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Examining users' emotional responses to YouTube content during the Covid-19 crisis: A cross-country experiment

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Abstract: This study experimentally investigates people's emotional responses to different online messages about Covid-19 on YouTube. Participants from the United Kingdom (N = 331), the United States (N = 312), and Greece (N = 306) completed an online experiment. Participants viewed two expert videos: one presenting positive vaccine news, and the other emphasizing the seriousness of COVID-19. After viewing, participants expressed their feelings and reported their level of COVID-related worry. Users reported more endorsement for the video of an expert describing the seriousness of Covid-19. This is the first study using mixed-methods evidence to highlight the importance of involving experts in crisis communication and the buffering effects of positive news amid crises.

Keywords: YouTube content, Covid-19, emotional responses, mixed methods

1 Introduction

The Covid-19 virus was first identified in December 2019 in China as a novel and unfamiliar virus. It quickly spread worldwide and was officially declared a pandemic on 11 March 2020 by the World Health Organization. During this crisis, both traditional and online media played crucial roles in disseminating information and shaping individuals' emotions regarding various aspects of the pandemic, such as vaccine development, mortality rates, and hospitalizations.

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While the role of traditional media has been previously examined during health crises (Manio and Papa, 2023) recent research has also focused on the Covid-19 pandemic crisis (Papa and Maniou, 2021). However, the role of audiovisual media, particularly the YouTube platform, has not been thoroughly investigated. YouTube, being the second largest social media platform (Lozano-Blasco et. al, 2023), has served as a significant news source (Yang and Gonzalez-Baillon, 2025) throughout the pandemic and has proven to be an effective tool for communicating health-risk information (Basch et al., 2017). Scholarship in this area suggests that online media messages related to political and social issues can amplify emotional responses in individuals (Widmann, 2022). Moreover, these emotions have the potential to influence audiences' attitudes and opinions regarding a particular crisis (Kühne and Schemer, 2015). Therefore, it is important to explore the impact of online media, including platforms like YouTube, on public perceptions and reactions during the Covid-19 pandemic crisis.

Indeed, recent scholarship argues that emotions play a significant role during crises (Photiadis and Papa, 2022). Although this is true within the field of political communication, extensive research highlights how politicians and experts strategically employ emotional rhetoric (Crabtree et al., 2020; Müller, 2022) to capture the audience's attention, particularly through media channels, during times of crisis. These studies demonstrate that politicians and experts often use both positive and negative emotional language to shape public discourse, which can vary across countries. Additionally, research indicates that media messages on political, social, and health issues can have a profound impact on individuals' emotional responses (Wildmann, 2022), subsequently strengthening specific attitudes and reinforcing public opinion. However, it is important to note that exposure to such messages is essential for influencing individuals' attitudes and opinions.

Despite the importance of online media messages during pandemics, there is a lack of in-depth research on the emotional rhetoric surrounding Covid-19 in response to specific YouTube audiovisual content related to health. Furthermore, little has been done to examine the prevalence of fear and hope appeals in audiovisual news content, communicated by experts across different countries. YouTube is particularly relevant to our study, as it serves as a public sphere where emotionally charged expressions and messages dominate and audience responses to posted or viewed videos are often highly emotional (Kim and Chen, 2024). Compared to other social media platforms, YouTube offers a unique environment for users to share vivid experiences and exchange emotions through diverse multimodal formats (Rosenbusch et al., 2019). Therefore, fear is singled out in our research as a critical emotional frame warranting deeper investigation. As previous research highlights, YouTube is one of the biggest information sources for science, technology, and health (Marchal and Au, 2020). As such, citizens rely on YouTube to obtain

scientific knowledge necessary for their everyday lives (Marchal and Au, 2020). In this context, Kim and Chen's (2024) empirical study on YouTube and Covid-19 shows that emotional frames related to fear are more prevalent than those associated with other emotions. This is a significant finding, as it highlights fear as the dominant emotion in rhetoric often associated with conspiracy videos or populist discourse, which often seek to undermine the scientific authority of established institutions and "fuel a culture of paranoia" among citizens (Marchal and Au, 2020). Such emotional frames flourished during the C-19 pandemic crisis in all social media, particularly in the three countries under examination. Hope is another significant emotion in rhetoric on YouTube to be studied because, as Marcus et al. (2000) suggest, positive emotions generally receive less attention compared to negative emotions. Similarly, Kim and Chen (2024) found that trust-related language and a positive emotional cue garnered fewer views on YouTube. Investigating the role of hope is essential for understanding how positive emotional frames can be effectively leveraged on a platform dominated by emotionally charged and often negative rhetoric. This could offer valuable insights into how to balance engagement with constructive messaging.

The current study aims to fill this gap by expanding the scale and scope of existing scholarship on emotions and online messages. It investigates the prevalence and nature of audiovisual media messages using a cross-national dataset of YouTube videos created by experts and collected during the Covid-19 pandemic. For the purposes of our study, we define expert videos as audiovisual content that features statements from qualified experts, such as scientists, medical professionals, or public health officials, discussing the Covid-19 pandemic. Using an experimental set-up, this study advances previous research by examining how audiences respond to different types of audiovisual news information related to Covid-19. Thus, the experimental stimuli consisted of mainstream news segments that incorporated expert commentary rather than opinion-based or user-generated content. Moreover, our study provides insights into individuals' emotional responses to YouTube videos from three countries (United Kingdom, United States, Greece). It not only compares emotional responses but also seeks to discuss how sociopolitical and cultural contexts in the United Kingdom, United States, and Greece might shape public reactions to expert-led audiovisual crisis communication. The inclusion of these three countries enables the exploration of country-specific patterns in emotional engagement, shaped by different levels of institutional trust, public health policy, and media systems (Ellinas and Lamprianou, 2014; Spyridou et al., 2024). The videos were sourced from widely recognized and credible news organizations to ensure ecological validity and generalizability. The study offers evidence and expands the existing literature by comparing responses to two types of audiovisual media content: (a) positive/optimistic news regarding vaccine development, and

(b) negative news emphasizing the severity of the health crisis. It is worth noting that experimental studies of this nature are scarce, particularly when considering textual forms of traditional and online media (Giri and Maurya, 2021; Loomba et al., 2021).

2 Emotional rhetoric responses, during crisis situations, on YouTube content

The role of social media content in global health crises requires further exploration, especially in relation to emotions and the so-called "affective turn" (Papacharissi, 2015). Communication scholars are particularly interested in the sociality of emotions, affect, and their diverse online contexts of expressions (Papacharissi, 2015), emphasizing how emotions are manifested and unpacked in the politics of everyday life (Lange, 2024). As such, the concept of emotional public spheres is a useful lens for analyzing the role of emotions in public discourse and matters of civic interest (Lange, 2024). Emotional public spheres serve as valuable frameworks by questioning and dismantling problematic dichotomies such as reason versus emotion or objective versus subjective viewpoints (Rosas and Serrano-Puche, 2018). They highlight the importance of emotions in interactive milieus such as YouTube. The emotional public sphere "parallels the rational critical public sphere in the way that it encourages, manages and reflects upon emotional conflict in a public context" (Lunt and Stenner, 2005, p. 63). Emotional rhetoric can influence public opinion and therefore expose injustices within systems of power (Lazzarich, 2015). In our case, social media, and particularly YouTube, with their interactive milieu can be used to assess public opinions and emotions during different stages of a crisis (Meadows et al., 2019). The Covid-19 pandemic represents the first phenomenon of this magnitude to impact the world since the advent of such platforms. In this context, scholarly research argues that social media serves as an informal channel for conveying, sharing, and processing information about events, developments, and individuals during crises (Austin et al., 2012). Particularly, social media such as YouTube offer an interactive platform for the public to share affective reactions during public crises. YouTube, established in 2005, has emerged as the second most popular social media platform. Scholars define YouTube as a platform that functions as a news source, where most videos are seen as authentic, spontaneous, and original (Towner and Dulio, 2011). They also suggest that YouTube videos are as credible as mainstream news sites (ibid). YouTube is often associated not only with its ability to attract audiences without traditional media gatekeepers but also with its capacity to evoke strong emotions in viewers.

In this context, engagement can be discussed as a complementary concept to emotion, particularly relevant to digital media studies. Engagement, in the context of digital media, refers to users' active and cognitive involvement with content (Calder et al., 2009). In crisis communication research, engagement has been treated both as an indicator of message effectiveness and as a behavioral outcome that reflects emotional activation (Kim and Yang, 2017; Liao et al., 2020). Prior literature suggests that emotionally intense content – especially fear-inducing messages – leads to increased attention and behavioral responses such as commenting or sharing, thus positioning engagement as both an affective and cognitive measure of audience impact (Widmann, 2022). Therefore, studies have shown that emotional intensity correlates with greater user engagement online (Chen et al., 2020). This is particularly relevant for YouTube, a platform where engagement metrics such as views, likes, shares, and comment volume are central indicators of user interaction. YouTube's architecture encourages audience participation through free-text comments, making it an ideal environment to assess how emotional stimuli translate into cognitive and behavioral forms of engagement. Unlike more passive consumption on traditional media, YouTube invites expressive responses, and longer comment length often signals higher cognitive engagement and personal reflection (Rosenbusch et al., 2019). Therefore, studying how emotional valence affects the extent of written responses on YouTube offers meaningful insights into audience engagement with crisis messages.

However, research on the efficacy of YouTube video content has yielded mixed results. Previous empirical studies have demonstrated that threat and fear appeals are commonly employed in YouTube videos, particularly in relation to anti-smoking campaigns or global water crises (Krajewski et al., 2019). Recently, Kim and Chen (2024) explored YouTube conspiracy and debunking videos to examine how emotional frames are employed in both conspiracy theories and counterarguments. Their findings reveal that fear and trust are the main emotions, supporting existing literature on the paranoid culture of conspiracies (Kouros et.al, 2023). Their work also offers a deeper understanding of how emotion and issue framing interact to engage audiences on platforms like YouTube. These studies suggest that audiovisual content can instill fear in the public consciousness, leading to reactions often associated with panic. In contrast, Guidry et al. (2017) argue that social media content is most effective when it incorporates risk communication principles, such as solution-based messaging, visual imagery, and direct engagement with public fears and concerns. Given these divergent findings, there is a need to delve deeper into the impact of social media, specifically YouTube, on audience emotions during health crises. Further research can illuminate the nuances of emotional responses evoked by social media content and explore effective strategies for risk communication and public engagement during global health crises.

One of the central tenets of appraisal theory is that individuals respond differently to stressful situations (Lazarus, 1991), and their emotional reactions vary across different circumstances (Duhachek, 2005). For instance, Coombs' (1998) situational crisis communication theory (SCCT) adopts an audience-centered approach to comprehend how stakeholders react in crisis situations, considering their attribution of crisis responsibility and assessment of crisis types. Jin and colleagues (2007) argue that an alternative perspective based on emotions should be integrated into the audience-centered approach to understand how individuals are likely to experience, feel, and evaluate crisis situations, especially through online messages. During crises, audiences actively seek social media information to access unfiltered and up-to-date content (Procopio and Procopio, 2007) as well as unique information not available elsewhere. Additionally, audiences turn to social media platforms for emotional support and recovery in times of crises (Austin et al., 2012). Recent empirical studies suggest that while users encounter both positive and negative emotional expressions online, they actively seek positive emotional experiences and tend to avoid negative ones (Lin et. al, 2014).

It is no surprise that increased consumption of Covid-related news on social media platforms has often been associated with heightened anxiety and worry on a global scale (Bendau et al., 2021; Hamidein et al., 2020; Ho et al., 2020; Wheaton et al., 2021). Related to online news, research has shown that negative news articles are more effective at capturing attention. Studies reveal that the presence of negative words in headlines significantly increases the likelihood of user engagement through clicks on social media platforms (Zhang et al., 2024). For instance, individuals tend to interact more frequently with negative content as evidenced by the metrics and comments on negative news stories (Macdonald et al., 2024; Poljak, 2024). This negativity bias affects how information is received and shared, carrying significant implications for both individual emotions and societal well-being (Andersen et al., 2024; Xu et al., 2023). Additionally, an analysis of emotional language – specific emotion labels such as anger, fear, joy, and sadness – found that headlines containing sad words increase click-through rates (Robertson et al., 2023). In contrast, other empirical studies have highlighted a positivity bias (Ng et al., 2023), suggesting that the debate on negativity bias in online news engagement warrants further exploration.

Research on online media consumption revolves around two key aspects. The first perspective, aligned with appraisal theory, suggests that fear is a central emotional response to media content (Wildmann, 2022), often associated with feelings of threat and anxiety (Papa and Maniou, 2021). Audiovisual content that elicits fear and threat perceptions can indeed lead individuals to align more closely with public health advice. Appraisal theories define fear as the perception of imminent physical harm (Lazarus, 1991). Furthermore, Heffner et al. (2021) demonstrated

that media messages framing Covid-19 as a threat evoked negative emotions, while prosocial messages elicited positive emotions. Importantly, their research revealed that positive emotions increased the effectiveness of prosocial messages, whereas negative emotions had no impact on the effectiveness of threat-based messages in increasing the willingness to engage in preventive behaviors (Heffner et al., 2021).

The second perspective suggests that social media content can evoke a "feeling of flow" among users, characterized by high positive valence and arousal (Mauri et al., 2011). Joy and fun are commonly reported positive emotions associated with this state. However, social media content can also trigger negative emotions such as envy (Tandoc et. al, 2023). For instance, Giri and Maurya (2021) demonstrated that consuming positive news about Covid-19 on social media, such as vaccine development, led to more positive emotions and increased resilience compared to negative news about the impact of the virus. These positive emotions, often linked to feelings of hope, can also result in the belief that negative situations are more likely to affect others rather than oneself (Kyriacou and Stylianou, 2023). This may lead individuals to underestimate the risk of contracting the disease and potentially disregard public health advice (Brewer et al., 2007).

In summary, the adverse effects of online audiovisual media consumption may depend not only on the characteristics of the medium but also on the content and format of the information being communicated. Chao et al. (2020) found that, during the early stages of the pandemic, information about the severity of the outbreak or the strain on the healthcare system increased distress, whereas information about the disease and its prevention was associated with lower levels of depression. Additionally, the credibility and source of the information can influence not only the effectiveness of crisis communication (Prati et al., 2011) but also its emotional impact. Throughout the pandemic, information from experts or reputable academic/medical sources, which were generally considered trustworthy (Lep et al., 2020), was associated with reduced distress (Chao et al., 2020; Ho et al., 2020). However, as these studies are cross-sectional in nature, it remains unclear whether media consumption causes distress or if the relationship is reciprocal (Pahayahay and Khalili-Mahani, 2020).

Hence, it is imperative to expand the existing body of literature on emotional appeals in YouTube's audiovisual content, particularly in the context of the Covid-19 pandemic. By exploring the public's emotional responses to various forms of audiovisual content, we can deepen our understanding of the circumstances in which emotional appeals either hinder or enhance the effectiveness of policies, initiatives, or public figures. In this context, our study aims to analyze the emotional rhetoric evoked by YouTube videos addressing the Covid-19 pandemic, with the objective of uncovering users' emotional reactions and engagement. While the study hypotheses are formulated across all samples, we also aim to explore how emotional

responses and engagement may differ by country (United Kingdom, United States, Greece). This allows us to consider how cultural and institutional differences such as media trust and governmental handling of the pandemic – influence the audience's reactions. For example, Greece experienced a more prolonged third wave of the pandemic during the study period, and had a lower level of public trust in political institutions and media, which may have heightened negative emotional responses and skepticism during the pandemic (Ellinas and Lamprianou, 2014;). In contrast, the United Kingdom and United States had more established vaccination programs at the time, and a higher availability of expert-led media content, potentially fostering greater receptivity to scientific messages (Lazarus et al., 2023). Additionally, Anglo-American media cultures are more accustomed to expert commentary in crisis coverage, which may explain higher endorsement and engagement levels in these samples. Considering these national characteristics allows for a richer interpretation of how and why audiences engage differently with emotionally charged, expert-led YouTube content. Thus, the comparative nature of the study not only supports replication but also provides insights into localized patterns of crisis communication.

To achieve our aims, we conducted an online experiment, replicated in three countries (United Kingdom, United States, Greece) to examine how people respond to YouTube audiovisual media messages, addressing different aspects of the Covid-19 crisis. Specifically, the study (a) investigates the effects of media messages on Covid-related worry and self-reported emotions, and (b) explores people's spontaneous thoughts evoked by different types of media content.

The experimental setup involved participants watching one of two selected video excerpts, each emphasizing a distinct aspect: (a) positive news concerning the progress in Covid-19 vaccine development, or (b) negative news regarding the severity and consequences of Covid-19 (including mortality and hospitalization rates). Subsequently, participants were asked to express their feelings about the video in a free-text format. While this request introduces an element of deliberation, prior research suggests that allowing participants to freely articulate their emotions can still capture emotional reactions, as such responses remain relatively unfiltered and reflective of immediate affective processing (Richardson et al., 2020; Robinson and Clore, 2002). Building upon previous experimental research (Giri and Maurya, 2021), the following hypotheses were formulated:

H1: Expert-led YouTube videos highlighting the seriousness of Covid-19 induce spontaneous expressions of negative emotions.

H2: Expert-led YouTube videos presenting positive news induce spontaneous expressions of positive emotions.

In addition to capturing participants' spontaneous (i.e., temporally proximal) emotional responses, we analyzed the textual content of their free-text responses to assess their level of engagement with, and support for, each video. Previous research indicates that negative news (Chen et al., 2020) and, more specifically, anti-vaccine content (Blankenship et al., 2018) often generates higher levels of engagement. In our study, engagement is operationalized as the number of characters participants wrote in response to the video. This textual engagement measure captures a specific aspect of user involvement – namely, the cognitive effort and emotional investment individuals make when reflecting on audiovisual content. Longer written responses typically indicate deeper processing, elaboration, and personal connection to the material, distinguishing reactions from more meaningful engagement. In the context of pandemic communication, this measure is particularly relevant: Emotionally resonant or cognitively provocative health information is more likely to provoke longer, more detailed responses. On platforms like YouTube, where users routinely post spontaneous, unmoderated reactions in comment sections, written expression serves as a direct behavioral trace of how individuals interpret, internalize, and respond to emotionally charged content (Rosenbusch et al., 2019). Thus, this form of engagement not only reflects immediate emotional responses but also hints at broader message resonance and potential influence on attitudes and behaviors.

Building on these earlier findings, we formulated the following hypothesis:

H3: Participants will show higher engagement (measured by text-response length) with the expert-led YouTube video emphasizing the seriousness of Covid-19 compared to the positive news video.

Furthermore, participants' responses were subjected to additional analysis, guided by previous literature and a priori hypotheses, to identify any spontaneously expressed positive or negative attitudes towards the media and the authorities responsible for managing the pandemic. It has been observed that these factors significantly influence the perceived credibility of Covid-related information (Lep et al., 2020) and can impact individuals' behaviors (Wu and Shen, 2021). It has also been shown that, in times of crisis, the public may lose trust in authorities (Ellinas and Lamprianou, 2014). By examining these attitudes, we aimed to gain a deeper understanding of their potential influence on participants' responses. We expected that:

H4: Expert-led YouTube videos highlighting the seriousness of Covid-19 will elicit more negative attitudes toward the government and media than videos with positive news.

3 Materials and methods

This investigation encompasses three independent online experiments that were conducted in the United Kingdom, the United States, and Greece. The inclusion of multiple countries allows for the replication and generalization of the findings across different contexts. Comparing these three countries is essential due to their distinct socio-cultural contexts and public-health strategies during Covid-19, which can shape public attitudes and behaviors during crises. Conducting the experiments during different pandemic phases (the second and third waves), yet aligning them with critical moments such as the initiation of the vaccination programs, allows for the exploration of shifting attitudes under varying circumstances. Moreover, the diversity in media landscapes and the influence of misinformation across these nations might enable a discussion about public-health communication effectiveness. This comparative approach ensures that our findings are robust, replicable, and generalizable across diverse settings.

The experiments took place in March 2021, a period situated between the second and third waves of the pandemic in the United States and the United Kingdom, and at the onset of the third wave in Greece. At the time of the experiments, all three countries had already initiated their vaccination programs. Given that vaccines were already in circulation, emotional responses – particularly to the positive news video – may have been influenced by participants' pre-existing attitudes. Compared to an earlier phase of the pandemic, vaccine-related optimism may have been less pronounced, while pandemic fatigue may have shaped reactions to the negative news video. Findings should be interpreted within this specific temporal context.

The research procedure received ethical approval from the Cyprus National Bioethics Committee (ΕΕΒΚ ΕΠ 2021.01.10).

Participants

All participants were recruited through Prolific, a reputable online research participation platform. Prior to participating in the study, individuals provided informed consent for their participation. Compensation for participation was approximately £6 per hour. The inclusion criteria for participants were as follows: (a) age over 18 years; (b) residency in the United Kingdom, United States, or Greece; and (c) fluency in English or Greek, depending on the country. To ensure statistical power, an a priori power analysis was conducted, considering an effect size of .33 (between "small" and "medium" using rule-of-thumb conventions), power of .95, and $\alpha = .05$. The power analysis yielded a required sample size of around 115 participants per group (around 230 participants per country). After attrition (e.g., dropouts), the

U.K. sample consisted of 224 participants, the U.S. sample of 214 participants, and the Greek sample of 206 participants. Random allocation was performed, assigning participants to one of two groups based on the video they watched: positive or negative news. The demographic characteristics of each group within each sample can be found in pertinent Tables in the Supplemental Material (Tables S1 to S3).

Materials

Video excerpts. Each participant viewed one of two video excerpts showcasing different aspects of the Covid-19 crisis: positive news and negative news. With the U.K. and U.S. samples, the same videos were used. The negative news video was a 1:53-minute excerpt from a World Health Organization (WHO) press conference held at the beginning of the pandemic. This content, typically broadcast by mainstream media worldwide, featured a scientist delivering a sober account of the seriousness of Covid-19, covering topics like infection and mortality rates, illness severity, and individuals' responsibility to prevent themselves and others from infection. The positive news video (1:48 minutes) included excerpts from U.S. media (ABC and NBC) featuring enthusiastic news and discussions about the efficacy of Covid-19 vaccines and the restarting of the economy as vaccination programs proceed.

For the Greek experiment, due to language differences, a slightly different set of videos was used. The negative video (1:57 minutes) included news excerpts from mainstream media (ERT, Euronews) presenting the straining of the Greek health care system and death, infection, and hospitalization rates. The positive news video was the same as the one used with the U.K. and U.S. samples (with Greek subtitles). We acknowledge that this introduces some variation in the negative stimuli across countries; however, the study's primary aim was to analyze within-country emotional response patterns rather than make absolute cross-national comparisons. The core experimental structure of the study remained consistent across all samples, ensuring conceptual validity. Specifically, participants in each country were randomly assigned to view either a positive or negative video, and their emotional responses were measured using the same methodology, coding framework, and analytical approach. This consistency allowed us to assess how different types of media messages influenced emotional reactions within each cultural context, even if some local adaptations were necessary. Using localized content, when necessary, is not considered to be a problem but often enhances ecological validity and reflects real-world media consumption (Kahlawi et al., 2025). Moreover, in Greece, the delayed vaccine rollout meant that fewer locally produced positive news segments were available. Consequently, this real-life restriction forced us to use English-language positive news content with Greek subtitles. However, we were able

to prioritize local-language expert communication for the negative video, because there was a higher availability of content to choose from. Given the technical nature of the latter, this approach ensured clarity and accessibility for Greek participants for the negative video (where technical terms are used). The positive video was more general, making it easier to follow in translation.

Measures

Outcome variables. (a) Covid-related worry: Before the video (baseline), participants rated the extent to which they currently felt worried about Covid-19 on a 9-point Likert scale (1 = *not at all*, 9 = *very much*). (b) General response to the video: After watching the video, all participants were asked to "write how you feel about the video you just watched." This free-text response was content-analyzed to examine participants' general emotional responses to the video, but also their thoughts about the media and the authorities handling the Covid-19 crisis.

Covariates. Perceived vulnerability was assessed with one item asking participants whether they considered themselves to have lower, the same, or a higher risk than other people (the general population) to contract the virus.

Procedure

Upon obtaining informed consent, participants were directed to complete the initial phase of the online study. This phase encompassed a range of sociodemographic questions including gender, age, educational level, income, and marital status. Participants responded to inquiries regarding their Covid-related worry (pre-manipulation baseline) and risk of contracting Covid-19. To conceal the focus of the study, these questions were intermixed with other Covid-related queries (not included in this study) such as engagement in protective behaviors and the impact of Covid-19 on work and domestic life.

Subsequently, all participants watched one of the two videos as part of the experimental treatment. Following the video, participants were given the opportunity to freely express their thoughts and emotions regarding its content in a text box, without any specific guidance provided. This was followed by the administration of a post-manipulation measure assessing Covid-related worry.

Data analysis

We followed content-analysis techniques typically used in communication studies (see, for example, Fleerackers et al., 2021). We developed a codebook drawing on the pertinent literature and professional guidelines (e.g., Evensen and Clarke, 2012). After several rounds of revisions to confirm the reliability and validity of coding, the codebook (found in Table S4, Supplementary material) consisted of the following codes: (a) *spontaneously reported emotions*: emotion words were extracted from the text and then categorized as positive, negative, neutral (e.g., indifferent, nothing), or other (e.g., surprise); (b) *attitudes towards the media*: comments about the media in general or the specific video categorized as positive or negative; c) *attitudes towards the government or authorities handling the crisis* categorized as positive, negative, or neutral; and (d) *endorsement of the video:* comments indicating agreement, disagreement, or ambivalence about the video content. Participant engagement in the experiment was measured using the number of characters written as a proxy. All analyses were conducted in R.

4 Results

Sample characteristics

In the U.K. sample, the majority were women, single, with higher education and average monthly income. The two groups (Table S1) differed slightly in education level, with more people reporting post-graduate studies in the positive group. However, as the education level was not associated with any of the dependent measures, it was not included as a covariate in the analysis.

In the U.S. sample, the majority were women, single, university/college graduates, with an average or high monthly income. The two groups did not differ significantly in terms of demographic characteristics (Table S2).

In the Greek sample, the majority of participants were women, single or in a relationship, younger than those in the U.S. and U.K. samples, and with mostly low monthly incomes (Table S3). The two Greek groups differed in age (see Table S3); thus, for this sample, age was examined as an additional covariate, but as this did not influence the findings, the most parsimonious models (without age) are presented below.

Emotional responses to the videos

A content analysis of participants' free-form responses after the video (Table S4) identified spontaneous expressions of negative, positive, neutral, or other emotions. Across all samples, the positive-news video produced spontaneous reports of positive emotions in the majority of individuals who watched it (Table 1). Hope was most frequently reported, followed by optimism, general positive feelings, and excitement. A few individuals reported feeling indifferent or neutral, while in the U.S. and Greek samples a small minority reported negative emotions. Overall, between 50 and 70 % of individuals who watched the positive video also reported positive emotions.

For the negative news video, the U.K. and U.S. samples yielded fewer spontaneous expressions of emotion, with about 20 to 30 % of individuals reporting negative emotions. The negative video evoked mainly reports of worry and fear in the U.K. sample, and worry, fear, and sadness in the U.S. sample. As for the Greek participants, a larger proportion (62 %; Table 1) reported negative emotions. The negative video evoked mostly feelings of worry and sadness.

To summarize, we consistently found significant differences ($p < .001$) in the proportions of participants reporting positive and negative emotions between the two videos in all three countries. These findings provide robust evidence that even very short video excerpts with positive news can induce positive emotions, while short video excerpts with negative news can evoke negative emotions. However, it is important to note that the specific content of the participants' responses may vary across different countries.

Engagement with, and endorsement of, online audiovisual content

The second objective of the study was to explore participants' spontaneous thoughts and attitudes towards each type of information. First, we looked at the length of the text written freely by participants, as an indication of engagement with the video. Engagement, especially in the context of social media, has been assessed using counts of likes, shares, and comments, with comments considered an active way of engagement (Kim and Yang, 2017; Liao et al., 2020). Here, text length (measured in characters typed), as it was not restricted, can reflect the time and energy a participant wished to invest in response to the stimulus. As the outcome variable was a character count, a Poisson regression was used to examine the effects of video type on text length, with gender and video type x gender interaction entered as covariates.

For all three samples, the participants who watched the positive video wrote the shortest responses and those who watched the negative video the longest (Table 2).

Table 1: Spontaneously reported emotions in free-text form responses in the UK, USA, and Greek samples.

	Positive	Negative	Group differences
United Kingdom			
No mention	29 (25.6 %)	67 (59.8 %)	$\chi^2(4) = 105.59$, $p < .001$
Negative emotions	1 (0.9 %)	34 (30.4 %)	
Positive emotions	73 (65.2 %)	4 (3.57 %)	
Neutral emotions	9 (8.0 %)	6 (5.36 %)	
Other	0 (0 %)	1 (0.9 %)	
United States			
No mention	46 (40.7 %)	71 (70.3 %)	$\chi^2(4) = 57.48$, $p < .001$
Negative emotions	6 (5.3 %)	19 (18.8 %)	
Positive emotions	58 (51.3 %)	5 (4.4 %)	
Neutral emotions	2 (1.7)	5 (4.4 %)	
Other	1 (0.8 %)	1 (0.9 %)	
Greece			
No mention	17 (17.2 %)	17 (15.9 %)	$\chi^2(3) = 88.54$, $p < .001$
Negative emotions	6 (6.1 %)	66 (61.7 %)	
Positive emotions	67 (67.7 %)	12 (11.2 %)	
Neutral emotions	9 (9.1 %)	12 (11.2 %)	
Other	0 (0 %)	0 (0 %)	

Table 2: Average length of free-text responses to each video for each sample (measured in characters; rounded to whole numbers).

	Positive	Negative
United Kingdom	64 (N = 110)	92 (N = 112)
United States	126 (N = 91)	141 (N = 91)
Greece	144 (N = 97)	155 (N = 107)

The video type effect was significant in all samples (model estimates can be found in Table S5). Males wrote shorter responses compared to females across samples. A statistically significant video by gender interaction was observed for the U.K. and Greek samples, whereas the interaction was just marginally non-significant for the U.S. sample (but the coefficient had similar magnitude and direction as for the UK and Greek samples; Table S5).

The content of the text was explored for expressions of video endorsement or non-endorsement (see codebook in Table S4). In the U.K. sample, around half of participants' texts across conditions were uninformative (Table S6a). Participants in the negative video group were more likely to express endorsement (37.5 %) com-

pared to the positive group (24.1 %). Participants in the negative video group were less likely to provide comments which were uninformative (54.5 %) compared to the positive group (63.4 %). Overall, however, the differences were not statistically significant ($\chi^2(3) = 5.685$, $p = .146$).

For the U.S. sample, around 40 % of responses were uninformative (Table S6b). The majority of participants who viewed the negative video (60 %) expressed endorsement in their comments, compared to 31.9 % of those who viewed the positive video. Furthermore, 12.4 % of the participants who viewed the positive video reported ambivalence, suggesting that they were not convinced by the positive news. The differences between the responses of the two groups were statistically significant ($\chi^2(3) = 17.580$, $p < .001$).

However, in the Greek sample, the majority of participants who watched the negative video (88.8 %) provided uninformative comments, compared to 53.5 % of those who watched the positive video (see Table S6c). The positive video created more ambivalence in this sample, as 18.2 % reported endorsement, 18.2 % reported uncertainty, and 10.1 % expressed non-endorsement. The differences between the groups were statistically significant ($\chi^2(3) = 34.369$, $p < .001$).

Overall, these results suggest that participants were generally inclined to endorse a scientific presentation of the seriousness of Covid-19. However, many participants showed some skepticism towards the positive message.

Attitudes towards media and the government

Participants' free-text responses were analyzed to assess positive or negative attitudes towards the media and the authorities responsible for handling the Covid-19 crisis (Table S4). Overall, only a small proportion of participants shared thoughts about the media, but this varied by video type in the U.K. and U.S. samples (United Kingdom: $\chi^2(8) = 37.92$, $p < .001$, United States: $\chi2(7) = 39.27$, $p < .001$). In both samples, about 32 % of participants who viewed the negative video expressed positive attitudes, mostly stressing how informative and useful the video was. Yet, only 12 % of U.K. participants and 13.2 % of U.S. participants who viewed the positive video expressed any attitudes towards the media, and these were equally positive and negative. Thus, people appear to recognize both the positive and negative aspects of the media coverage of the crisis, but media content featuring scientific, factual information is perceived especially positively. This pattern was not replicated in the Greek sample, where only about 18 % of the participants expressed any attitudes towards the media.

Regarding people's attitudes towards the government and the authorities handling the crisis (Table S4), only a small minority of participants from the U.K. and U.S. samples mentioned them. Those who did, predominately expressed negative

thoughts, with no differences across video types. About 20 % of the Greek sample reported negative attitudes towards the handling of the crisis by the Greek or other governments (e.g., the U.S. government was mentioned by two individuals). For the Greek sample, 9 % of participants who viewed the positive video (vs. 29 % of participants who viewed the negative video) reported negative attitudes towards the handling of the crisis by the Greek government ($\chi^2(10) = 24.06$, $p < .01$).

5 Discussion

This study presents an experiment, replicated across three countries, examining people's emotional responses to different video messages regarding the Covid-19 epidemic. The study expands prior scholarship by using excerpts of audiovisual information instead of textual information and comparing two types of YouTube media content: (a) positive/optimistic news regarding vaccine development, and (b) negative news highlighting the seriousness of the health crisis. This investigation provides empirical evidence around the ways video content circulating on platforms might influence people's feelings and expressions towards the Covid-19 crisis in different ways. Our findings supported H1, H2, and H3, suggesting that negative news induced more negative emotions (worry, fear, sadness), positive news evoked more positive emotions (hope, optimism), and participants engaged more with negative content. H4 was partially supported, as negative attitudes toward the government and media emerged, but only in the Greek sample. A key finding was that negative news elicits stronger emotional and cognitive engagement than positive news, reinforcing crisis communication challenges.

In line with findings from similar studies (Chao et al., 2020), online video messages highlighting the seriousness of Covid-19 increased Covid-related worry across samples, with participants reporting feelings of worry, fear, and sadness. However, our content analysis revealed that the source of the information influences how such news is perceived. Individuals who watched a scientific report of the seriousness of Covid-19 (United Kingdom) reported feelings of anxiety and fear, but at the same time expressed agreement with the video and found it informative and useful. This aligns with previous studies which found that such messages aim not only to elicit emotional responses such as fear and sadness but also to create a positive relationship between such emotions and message effectiveness. This was not the case for the Greek sample receiving information about Covid-19 seriousness via a TV news report. This is in line with previous findings showing that distressing information when communicated by experts can induce both negative and positive affect (Chao et al., 2020). We further showed that information coming from

scientific sources, although distressing in content, is also considered trustworthy and can make people feel more informed, which is crucial in times of uncertainty (Reynolds and Seeger, 2005).

We also found that positive news reduces worry and instills feelings of hope and optimism across samples (although effects were not always statistically significant). However, across all three samples, positive news produced the least engagement. This may reflect that, at the time the study was conducted, a few months after vaccination rollout, vaccine efficacy was a less disputed topic and people had little to talk about. Nevertheless, similar findings were reported earlier in the pandemic (Chen et al., 2020), suggesting lower audience penetration for positive content in times of crisis. Although positive news cannot be associated with greater engagement, it might – in the long term – encourage viewers to think around the benefits of vaccines (Xu and Guo, 2018). However, this hypothesis will need to be verified in further research.

Some scholars have pointed out the excessive negativity of media reports about Covid-19 driven by the popularity of negative news (Sacerdote et al., 2020). Our findings demonstrate that the tendency of popular platforms like YouTube to focus on negative messages can exacerbate people's negative emotions. This underscores the importance of incorporating positive news in crisis communication, which may not be highly engaging but can help buffer individuals against further distress. This reflection aligns with previous findings (Kwon and Park, 2023; Mitra et al., 2016) that fear was the most prominent emotion generated by YouTube videos related to Covid-19 vaccine side effects. Future communication strategies should be tailored towards minimizing negative messages on such platforms (Chou and Budenz, 2020).

Although the core experimental findings were consistent across countries, responses varied considerably. The Greek sample showed the highest rate of negative emotional responses and skepticism toward institutions. This is consistent with previous findings regarding low institutional trust and media credibility in Greece (Karadimitriou and Papathanasopoulos, 2024). By contrast, U.K. and U.S. participants appeared more trusting of expert-led videos, suggesting that cultural and political trust dynamics significantly shape emotional reactions. These findings underscore the value of cross-country experimentation in identifying local variations in media effects during global crises. Also, some noteworthy gender differences emerged. For example, positive news had a larger impact on women in the U.K. sample (less reported worry). Women in the U.K. and Greek samples also demonstrated more engagement (i.e., they wrote longer texts). These effects were not consistent across all three samples, so further experimental replication is needed, but they do suggest that women may be particularly influenced by the emotional valence of media messages, either positive or negative. As women's mental health was disproportionately impacted by this crisis, further research needs to examine the role of media consumption in such mental health gender discrepancies.

Various limitations of this study should be noted. First, as these were online experiments, there was little control over participants' attention to the videos. Furthermore, the videos used with the Greek sample were not directly comparable with those used with the U.S. and U.K. samples, while even between the two English-speaking countries the same content may have been perceived differently. Additionally, the videos were mostly from earlier timepoints in the pandemic, which may have impacted their relevance. Finally, although all experiments took place at the same time, each country was at a slightly different phase of the pandemic, for instance, Greece was undergoing its third wave, which may have influenced perceptions of the crisis.

To interpret our findings, the reader is invited to consider the wider temporal and political context of the three countries. At the time of data collection (March 2021), the United Kingdom and United States had relatively high vaccination rates, whereas Greece was in somewhat earlier phases of vaccine rollout (Auld and Toxvaerd, 2021). This difference may have influenced how participants engaged with positive vaccine-related news, potentially explaining differences in our findings. Additionally, prior research suggests varying levels of trust in government and media across these countries, which could have shaped responses to expert-driven content. Studies indicate that trust in public health institutions and official news sources was much lower in Greece at the time (Karadimiriou and Papathanasopoulos, 2024; Spyridou et al., 2024). In Greece, where trust towards political institutions is generally much lower compared to other countries (Ellinas and Lamprianou, 2014), participants may have been more critical of crisis communication strategies.

6 Conclusion

Our study shows that the emotional valence of online media messages influences how individuals experience a crisis. Positive content can have an ameliorating effect on people's well-being, while negative content evokes negative emotions and increases worry. Information stemming from trustworthy, scientific sources is valued by audiences despite being unpleasant, thus scientists and experts need a bigger spotlight during a crisis. Overall, the current findings highlight the various ways platform content can emotionally impact individuals, an outcome that should receive greater consideration in health communication strategies.

Our results also reveal that the emotional tone of media content plays a crucial role in influencing individuals' emotions. Specifically, exposure to positive content can have a mitigating effect, fostering hope, while negative content intensifies neg-

ative emotions such as worry, fear, and sadness. Importantly, audiences demonstrated a preference for information from credible, scientific sources, even when the news was distressing. This underscores the necessity of amplifying the voices of scientists and experts in crisis communication strategies, as their input is valued. These insights highlight the power of audiovisual content on platforms in shaping public sentiment and underscore the need for strategic communication approaches that account for the psychological impact of content during crises.

Moreover, the study confirmed hypotheses regarding emotional engagement with different types of news. Participants exhibited stronger reactions to negative news, which elicited higher levels of cognitive and emotional engagement than positive news. Negative content not only triggered worry and fear but also led to increased interaction, reinforcing the well-documented tendency of people to engage more with distressing information. However, findings varied across cultural contexts, as negative attitudes towards the government and media emerged only in the Greek sample, providing partial support for the hypothesis. This suggests that national and cultural factors may influence how people perceive, and respond to, crisis-related information. The study's findings highlight the challenge of balancing crisis communication, as negative news captures attention but can also exacerbate fear and anxiety. Therefore, policymakers and media professionals should consider these findings when designing health communication strategies to ensure that public information fosters resilience rather than distress.

Finally, this study provides valuable insights for shaping more effective public crisis communication strategies. For instance, concerning public health authorities and policymakers, the findings underscore the importance of expert-driven communication in enhancing the credibility and impact of health campaigns. Educators and media professionals can also leverage these empirical insights to craft balanced messaging that addresses public concerns while promoting positive outcomes, such as vaccine uptake. It is also important to consider the need for locally customized content, as people from different cultures may perceive the same content in different ways.

In future research, we aim to expand our study by incorporating neutral-toned news to examine its emotional and cognitive impact in comparison to positive and negative news. This would offer a more nuanced understanding of how different tones influence audience engagement and perception in real-world scenarios.

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