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Emotional appeals and social support in organizational YouTube videos during COVID-19

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ABSTRACT

Through a content analysis of 106 organizational YouTube videos during COVID-19 from March to September 2020 and sentiment analysis of the 9398 audiences’ comments, this study aims to analyze the emotional appeals, social support, and preventive behaviors reflected in the organizational YouTube videos and how such message features influenced audience engagement and audience comments sentiment. We found that hope and happiness are the two emotions used most frequently. Emotional appeals changed over time. Though videos in March and April mainly adopted fear and anxiety appeals, humor became more dominant after May. 2020. Emotional appeals also increased views and positive comments. Videos providing informational and emotional support received more likes. Videos produced at different stages of the pandemic also promoted preventive behaviors differently, with more videos promoting wearing masks after May. Sports/entertainment industries produced videos that received more positive comments than other industries.

Introduction

The year 2020 brought significant changes due to the COVID-19 outbreak, a respiratory disease caused by a novel coronavirus. First detected in December 2019, the virus has spread across the world [6]. During this pandemic, some people have regularly turned to media for news and information, whereas some have attempted to escape reality through entertainment programming. By examining over 24 billion video starts and 6.6 billion hours of content viewed, a study by Adobe Digital Insights found a nearly even split, with 54% of people reporting that they watched the news, whereas 48% reported that they watched movies [14]. Nevertheless, whether we watched a news program or a fictional movie, it was difficult to avoid organizational messages. According to the Society for Human Resource Management (2022), organizational communication refers to strategic messages from a business entity for the purpose of dialoging with constituencies, employees, stakeholders, as well as the community at large. Unlike mass communication that involves a media source or interpersonal communication that emphasizes small and large-group interactions, organizational communication comes from a business. Although businesses oftentimes rely on media sources to share their messages via print, broadcast, or online mediums through public relations and advertising tactics, when an organization circulates its message directly to its audience, there is an opportunity for a more personal interaction with the receivers. However, since the start of the pandemic, these messages have looked a little different. In particular, many of these messages are addressing COVID-19 and are integrating organizational dialogue with prosocial public health commentary.

According to AdAge [1], in March 2020 at the start of the pandemic in the United States, organizational messages were rallying cries promoting community and strength. As a growing number of states enacted mask mandates beginning in April 2020, the organizational messages repeatedly showed social distancing and the use of face coverings, therefore normalizing these behaviors. When the holiday season approached, organizations were grappling with how to convey joy and festive cheer (a common theme during the end of a year) in their messages without appearing tone-deaf by ignoring or not fully addressing the devastation of COVID-19 [37].

One strategy that has been used in previous organizational messages is emotional appeal. As a method to persuade people to take actions through creating an emotional response [5], emotional appeal not only plays an important role in advertising and health communication [44], but also is an integral part in crisis and emergency communication [21]. Scholars found that widespread and rapid adoption of preventative measures are contingent upon messages with emotional appeals [34]. Recent research on COVID-19 interventions shows that emotional appeals such as helping protect others rather the self can be successful in evoking positive emotions and persuading people to take behavioral change such as keeping social distance [17]. Thus, in the era of global recovery from the pandemic, it is important to study how organizational messages with
different emotional appeals would provoke positive emotions and engage the public in taking preventive measures.

Organizational messages may also utilize the concept of social support. Adelman [2] defined social support as “verbal and nonverbal communication between recipients and providers that reduces uncertainty about the situation, the self, the other, or the relationship, and functions to enhance a perception of personal control in one’s life experience” (p. 185). During times of great uncertainty, people rely on physical support (i.e. hugging), which was not an option early on during the COVID-19 pandemic. Therefore, social support through social media may lead to particularly powerful effects. Organizational communication emphasizes a dialogue with the audience; therefore, social support can not only be provided on an interpersonal level, but be enacted from an organizational source.

The purpose of the proposed research is to examine organizational messages in the U.S. disseminated during the COVID-19 pandemic between March and September 2020. Each message will be evaluated for its use of emotional appeals, its elements of social support, as well as the presence of preventive behaviors. This project fills a research gap, since COVID-19 continues to spread and will remain an issue until the virus can successfully be eradicated. It is important that we learn lessons now, as history repeats itself and future pandemics will arise. In addition, this study serves a practical function, as the findings can be presented to organizations to assist in the development of a comprehensive communication strategy during a public health emergency.

Literature review

Public health emergencies are not a new phenomenon. Nevertheless, over the last two decades, with crises ranging from natural disasters, to anthrax attacks, to diseases and viruses, there is a growing need for “strategic, broad based, responsive, and highly contingent” health communication ([40], p. 49). According to Reynolds and Seeger [40], members of the medical and public health community must communicate “in accurate, credible, timely, and reassuring ways” (p. 45). In October 2002, the CDC launched a course for public health officials using the crisis and emergency communication (CERC) model [46].

The crisis and emergency communication (CERC) model

The CERC model argues that public crises usually develop in five stages: pre-crisis, initial event, maintenance, resolution, and evaluation [40]. CERC was developed to educate public health professionals about their communication responsibilities during emergency situations. It is a compilation of risk and crisis communication principles [39]. Although there are many models grounded in crisis communication [9,13,33], CERC uses a “systematic approach that requires ongoing and escalating communication processes” ([46], p. 27).

Public health professionals need to employ different strategies at different stages. Therefore, it is important to understand each category and apply the appropriate response(s). Step I: Pre Crisis involves risk messages, warnings, and preparations; Step II: Initial Event includes uncertainty reduction, self-efficacy, and reassurance; in Step III: Maintenance, there is ongoing uncertainty reduction, self-efficacy, and reassurance; Step IV: Resolution requires updates regarding resolution, discussions about cause and new risks/new understandings of risk; and Step V: Evaluation embodies discussions of adequacy of response, consensus about lessons and new understandings of risks [40].

This proposed study focuses on organizational messages early on in the pandemic, specifically between March and September 2020. Nevertheless, in that short period of time, the CERC steps appear to have been realized [3,54]. In particular, during the first two weeks of March, the U.S. was not yet in a nationwide emergency, though there were an increasing number of people testing positive for the virus and the crisis was still forming. The final two weeks of March came with organizations closing their doors in accordance with stay-at-home orders. At that point, information was being circulated and uncertainty reduction was paramount. By April, mitigation efforts were ramping up as more was being learned about the virus, and social distancing and the wearing of face coverings were common, which follows the third step of the CERC model; maintenance. As the summer months arrived and warmer weather brought people outdoors to spaces where the virus did not spread as rapidly, a temporary resolution emerged, which follows the fourth step of the model. The fifth step of the model, evaluation, carried over into the fall months, as the cooler temperatures arrived and people were trying their best to remain outdoors or gather inside with proper ventilation.

The CERC model not only is a tool to educate public health professionals to expand communication responsibilities of public health in emergency situations, but provides a theoretical framework [46]. It proposes that risks and crises are uncertain conditions that create information needs and deficiencies, and communication is central throughout the risk and crisis communication process. During risks and emergencies, communication processes will change dramatically as a risk evolves and the development of such communication is a dynamic process involving psychological and social factors. Nonetheless, such propositions of the CERC model are largely unexplored. Moreover, the CERC model argues that two-way communication is necessary to make choices about how to manage and reduce the threat to health. However, research mainly focuses on how crisis managers communicate to the public during crisis and few investigations have explored the feedback. Thus, this study will investigate how emotional appeals and social support in COVID-19 YouTube messages have changed over time. We will also examine audiences’ response to YouTube messages during the COVID-19 pandemic and explore what types of messages would be more effective in providing information.

The CERC model has been tested in many situations, specifically Lachlan et al. [27] examined tweets leading up to a major snowstorm and found that emergency management agencies were largely absent from online conversations. Whereas localized hashtags provided some refuge for the public in the form of actionable information, this was a missed opportunity for critical risk communication. Furthermore, Lwin et al. [31] looked at Zika-related Facebook posts from three main health agencies in Singapore from January to December 2016. Similar to this study, they examined how social media can be used during the different stages of crisis communication and found that the crisis was strategically communicated, showing support for the CERC model. However, Lwin et al.’s [31] study focused on Facebook and suggested future research should consider studying other social media platforms. The reason is that Facebook relies on long text messages, while other types of social media may utilize other forms of communication and may achieve different effects. This study will examine the use of YouTube videos during the different stages of the COVID-19 pandemic because it is a social media platform with billions of daily views, and it may have tremendous impacts on public health efforts [29]. Zhong, Huang, & Liu [55] applied the CERC model to study the association between social media use and the mental health toll during Wuhan’s COVID outbreak. Their study uncovered the invisible harm by COVID-19 to mental health such as depression and secondary trauma. They found that social media could reduce the threats of COVID-19 by providing informational, emotional, and peer support, suggesting social media could play a role in the global recovery of the pandemic. However, their research did not address strategies mitigating the mental health toll during COVID-19 and beyond. This study will go further to explore possible strategies that can be utilized in YouTube videos to engage audiences and lessen the negative impacts of the pandemic. Miller et al. (2021) conducted a systematic review of research using CERC as a theoretical lens. A total of 4,471 articles in 20 languages were screened, with 400 full texts examined and 19 articles included, revealing that CERC has rarely been theoretically tested. As a result, there is a need to reformulate its propositions for
empirical support of the model. Given this finding, the researchers of the proposed study look at CERC in tandem with two additional constructs, including emotional appeal and social support [46].

**Emotional appeal**

Driven by one’s unconscious mind or feelings, emotional appeal is a method to persuade people by creating an emotional response [5]. It features more subjective and emotional expressions or other emotion-eliciting strategies [32]. Emotional appeal can enhance recall and message acceptance and facilitate learning because individuals are more engaged with emotional messages [51]. Emotional appeals can stimulate either positive or negative emotions and achieve a stronger persuasive influence [8].

A great deal of research has shown that emotional appeal is an effective strategy in advertising and health communication [50]. Researchers found antismoking campaigns with fear appeals had significant effects on audiences (Dunlop et al., 2012) and health advertisements with humorous appeal had better recall. Facebook posts of public health organizations featuring positive appeals received higher levels of user engagement [25]. Emotional advertisements on Facebook increase people’s memory and user engagement, and influences adoption behavior [36]. Koenig [26] applied the concepts of emotional appeal and empowerment to address the question about what type of message appeal would be best received during the pandemic. She found that COVID-19 health risk messages with emotional appeal led to a higher degree of message empowerment than the informational appeal messages. However, this study was conducted in Austria and used a convenience sample, while audiences’ responses may vary based on different demographics. This study will examine the emotional appeals in COVID-19 YouTube videos and how the emotional appeals could influence audience behavior.

**Social support**

Another strategy for communicating during a public health crisis involves social support. Adelman [2] defined social support as “verbal and nonverbal communication between recipients and providers that reduces uncertainty about the situation, the self, the other, or the relationship, and functions to enhance a perception of personal control in one’s life experience” (p. 185).

Social support is based on human relations and is exchanged through interpersonal communication [15,16,23]. It can be used as a strategy to buffer against stress, which refers to any environmental, social, or internal changes [22]. Social support does not have to be applied to be effective. Specifically, Helgeson [18] found that perceptions of availability of social support can have a positive impact on well-being, as the perception can increase confidence in combating stress.

Furthermore, social support is not exchanged only through interpersonal contexts. In particular, Eisenberger et al. (2002) looked at workplace social support and the degree to which individuals perceive that their workplace sources, including supervisors and the broader organization, value their wellbeing. Additionally, previous research has found that people recognize a sense of self-worth in brands and therefore use those organizations to express themselves and their identity (Banister and Hogg 2003; Dalton 2008; Grubb and Grathwohl 1967; Shachar et al. 2001; Shepherd et al. 2011). Taken further, research indicates that brands are also substitutable for the more traditional means of achieving identity and self-worth. For example, Epley et al. (2008) found that those who were chronically lonely showed an increased tendency to anthropomorphize (i.e., attribute consciousness and free will) products and nonconscious objects.

There are three main types of social support, including informational, emotional, and instrumental support [18]. According to Helgeson [18], informational support includes advice, guidance, or information relevant to the situation. Secondly, instrumental support includes aid or assistance. Lastly, emotional support incorporates love and care. Social support can be provided by a source, or it can be sought from a source. In addition, social support can be a reciprocal process, with sources repeatedly providing and seeking support.

Previous research has found that media, particularly computer-mediated communication, is effective for social support exchange [45,47,49]. Informational support can help with patients’ exchange of medical information [35,53], sharing of personal experiences [48,55] and referrals to experts [10]. Emotional support provides encouragement, caring, understanding, empathy, and sympathy [11,38]. Instrumental support can provide financial support [35,38],-esteem support, including compliment and validation [38], and network support, such as offering other members access to vent [10].

Social support has been examined during the COVID-19 pandemic both domestically in the United States as well as internationally. In a study of U.S. college students and the role of self-isolation on feelings of stress, the perception and reception of social support, and mental health problems (Szkydy, 2021), it was found that social support buffered the connection between worry about COVID-19 and psychological health. Zhang et al. [52] found that information about the vaccine increased the number of likes of the tweets. Additionally, in a study of healthcare workers in Germany, it was found that social support correlated significantly with mental health outcomes (Schmuck et al., 2021). Also, in a Chinese study involving the relationship between risk perception, social support, and mental health (Liu et al., 2021), it was revealed that social support moderated the relationship between perceived uncontrollability and mental health symptoms. Finally, in a study involving social support as a part of student resilience in China, it was found that the degree of social support perceived by students is directly proportional to the coping tendency (Mai et al., 2021).

**Preventive behaviors and source**

One of the most important characteristics of health campaigns is to convey accurate information about health behavior. Content analysis of YouTube videos about COVID-19 in January 2020 showed more than two-thirds of the videos did not cover any behavioral recommendations. The top three prevention behaviors promoted in the videos were avoiding close contact with sick people, staying home when ill, and hand hygiene [4]. Another study of COVID-19 videos in Spanish on March 18, 2020 found hand washing as the most frequent preventive measure, followed by covering nose and mouth when coughing, social distance, and avoiding touching face [19]. None of the videos in these two studies mentioned using a facemask for self-protection. However, the New York State government made facemasks mandatory on March 15, 2020 and the CDC guidelines have been changing since then. Thus, it would be interesting to explore the change of recommended preventive behaviors over time.

Moreover, health campaign videos on YouTube can be from various sources (Rowena et al., 2012) and videos produced by different sources may differ in tone and user responses. For instance, consumer-generated videos about the vaccine were disliked more than those produced by medical sources or news sources (Rowena et al., 2012). YouTube videos about COVID-19 produced by health professionals were more likely to recommend preventive behaviors than videos produced by private users [19].

**Research Questions:**

As tracking the trajectory of the emotional and behavioral reactions to the pandemic could help to understand how people respond to the development of crisis and emergent situations and provide insights into what types of preventive behaviors could be effective in the long run [30], it is critical to study the change over time. Thus, we have the following research questions:

RQ1: Did emotional appeals, social support, and preventive behaviors in COVID-19 related videos change over time?
RQ2: How did emotional appeals, social support, and preventive behaviors in COVID-19 related videos influence YouTube audience engagement (i.e., comments, likes, and views)?

RQ3: How did emotional appeals, social support, and industries in COVID-19 videos correlate with YouTube comments sentiment?

Method

Sample

The sample in this study included 106 COVID-19 related videos on YouTube between March 15 and August 20, 2020 during the first wave of the COVID-19 pandemic. COVID-19 first appeared in the state of Washington in January 2020. U.S. President Donald Trump declared COVID-19 a national emergency and issued a travel ban on March 13, 2020. In April 2020, the daily infected cases reached over 30,000 in the U.S., with most cases in New York City. However, the rate at which COVID-19 spread greatly declined from May to July 2020.

The researchers used the keywords of “COVID-19,” “coronavirus,” and “organizational messages” to retrieve the videos. The initial search generated more than 500 messages. We followed the criteria of previous research and excluded videos that were duplicate, non-English, non-audio or non-visual, exceeding 10 min in duration, or unrelated to COVID-19 [29]. We paid attention to the organization being featured so as not to analyze multiple messages from the same organization, ensuring that the researchers could examine a broad range of organizations. Finally, 106 videos were selected using a simple random sampling method for analysis in this study. Table 1 includes a complete list of the organization names and the titles of the 106 sampled YouTube videos. We then downloaded all of the 9,398 comments of these 106 videos using a Python wrapper for YouTube Data API.

Coding procedure

To code the videos’ content, the first two authors each coded 20% of the videos for inter-coder reliability testing. After the inter-coder reliability reached at least 80%, the rest of the videos were split and each coder coded half of the videos.

For the sentiment analysis of YouTube comments, we first adopted the NLTK package and the pandas package in Python to clean the data. We eliminated punctuations and emojis from the comments. We then lowercased all the text and adopted words’ common base form. We also removed stop words such as “and” and “then” from the comments, as such words provide minimal interpretive value [12]. We then conducted the sentiment analysis by adopting the flair package in Python, which uses supervised machine learning to ‘read’ texts and make predictions about the sentiment of a text. The sentiment of each comment was labeled as positive or negative with a confidence level. Research has documented the high validity and accuracy of the flair package, with an accuracy rate over 90% [41]. The total number of positive and negative comments were calculated for each YouTube video.

Measurement

Emotional Appeals were measured based on previous literature [42,43] and coded as whether the video contains fear, anxiety, sadness, hope, humor, happiness, and guilt (0 = No and 1 = Yes), with Cohen’s Kappa ranging from .88 to 1.00. Video Length was coded as how many seconds the videos last (Cohen’s Kappa = 1.00). YouTube Audience Engagement was measured by the numbers of comments, likes, and views of the video (Cohen’s Kappa = 1.00) [25]. The numbers of comments, likes, and views were treated and analyzed as separate variables. Preventive Behaviors was adopted from previous studies [24,30] and coded as whether the video promotes the preventive behaviors suggested by the CDC or not, including wearing face masks, keeping social distancing, wearing gloves, and deep cleaning (0 = No and 1 = Yes), with Cohen’s Kappa

| Organizations     | Titles                        |
|-------------------|------------------------------|
| Budweiser         | One Team                     |
| Coca-Cola         | For The Human Race           |
| IBM               | COVID-19; Business Today     |
| Uber              | Thank You For Not Riding     |
| Facebook          | We’re Never Lost If We Can Find Each Other |
| Apple             | Thank You                   |
| First Energy      | COVID-19 Thank You           |
| AT&T              | AT&T Provides Essential Connectivity During COVID-19 Crisis |
| Nissan            | Thank You                   |
| Frito Lay         | It’s About People            |
| Verizon           | We’re Here, And We’re Keeping Students And Teachers Connected |
| Publix            | Working Together             |
| GrubHub           | Restaurants Are Our Family   |
| Ford              | We’re Here For You           |
| State Farm Insurance | We’ve Been There Before   |
| American Family Insurance | Caring For Our Employees    |
| CarMax            | Driven Together              |
| Google            | Thank You Healthcare Workers |
| Amazon            | Thank You Amazon Heroes     |
| CBS Sports        | Thank You                   |
| Pfizer            | Science Will Win, Ask Science|
| Liberty Mutual    | Liberty Mutual COVID-19      |
| Cottonelle        | #ShareASquare                |
| Cadbury           | This Does Not Need To End    |
| Walmart           | Graduation                   |
| Geico             | Thank You                   |
| The New York Times | The Truth Is Essential      |
| DoorDash          | Open For Delivery            |
| Dove              | Courage Is Beautiful         |
| Oreo              | Stay Home, Stay Playful      |
| McDonald’s        | Food At Home                 |
| Domino’s          | We’re Hiring                 |
| Burger King       | Contactless Delivery         |
| Jersey Mike’s     | Our Family                   |
| Hyundai           | Humanity Prevails            |
| Subaru            | What We Do                   |
| Procter & Gamble  | We Are Here For You          |
| Buick & GMC       | Stepping Up As A Force For Good |
| USAA              | We Will Be Here When It’s Over|
| Fareway Stores    | Here To Help                 |
| Samsung           | We’re Here For You           |
| Fedex             | Stay Apart, Stay Together    |
| Penske            | Our People                   |
| Angel Soft        | Thank You                   |
| Quilted Northern Spectrum | Count On Us To Keep Connected |
| CVS               | Heart At Work                |
| Mazda             | Rules For The Road Ahead     |
| NYS Governor’s Office | #WearAMaskNY You Can Still Smile |
| NYS Governor’s Office | #WearAMaskNY Famous Last Words |
| Olive Garden      | Coronavirus (COVID-19) Social Distancing |
| NYC Department of Health | Alone Together          |
| World Health Organization | Forward Together         |
| Ad Council/# AloneTogether | #AmericaRunsOnDunkin |
| Dunkin’           | #HangOutFromHome             |
| Smirnoff          | NYS Department of Health     |
| NYS Department of Health | Calling On All New Yorkers |
| Walmart           | Back To School               |
| Amazon            | Meet Janelle                 |
| Ad Council/# AloneTogether | Stay Calm              |
| Progressive       | Work From Home Mara Unmuted  |
| NYS Governor’s Office | #WearAMaskNY Do The Right Thing |
| Mount Sinai Health Systems | Wear A Mask               |
| Progressive       | Work From Home At Least One Thing’s Clear |
| St. Peter’s Hospital | It’s Still Easy to Save    |
| Target            | Graduation 2020              |
| NYS Governor’s Office | #WearAMaskNY That Guy        |
| NYS Governor’s Office | #WearAMaskNY You Have My Respect   |
| Ad Council/Sesame Street | Sneezing And Coughing Safely |
| Saint Peter’s Healthcare System | Thank You |

(continued on next page)
Table 1 (continued)

| Organizations                      | Titles                                                                 |
|-------------------------------------|------------------------------------------------------------------------|
| NYS Governor’s Office               | #WearAMaskNY We Love NY                                                |
| Applebee’s                          | #WelcomelBack                                                          |
| Walgreens                           | Keep Summer Going Safely                                               |
| Seamless                            | NYC Still East                                                        |
| Ad Council/Seagate Street           | Time To Wash Your Hands                                               |
| Domino’s                            | The Official Food Of Nights In                                        |
| Ad Council/#AloneTogether           | Universal Family                                                       |
| Pfizer                              | Thank You!                                                             |
| Ad Council/#AloneTogether           | Universal                                                              |
| Walgreens                           | #Graduation2020                                                        |
| Amazon                              | Meet Kent                                                              |
| Ad Council/Seagate Street           | Washy Wash Song With Elmo                                              |
| Ad Council/#AloneTogether           | Stay Connected                                                         |
| NYC Department of Health            | NYC Health Commissioner                                               |
| Walmart                             | Masks                                                                  |
| NYS Governor’s Office               | #MaskUpAmerica Come On                                                 |
| NYS Governor’s Office               | #WearAMaskNY We Are Compassion, We Are                                |
| Coca-Cola                           | Stay Home                                                              |
| NYS Governor’s Office               | #MaskUpAmerica Show Some Respect                                       |
| Ad Council/#AloneTogether           | Stay Active                                                            |
| Ad Council                           | Stay Here-O’s                                                         |
| NYS Governor’s Office               | #MaskUpAmerica It’s Your Shift                                         |
| Ad Council/#AloneTogether           | Universal                                                              |
| Amazon                              | Meet Christine                                                         |
| Dunkin’                             | Dunkin’ At Home                                                        |
| Progressive                         | Work From Home                                                         |
| Smirnoff                            | #HangOutFromHome For America                                          |
| Amazon                              | Meet Ricardos                                                          |
| NYS Governor’s Office               | #MaskUpAmerica An Easy Lift                                           |
| Pfizer                              | RxPathways & COVID-19                                                  |
| Target                              | Drive-Up                                                               |
| Lysol                               | Practice Healthy Habits                                                |
| Lysol                               | How And Where To Use Lysol Disinfectant Spray                         |
| Vistaprint                          | This Is Not A Mask                                                     |
| NYS Governor’s Office               | #MaskUpAmerica 1918                                                    |

ranging from .81 to 1.00. Time was measured as the month in which the video was published (Cohen’s Kappa = 1.00). Comment Sentiment was measured as whether the comment is positive (1) or negative (2). Industry Featured looked at the type of industry the organization represents. After examining previous scales measuring similar items [28], the following dimensions were established for this study: (1) Grocery, (2) Restaurant, (3) Automobile, (4) Banking and Insurance, (5) Health and Beauty, (6) Recreation/Sports/Entertainment, (7) Retailer/Department Store—Not Clothing Specific, Not Grocery Specific, (8) Technology (i.e., computers, social media, etc.), (9) Utility (electricity, telecommunication, heating, etc.), (10) Government, and (11) Non-Governmental Organization (NGO)/Non-Profit Organization (NPO) (i.e., Ad Council) (Cohen’s Kappa = .95). Social Support was coded based on previous work by Helgeson [18]. Specifically, we coded whether the message provides informational support (provide advice/guidance/information about the situation to others), whether the message provides instrumental support (provide aid or assistance to others), whether the message provides emotional support (provide love and care to others), whether the message seeks informational support (ask for advice/guidance/information about the situation from other sources), whether the message seeks instrumental support (ask for aid or assistance from other sources), and whether the message seeks emotional support (ask for love and care from other sources). The coding scheme was No (0) and Yes (1).

Data analysis

To answer RQ1, Chi-square tests were run to examine the relationship between emotional appeals, social support, and preventive behaviors with time. To answer RQ2, a series of ANCOVA were performed with audience engagement as the dependent variable. Different types of emotional appeals, social support, and preventive behaviors served as the independent variables, respectively. We calculated the number of days between the date of publication of the videos and the date of coding. Then the number of days was included as a covariate. To answer RQ3, ANCOVA analyses were run with the number of positive comments and the number of negative comments of each video as the dependent variables, respectively. Different types of emotional appeals, social support, and industries served as the independent variables. The number of days served as a covariate.

Diagnostic tests were performed to test the assumptions of the ANCOVA analyses. Levene’s tests were carried out and the assumption of homogeneity of variances was met. The normal Q-Q plots of standardized residuals showed the assumption of the normality of errors was met. Shapiro Wilk tests were not significant, confirming the normality of the residuals. The scatterplots showed the assumption of linearity was met. There were no interaction effects between the covariate and the independent variables on the dependent variables, indicating the assumption of homogeneity of regression slopes was met.

Results

RQ1: Did emotional appeals, social support, and preventive behaviors in COVID-19 related videos change over time?

Among different emotional appeals, hope appears most frequently in the COVID-19 videos (86.8%), followed by happiness (71.7%), anxiety (57.5%), and anger (26.4%). As shown in Table 2, emotional appeals in the videos have changed over time. Chi-square tests showed that more videos contained anxiety in March and April, but most videos no longer had anxiety appeal after May ($\chi^2(3) = 14.16, p < .01$). A similar pattern was detected with fear appeal ($\chi^2(3) = 11.58, p < .01$), with most videos containing fear appeal in March and April, and most videos without fear appeal after May. Humor appeal also changed over time ($\chi^2(3) = 9.36, p < .05$), but showed the opposite pattern. Most videos in March and April did not have humor appeal, but more videos used humor after May.

Among the different preventive behaviors promoted in the videos, only wearing masks changed over time. Most videos in March and April did not promote wearing a face mask or face covering in March and April, but wearing a face mask became popular in videos produced in May and after ($\chi^2(3) = 21.94, p < .001$).

As shown in Table 2, the numbers of videos that provided informational support ($\chi^2(3) = 2.12, p = .55$), emotional support ($\chi^2(3) = 5.22, p = .16$), and instrumental support ($\chi^2(3) = 4.00, p = .26$) did not have significant change over time. The numbers of videos seeking informational support ($\chi^2(3) = 1.05, p = .78$), emotional support ($\chi^2(3) = 1.15, p = .77$), and instrumental support ($\chi^2(3) = 2.21, p = .53$) did not change over time, either. Thus, there was no correlation between social support and time.

As shown in Table 3, there was also a change in the amount of COVID-19 related videos produced by different organizations over time ($\chi^2(30) = 56.41 p < .01$). In March and April, most COVID-19 videos were produced by restaurants, grocery stores, and bank and insurance companies. From May to August, the government produced the most COVID-19 videos.

RQ2: How did emotional appeals, social support, and preventive behaviors in COVID-19 related videos influence YouTube audience engagement (i.e., comments, likes, and views)?

As shown in Table 5, among the different types of emotional appeals, videos that contained sadness (F(1, 87) = 4.19, p < .001) and fear (F(1, 87) = 3.44, p < .05) appeals received more likes. We further examined whether there was an interaction effect between emotional appeals and time on audience engagement. Happiness appeal had an interaction effect with time on the number of views of the COVID-19 videos,
Table 2
Correlations between emotional appeals, social support, and preventive behaviors and time.

| Emotional Appeals | March | April | May | June and After |
|-------------------|-------|-------|-----|----------------|
|                   | Yes   | No    | Yes | No   | Yes  | No  | Yes  | No  | $\chi^2$ | df | p     |
| Fear              | 9 (47.4) | 10 (52.6) | 15 (31.9) | 32 (68.1) | 2 (10.5) | 17 (89.5) | 1 (5.6) | 17 (89.5) | 11.58 | 3 | .009 |
| Anxiety           | 15 (78.9) | 4 (21.1) | 30 (63.8) | 17 (36.2) | 9 (47.4) | 10 (52.6) | 4 (22.2) | 14 (77.8) | 14.16 | 3 | .003 |
| Sadness           | 4 (21.1) | 15 (78.9) | 13 (27.7) | 34 (72.3) | 2 (10.5) | 17 (89.5) | 2 (11.1) | 16 (88.9) | 3.93  | 3 | .304 |
| Hope              | 17 (89.5) | 2 (10.5) | 38 (80.9) | 9 (19.1) | 16 (84.2) | 3 (15.8) | 18 (100) | 0 (0)  | 4.30  | 3 | .231 |
| Guilt             | 2 (10.5) | 17 (89.5) | 22 (46.8) | 25 (53.2) | 6 (31.6) | 13 (68.4) | 4 (22.2) | 14 (77.8) | 9.36  | 3 | .025 |

| Social Support | March | April | May | June and After |
|----------------|-------|-------|-----|----------------|
| Providing informational support | 19 (100) | 0 (0) | 43 (91.5) | 4 (8.5) | 17 (89.5) | 2 (10.5) | 16 (88.9) | 2 (11.1) | 2.12  | 3 | .548 |
| Providing emotional support | 18 (94.7) | 1 (5.3) | 36 (76.6) | 11 (23.4) | 15 (78.9) | 4 (21.1) | 17 (94.4) | 1 (5.6) | 5.22  | 3 | .262 |
| Providing instrumental support | 16 (84.2) | 3 (15.8) | 41 (87.2) | 6 (12.8) | 15 (78.9) | 4 (21.1) | 18 (100) | 0 (0) | 4.00  | 3 | .262 |
| Seeking informational support | 0 (100) | 19 (100) | 0 (100) | 45 (95.7) | 2 (4.3) | 19 (100) | 0 (0) | 18 (100) | 1.05  | 3 | .368 |
| Seeking emotional support | 1 (5.3) | 18 (94.7) | 2 (4.3) | 45 (95.7) | 1 (5.3) | 18 (94.7) | 2 (11.1) | 16 (88.9) | 1.15  | 3 | .765 |
| Seeking instrumental support | 10 (52.6) | 9 (47.4) | 22 (46.8) | 25 (53.2) | 9 (47.4) | 10 (52.6) | 12 (66.7) | 6 (33.3) | 2.21  | 3 | .350 |

Table 3
Correlations between industry and time.

| Industries | March | April | May | June and After |
|------------|-------|-------|-----|----------------|
|             | n %   | n %   | n % | n % | $\chi^2$ | df | p     |
| Grocery    | 4 21.1 | 3 6.4 | 2 10.5 | 2 11.1 | 56.41  | 30 | .002 |
| Restaurant | 5 26.3 | 2 4.3 | 0 0 | 4 22.2 |
| Automobile | 1 5.3 | 6 12.8 | 1 5.3 | 0 0 |
| Banking    | 0 0 | 6 12.8 | 1 5.3 | 0 0 |
| Health and Beauty | 1 5.3 | 7 14.9 | 2 10.5 | 1 5.6 |
| Recreation/Sports/Entertainment | 0 0 | 3 6.4 | 2 10.5 | 0 0 |
| Retailer/Department Store | 0 0 | 1 2.1 | 0 0 | 2 11.1 |
| Technology | 3 15.8 | 3 6.4 | 5 26.3 | 1 5.6 |
| Utility    | 1 5.3 | 3 6.4 | 0 0 | 0 0 |
| Government | 3 15.8 | 3 6.4 | 6 31.6 | 7 38.9 |
| NPO/NGP   | 1 5.3 | 10 21.3 | 0 0 | 1 5.6 |

$F(3, 81) = 3.181, p < .05$. Fig. 1 shows that in March, COVID-19 videos with happiness appeal ($M = 2268860.92, SD = 627795.40$) received more views than those without happiness appeal ($M = 17879936.67, SD = 391781.41$) ($t(17) = 1.45, p < .01$), indicating people may have needed videos with positive emotions to boost their moods when the pandemic started to become serious. However, there was no difference in views of the videos between videos with or without happiness appeal after April.

As shown in Table 5, ANCOVA analyses showed videos that provided informational support ($M = 1859.68, SD = 6654.43$) received more likes than videos that did not provide informational support ($M = 254.17, SD = 259.88$) ($F(1, 87) = 2.23, p < .05$). According to Tables 4 and 5, videos providing social support also received more likes ($M = 2073.94, SD = 7065.91$) and comments ($M = 133.51, SD = 365.80$) than those without emotional support ($M_{like} = 266.63, SD = 407.10; M_{comment} = 32.36, SD = 50.75$) ($F(1, 87)_{like} = 3.15, p < .05; F(1, 87)_{comment} = 2.17, p < .05$).

ANCOVA analyses showed that videos that promoted social distance received more likes ($M = 2178.25, SD = 7254.61$) than those without social distancing messages ($M = 391.52, SD = 774.53$) ($F(1, 87) = 2.206, p < .05$) (see Table 5).

RQ3: How did emotional appeals, social support, and industries in COVID-19 related videos correlate with YouTube comments sentiment?

As shown in Table 6, videos providing instrumental support received more positive comments ($M = 76.00, SD = 57.32$) than those without instrumental support ($M = 30.18, SD = 45.48$), $F(1, 89) = 2.37, p < .05$. Videos with guilt appeal received more positive comments ($M = 120.06, SD = 33.48$) than videos without guilt appeal ($M = 33.31, SD = 7.05$), $F(1, 89) = 6.428, p < .01$. Videos with anger appeal also received more positive comments ($M = 92.32, SD = 28.08$) than those without anger appeal ($M = 33.23, SD = 7.30$), $F(1, 89) = 4.413, p < .05$. Videos with hope appeal received fewer negative comments ($M = 34.15, SD = 11.58$) than videos without hope appeal ($M = 91.77, SD = 25.64$), $F(1, 67) = 4.185, p < .05$. Table 7 shows that videos providing instrumental support also received few negative comments ($M = 33.75, SD = 48.48$) than those without instrumental support ($M = 102.29, SD = 148.71$), $F(1, 67) = 5.91, p < .05$.

Videos produced by different organizations received comments with different sentiment ($F(10, 37) = 4.026, p < .01$). Post-hoc analysis shows
that videos produced by sports/entertainment industries received most positive comments ($M = 127.13$, $SD = 23.65$) (see Table 6).

Discussion

This study is an explorative study adopting the CERC model to investigate how organizations use YouTube to communicate with the public during the breakout of COVID-19 in early 2020. We analyzed 106 organizational YouTube videos produced by different industries and explored how emotional appeals, social support, and preventive behaviors in these videos have changed as the pandemic develops. We also examined how such YouTube messages engage the audience and elicit their responses.

The results of this study indicate that the features of the messages changed over time and echoes the CERC model. Early on in the pandemic, it was unclear how the virus spread and how it could be best prevented. Though, as time went on and scientists learned more, that knowledge was also shared with the public. The message feature change in this study reflects the CERC model, which explains that public health professionals need to employ different strategies at different stages [40]. Specifically, messages must be crafted in accordance with audience needs, values, background, culture, diversity, health literacy, and experience (Murray-Johnson et al., 2001; Institute of Medicine, 2002).

This study found that emotional appeals in the messages changed over time, with more anxiety demonstrated in March and April than in May. In March and April, so much was unknown about the virus, therefore anxiety was a natural, common emotion. However, by May, the infection rate was somewhat controlled and more was known about COVID-19. Emotional appeals in these sampled messages also shifted from a negative tone to a positive one, with humor present in several more messages in May as opposed to March and April. Again, the shift in emotion from negative to positive is illustrative of how people were feeling about combating the virus. Following the CERC model, these approaches align with the second step, Initial Event, which includes uncertainty reduction, self-efficacy, and reassurance; as well as the third step, Maintenance, including ongoing uncertainty reduction, self-efficacy, and reassurance [40].

In May, the sampled messages were found to include more examples of preventive behaviors, particularly mask wearing. This follows state mandates occurring at that time as more governments began instituting mask-wearing policies. The industries producing these COVID-19 messages also changed over time. In March and April, the dominant industries in this sample included restaurants, grocery stores, and banking and insurance. However, the sample of messages from May included many more that were produced by the government. Once again, this can be attributed to the progression of the virus, with March and April being critical points of controlling the virus, whereas by May there was a push to launch campaigns to educate the public about how to stay safe and healthy. These approaches follow the fourth step of the CERC model, Resolution, which requires updates regarding resolution, discussions about cause, and new risks/new understandings of risk [40].

Previous studies have indicated just how powerful social support can be in helping both the sender as well as the receiver. In difficult situations, social support can be used as a strategy to buffer against stress, which refers to any environmental, social, or internal changes [22]. COVID-19 is inarguably a significant stressor affecting nearly every facet of life for people across the globe. Social support is the lending of a hand, to help and connect with other people. At a time when people felt more isolated than ever before, social support was critical. Appendix A

We found that videos providing informational support received more likes than those messages without informational support. At the beginning of the pandemic, information about COVID-19 was hard to obtain. As a result, this can help explain why people liked the sampled videos with informational support more than those without informational support.
support. Similarly, Hether et al. [20] found that providing support on social media sites related to health garnered the most outcomes, including seeking more information from additional sources and following recommendations posted on the social media sites. This finding also echoes with Zhang et al. [52] finding that positive valence and information about the virus could increase the number of “likes” of the tweets during COVID-19.

The finding that videos providing emotional support garnered more likes and comments than those without emotional support follows previous research. During the pandemic, many people have been contending with anxiety, depression, and mental illness. Emotions have been in flux, therefore by providing emotional support, there is at least a small antidote to the negative emotions people are experiencing. In the same way that someone would feel compelled to answer a sentiment of “good morning” with a returning, positive gesture, these videos with emotional support inspired likes and an almost obligatory response of positive affirmation. Prison and Eggemont (2015) similarly found that when social support was sought on Facebook and subsequently perceived, there was a decrease in adolescents’ depressed mood.

Finally, it makes sense that the videos providing instrumental support received more positive comments than videos without instrumental support. At a time when people have felt helpless, to know that steps are being taken to mitigate problems can be a huge weight lifter. With organizations using these videos to tell audiences that they were doing something, this was the motivator for people to also do something in the form of a positive comment. Alsubaie et al. (2018) looked at sources of social support as related to university students’ depression and quality of life and found that by having sources provide instrumental support, students’ mental health could be much more protected.

This study revealed that emotional appeal is an effective strategy in increasing YouTube audiences’ engagement. Hope and happiness are two of the most frequent emotions in the videos. Videos with sadness and fear appeals received more likes, and those with guilt and anger received more comments. Moreover, happiness appeal interacted with time and influenced the number of views of the videos. Specifically, videos with happiness appeal in March received more views than those without happiness appeal, while such difference did not exist after April. The reason could be that there was more uncertainty and anxiety during the beginning of the pandemic and videos with happiness appeal could boost people’s mood and thus attracted more viewers. Similarly, videos with hope appeal received fewer negative comments. Such findings are consistent with previous studies that emotional appeal is an effective strategy to elicit campaign receivers’ emotional and behavioral reactions (Lang, 2006; Lang & Yegiyvan, 2008). Previous studies mainly focused on negative emotions such as fear appeal (Dunlop, Perez, & Cotter, 2012). However, this study suggests that positive emotions such as hope and

| Table 4 | Effects of emotional appeals, social support, and preventive behaviors on comments. |
|----------|---------------------------------|
|          | M    | SD   | F    | df | p   |
| **Emotional Appeals** |       |      |      |    |     |
| Fear     | Yes  | 185.75 | 583.442 | .556 | 1  | .576 |
| Anxiety  | No   | 93.362 | 202.560 | .207 | 1  | .813 |
| Sadness  | No   | 108.244 | 412.034 |  |     |
| Hope     | Yes  | 224.600 | 660.308 | .958 | 1  | .388 |
| Humor    | No   | 91.444 | 205.350 |  |     |
| Anger    | Yes  | 117.537 | 360.369 | .103 | 1  | .902 |
| Happiness| Yes  | 106.103 | 208.368 |  |     |
| Guilt    | Yes  | 123.530 | 400.837 |  |     |
| **Social Support** |       |      |      |    |     |
| Providing informational support | Yes  | 123.278 | 353.827 | .242 | 1  | .785 |
| Providing emotional support | Yes  | 133.512 | 365.80 | 2.166 | 1  | .035 |
| Providing instrumental support | Yes  | 110.576 | 358.125 | .156 | 1  | .856 |
| Seeking informational support | Yes  | 112.652 | 269.856 | .202 | 1  | .654 |
| Seeking emotional support | Yes  | 117.051 | 340.614 |  |     |
| Seeking instrumental support | Yes  | 117.770 | 422.859 | .100 | 1  | .905 |
| **Preventive Behaviors** |       |      |      |    |     |
| Wearing face masks | Yes  | 179.786 | 516.181 | .028 | 1  | .869 |
| Keeping social distancing | Yes  | 128.017 | 374.344 | .253 | 1  | .777 |
| Wearing gloves | Yes  | 83.000 | 207.698 |  |     |
| Deep cleaning | Yes  | 117.333 | 237.231 |  |     |
|                     | No   | 83.000 | 207.698 |  |     |

| Table 5 | Effects of emotional appeals, social support, and preventive behaviors on likes. |
|----------|---------------------------------|
|          | M    | SD   | F    | df | p   |
| **Emotional Appeals** |       |      |      |    |     |
| Fear     | Yes  | 4512.283 | 7.340 | 1  | .038 |
| Anxiety  | No   | 691.232 | 2481.169 |  |     |
| Sadness  | No   | 2056.279 | 7380.522 |  |     |
| Hope     | Yes  | 5450.784 | 4.185 | 1  | .001 |
| Humor    | No   | 828.107 | 2906.212 |  |     |
| Anger    | Yes  | 1851.918 | 6855.828 | .964 | 1  | .386 |
| Happiness| No   | 465.093 | 563.332 |  |     |
| Guilt    | Yes  | 1718.474 | 4039.602 | .616 | 1  | .543 |
| **Social Support** |       |      |      |    |     |
| Providing informational support | Yes  | 1859.677 | 6654.432 | 2.23 | 1  | .045 |
| Providing emotional support | Yes  | 2077.735 | 7095.910 | 3.15 | 1  | .030 |
| Providing instrumental support | Yes  | 1760.588 | 6780.572 | .635 | 1  | .533 |
| Seeking informational support | Yes  | 1705.544 | 4040.545 |  |     |
| Seeking emotional support | Yes  | 1752.631 | 6493.113 | .102 | 1  | .789 |
| Seeking instrumental support | Yes  | 1658.953 | 1255.36 |  |     |
| **Preventive Behaviors** |       |      |      |    |     |
| Wearing face masks | Yes  | 1697.053 | 5427.833 | .687 | 1  | .506 |
| Keeping social distancing | Yes  | 1718.245 | 7254.612 | 2.206 | 1  | .012 |
| Wearing gloves | Yes  | 391.524 | 774.531 |  |     |
| Deep cleaning | Yes  | 1329.752 | 4305.845 | .664 | 1  | .517 |
|                     | No   | 1817.695 | 6726.295 |  |     |

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happiness are the dominant emotions in COVID-19 videos and can exert positive impacts on audience engagement during the early stage of a pandemic.

Compared with videos produced in March and April, videos produced in May and after were more likely to promote wearing face masks or other face coverings. The reason could be that New York State started to make wearing face masks mandatory on April 15, and over 30 states have set a similar requirement since then. This result is also consistent with the findings about the organization change over time. While in March and April, restaurants, grocery stores, and bank and insurance companies produced more COVID-19 videos, the government produced the most videos from May to August. Such findings suggest the role of government as a stakeholder in crisis communication during health pandemics [7].

We also found that videos produced by sports/entertainment industries received more positive comments than other industries. Further analysis shows that sports/entertainment industries produced more videos with hope ($\chi^2(10) = 19.416, p < .05$). It could be because people like to watch videos with positive emotions to reduce anxiety during the pandemic. This finding is also consistent with the findings that hope and happiness are the most frequent emotional appeals in the COVID-19 related videos. This study suggests that videos with positive emotions deserve more attention in crisis communication.

This study adopts the CERC model in analyzing how organizations use YouTube videos to communicate information about COVID-19 during the early outbreak of the virus in 2020. This study contributes to the CERC model in the following ways. First, the CERC model argues that the communication process during crisis and emergencies is a dynamically changing process due to psychological, social, and cultural factors. The communication process keeps developing as the crisis evolves. However, Veil et al. [46] pointed out that such positions were seldom explored. This study examined how emotional appeal, social support and preventive behaviors in the YouTube COVID-19 messages changed over time. We found that hope and happiness are the two emotions used most frequently. Emotional appeals changed over time. Though videos in March and April mainly adopted fear and anxiety appeals, humor became more dominant after May 2020. Second, two-way communication is an integral part of the CERC model during crisis and emergency. However, previous research mainly focuses on how the organizations communicate to the public and seldomly investigate the feedback. This study takes it one step further by examining the association between emotional appeals and social support and audience engagement on YouTube.

### Table 6
Effects of emotional appeals, social support, and industries on the number of positive comments.

| Emotional Appeals | M    | SD   | F    | df | p   |
|-------------------|------|------|------|----|-----|
| Fear              | Yes  | 32.846 | 59.934 | .096 | .898 |
| Anxiety           | Yes  | 22.783 | 48.134 | .274 | .603 |
| Sadness           | Yes  | 41.042 | 51.549 |     |     |
| Hope              | Yes  | 31.872 | 45.470 | 2.574 | .116 |
| Humor             | Yes  | 56.222 | 60.924 | 2.101 | .154 |
| Anger             | Yes  | 0.250  | 112.082 | 4.413 | .011 |
| Happiness         | Yes  | 37.297 | 49.435 | .001 | .973 |
| Guilt             | Yes  | 0.120  | 33.483 | 6.428 | .006 |
|                   | No   | 33.31  | 7.057  |     |     |

### Table 7
Effects of emotional appeals, social support, and industries on the number of negative comments.

| Emotional Appeals | M    | SD   | F    | df | p   |
|-------------------|------|------|------|----|-----|
| Fear              | Yes  | 27.692 | 40.928 | .736 | .395 |
| Anxiety           | Yes  | 30.870 | 45.496 | 1.268 | .266 |
| Sadness           | Yes  | 41.300 | 54.602 | .005 | .944 |
| Hope              | Yes  | 34.152 | 11.582 | 4.185 | .021 |
| Humor             | Yes  | 35.056 | 45.222 | .397 | .532 |
| Anger             | Yes  | 109.333 | 89.226 | 2.433 | .126 |
| Happiness         | Yes  | 39.500 | 71.968 |     |     |
| Guilt             | Yes  | 59.000 | 26.870 | .094 | .761 |
|                   | No   | 43.289 | 75.549 |     |     |

### Industries

| Social Support | Providing informational support | Yes  | 38.442 | 51.263 | .448 | .507 |
|----------------|---------------------------------|------|--------|--------|------|-----|
|                | Providing emotional support     | Yes  | 37.333 | 52.027 | .009 | .924 |
|                | Providing instrumental support  | Yes  | 35.375 | 37.911 |     |     |
|                | Seeking informational support   | Yes  | 39.582 | 65.849 | .586 | .785 |
|                | Seeking emotional support       | Yes  | 37.000 | 49.540 |     |     |
|                | Seeking instrumental support    | Yes  | 24.115 | 41.008 | 4.273 | .075 |
|                | No                             | 25.952 | 55.313 |     |     |

| Industries     | Grocery                        | 21.000 | 24.688 | 4.026 | 10   | .002 |
|----------------|--------------------------------|--------|--------|------|-----|-----|
|                | Restaurant                     | 17.500 | 18.929 |     |     |     |
|                | Automobile                     | 55.833 | 52.739 |     |     |     |
|                | Banking                        | 74.750 | 38.638 |     |     |     |
|                | Health and Beauty              | 68.000 | 89.599 |     |     |     |
|                | Recreation/Sports/Entertainment | 127.132 | 23.651 |     |     |     |
|                | Retailer/Department Store      | 55.333 | 16.166 |     |     |     |
|                | Technology                     | 5.000  | 0      |     |     |     |
|                | Utility                        | 5.622  | 6.365  |     |     |     |
|                | Government                     | 7.000  | 7.071  |     |     |     |
|                | NPO/NGP                        | 4.200  | 3.853  |     |     |     |
that different emotional appeals and social support in YouTube videos could elicit different user views, likes, and comments, providing support for the CERC model.

This study also has implications for the global recovery from COVID-19. It provides a number of interesting findings and several practical implications for medical professionals, businesses, and government entities across the globe to be used in accordance with a post-pandemic/endemic communication strategy. Although there is always more work to be done in public understanding of health issues, it is evident that the more that is learned about effective organizational communication and perceptions, the better position to be in for tailoring future messages. In a shift toward global recovery, it is imperative to reflect on what communication worked well and to replicate those strategies, along with making important iterations to message frames that were ineffective. As the world moves forward with conversations related to health, safety, and wellbeing, additional issues have emerged in the wake of the pandemic, including the economy, supply chain, inflation, education, as well as access and equity. It behooves communicators to craft effective messages, as the world how depends on it. As different as everyone across the globe may be, no doubt there are similarities in health communication-seeking attitudes and behaviors, and it is truly paramount for everyone to heal together and look forward to a new normal.

Limitations and future research

The study is not without shortcomings. First, the study was conducted between March and September 2020, the first wave of COVID-19. However, the second wave starting November 2020 spread more widely and caused more deaths, with the vaccine doses starting to be given in December 2020. Thus, future research can examine how the content of COVID-19 related videos has been changing during the subsequent waves. Second, besides categorizing YouTube comments as positive or negative, future research could conduct qualitative research about the comments to decipher deeper meaning. Third, this study is an exploratory and pilot study with analysis of 106 YouTube videos. The small sample size cannot represent all the organizational messages during COVID-19. Therefore, the results in this study cannot be generalized to the entire population of organizational messages. Future research may include a larger sample size to draw more robust conclusions. Fourth, we only included seven emotional appeals in this study. Future research could explore other types of emotional appeals in YouTube videos about COVID-19. Fifth, audience engagement could be influenced by many social media content factors, such as the characteristics of those postings, the text, and the posting time. However, due to the scope of this study, we did not include these factors and only examined emotional appeals and social support. Future research could examine how these factors would be related to audience comments, likes, views, and user comment sentiment.

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CRediT authorship contribution statement

Wenjing Xie: Visualization, Data curation, Formal analysis, Methodology, Resources, Conceptualization, Writing – original draft, Writing – review & editing. Amanda Damiano: Data curation, Formal analysis, Methodology, Resources, Conceptualization, Writing – original draft, Writing – review & editing. Chang-Han Jong: Visualization, Data curation, Formal analysis, Writing – original draft, Methodology, Resources.

Data availability

The data that has been used is confidential.

Appendix A. Examples of YouTube messages

The toilet paper industry is one area that has manifested public fear, panic buying, and hoarding of supplies. Three organizations from that industry were included in this sample. The first example was from April 2020. Angel Soft released a message stating that “the world has slowed down, but we have not.” Similarly, Quilled Northern, in its March 2020 message, stated, “We’ve been making toilet paper since 1901. And we won’t stop now.” Additionally, in March 2020, Cottonelle said in its message, “...we assure you there will be enough to go around.”

The fast food industry was also included in this sample, particularly with a message from McDonald’s released in March 2020, specifically stating that “the safety of our communities and people is our top priority.” The message ended with, “just like we have for the last 65 years, we can still be here to take your order.”

The New York State Governor’s Office also produced messages during the COVID-19 pandemic. The “Mask Up, America” campaign, which began in July 2020, featured nearly a dozen messages with appearances from celebrities including Morgan Freeman, Billy Crystal, and Robert DeNiro and stressed the importance of wearing a face covering to cut down on the spread of the virus. Similarly, the Ad Council produced a number of messages as part of its “Alone Together” campaign, launched in March 2020, encouraging the public to unite while being physically apart.

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