health agency (Jasanoff et al. 2021). The first phase of the pandemic birthed new celebrity scientists in the form of former Head of the Communicable Diseases for the Swiss Federal Office of Public Health (FOPH) Daniel Koch, and state epidemiologist of Sweden Anders Tegnell (Erdbrink and Anderson 2020; Fahy and Lewenstein 2021; Romy 2020).

Despite these individuals’ and organisations’ popularity, public opinion can shift quickly, with severe effects on willingness to comply with pandemic-related restrictions (Siegrist and Zingg 2014; Slovic 1993). Following the Swedish Public Health Agency’s (PHA) guidance to relax restrictions while cases were increasing, amid great criticism from medical doctors, politicians instead began to take greater responsibility, becoming the new public face of the Swedish COVID-19 response in the place of Tegnell by November 2020 (Bjorklund and Ewing 2020; Claeson and Hanson 2021; Habib 2020). Although scientist popularity can promote trust and support for restriction measures, trust can easily be destroyed (see Battiston, Kashyap, and Rotondi 2021; Slovic 1993). Public support for individual communicators’ persuasive messages can also only be as successful as the policy approach behind it: effective risk communication relies on popular, effective and considered risk management (Fischhoff 1995; Lofstedt 2005).

Public opinion of policy makers’ and leaders’ actions can also influence acceptance and adherence to restrictions, alongside creating new social norms (Schnall and Roper 2012; Van Bavel et al. 2020; Yaffe and Kark 2011). Leading by example has been a recommended practice throughout the COVID-19 pandemic (Van Bavel et al. 2020; Wardman 2020). Exhibiting traits that show leaders as members of the public, displaying the mantra of we are ‘all in this together’ through following rules rather than acting in their own interest is strongly recommended in the context of COVID-19 and more generally (Haslam and Platow 2001; Haslam, Reicher, and Platow 2011; Hogg 2001; Van Bavel et al. 2020, 466). Several reports of UK leaders and experts breaking rules, such as political strategist Dominic Cummings, Professor Neil Ferguson, Scottish National Party MP Margaret Ferrier, and four senior Welsh politicians, have functioned as trust-destroying incidents (Neilan 2020; Sky News 2021). This has provoked a divided mentality of one rule for us, another rule for them between the public and the political class (Reicher and Stott 2020; Van Bavel et al. 2020). Since the Dominic Cummings scandal, public compliance to COVID-19 restrictions has decreased alongside confidence in the government to adequately
manage the pandemic (Fancourt, Steptoe, and Wright 2020). Across Europe, even acting as a role model to promote NPIs has been lacking. This was seen early on in the pandemic with leaders including French President Emmanuel Macron and Prime Minister Johnson not wearing masks before they became mandated in these nations (Drylie-Carey, Sánchez-Castillo, and Galán-Cubillo 2020; Newton 2020).

**Consistency and clarity of COVID-19 communication**

Ensuring message consistency can promote public trust in the government’s approach to managing risks including COVID-19 (Renn and Levine 1991; Wardman 2020; Warren, Lofstedt, and Wardman 2021). Perceived inconsistency may undermine a message, leading to confusion and public uncertainty about the real impact of risks such as COVID-19. Message inconsistency has been endemic during this pandemic in the face of uncertainty, changing information and policy priorities (Finset et al. 2020; Porat et al. 2020; Renn 2008). Independent SAGE (2020, 1) argue that message consistency and imprecision may result in ‘mistakes, perceived inequities, frustration, and non-adherence’, so communicators should pay attention to avoid inconsistent strategies. Many of the nations discussed here have had inconsistent and changeable messaging strategies, including France, Sweden and the UK nationally, and Germany and Switzerland between federal states (Das Erste 2021; Demey 2021; Meyer 2020; Syal 2021; Warren, Lofstedt, and Wardman 2021).

The UK is a particularly bad offender on policy and communication inconsistency, with COVID-19 rules estimated to have changed over 60 times between March 2020 and January 2021 (Syal 2021; Warren, Lofstedt, and Wardman 2021). Despite Independent SAGE (2020, 1) advocating for a ‘communications reset’ in November, these government communication inconsistencies have continued into 2021. Recently, questions about summer holiday restrictions in 2021 have received contradictory replies from different ministers, outlined by Campbell (2021). Originally, despite Foreign Secretary Dominic Raab urging caution and warning against booking holidays on 17 January, Health Secretary Matt Hancock stated the next day that he planned on spending his summer holiday in Cornwall as part of a ‘great British summer’. After widespread pessimistic statements from International Trade Secretary Liz Truss, Transport Secretary Grant Shapps, and Prime Minister Johnson in early February, Hancock appeared more cautious on 11 February, stating that it was too soon to begin plans for summer holidays. This example illustrates the kind of message inconsistency that has plagued the UK government’s COVID-19 communications strategy. Sweden has seen similar communication inconsistency in recent months, with the PHA relaxing rules on public meetings, just for Prime Minister Stefan Löfven to overrule this NPI relaxation two weeks later (Bjorklund and Ewing 2020; Claeson and Hanson 2021; Habib 2020). In Germany, communication has been inconsistent due to varying rules and implementation across states, which has caused public uncertainty (Han et al. 2020; Warren, Lofstedt, and Wardman 2021).

Message clarity is necessary to avoid public uncertainty, which could lead to errors in judgment or refusal to adopt new COVID-19 measures (Finset et al. 2020), especially when interventions are recommended rather than mandatory and therefore rely on individual decision making (Fischhoff 2005). Messages must contain clear asks of the public, so that they understand exactly what needs to be done and how to do it (Fishbein and Ajzen 2011). An example of original success is in the UK, where the lockdown slogan of ‘Stay at Home, Protect the NHS, Save Lives’ offered a clear direction to people not to leave their home (Stay at Home), while also being clear about the rationale (Protect the NHS, Save Lives). This slogan is described by Wardman (2020, 1102) as ‘simple, unambiguous, clear, easy to follow’, resulting in widespread compliance and around 90% of people understanding what actions were expected of them (Independent SAGE 2020; Skinner 2020). However, after restrictions were eased and the stay-at-home order was lifted, the slogan changed to ‘Stay Alert, Control the Virus, Save Lives’, which was widely mocked on social media
and seen as too ambiguous and unclear to outline what people should be doing to limit COVID-19 transmission (Ginnis et al. 2020; Independent SAGE 2020; Wardman 2020).

**COVID-19 communication methods**

The method by which public leaders communicate influences public reception, acceptance and compliance with message requirements (Rickard 2021; Simcock et al. 2014; Warren and Foulds 2020). Top-down, one-way communication methods are commonplace in fast-paced crises (Lofstedt 2003), and this has been evident throughout the COVID-19 pandemic in all nations discussed. Risk communication in Sweden has remained very much top-down through the entire COVID-19 pandemic. In the first wave, this was more appropriate for PHA to undertake as public trust remained high (Lofstedt 1996, 2003). This strategy did not change, resulting in no thought-through risk communication strategy despite public confidence in the government approach declining since March to record lows of 30% in late January 2021 (Sjöström 2021). The PHA and Government simply believed the public would just trust the guidance that was being continuously offered as before (Habib 2020; Lofstedt 2005). Typically high trust in public figures has drastically reduced, and top-down communication alongside an original avoidance of enforcing stringent restrictions has not helped Sweden to avoid a second COVID-19 wave (Habib 2020; Sjöström 2021). A bottom-up focus, understanding what people need, integrating the public in decision making and creating a dialogue rather than simply providing facts through a top-down approach is a more effective method to engage the public on COVID-19 and increase efficacy (Nazione, Perrault, and Pace 2021; Porat et al. 2020; Richards and Scowcroft 2020). This is especially important in nations with low levels of social trust in government or access to social resources (Ihm and Lee 2021; Kasperson 2014), such as the UK or France.

Message format can also influence effectiveness (Rickard 2021). One example of this is through the use of visual imagery to communicate risk (Lipkus 2007). France was one of the first nations early on in the pandemic to use a traffic light heat map to display geographical variations in COVID-19 risk. Visualising the local risk level on a map based on three main indicators allowed the public to easily understand their local area’s rating in terms of safety and the NPI rationale. The traffic light system has become a commonplace visualisation of risk as it is easily understandable (Hieke and Wilczynski 2012), often more so than other visualisation methods (Roberto et al. 2012). Many including the RKI in Germany and the Swedish PHA through a live-tracker (Folkhälsomyndigheten Sverige 2021; Robert Koch Institut 2021), the UK Chief Medical Officer during press briefings (Cabinet Office Briefing Rooms 2020) and the Swiss FOPH in their weekly briefing (Bundesamt für Gesundheit BAG 2021) have since adopted risk maps to visualise geographical spread of COVID-19 cases and data, however, none are as clear and understandable as the original French version from May 2020.

**COVID-19 message attributes: framing and emotive messaging**

Changing communication framing can influence emotions and affective response to COVID-19 (Heffner, Vives, and FeldmanHall 2021; Rickard 2021; Roeser 2012). Different emotions influence risk perceptions, decision making likelihood, strength and speed of action, and may focus public attention on certain characteristics of a risk (Slovic 2010; Van Bavel et al. 2020). There are many potential emotions that can be evoked, and this article will explore three broad groups in the context of COVID-19 communication messages, namely: guilt and fear (negative affective messaging), humour, and solidarity and empathy (positive affective messaging).

The UK government has primarily undertaken an information-based communications strategy between spring and autumn 2020, best exemplified through the Hands. Face. Space advertising campaign released in early September 2020 (Corbishley 2020). A new self-described ‘hard hitting’
fear- and guilt-based emotional television advertising campaign replaced it in January 2021, where the government asks: ‘Can you look them in the eyes and tell them you’re helping by staying at home?’ while faces of patients on ventilators and healthcare staff are shown (Department of Health and Social Care 2021). The campaign aimed to promote more protective behaviours and to give the public a ‘massive jolt’, in the words of Chief Medical Officer Chris Whitty, required due to a lack of behaviour change thus far (Shipman and Wheeler 2021). It shifted responsibility and blame onto the individual for their actions as hospitalisation rates remained high (Cunliffe 2021; Department of Health and Social Care 2021), to elicit a negative affective response. Despite Keller et al. (2006) finding a link between increased negative affect and perceived risk, Peters et al. (2013) find that when this frame is used without information on how to limit risk then this kind of message is often ignored by the public. This communications approach to COVID-19 has specifically been warned against by Stolow et al. (2020, 532), who warn that negative affective messages including fear can actually backfire through ‘unanticipated, negative, reactionary behaviors’. This should especially be avoided as pandemic weariness has recently increased in several European nations, reducing the impact of fear-based messaging on capturing public attention (Cevipof 2021; Sutton et al. 2020).

Although negative affective messages are commonplace, positive affective messages have also been employed during the COVID-19 pandemic. One example involves a humour-based positive social media campaign from the German government titled ‘#specialheroes – together against corona’, a public health message to promote patience and solidarity, where in a documentary-style interview an old man is asked to reflect on surviving the pandemic (Bundesregierung Deutschland 2020). He states:

The fate of this country lay in our hands, so we mustered all our courage and did what was expected of us. The only right thing. We did… nothing. Absolutely nothing. (Bundesregierung Deutschland 2020).

Although some criticised the advert for being aimed at a very small demographic (Oelze 2020), the hashtag was widely shared through social media and received praise for its positive style and focus on young adults (Kluth 2020). Although communicating through humour can backfire, it has been found to raise awareness of risks and promote behavioural change, and stimulate the processing of negative events and emotions (Eisend 2009; Kaltenbacher and Drews 2020; Murthy and Gross 2017; Skurka et al. 2018). The #specialheroes hashtag shows a more positive messaging technique, using social media memes and viral video content to promote awareness, coping strategies and action against risks (Ross and Rivers 2019), and in this case COVID-19 (Cauberghe et al. 2021).

Promoting social solidarity and collectivism is significant when requiring or requesting that groups undertake altruistic actions or accept limitations to freedoms to protect other groups from risks (Bierhoff and Küpper 1999; Fincher et al. 2008; Roos et al. 2015). For COVID-19, this may involve younger individuals staying at home and physically distancing to stop the spread of a disease to which they are not as susceptible compared to older adults or individuals with underlying health conditions (Porat et al. 2020; Yanez et al. 2020). Avoiding an us versus them mindset is important as it can lead to counterproductive actions (Porat et al. 2020; Van Bavel et al. 2020), such as panic buying seen in early 2020 in many nations (Habersaat et al. 2020). A communications approach that promotes solidarity is recommended by researchers from many academic disciplines (see for example Drury, Reicher, and Stott 2020; Elcheroth and Drury 2020; Habersaat et al. 2020; Porat et al. 2020; Van Bavel et al. 2020). At the beginning of the pandemic, the Swiss government was particularly effective in promoting solidarity through the ‘Wir/Nous/Noi/Nus’ campaign. As part of an extensive communications campaign by the FOPH, Health Minister Alain Berset personally encouraged Swiss people in a video shared on social media to show what they were doing to keep safe, using a hashtag in three national languages. This campaign has developed in different ways, including projecting the Swiss flag with ‘Wir/Nous/Noi/Nus’ onto the Matterhorn mountain on 31 March. The solidarity and ‘all in this together’
approach was, at the time, a fundamental part of the FOPH’s overall communications approach to COVID-19. Switzerland displayed a high level of adherence to rules in the early stages of the pandemic, with strong public support for further stringency since late March (Hermann 2020). A cohort study found 87% of young adults, often seen as the group most likely to flout rules, adhered to the prescribed non-mandatory health measures to stay at home (Nivette et al. 2021).

**Public trust in government in the wake of COVID-19**

Overall, public trust is vital to effective risk communication (Cvetkovich and Lofstedt 1999; Lofstedt 2005; McComas 2006; Slovic 1993). Public trust has a significant impact on public acceptance of interventions and likelihood to comply with government COVID-19 NPIs (Clark et al. 2020; Soveri et al. 2020; Wright, Steptoe, and Fancourt 2020; Nivette et al. 2021). Despite some evidence of communication that follows recommendations from scientific bodies, much of the COVID-19 communication and risk management strategy in the five nations discussed has not fostered public trust, decreasing public confidence especially from autumn 2020 (Warren, Lofstedt, and Wardman 2021).

UK public trust in government has always been relatively low. Even in April 2020, although 95% of respondents agreed that the government should have power to enforce restrictions, only 52% believed the government was effective in managing the pandemic and 42% trusted that the government ‘always or mostly’ told the truth on COVID-19 – this is actually higher than seen in previous years, attributed to a ‘crisis effect’ (Enria et al. 2021, 15–16). By late November, public distrust in the government’s ability to control the pandemic reached 57% (Allington et al. 2020). However, following positive press on the vaccine rollout, belief that the government is handling the COVID-19 pandemic ‘well or very well’ reached 38% in February 2021, up from 30% in October 2020 (Skinner et al. 2021, 22).

The French public has displayed high levels of government distrust since the start of the pandemic. In an Ipsos (2020) study in April 2020, only 35% of French respondents trusted the national government. Public trust has remained stubbornly around this level, with a February 2021 study by Odoxa-Backbone Consulting for Le Figaro and France Info showing 39% public trust and 60% distrust in the government’s ability to manage the COVID-19 health crisis (Odoxa 2021).

German public likelihood to trust the government reached its highest level in 5 years in July/August 2020, at 61% ‘rather trusting’ (Statista 2020). Since, happiness with the federal government approach has waned, reaching its lowest level yet in February 2021, where only 42% of respondents were either very happy or happy, and 22% being not at all happy (Infratest dimap 2021).

Public trust in the Swedish government has greatly reduced following the first wave, where 64% trusted the government’s approach to the COVID-19 pandemic, and 75% trust in the PHA at the end of March 2020 (Sjöström 2021). By late January, this had consistently decreased, to 30% and 50% respectively (Sjöström 2021).

In Switzerland, public trust in the Federal Council has also dramatically declined. After starting strongly, with 61% of respondents from all language regions either self-declaring high or very high trust in the Federal council in March 2020, this has plummeted to 32% in January 2021 (Bosshard et al. 2021).

Overall, declining public trust in all countries highlights the task facing respective governments to promote public confidence in their approach to tackling the COVID-19 pandemic. Growing mistrust in politics has also led to an increase in COVID-19 conspiracy theory belief (Cevipof 2021).

**Conclusions and recommendations**

Overall, COVID-19 is perceived as a dread risk with unknown qualities (Cori et al. 2020), especially at the beginning of the pandemic. This has resulted in high public perceptions of risk, great
media scrutiny and thus more effective risk communication strategies are needed (Wardman 2020; Warren, Lofstedt, and Wardman 2021). To achieve this, communicators must consider the messenger, audience, and message characteristics (Rickard 2021). With COVID-19 risk communication, the use of scientists and trusted messengers is widely used in the nations discussed. Leading by example in a crisis is vital (Schnall and Roper 2012; Van Bavel et al. 2020), however, examples from the UK and France highlight where this can go astray, with damaging effects. Message consistency and clarity can also encourage public engagement and support for government COVID-19 interventions, although examples from across Europe suggest that this is not occurring. In a crisis, top-down risk communication can be a tempting method to use (see Lofstedt 2004; Olsson, 2014). However, alongside the theoretical critique of this approach, especially in cases of low public trust in government (Leiss 1996; Lofstedt 2003), its effects after over a year of the pandemic suggest that one-way communications employed throughout Europe are not functioning as desired. Finally, using frames to elicit emotions can promote behaviour change, but it is important to apply them correctly. The use of framing has seen varying applications and success during the COVID-19 pandemic.

Based on the findings from the five nations studied, the following recommendations are offered for risk communicators in future public health crises:

- Ensure communication is consistent over time, and U-turns are avoided if possible;
- Keep instructions clear and actionable to ensure public compliance and to avert disengagement;
- Embody leading by example to promote solidarity and to avoid trust-destroying incidents;
- Avoid the use of fear- and guilt-based frames in communications campaigns, especially after the initial phase of a crisis;
- Move away from orthodox top-down communication approaches, towards bottom-up tailored risk communication that accounts for public values, perceptions and situation;
- Pre-test communications campaigns beforehand and evaluate them afterwards to increase effectiveness and avoid potential unexpected outcomes.

Notes
1. For example, the original focus on communicating the need to wash hands over the use of face coverings in the early stages of the pandemic in the UK (Sample 2020).
2. Usually either Prime Minister Boris Johnson or former Health Secretary Matt Hancock have been present, although other ministers have attended if there is a special reason to.
3. Usually the Chief Medical Officer, representatives from Public Health England or the NHS.
4. These were: (1) active circulation of the virus, (2) pressure on resuscitation capacity in hospitals, and (3) coverage of estimated tests needed (Ministry of Solidarity and Health 2020).
5. For a deeper review of the literature on appeals to emotion and their impacts, see Balog-Way et al. (2020).

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References

Allington, Daniel, Kelly Beaver, Bobby Duffy, Christoph Meyer, Vivienne Moxham-Hall, George Murkin, G. James Rubin, Gideon Skinner, Louise Smith, Lucy Strang, et al. 2020. “The UK Government’s Handling of the Coronavirus Crisis: Public Perceptions.” London, UK, December 6.

Aven, Terje, and Frederic Boudier. 2020. “The COVID-19 Pandemic: How Can Risk Science Help?” Journal of Risk Research 23 (7-8): 849–854. doi:10.1080/13669877.2020.1756383.

Balog-Way, Dominic H. P., and Katherine A. McComas. 2020. “COVID-19: Reflections on Trust, Tradeoffs, and Preparedness.” Journal of Risk Research 23 (7-8): 838–811. doi:10.1080/13669877.2020.1758192.

Balog-Way, Dominic, Katherine McComas, and John Besley. 2020. “The Evolving Field of Risk Communication.” Risk Analysis: An Official Publication of the Society for Risk Analysis 40 (S1): 2240–2262. doi:10.1111/risa.13615.

Battiston, Pietro, Ridhi Kashyap, and Valentina Rotondi. 2021. “Reliance on Scientists and Experts during an Epidemic: Evidence from the COVID-19 Outbreak in Italy.” SSM - Population Health 13: 100721. doi:10.1016/j.ssmph.2020.100721.

Bierhoff, Hans W., and Beate Küpper. 1999. “Social Psychology of Solidarity.” In Solidarity, Philosophical Studies in Contemporary Culture, edited by Kurt Bayertz, 5th ed., 133–156. Dordrecht: Springer. doi:10.1007/978-94-015-9245-1_7.

Bish, Alison, and Susan Michie. 2010. “Demographic and Attitudinal Determinants of Protective Behaviours during a Pandemic: A Review.” British Journal of Health Psychology 15 (Pt 4): 797–824. doi:10.1348/135910710X485826.

Bjorklund, Kelly, and Andrew Ewing. 2020. “The Swedish COVID-19 Response Is a Disaster. It Shouldn’t Be a Model for the Rest of the World.” Time, October 14.

Bogliacino, Francesco, Rafael Charris, Camilo Gómez, Felipe Montealegre, and Cristiano Codagnone. 2021. “Expert Endorsement and the Legitimacy of Public Policy. Evidence from Covid19 Mitigation Strategies.” Journal of Risk Research 24 (3-4): 394–322. doi:10.1080/13669877.2021.1881990.

Bord, Richard J., and Robert E. O’Connor. 1990. “Risk Communication, Knowledge, and Attitudes: Explaining Reactions to a Technology Perceived as Risky.” Risk Analysis 10 (4): 499–506. doi:10.1111/j.1539-6924.1990.tb00535.x.

Bosshard, Cyril, Gordon Bühler, Julie Craviolini, Michael Hermann, and David Krähenbühl. 2021. “6. SRG Corona-Monitor 15.01.2021.” Zürich.

Bostrom, Ann, Luc Anselin, and Jeremy Farris. 2008. “Visualizing Seismic Risk and Uncertainty: A Review of Related Research.” Annals of the New York Academy of Sciences 1128: 29–40. doi:10.1196/annals.1399.005.

Brewer, Noel T. 2011. “Goals.” In Communicating Risks and Benefits: An Evidence-Based User's Guide, edited by Baruch Fischhoff, Noel T. Brewer, and Julie S. Downs, 3–10. Washington, DC: Food and Drug Administration.

Bundesamt für Gesundheit BAG. 2021. “Situationsbericht Zur Epidemiologischen Lage in Der Schweiz Und Im Fürstentum Liechtenstein - Woche 5 (01.02 - 07.02.2021).” Bern.

Bundesregierung Deutschland. 2020. “Video: #besonderehelden - Zusammen Gegen Corona.” Bundesregierung Deutsch land, November 14.

Cabinet Office Briefing Rooms. 2020. “Slides to Accompany Coronavirus Press Conference - CMO - 31 October 2020.” COBR. London. October 31. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/931774/Slides_to_accompany_coronavirus_press_conference_-_CMO_-_31_October_2020.pdf.

Campbell, Lucy. 2021. “Ministerial Flip-Flops over Summer Holidays for Britons – Timeline.” The Guardian, February 11.

Campbell, Rose G., and Austin S. Babrow. 2004. “The Role of Empathy in Responses to Persuasive Risk Communication: Overcoming Resistance to HIV Prevention Messages.” Health Communication 16 (2): 159–182. doi:10.1207/S15327027HC1602_2.

Carfi, Angelo, Roberto Bernabei, and Francesco Landi; for the Gemelli Against COVID-19 Post-Acute Care Study Group. 2020. “Persistent Symptoms in Patients after Acute COVID-19.” JAMA 324 (6): 603–605. doi:10.1001/jama.2020.12603.

Caserotti, Marta, Paolo Girardi, Enrico Rubaltelli, Alessandra Tasso, Lorella Lotto, and Teresa Gavaruzzi. 2021. “Associations of COVID-19 Risk Perception with Vaccine Hesitancy over Time for Italian Residents.” Social Science & Medicine (1982) 272: 113688. doi:10.1016/j.socscimed.2021.113688.

Caubergh, Verolien, Ini Van Wesenbeeck, Steffi De Jans, Liselot Hudders, and Koen Ponnet. 2021. “How Adolescents Use Social Media to Cope with Feelings of Loneliness and Anxiety during COVID-19 Lockdown.” Cyberpsychology, Behavior, and Social Networking 24 (4): 250–258. doi:10.1089/cyber.2020.0478.
Folkhälsomyndigheten Sverige. 2021. "Antal Fall Av Covid-19 i Sverige På Regionnivå." Folkhälsomyndigheten Sverige. https://experience.arcgis.com/experience/19fc7e36f1ec4e86af178fe2275029c5.

Gandhi, Monica, Deborah S. Yokoe, and Diane V. Havlir. 2020. "Asymptomatic Transmission, the Achilles’ Heel of Current Strategies to Control Covid-19." The New England Journal of Medicine 382 (22): 2158–2160. doi:10.1056/NEJMe2009758.

Gerhold, Lars. 2020. "COVID-19 : Risk Perception and Coping Strategies. Results from a Survey in Germany." Interdisciplinary Security Research Group, 1–11.

Gennis, Steve, Sylvie Hobden, Tirtha Medappa, and Freddie Gregory. 2020. "Communicating Public Health: Conversations about the COVID-19 Pandemic." Ipsos MORI: London.

Habersaat, Katrine Bach, Cornelia Betsch, Margie Danchin, Cass R. Sunstein, Robert Böhm, Armin Falk, Noel T. Brewer, Saad B. Omer, Martha Scherzer, Sunita Sha, et al. 2020. "Ten Considerations for Effectively Managing the COVID-19 Transition." Nature Human Behaviour 4 (7): 677–687. doi:10.1038/s41562-020-0906-x.

Habib, Heba. 2020. "Covid-19: What Sweden Taught Scandinavia for the Second Wave." BMJ 371:m4456. doi:10.1136/bmj.m4456.

Han, Emeline, Melissa Mei Jin Tan, Eva Turk, Devi Sridhar, Gabriel M. Leung, Kenji Shibuya, Nima Asgari, Juwhan Oh, Alberto García Basteiro, Johanna Hanefeld, et al. 2020. "Lessons Learnt from Easing COVID-19 Restrictions: An Analysis of Countries and Regions in Asia Pacific and Europe." The Lancet 396 (10261): 1525–1534. doi:10.1016/S0140-6736(20)32007-9.

Haslam, S. Alexander, and Michael J. Platow. 2001. "The Link between Leadership and Followership: How Affirming Social Identity Translates Vision into Action." Personality and Social Psychology Bulletin 27 (11): 1469–1479. doi:10.1177/01461672012711008.

Haslam, S. Alexander, Stephen D. Reicher, and Michael J. Platow. 2011. The New Psychology of Leadership: Identity, Influence, and Power. Abingdon, UK Routledge. doi:10.4324/9780203833896.

He, Xi, Eric H. Y. Lau, Peng Wu, Xilong Deng, Jian Wang, Xinxin Hao, Yi Chuang Lau, Jessica Y. Wong, Yujuan Guan, Xinghua Tan, et al. 2020. "Temporal Dynamics in Viral Shedding and Transmissibility of COVID-19." Nature Medicine 26 (5): 672–675. doi:10.1038/s41591-020-0869-5.

Heffner, Joseph, Marc Lluis Vives, and Oriel FeldmanHall. 2021. "Emotional Responses to Prosocial Messages Increase Willingness to Self-Isolate during the COVID-19 Pandemic." Personality and Individual Differences 170: 110420. doi:10.1016/j.paid.2020.110420.

Hermann, Michael. 2020. "Wirkungsanalyse Der Präventionsarbeit Des Bundesamts Für Gesundheit BAG in Bezug Auf Das Neue Coronavirus. Studie Im Auftrag Des Bundesamts Für Gesundheit BAG." Zürich.

Hieke, Sophie, and Petra Wilczynski. 2012. "Colour Me In-An Empirical Study on Consumer Responses to the Traffic Light Signposting System in Nutrition Labelling." Public Health Nutrition 15 (5): 773–782. doi:10.1017/S1368980011002874.

Ho, Ming-Chou, Daigee Shaw, Shuyeu Lin, and Yao-Chu Chiu. 2008. "How Do Disaster Characteristics Influence Risk Perception?" Risk Analysis: An Official Publication of the Society for Risk Analysis 28 (3): 635–643. doi:10.1111/j.1539-6924.2008.01040.x.

Hogg, Michael A. 2001. "A Social Identity Theory of Leadership." Personality and Social Psychology Review 5 (3): 184–200. doi:10.1207/S15327957PSPR0503_1.

Ihm, Jennifer, and Chul Joo Lee. 2021. "Toward More Effective Public Health Interventions during the COVID-19 Pandemic: Suggesting Audience Segmentation Based on Social and Media Resources." Health Communication 36 (1): 98–108. doi:10.1080/10410236.2020.1847450.

Independent SAGE. 2020. "The Independent SAGE Report 22 UK Government Messaging and Its Association with Public Understanding and Adherence to COVID-19 Mitigations: Five Principles and Recommendations for a COVID Communication Reset." London: Independent SAGE.

Infratest dimap. 2021. "ARD - DeutschlandTRENDS: Eine Studie Zur Politischen Stimmung Im Auftrag Der ARD-Tagesthemen Und Der Tageszeitung DIE WELT. ARD-Tagesthemen und DIE WELT. Berlin: Infratest dimap. Ipsos. 2020. "Coronavirus: Suivi de l'opinion Internationale." Paris: Ipsos.

Jasanoff, Sheila, Harvard Kennedy, Stephen Hilgartner, and Margarita Rayzberg. 2021. "Comparative Covid Response: Crisis, Knowledge, Politics Interim Report." Cambridge, MA: John F. Kennedy School of Government. Jong, Wouter. 2020. "Evaluating Crisis Communication. A 30-Item Checklist for Assessing Performance during COVID-19 and Other Pandemics." Journal of Health Communication 25 (12): 962–969. doi:10.1080/10810730.2021.1871791.

Kaltenbacher, Miriam, and Stefan Drews. 2020. "An Inconvenient Joke? A Review of Humor in Climate Change Communication." Environmental Communication 14 (6): 717–729. doi:10.1080/17524032.2020.1756888.

Kasprow, Roger. 2014. "Four Questions for Risk Communication." Journal of Risk Research 17 (10): 1233–1239. doi:10.1080/13669877.2014.900207.

Keller, Carmen, Michael Siegrist, and Heinz Gutscher. 2006. "The Role of the Affect and Availability Heuristics in Risk Communication." Risk Analysis: An Official Publication of the Society for Risk Analysis 26 (3): 631–639. doi:10.1111/j.1539-6924.2006.00773.x.

Keller, Lucas, and Peter M. Gollwitzer. 2017. "Mindsets Affect Risk Perception and Risk-Taking Behavior: Illusory Optimism and the BART." Social Psychology 48 (3): 135–147. doi:10.1027/1864-9335/a000304.
Kluth, Andreas. 2020. "Germany’s Covid-Heroes Video Campaign Hits the Right Note." Bloomberg, November 17.

Krause, Nicole M., Isabelle Freilinger, Becca Beets, and Dominique Brossard. 2020. "Fact-Checking as Risk Communication: The Multi-Layered Risk of Misinformation in Times of COVID-19." Journal of Risk Research 23 (7-8): 1052–1059. doi:10.1080/13669877.2020.1756385.

Leiss, William. 1996. "Three Phases in the Evolution of Risk Communication Practice." The ANNALS of the American Academy of Political and Social Science 545 (1): 85–94. doi:10.1177/000271629654501009.

Lipkus, Isaac M. 2007. “Numeric, Verbal, and Visual Formats of Conveying Health Risks: Suggested Best Practices and Future Recommendations." Medical Decision Making: An International Journal of the Society for Medical Decision Making 27 (5): 696–713. doi:10.1080/0272989X07307271.

Lofstedt, Ragnar. 1996. "Risk Communication: The Barsebäck Nuclear Plant Case." Energy Policy 24 (8): 689–696. doi:10.1016/0301-4215(96)00042-0.

Lofstedt, Ragnar. 2003. "Risk Communication: Pitfalls and Promises." European Review 11 (3): 417–435. doi:10.1017/S106279870300036X.

Lofstedt, Ragnar. 2004. "Risk Communication and Management in the Twenty-First Century." International Public Management Journal 7 (3): 335–346.

Lofstedt, Ragnar. 2005. Risk Management in Post-Trust Societies. Risk Management in Post-Trust Societies. Basingstoke: Palgrave Macmillan. doi:10.1057/9780230503946.

Maekelae, Martin Jensen, Niv Reggev, Natalia Dutra, Ricardo M. Tamayo, Reinaldo A. Silva-Sobrinho, Kristoffer Klevjer, and Gerit Pfuhl. 2020. "Perceived Efficacy of COVID-19 Restrictions, Reactions and Their Impact on Mental Health during the Early Phase of the Outbreak in Six Countries: Perceived Efficacy Reactions COVID-19." Royal Society Open Science 7 (8): 200644. doi:10.1098/rsos.200644.

Malecki, Kristen M. C., Julie A. Keating, and Nasia Safdar. 2021. "Crisis Communication and Public Perception of COVID-19 Risk in the Era of Social Media." Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America 72 (4): 697–702. doi:10.1093/cid/ciaa758.

McComas, Katherine A. 2006. "Defining Moments in Risk Communication Research: 1996-2005." Journal of Risk Research 9 (1): 75–91. doi:10.1080/13669877.2006.10810730500461091.

Meagher, Kelsey D. 2019. "Public Perceptions of Food-Related Risks: A Cross-National Investigation of Individual and Contextual Influences." Journal of Risk Research 22 (7): 919–935. doi:10.1080/13669877.2017.1422789.

Meyer, Alain. 2020. "Les Confinements à Géométrie Variable Des Cantons Suisses." Deutsche Welle, November 12.

Miller, Saskia. 2020. "The Secret to Germany's COVID-19 Success: Angela Merkel Is a Scientist." The Atlantic. https://www.theatlantic.com/international/archive/2020/04/angela-merkel-germany-coronavirus-pandemic/610225/.

Ministry of Solidarity and Health. 2020. "Covid19: Conférence de Presse Sur Le Déconfinement." Paris: Ministry of Solidarity and Health.

Morgan, M., Granger, Baruch, Fischhoff, Ann Bostro, and 2002. M, and Cynthia J. Atman. Risk Communication: A Mental Models Approach. Cambridge, UK: Cambridge University Press.

Murthy, Dhiraj, and Alexander J. Gross. 2017. "Social Media Processes in Disasters: Implications of Emergent Technology Use." Social Science Research 63: 356–370. doi:10.1016/j.ssr.2016.09.015.

Nazione, Samantha, Evan Perrault, and Kristin Pace. 2021. "Impact of Information Exposure on Perceived Risk, Efficacy, and Preventative Behaviors at the Beginning of the COVID-19 Pandemic in the United States." Health Communication 36 (1): 23–31. doi:10.1080/10410236.2020.1847446.

Neilan, Catherine. 2020. "From Corbyn to Cummings: The Public Figures Who Have Broken Lockdown Rules." The Telegraph, October 4.

Newton, Kenneth. 2020. "Government Communications, Political Trust and Compliant Social Behaviour: The Politics of Covid-19 in Britain." The Political Quarterly 91 (3): 502–513. doi:10.1111/1467-923X.12901.

Nivette, Amy, Denis Ribeaud, Aja Murray, Annekatrin Steinhoff, Laura Bechtiger, Urs Hepp, Lilly Shanahan, and Manuel Eisner. 2021. "Non-Compliance with COVID-19-Related Public Health Measures among Young Adults in Switzerland: Insights from a Longitudinal Cohort Study." Social Science & Medicine 268: 113370. doi:10.1016/j.socscimed.2020.113370.

Nordgren, Loran F., Joop Van Der Pligt, and Frenk Van Harreveld. 2007. "Unpacking Perceived Control in Risk Perception: The Mediating Role of Anticipated Regret." Journal of Behavioral Decision Making 20 (5): 533–544. doi:10.1002/bdm.565.

Odoxa. 2021. "Covid-19: La Gestion de La Crise Par l’executif Ne Convainc Toujours Pas Les Français." Paris: Odoxa.

Oelze, Sabine. 2020. "#besonderehelden: Debatte Um Clips Über Corona-Faulpelze." Deutsche Welle, November 18.

Olsson, Eva-Karin. 2014. "Crisis Communication in Public Organisations: Dimensions of Crisis Communication Revisited." Journal of Contingencies and Crisis Management 22 (2): 113–125. doi:10.1111/1468-5973.12047.

Peters, Gjalt, Jorn, Ygram, Robert A. C. Ruiter, and Gerjo Kok. 2013. "Threatening Communication: A Critical Re-Analysis and a Revised Meta-Analytic Test of Fear Appeal Theory." Health Psychology Review 7 (sup1): S8–S31. doi:10.1080/17437199.2012.703527.

Pidgeon, Nick. 2021. "Engaging Publics about Environmental and Technology Risks: Frames, Values and Deliberation." Journal of Risk Research 24 (1): 28–46. doi:10.1080/13669877.2020.1749118.
Porat, Talya, Rune Nyrup, Rafael A. Calvo, Priya Paudyal, and Elizabeth Ford. 2020. “Public Health and Risk Communication during COVID-19—Enhancing Psychological Needs to Promote Sustainable Behavior Change.” *Frontiers in Public Health* 8: 573397. doi:10.3389/fpubh.2020.573397.

Prati, Gabriele, and Bruna Zani. 2013. “The Effect of the Fukushima Nuclear Accident on Risk Perception, Antinuclear Behavioral Intentions, Attitude, Trust, Environmental Beliefs, and Values.” *Environment and Behavior* 45 (6): 782–798. doi:10.1177/0013916512444286.

Public Health England. 2021. “Coronavirus (COVID-19) in the UK: Deaths in United Kingdom.” UK Government. https://covid19.data.gov.uk/details/deaths.

Reicher, Stephen, and Clifford Stott. 2020. “On Order and Disorder during the COVID-19 Pandemic.” *The British Journal of Social Psychology* 59 (3): 694–702. doi:10.1111/bjso.12398.

Renn, Orwin. 1989. “Risk Perception and Risk Management.” Paper presented at the 14th Congress of the World Energy Conference “Energy for Tomorrow”, 2.2.1 Energy and the Environment - Environmental Assessments: Air, Water, Land, Montreal, Canada.

Renn, Orwin. 2008. “Risk Communication: Insights and Requirements for Designing Successful Communication Programs on Health and Environmental Hazards.” In *Handbook of Risk and Crisis Communication*, edited by Robert L. Heath and H. Dan O’Hair, 81–99. New York, NY: Routledge. doi:10.4324/9780203891629-10.

Renn, Orwin, and Debra Levine. 1991. “Credibility and Trust in Risk Communication.” In *Communicating Risks to the Public*, 175–217. Dordrecht: Springer Netherlands. doi:10.1007/978-94-009-1952-5_10.

Richards, Tessa, and Henry Scowcroft. 2020. “Patient and Public Involvement in Covid-19 Policy Making.” *BMJ* 370: m2575. doi:10.1136/bmj.m2575.

Rickard, Laura N. 2021. “Pragmatic and (or) Constitutive? On the Foundations of Contemporary Risk Communication Research.” *Risk Analysis* 41 (3): 466–414. doi:10.1111/risa.13415.

Robert Koch Institut. 2021. “Robert Koch-Institut: COVID-19-Dashboard.” RKI. https://experience.arcgis.com/experience/478220a4c45480e823b17327b2bf1d4.

Roberto, Christina A., Marie A. Bragg, Marlene B. Schwartz, Marissa J. Seamsans, Aviva Musicus, Nicole Novak, and Kelly D. Brownell. 2012. “Facts up Front versus Traffic Light Food Labels: A Randomized Controlled Trial.” *American Journal of Preventive Medicine* 43 (2): 134–141. doi:10.1016/j.amepre.2012.04.022.

Roesser, Sabine. 2012. “Risk Communication, Public Engagement, and Climate Change: A Role for Emotions.” *Risk Analysis: An Official Publication of the Society for Risk Analysis* 32 (6): 1033–1040. doi:10.1111/j.1539-6924.2012.01812.x.

Romy, Katy. 2020. “Who Is Switzerland’s ‘Mr Coronavirus’?” SWI SwissInfo.Ch, March 26.

Roos, Patrick, Michele Gelfand, Dana Nau, and Janetta Lun. 2015. “Societal Threat and Cultural Variation in the Strength of Social Norms: An Evolutionary Basis.” *Organizational Behavior and Human Decision Processes* 129: 14–23. doi:10.1016/j.obhdp.2015.01.003.

Ross, Andrew S., and Damian J. Rivers. 2019. “Internet Memes, Media Frames, and the Conflicting Logics of Climate Change Discourse.” *Environmental Communication* 13 (7): 975–994. doi:10.1080/17524032.2018.1560347.

Sample, Ian. 2020. “Did Early Focus on Hand Washing and Not Masks Aid Spread of Covid-19?” The Guardian, October 5. https://www.theguardian.com/world/2020/oct/05/did-early-focus-on-hand-washing-and-not-masks-a-id-spread-of-covid-19-coronavirus.

Schnall, Simone, and Jean Roper. 2012. “Elevation Puts Moral Values into Action.” *Social Psychological and Personality Science* 3 (3): 373–378. doi:10.1177/1948550611423595.

Seale, Holly, Clare E. F. Dyer, Ikram Abdi, Kazi M. Rahman, Yanni Sun, Mohammed O. Qureshi, Alexander Dowell-Day, Jonathon Sward, and M. Saiful Islam. 2020. “Improving the Impact of Non-Pharmaceutical Interventions during COVID-19: Examining the Factors That Influence Engagement and the Impact on Individuals.” *Journal of Preventive Medicine* 59 (3): 694–702. doi:10.1111/bjso.12398.

Shen, Lijiang. 2011. “The Effectiveness of Empathy- versus Fear-Arousing Antismoking PSAs.” *Health Communication* 26 (5): 404–415. doi:10.1080/10410236.2011.552480.

Shipman, Tim, and Caroline Wheeler. 2021. “INSIDE NO 10 - Shock Therapy: Boris Johnson’s Critics Say Cabinet Needs Massive Jolt.” *The Sunday Times*, January 9.

Siegrist, Michael, and Joseph Árvai. 2020. “Risk Perception: Reflections on 40 Years of Research.” *Risk Analysis: An Official Publication of the Society for Risk Analysis* 40 (51): 2191–2206. doi:10.1111/risa.13599.

Siegrist, Michael, and George Cvetkovich. 2000. “Perception of Hazards: The Role of Social Trust and Knowledge.” *Risk Analysis: An Official Publication of the Society for Risk Analysis* 20 (5): 713–720. doi:10.1111/0272-4332.205064.

Siegrist, Michael, and Alexandra Zingg. 2014. “The Role of Public Trust during Pandemics: Implications for Crisis Communication.” *European Psychologist* 19 (1): 23–32. doi:10.1027/1016-9040/a000169.

Simcock, Neil, Sherilyn MacGregor, Philip Catney, Andrew Dobson, Mark Ormerod, Zoe Robinson, Simon Ross, Sarah Royston, and Sarah Marie Hall. 2014. “Factors Influencing Perceptions of Domestic Energy Information: Content, Source and Process.” *Energy Policy* 65: 455–464. doi:10.1016/j.enpol.2013.10.038.

Sjöström, Torbjörn. 2011. *Förtroendet För Myndigheter Och Regeringen Rasar i Deras Hantering Av Corona.* Stockholm, Sweden: Novus.

Skinner, Gideon. 2020. “Government Message Cutting through on COVID-19.” Ipsos MORI, April 3.
Sutton, Jeannette, Yonaira Rivera, Tara Kirk Sell, Meghan Bridgid Moran, DeeDee Bennett Gayle, Monica Schoch-Spana, Stolow, Jeni A., Lina M. Moses, Alyssa M. Lederer, and Rebecca Carter. 2020. “How Fear Appeal Approaches in The Economist. 2020. “Germany Excels among Its European Peers.” The Guardian Syal, Rajeev. 2021. “English Covid Rules Have Changed 64 Times since March, Says Barrister.”, January 21. Slovic, Paul. 1987. “Perception of Risk.” Science (New York, N.Y.) 236 (4799): 280–285. doi:10.1126/science.3563507. Slovic, Paul. 1993. “Perceived Risk, Trust, and Democracy.” Risk Analysis 13 (6): 675–682. doi:10.1111/j.1539-6924.1993.tb01329.x. Slovic, Paul. 2010. The Feeling of Risk: New Perspectives on Risk Perception. The Feeling of Risk: New Perspectives on Risk Perception. London: Routledge. doi:10.4324/9781849776677. Slovic, Paul, Baruch Fischhoff, and Sarah Lichtenstein. 1982. “Why Study Risk Perception?” Risk Analysis 2 (2): 83–93. doi:10.1111/j.1539-6924.1982.tb01369.x. Slovic, Paul, Sarah Lichtenstein, and Baruch Fischhoff. 1984. “Modeling the Societal Impact of Fatal Accidents.” Management Science 30 (4): 464–474. doi:10.1287/mnsc.30.4.464. Sobkow, Agata, Tomasz Zaleskiewicz, Dafina Petrova, Rocio Garcia-Retamero, and Jakub Traczyk. 2020. “Worry, Risk Perception, and Controllability Predict Intentions toward COVID-19 Preventive Behaviors.” Frontiers in Psychology 11: 582720–5827215. doi:10.3389/fpsyg.2020.582720. Soveri, Anna, Linda C. Karlsson, Jan Antfolk, Mikael Lindfelt, and Stephan Lewandowsky. 2020. “Unwillingness to Engage in Behaviors That Protect against COVID-19: Conspiracy, Trust, Reactance, and Endorsement of Complementary and Alternative Medicine.” PsyArXiv [Preprint]. Statista. 2020. “Wie Sehr Vertrauen Sie Der Deutschen Regierung?” Statista. https://de.statista.com/statistik/daten/studie/153823/umfrage/allgemeines-vertrauen-in-die-deutsche-regierung/. Stolow, Jeni A., Lina M. Moses, Alyssa M. Lederer, and Rebecca Carter. 2020. “How Fear Appeal Approaches in COVID-19 Health Communication May Be Harming the Global Community.” Health Education & Behavior: The Official Publication of the Society for Public Health Education 47 (4): 531–535. doi:10.1177/10901981198528442. Sutton, Jeannette, Yonaira Rivera, Tara Kirk Sell, Meghan Bridgid Moran, Deedee Bennett Gayle, Monica Schoch-Spana, Eric K. Stern, and David Turetsky. 2020. “Longitudinal Risk Communication: A Research Agenda for Communicating in a Pandemic.” Health Security 19 (4): 1–9. doi:10.1089/hs.2020.0161. Syal, Rajeev. 2021. “English Covid Rules Have Changed 64 Times since March, Says Barrister.” The Guardian, January 12. The Economist. 2020. “Germany Excels among Its European Peers.” The Economist. https://www.economist.com/europe/2020/04/25/germany-excels-among-its-european-peers. Van Bavel, Jay J., Katherine Baicker, Paulo S. Boggio, Valerio Capraro, Aleksandra Cichocka, Mina Cikara, Molly J. Crockett, Alia J. Crum, Karen M. Douglas, James N. Druckman, et al. 2020. “Using Social and Behavioural Science to Support COVID-19 Pandemic Response.” Nature Human Behaviour 4 (5): 460–412. doi:10.1038/s41562-020-0884-z. Wardman, Jamie K. 2008. “The Constitution of Risk Communication in Advanced Liberal Societies.” Risk Analysis: An Official Publication of the Society for Risk Analysis 28 (6): 1619–1637. doi:10.1111/j.1539-6924.2008.01108.x. Wardman, Jamie K. 2020. “Recalibrating Pandemic Risk Leadership: Thirteen Crisis Ready Strategies for COVID-19.” Journal of Risk Research 23 (7-8): 1092–1029. doi:10.1080/13669877.2020.1842989. Warren, George W., and Chris Foulds. 2020. “‘Better’ Domestic Energy Advice in England? A Narrative Literature Review.” London: UKERC Publications. Warren, George W., and Ragnar Lofstedt. 2021. “COVID-19 Vaccine Rollout Risk Communication Strategies in Europe: A Rapid Response.” Journal of Risk Research 24 (3-4): 369–311. doi:10.1080/13669877.2020.1870533. Warren, George W., Ragnar Lofstedt, and Jamie K. Wardman. 2021. “COVID-19: The Winter Lockdown Strategy in Five European Nations.” Journal of Risk Research 24 (3-4): 267–293. doi:10.1080/13669877.2021.1891802. Witte, Kim. 1994. “Fear Control and Danger Control: A Test of the Extended Parallel Process Model (EPPM).” Communication Monographs 61 (2): 113–134. doi:10.1080/03637759409376328. Wright, Liam, Andrew Steptoe, and Daisy Fancourt. 2020. “What Predicts Adherence to COVID-19 Government Guidelines? Longitudinal Analyses of 51,000 UK Adults.” MedRxiv 1–28. doi:10.1101/2020.11.20.2015376. Wynne, Brian. 1991. “Knowledges in Context.” Science, Technology & Human Values 16 (1): 111–121. doi:10.1177/016224391016001018. Yaffe, Tal, and Ronit Kark. 2011. “Leading by Example: The Case of Leader OCB.” The Journal of Applied Psychology 96 (4): 806–826. doi:10.1037/a0022464. Yanez, N. David, Noel S. Weiss, Jacques-André Romand, and Miriam M. Treggiari. 2020. “COVID-19 Mortality Risk for Older Men and Women.” BMC Public Health 20 (1): 1742. doi:10.1186/s12889-020-09826-8.