



# Risks Elaborated vs. Risks Downplayed: The Effect of Risk Comparisons in Mainstream Media During Covid-19 on Risk Perceptions and Anxiety Levels

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This study examines the effects of risk comparisons in mainstream media during the Covid-19 outbreak that either expressed the severity of the outbreak or downplayed it by comparing the mortality rates of the disease to those of other risks. In an online experiment of undergraduate students at a large university in the U.S. Mountain West ( $n = 78$ ) in early May 2020, we found that trust in government agencies played an important role in how people interpret risk messages in media. When the risks are amplified, those who hold low levels of trust in government agencies are more likely to report higher levels of anxiety. When risks are downplayed, people who hold high levels of trust in government agencies are more likely to report greater risk perceptions than those who hold low levels of trust in government agencies. The implications are discussed.

**Keywords:** risk perception, anxiety, mainstream media, COVID-19, risk comparisons

## INTRODUCTION

Since the beginning of the Covid-19 pandemic, mainstream media sources have both downplayed and elaborated upon the risks of the disease. In early March 2020, U.S. President Donald Trump compared the disease to seasonal influenza, saying that the number of deaths occurring from each was comparable, effectively beginning months of messaging that minimized the risks of Covid-19 (Qiu and Bouchard 2020). Scientists like Dr Anthony Fauci have countered such claims by providing information about the severity of the risks. As early as mid-March 2020, Dr Fauci described Covid-19 as being 10 times more lethal than the flu in front of the Congress (Bloomberg 2020). Over time, comparisons of the rate of Covid-19 deaths to those of deaths from other prominent and common risks beyond the flu were adopted in mainstream media (McCann et al., 2020).

Scientific understanding of Covid-19 has shifted rapidly throughout the pandemic, which has created an uncertain information environment in which individuals turn to their trust in governmental and scientific agencies to make sense of the issue. An April 2020 survey showed that the Centers for Disease Control (CDC), the primary federal government agency providing guidance and protocols during health crises, was among the most trusted sources of information for Covid-19, with nearly nine in 10 Americans reporting trust in the agency (Ballew et al., 2020).

This study examines the effects of comparisons that amplify—or elaborate upon—the risks of Covid-19 or downplay them, as portrayed in prominent cable news channels, among undergraduate students at a large U.S. university in the Mountain West in May 2020 ( $n = 78$ ). Results showed that when the risks are amplified, those who held low levels of trust in government agencies were more

likely to report higher levels of anxiety. When risks are downplayed, people who hold high levels of trust in government agencies are more likely to report greater risk perceptions.

## RISK AMPLIFICATION DURING VIRAL OUTBREAKS

Mainstream media are an important source of information during pandemics and play a key role in how people perceive and respond to the risks from diseases (Wirz et al., 2020). In such outlets, it is common to see comparisons being made between emerging risks and more familiar risks (Lundgren and McMakin 2018). Such comparisons help individuals make sense of the novel and highly uncertain phenomena that they face during an outbreak of an emerging disease like Covid-19. They can also be misleading by comparing risks that can be controlled (e.g., a car crash) to an emerging involuntary hazard with no known immunity or treatment (e.g., Covid-19) (Haas 2020). Research on past viral outbreaks provides evidence that news media use such risk comparisons in their coverage. A study that analyzed how U.S. news media covered H5N1, or the avian flu, showed that nearly 40% of stories made a comparison to another risk, such as the common flu (Dudo et al., 2007).

News media can provide distorted coverage of such risk comparisons. For instance, press coverage of the risks of the H1N1 virus emphasized messages of uncertainty, conflict, and dramatization or emotional, alarming messages that personalized the risk (Rossmann et al., 2018). In a study of the U.S. coverage of the Zika virus, 96% of stories were found to contain messages that elevated the risks, while 61% contained messages that minimized the risks (Sell et al., 2018). Research carried out more broadly on the news coverage of risk comparisons shows that news media overreport mortality rates for certain risks, such as homicide rates, and underreport mortality rates for other risks, such as tobacco use, likely due to news values and commercially driven interests (Frost et al., 1997). Despite a tendency in news media to cover some risks inaccurately, there is other evidence that news coverage of viral outbreaks can be accurate. In their analysis of the H1N1 virus, Dudo and his colleagues (2007) found that approximately half of the stories that contained quantitative risk information, such as mortality rates, included a denominator. Providing a denominator when presenting quantitative risk information increases the accuracy by giving context. The evidence for such a practice is mixed, however. Coverage of the risks associated with West Nile has been found to be mostly qualitative, with quantitative risks that are rarely mentioned containing denominator information (Roche and Muskavitch 2003).

Empirical research on past viral outbreaks provides a range of evidence on how news media cover diseases. On one hand, news outlets provide comparisons of the risks of the emerging viruses to other known risks. Those comparisons can be guided by news values (e.g., conflict) and are not always provided in the context of important information, such as denominators for mortality rates. This study explores how different risk

comparisons made in news media impacted public perceptions during Covid-19.

## RISK PERCEPTIONS AND ANXIETY LEVELS DURING OUTBREAKS

Public perceptions of emerging risks such as Covid-19 are thought to arise from two primary paths—cognitive or emotional (Slovic 2000; Loewenstein et al., 2001). Indeed, empirical research provides evidence that both routes are linked to how people make decisions and act on risks. People are more likely to act not out of understanding or knowledge but as a result of the characteristics that they perceive from the risk—severity, controllability, or familiarity, for instance—or as a result of the way they feel about a risk (National Academies of Sciences, Engineering, and Medicine 2017).

Therefore, this study examines risk perceptions and anxiety levels. Evidence from past viral outbreaks suggests that these variables are associated with the adoption of recommended behavior changes. For instance, studies of different outbreaks in recent years, including SARS and H1N1, show that when people have higher levels of anxiety, they are more likely to take measures that protect them from the virus (Leung et al., 2005; Rubin et al., 2009). Negative emotions such as anxiety can stimulate greater information seeking during a pandemic (Kim and Niederdeppe 2013). Other data from the H1N1 outbreak show that anxiety levels mediated the link between risk perceptions and taking an action to protect oneself, suggesting that emotional responses stimulate action for those who are concerned about a virus (Prati et al., 2011). Early data on Covid-19 show that risk perceptions and anxiety levels have both been associated with the adoption of behaviors that prevent contracting and spreading the disease, such as following quarantine guidelines (Carlucci et al., 2020).

Risk perceptions and anxiety levels are important attitudes to analyze in relation to health-related risks such as viral outbreaks due to the evidence of their important relationship to the actions that people take to protect themselves. Media messages play an important role in how people perceive the cognitive and emotional dimensions of the risk during viral outbreaks (Oh et al., 2015). Research shows that both emotional (fear) and cognitive (knowledge) responses that develop from media messages are important mediators in the link between media use and likelihood of adopting preventive behaviors (Zhang et al., 2015). We pose the following hypothesis.

H<sub>1</sub>: Individuals exposed to the Risks Elaborated condition will have higher 1) anxiety levels and 2) risk perceptions than individuals exposed to the Risks Downplayed condition.

## THE ROLE OF INSTITUTIONAL TRUST DURING VIRAL OUTBREAKS

Research shows that in addition to risk perceptions and negative emotions, trust in governmental agencies during viral outbreaks is closely connected to the actions that people take to protect

themselves from diseases and the perceptions that they hold about the diseases. Evidence from the H1N1 outbreak in 2009 shows that trust in authorities was related to recommended behavior changes, such as increased hand washing (Rubin et al., 2009). During the Covid-19 outbreak, mask wearing increased by 12 percentage points after the CDC made the recommendation (Goldberg et al., 2020). In addition, low levels of confidence in the management of COVID-19 by government officials are associated with higher levels of worry about COVID-19 (Lu et al., 2020).

Trust in the government has been linked to emotional and mental health in other risk contexts, as well. Research after the Fukushima power plant disaster found that distrust in the government was linked to symptoms of depression and anxiety (Tateno and Yokoyama 2013; Fukasawa et al., 2020; Guo et al., 2020).

People use trust to make sense of and reduce the complexity of the risks they face, and empirical research provides significant evidence for the relationship between institutional trust and risk perceptions (Siegrist 2019). Viral outbreaks develop rapidly amidst an uncertain information environment (Paek and Hove 2020). Past research on viral outbreaks shows that governmental and health authorities provide reassuring messages with information about action that people can take to stay healthy (Rossmann et al., 2018), and people use trust in such actors to guide them through crises and times of uncertainty.

Thus, there is an important connection between trust in institutions and the information that people turn to during a crisis. Research has found that media use predicts trust in institutional sources of information about science (Anderson et al., 2012). Furthermore, trust in scientists mediates the effect of news media use on perceptions of scientific and risk issues such as global warming and nuclear energy (Hmielowski et al., 2014; Qiu et al., 2021).

Governmental agencies are an important part of the information environment for Covid-19, and how people view them likely shapes how people interpret risk messages.

H<sub>2</sub>: Individuals' trust in government agencies will moderate 1) anxiety levels and 2) risk perceptions when exposed to the Risks Elaborated condition vs. the Risks Downplayed condition.

## METHODS

### Study Design

An online experiment was conducted comparing a video that elaborated on the risks of Covid-19 to one that downplayed the risks of Covid-19 by comparing the mortality rates from Covid-19 to those of other major causes of death. In the Risks Elaborated condition, participants were exposed to a 10-s clip that aired on March 17, 2020, during which MSNBC host Joe Scarborough introduced a recent report that describes the number of American deaths from Covid-19 in the worst-case scenario to be two million, or higher than the total number of deaths for the Vietnam War, Civil War, World War I, and World War II combined (Concha 2020). In the Risks Downplayed condition, participants were exposed to a 15-s clip that aired on April 17,

2020, in which Dr Phil, a prominent television personality, declares in an interview on Fox News that Covid-19 has produced fewer deaths than the following common causes of death in the United States: cigarette smoking, automobile accidents, and swimming pool accidents (Ali 2020). Neither clip attributed the mortality rates to a specific source.

Undergraduate students at a large university in the Mountain West participated in the study between April 30 and May 8, 2020 ( $n = 78$ ). The study was approved by the Institutional Review Board of the authors' institution. See **Supplementary Material** for descriptive statistics about the sample and control variables.

### Independent Variables

Trust in government agencies was measured using an item that asked people to evaluate how much they trust health information from government agencies such as the Centers for Disease Control as a source of information about coronavirus on a five-point scale, with one being equal to "none at all" and five being equal to "a great deal" ( $M = 4.17$ ,  $SD = 1.01$ ).<sup>1</sup> The item was split at the median (4), with 53% of participants ( $n = 40$ ) in the high trust category and 47% of participants ( $n = 36$ ) in the low trust category.

### Dependent Variables

Risk Perceptions is the mean index of three items measured on a seven-point scale (Cronbach's  $\alpha = 0.68$ ,  $M = 3.57$ ,  $SD = 1.19$ ): "How serious are current threats related to coronavirus to your health," "How likely are you to come down with coronavirus in the next year," and "If you were to become ill with coronavirus in the next year, how serious do you think it would be?" (Kahlor 2010).

Anxiety was measured using the mean index of the Z-score of two items. The first asked them to consider how they have felt in the past week on a four-point scale: "How often do you worry about getting coronavirus, or COVID-19?" (Zhao and Cai 2009). The second asked on a seven-point scale: "How often have you felt anxious as cases of the coronavirus have been increasing rapidly in the United States?" (Pearson's  $R = 0.40$ ,  $p < 0.001$ ;  $M = 0.00$ ,  $SD = 0.83$ ) (Kim and Niederdeppe 2013).

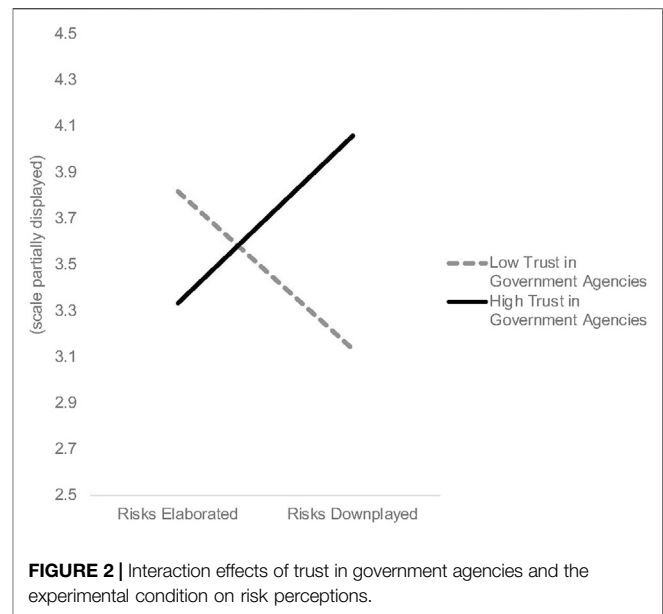
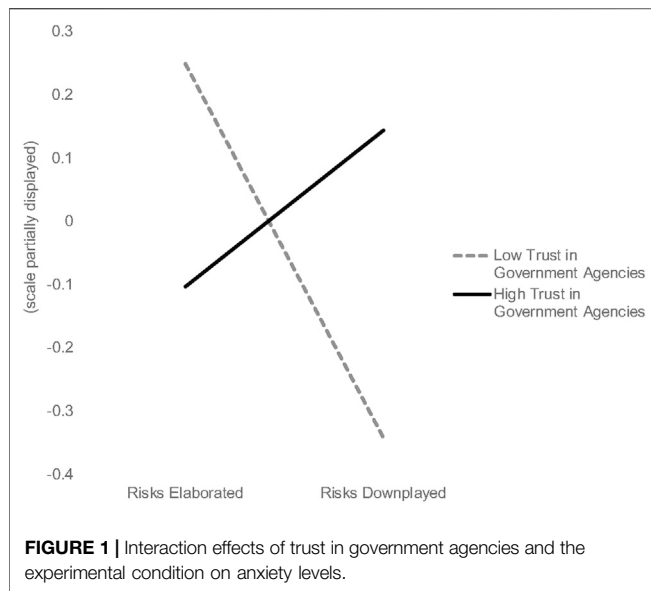
### Analyses

This study employed a two-way analysis of covariance (ANCOVA) to test our hypotheses. See **Supplementary Material** for information about the manipulation checks.

## RESULTS

The first hypothesis examined the main effects of the experimental video on levels of anxiety and perceptions of risk. It was not supported. There were no main effects of the experimental condition on anxiety [ $F(1, 70) = 0.82$ ,  $p = 0.369$ ] or risk

<sup>1</sup>Previous work has used single-item measures to operationalize trust in sources of information for science as both an independent and dependent variable (Eiser et al., 2002; Brewer and Ley 2012; Larson et al., 2018).



perceptions [ $F(1, 68) = 0.06, p = 0.801$ ] after controlling for race, sex, political ideology, trust in MSNBC, and trust in Fox News.

The second hypothesis explored the interaction effects of trust in government agencies and the experimental condition on anxiety and risk perceptions. The interaction effect of trust in government agencies and the experimental condition on anxiety was statistically significant [ $F(1, 70) = 5.14, p < 0.05$ ] after controlling for race, sex, political ideology, trust in MSNBC, and trust in Fox News. Those who hold low trust in government agencies held higher levels of anxiety when they saw the Risks Elaborated video vs. the Risks Downplayed video (see **Figure 1**). Those who hold high trust in government agencies held similar levels of anxiety, regardless of the video they saw. The interaction effect of trust in the CDC and the experimental condition on risk perception was statistically significant [ $F(1, 68) = 7.36, p < 0.01$ ] after controlling for race, sex, political ideology, trust in MSNBC, and trust in Fox News. Those who hold high trust in government agencies were more likely than those who hold low trust in government agencies to hold higher levels of risk perceptions in the Risk Downplayed condition (see **Figure 2**).

## DISCUSSION

The goal of this study was to examine the impacts various comparisons of risk in mainstream media can have on risk perceptions and anxiety levels during an emergent disease outbreak. Our study provides evidence that trust in government agencies moderates the relationship between risk comparison portrayals and how individuals perceive the risk of Covid-19 and experience anxiety about it. This points to the important role of institutional sources of information in how people interpret portrayals of risk.

Before discussing the findings further, it is important to note a few limitations of this study. This study examined the effects of mediated messages from a moment in time during a rapidly

changing media environment, using a sample with limited diversity. It is possible that other characteristics of the clips (e.g., source characteristics, such as likability or competence, or perceived accuracy) contributed to the effects that we found. Our analyses control for a number of factors, including demographic characteristics, political ideology, and source perceptions for Fox News and MSNBC, which does provide support for isolating the effects of our independent variables of risks elaborated vs. risks downplayed. In addition, our study also had high external validity. The clips tested in the experiment were taken directly from aired national broadcasts and represented messages commonly portrayed in mainstream media sources. More expansive research could test a broader range of risk comparison messages from a range of sources while controlling for source perceptions. Furthermore, while our sample of college students represents a particular age group with arguably more limited risk of the disease, the study was also fielded in early May 2020—a time when most individuals around the world were under or had recently come out of a stay-at-home order. The experiences of a college student during this time were possibly not so dissimilar to those of other individuals at different life stages. While the individual situations people experienced were unique, all individuals were living under the broader umbrella of stay-at-home orders and stressful circumstances. Furthermore, many college students were living with their families during this time, making their experiences more aligned with those of the broader public than a typical college experience. This relatively homogeneous experience among individuals in different places supports the case for testing a small sample of college students. Future research should continue to explore the risk comparisons being made over the long term and after more intense politicization has occurred, such as the divergent government responses in terms of recommendations to manage Covid-19 in the summer months of 2020. An additional limitation of our study is the use of a single



item to measure trust in governmental agencies, given the multidimensional nature of the construct (Besley et al., 2021). While this study employs a measure of institutional trust that is commonly used in research, it is important that science communication researchers move toward multidimensional measurements of trust that account for its complex nature. We also use an item that uses the CDC as a specific example when we asked about levels of trust in government agencies. While additional agencies (e.g., the Food and Drug Administration) could have been used as examples in the measurement of trust, the CDC tends to be among the most well known (Myers et al., 2017). Moreover, people do not tend to view such institutions that differently.

Our data show that elaborating upon the risks of Covid-19 in a risk comparison message can draw out greater anxiety from those who hold low trust in government agencies. It is likely that individuals with low trust in scientific organizations like the CDC that provide some of the main guidance during health crises were in a cognitive state in which their anxiety levels were easily stoked by alarming messages. Given that institutional trust can be a guiding factor in how people manage such uncertainties, their levels of anxiety were easily stimulated by messages that heightened the risks of the disease. This has important implications for understanding how individuals build resilience in the context of an ongoing pandemic. Reaching them with information that helps them foreground positive actions while also acknowledging these negative emotions is a productive outcome of this communication dynamic. It is worth noting that negative emotions like anxiety can stimulate ideal behaviors during pandemics and viral outbreaks (e.g., handwashing and information seeking). The risk comparisons being made in media outlets likely play an important part in encouraging health-protective actions for people who may not feel like they can turn to a governing body or authority during a pandemic given their low trust in such institutions.

Results from this study suggest that downplaying risks, on the other hand, appears to heighten concerns among people who hold high trust in government agencies. It is likely that those with high trust in agencies like the CDC also hold greater concern over the virus. Our study indicates that when these individuals encounter messages that do not align with their perspectives, or a message that downplays the risks, they respond with even greater concern. It is possible then that such messages could fuel even more action (e.g., greater steps taken to participate in social distancing or mask wearing) or policy support on the part of people who are already concerned. This is important given that President Trump acknowledged that he was downplaying the risks all along (Gangel et al., 2020) and when there have been reports of meddling by President Trump's administration in the reports and recommendations made by the CDC (Weiland 2020). The state of uncertainty and polarization that results from such long-term and ongoing actions may actually motivate those most concerned about the risks to protect themselves and others during the health crisis.

Research suggests that trust in scientific governmental agencies can falter when it is in the presence of a politicized topic (Myers et al., 2017). The news media environment for Covid-19 during the early phase of the pandemic was politicized (Hart et al., 2020). Some evidence suggests that this polarized

news environment is connected to attitudes about governmental agencies. A survey from March 2020 found that greater exposure to conservative media was associated with the perception that the CDC exaggerated the threat of Covid-19 in order to hurt President Trump's image (Jamieson and Albarracín 2020). These connections between polarized messaging available in mainstream media and perceptions of the CDC possibly deepened over time. About nine in 10 Americans trusted two prominent government agencies—the CDC and the National Institutes for Health (NIH)—for information about Covid-19 in a survey conducted in April 2020 (Ballew et al., 2020), yet perceptions that the CDC is doing an excellent or good job in its response to the outbreak dropped considerably between March (79%) and August (63%) (Pew Research Center 2020). This study adds important insights into how the specific risk comparisons that are so prominent in the Covid-19 discourse shaped individuals' experiences, taking into account the important role of trust in governmental agencies.

Research has begun to examine how the risk comparisons made between Covid-19 and other more familiar risks shape responses. One study found that people think that helping an individual afflicted by Covid-19 is riskier than helping an individual afflicted by the flu or a car accident, and they are less likely to help the individual afflicted by Covid-19 (Niemi et al., 2021). Our study places such popular comparisons made in public discourse in the context of institutional trust, an important orientation for understanding how people process risk because it reduces anxiety for individuals in the face of a novel uncertain risk. Here, we found that for individuals who hold low trust in the government and cannot turn to it to manage their emotional responses and mental health related to the crisis, messages that elaborate on the severity of the risks will leave them with more anxiety. The implications of this may indicate that it is important for public health officials to make other sources of trust—such as religious leaders, doctors, or members of one's social network—available to those with low trust in the government to help them manage their feelings of anxiety during such crises.

We also know that those with high trust in government agencies tend to hold greater risk perceptions. Our study found this pattern between high trust and high risk perceptions to be even greater in the face of messages that downplay the risks. This evidence suggests that viewing these downplayed risks triggers even greater concern for those with high trust. It may be that these individuals have already heard messages from their trusted authorities stating that the risks are serious and are worried that others will not take the risks as seriously if they see the risks downplayed. Notably, even though those with high trust in governmental agencies reported more risk perceptions in the face of messages that downplay the risks, their levels of anxiety were not impacted.

Early in the Covid-19 pandemic, the WHO declared an "infodemic" in which inaccurate information was spreading rapidly in various traditional and digital media sources. While empirical research is still developing on how media portray the Covid-19 pandemic, future research should examine how risk

comparisons—including how accurate those portrayals were—played out in news media sources and whether there was an uptake of those messages in social media conversations. This can provide further insight into the reach of such portrayals from prominent political actors in public discourse and the potential effects of them. Future research should also examine how people rely on trust in governmental agencies to manage their emotional responses to media messages during other crises (e.g., social justice issues).

Our data show that the levels of institutional trust, combined with the repeated messages that downplay or elaborate upon the risks purported in media *via* major political actors, can have significant consequences with regard to how people perceive the issue. When individuals hold low trust in a scientific governing body like the CDC, their anxiety levels are provoked by messages that elaborate upon the risk of Covid-19. This suggests that those who cannot turn to institutional trust during health crises need other mechanisms for coping with the mental health impacts of such events. For those who do hold trust in governmental agencies, the use of messages that downplay the risks stimulated their risk perceptions, but their anxiety levels remained the same. This suggests that these individuals are able to turn to their trust in the government to manage any anxiety that might arise from media messages during a health crisis such as a pandemic.

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## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Colorado State University Institutional Review Board. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

AA contributed to the research design, data collection, data analysis, and manuscript development. GS contributed to the research design, data collection, and manuscript proofreading.

## SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fcomm.2021.646001/full#supplementary-material>

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**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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