MESSAGE FRAMING AND MESSAGE APPEALS ON COVID-19 VACCINATION: A CONTENT ANALYSIS ON COVID-19 VACCINATION YOUTUBE VIDEOS

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This Independent Study Manuscript Presented to
the Graduate School of Bangkok University
in Partial Fulfillment
of the Requirements for the Degree
Master of Communication Arts in Global Communication

Academic Year 2022

This manuscript has been approved by
the Graduate School
Bangkok University

Title: Message Framing and Message Appeals on COVID-19 Vaccination: A Content Analysis on COVID-19 Vaccination YouTube Videos

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Senorit, Chadarat. Master of Communication Arts, November, 2023,
Graduate School, Bangkok University.
Message Framing and Message Appeals on COVID-19 Vaccination: A Content Analysis on COVID-19 Vaccination YouTube Videos (102 pp.)
Advisor : Assoc. Prof. Vimviriya Limkangvanmongkol, Ph.D.

ABSTRACT

This work examines the message framing and message appeals used in COVID-19 vaccination videos through content analysis of 80 videos published between 2020 April and 2022 May on the YouTube platform. Research findings revealed that the videos primarily aimed to encourage individuals to get vaccinated against COVID-19. Gain-framed messages, personal health risk frames, and descriptive appeals dominated the analyzed COVID-19 vaccination videos. In gain-framed messages, the videos emphasized the advantages of COVID-19 vaccines by depicting how the immune system responded post-vaccination or infection. COVID-19 vaccines were portrayed as reducing the risk of severe illness, hospitalization, and death post-infection, while also bolstering the immune system to combat COVID-19. In personal health risk frames, videos highlighted the advantages of COVID-19 vaccination in protecting individuals from serious illnesses and hospitalization following infection. In descriptive appeals, the videos provided simplified information about various aspects of COVID-19 vaccination.

Keywords: Message Framing, Message Appeals, COVID-19 Vaccination, Health Communication, YouTube

ACKNOWLEDGEMENT

This study was made successful through the significant support of people who guided and helped the researcher throughout the completion of this study. Her utmost gratitude is given to the following who helped broaden the researcher's perspective as she went through this study.

Words of gratitude is expressed to the researcher's supervisor, Dr. Vimviriya Limkangvanmongkol, who was abundantly helpful and offered invaluable assistance, support, guidance, patience, and time spent despite her busy schedule. In addition, this paper would not have made possible without her rich knowledge and suggestions that she supplied. Working under her guidance was a tremendous privilege.

A sincere appreciation is also expressed to the researcher's parents, brother, and sister for their support and encouragement to complete this study. A special acknowledgement is likewise expressed to her husband and two children for their unending love, support, prayers, and sacrifice. Without their selfless and constant love, inspiration, and support, this work would not have been made possible.

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CHAPTER 1
INTRODUCTION

1.1 Background

1.1.1 The Pandemic Outbreak

The COVID-19 pandemic is a worldwide outbreak of coronavirus, which is an infectious germ caused by the severe respiratory syndrome coronavirus 2 (SARS-CoV-2). The first cases of COVID-19 infection were reported in China in December 2019, followed by the rapid spreading of the virus to many countries across the world. This prompted the World Health Organization (WHO) to announce a Public Health Emergency of International Concern in January 2020 and categorize the outbreak as a pandemic on March 11, 2020 (World Health Organization, 2023a)

From then on, the COVID-19 pandemic has affected almost every aspect of human life (Abubakar, 2020). Global supply chains and systematic healthcare bore the brunt of the devastation, including harmful effects on individuals' health (Ebrahim, Ahmed, Gozzer, Schlagenhauf, & Memish, 2020). At various stages of the pandemic, lockdowns have also been enacted to combat its spread, severely impacting society. The lockdown rules drastically slowed the operations of many manufacturers and businesses, forcing some into temporary closure (Calderon & Kubota, 2020). Company employees and workers were prevented from reaching their workplace, leading to job insecurity and widespread financial shortfall in the affected communities (Zhou, et al., 2020).

The COVID-19 pandemic has also caused enormous disruption in education opportunities (Reimers & Shcleicher, 2020), and educational systems around the world (Meinck, Fraillon, & Strietholt, 2022). With educational organizations and training centers forced shut, students had to resort to online solutions to continue their studies and socialize with friends (Asad, 2020).

Exacerbating these issues, the COVID-19 pandemic exerted an enormous strain on mental health worldwide. Shortcomings in community disease management and infection control manifested high levels of fear and anxiety at the individual level (Zhou, et al., 2020), causing similar reactions in terms of concerns and emotions at the population level (Brooks, et al., 2020 and Roy, et al., 2020). Furthermore, individuals

following social distancing practices reported loneliness and an alarming level of stress and anxiety symptoms (Brooks, et al., 2020 and Zho, et al., 2020).

Taken together, the research works outlined above provide ample evidence for the debilitating effects caused by the COVID-19 pandemic in every aspect of human life worldwide. To stem its reach and curb its effects, a number of preventative measures have been devised and enacted. To reduce viral transmission, the population was required to follow good hygienic practices, including social distancing, avoiding crowded areas, wearing face masks, and keeping hands washed (Zickfeld, Schubert, Herting, Grahe & Faasse, 2020). Vaccination is also considered an effective preventive measure, but its success relies on the worldwide accessibility of vaccines and people's willingness to be vaccinated (Subedi, et al., 2021). Vaccination campaigns succeed when herd immunity is achieved through widespread vaccination, which relies on the public's positive attitude and perceptions towards the vaccine (Subedi, et al., 2021). Therefore, it is crucial to examine the message framing and message appeals used on COVID-19 vaccination on social media platforms, especially on YouTube, to understand the most frequent message framing and message appeals used in pro-vaccination videos.

1.1.2 Vaccine is a solution

A vaccine refers to a product that arouses the immune system of an individual to create the immunity to specific disease and protect people from that disease (Centers for Disease Control and Prevention, 2021a); a vaccine contains dead or attenuated viruses (that could not cause the disease) that enter the individual to stimulate the immune system to create the immunization to fight against the disease or germ (Ministry of Health India, 2022).

To respond to the rapid spreading of the COVID-19 virus, COVID-19 vaccines have been developed and evaluated (Valencia, 2020). Cocchio, et al. (2022) revealed that vaccination alleviated the impact of COVID-19 for particular age groups, and that vaccination has created desirable consequences in both public and clinical health. Furthermore, significant reductions in the number of hospitalization and death due to COVID-19 can be observed over time, particularly over 150 days after the second dose of the vaccine (Levin, et al., 2021). Most importantly, vaccination not only benefits the vaccinated individuals but also protects the

community at large (World Health Organization, n.d.). Therefore, it is not surprising that communicating the social benefits of vaccination has been confirmed to enlarge vaccination intentions, especially when the low risk of vaccination and getting vaccinated take a little effort (Betsch, Böhm & Korn, 2013).

To convince people to get vaccinated, vaccination campaigns have been started in many countries. For example, vaccination in Veneto, North Italy, started in December 2020 (Cocchio, et al., 2022), while the Pfizer COVID-19 vaccine was administered in Saudi Arabia in the same month (Almaghaslah, Alsayari, Kandasamy, & Vasudevan, 2021). The aforementioned and other campaigns revealed that promoting vaccination is useful in the pandemic context, but the acceptance and uptake of COVID-19 vaccines present a challenge (World Health Organization, n.d.). Thus vaccination promotion has gathered enormous attention, and many studies emphasized factors that actuate vaccination intentions and behavior (Wheldon, et al., 2018). It was also discovered that the level of an individual's knowledge about the COVID-19 vaccine may gain an essential impact on the assessment of the COVID-19 vaccine's benefits and risks (Gursoy, Yuksel, Can & Murray, 2022).

1.2 Rationale and Problem Statement

Vaccination is one of the ways to overcome the COVID-19 pandemic outbreak, but one important barrier to this solution is vaccine hesitancy (Elkind, 2020). In fact, vaccine hesitancy has existed since the beginning of vaccine introduction. In 1796, Edward Jenner developed the first vaccine to fight communicable sickness (smallpox) efficiently in preventing infection and spreading of disease (Stern & Markel, 2005). Many organizations and the Anti-Vaccination League objected to the dissemination of the vaccine because they had concerns about safety, and instead motivate homeopathic solutions (Wolfe & Sharp, 2002). It is thus unsurprising that a recent study on the acceptance and decline of the COVID-19 vaccine by Fronstin and Woodbury (2020) revealed that even though the attitudes vary by population, vaccine hesitancy is a global concern. In addition, a study of COVID-19 vaccine hesitancy in the UK and the U.S. discovered that the vaccination willingness of Black and other non-White communities was generally low (Chang & Kochel, 2020 and Robertson, et al., 2021). People with low levels of education also

have been attracted to vaccine hesitancy (Makarovs & Achterberg, 2017), while studies by Callaghan, et al. (2021) and Robertson, et al. (2021) reported that women exhibit vaccine hesitancy at a higher rate than men.

The rates of vaccine acceptance and intention to get vaccinated decreased in 2020 (Grasselli, et al., 2020 and Richardson, et al., 2020). Main concerns cited the side effects of the vaccines, and the perception that the COVID-19 vaccines were not sufficiently evaluated (Khatri, et al., 2020). Compounding the issue was the fact that misleading vaccination information and vaccination hesitancy have been on the rise (World Health Organization, n.d.), and a recent study showed that the anti-vaccine movement had appeared powerful against the COVID-19 vaccine (Jamison, et al., 2020). In addition to concerns about vaccine evaluation, additional doubts have risen regarding the delivery system of vaccines, questioning also the competence of health workers and the motivation of various stakeholders (Jamison, Quinn, & Freimuth, 2019 and Vinck, Pham, Bindu, Bedford & Nilles, 2019).

The rapidly evolving, dynamic nature of COVID-19 vaccine development caused a deluge of data, resulting in some people inadvertently taking wrong information to fill their knowledge gaps (the Royal Society and the British Academy, 2020). The surplus information moving around COVID-19, known as the "infodemic", means that people inevitably face misinformation and rumors that may decay their confidence in vaccination (World Health Organization, n.d.).

The mentioned studies point out distinct differences between groups and individuals: some may hesitate toward vaccination because they believe that they may be at low risk of vaccination, while some may doubt the vaccination safety, yet others may hesitate due to religious values or concerns about the efficacy of their healthcare system (Dubé, et al., 2013 and MacDonald & SAGE Working Group on Vaccine Hesitancy, 2015).

Considering the numerous issues examined above, it is unsurprising that COVID-19 information and news are shared and transmitted to people through social media (Ahmad & Murad, 2020). Credible and leading organizations such as World Health Organization (WHO), Centers for Disease Control and Prevention (CDC), Cable News Network (CNN), and Australian Broadcasting Corporation (ABC News) spread information about vaccination on various prominent social media platforms,

including the video sharing platform YouTube. As one of the more prolific platforms of discussing social and pandemic concerns (Ali & Yang, 2022), YouTube has attracted an extraordinary number of viewers during the COVID-19 pandemic (Dutta et al., 2020), echoing the observations of another study by Shukla (2021) that pointed to YouTube's role as a source of information on public health issues such as tobacco use, the H1N1 influenza virus, and COVID-19.

1.3 Objectives of Study

This research aims to achieve the following objectives:

1.3.1 Examine the message frames on COVID-19 vaccination perceived risks that are most frequently used in COVID-19 vaccination YouTube videos

1.3.2 Examine the message frames on COVID-19 vaccination intentions that are most frequently used in COVID-19 vaccination YouTube videos

1.3.3 Examine the message appeals that are most frequently used in COVID-19 vaccination YouTube videos.

1.4 Research Questions

RQ1: What frames on COVID-19 vaccination perceived risks are most frequently used in the COVID-19 vaccination YouTube videos?

RQ2: What frames on COVID-19 vaccination intentions are most frequently used in the COVID-19 vaccination YouTube videos?

RQ3: What message appeals are most frequently used in the COVID-19 vaccination YouTube videos?

1.5 Scope of Study

This research relied on content analysis to investigate the message framing and message appeals used on COVID-19 vaccination in YouTube videos.

The purposive sampling method was used to collect 80 video samples by conducting search queries on YouTube using three key phrases: "COVID-19 vaccination", "COVID-19 vaccination persuasion", and "public service advertisement COVID-19 vaccination". The resulting videos have all been published during the pandemic period between April 01, 2020, and May 30, 2022. Only English videos

were selected, as English is one of the most popular languages used on YouTube (Global Media Insight, 2024)

1.6 Significance of Study

This study focused mainly on investigating the message framing and message appeals on COVID-19 vaccination used in YouTube videos published. YouTube is a fundamental part of social media and has many long-term users (Kılınç & Sayar, 2019). There are many millions of daily visitors around the world who access YouTube videos. In addition, YouTube has been accepted as a main public source of information during the crises caused by Zika, H1N1, swine flu, and COVID-19 recently (Parabhoi, et al., 2021).

Many studies have focused on the COVID-19 pandemic and vaccination hesitancy. However, there are very few scholarly studies about message framing and message appeals on COVID-19 vaccination (Chen, Tzeng, Tham & Chu, 2021; Gursoy, et al., 2022; Kim, Kim, & Murphy, 2020 and Pattison, et al., 2022). Although numerous scholarly works have studied message framing in health communication (Apanovitch, McCarthy, & Salovey, 2003 and Meyerowitz & Chaiken, 1987), very few have focused on COVID-19 vaccination, especially on YouTube videos.

This study aimed to investigate the message framing and appeals used primarily by video content creators to persuade audiences regarding COVID-19 vaccination. The results of this study provide valuable insights for global organizations such as the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), and the United Nations Children's Fund (UNICEF) in effectively communicating with worldwide audiences through video content for various purposes. Additionally, the findings are beneficial for companies, marketers, policymakers, advertisers, and individuals interested in utilizing videos to convey messages to mass audiences and persuade them about health-related products and services. Furthermore, the insights from this research may also provide novel and suitable ideas for creating efficient video content for potential future outbreaks, such as Mpox (monkeypox).

1.7 Definition of Terms

1.7.1 Message Framing

Message framing is extended from the “prospect theory” founded by Tversky and Kahneman (1981), which presumes that people may carefully assess the information by anticipating the benefits and losses.

1.7.2 Message Appeals

Message appeals involve the utilization of visual and linguistic techniques in advertisements to captivate the audience and effectively convey information about the services and products being promoted (Belch & Belch, 2013).

1.7.3 Pandemic

A pandemic refers to the spreading of a disease outbreak across countries or continents. It impacts a lot of people and has larger mortality than an epidemic does (Robinson, 2022).

1.7.4 YouTube

YouTube is a public-access Web platform that allows people to view, upload, share, rate, comment, and explore video clips at no charge. YouTube is the second most popular website with many hundreds of millions of users worldwide (Karadia, 2021).

1.7.5 Vaccination

Vaccination means the action of introducing vaccines into people’s bodies to build immune resistance to a specific harmful disease (Centers for Disease Control and Prevention, 2021a).

1.7.6 Immunity

Immunity refers to protection from infectious diseases. People with immunity to a certain disease can contract that disease without becoming infected (Centers for Disease Control and Prevention, 2021a).

1.7.7 Vaccine

Vaccine means a preparation that is utilized to arouse an immune response against diseases in the body. Vaccines are normally administrated through intravenous injections, but some vaccines can be administrated orally or by nasal spray (Centers for Disease Control and Prevention, 2021b; 2021c; 2021d).

1.7.8 Coronavirus Disease 2019 (COVID-19)

COVID-19 is a respiratory disease caused by SARS-CoV-2, a coronavirus discovered in 2019 (Cennimo, 2024).

1.7.9 Gain Frames

Gain frames involve positive aspects when people follow the instruction in the advertisements (Tversky & Kahneman,1981).

1.7.10 Loss Frames

Loss frames involve negative aspects that could happen when people do not follow the requirements presented in the advertisement (Tversky & Kahneman, 1981).

1.7.11 Personal Health Risk Frames

Personal health risk frames refer to "the possibility of getting [oneself] seriously sick" (Motta, Sylvester, Callaghan & Lunz-Trujillo, 2021).

1.7.12 Collective Health Risk Frames

Collective health risk frames refer to "the possibility of infecting others; including vulnerable populations" (Motta, et al., 2021).

1.7.13 Economic Risk Frames

Economic risk frames refer to "the financial burdens associated with the economy 'shutting down' to contain viral spread" (Motta, et al., 2021).

1.7.14 Statistical Evidence Appeals

Statistical evidence appeals refer to numerical evidence to present in the advertisement (Feeley, Marshall & Reinhart, 2006). For example, in the summary of statistics, it could be "a number of deaths per year from a particular health treat" (Greene & Brinn, 2003).

1.7.15 Narrative Appeals

Narrative appeals involve anecdotal examples to elicit emotional responses from the audience, compelling them toward intended persuasion (Allen & Presiss, 1997)

1.7.16 Humor Appeals

Humor appeals capture the audience's attention by associating positive emotions with the presented topics (Blanc & Brigaud, 2014).

1.7.17 Peer Influence Appeals

Peer influence appeals refer to the descriptive norms which are about presenting what most people do, and injunctive norms, presenting what most people believe others think they should do (Cialdini, Reno & Kallgren, 1990).

1.7.18 Fear Appeals

Fear appeals involve applied negative appeals for health messages, aimed to alarm the audience by using frightful terms to describe negative consequences that may arise by not following the recommended actions (Witte, 1992).

1.7.19 Descriptive Appeals

Descriptive appeals involve specific keywords that people can use for searching on the target site, such as “information”, “update” and “symptoms” (Pattison, et al., 2022).

CHAPTER 2
LITERATURE REVIEW

This chapter provides a comprehensive review of relevant literature and the theory involved with the topic of the study, focusing on message framing and message appeals used in health communication. This chapter comprises the review of related literature and previous studies, and related theories.

2.1 Related Literature Review and Previous Studies

2.1.1 Vaccine Promotion

Vaccine is a product that helps the immune system foster immunity against a specific pathogen or disease, providing protection against infection by that particular pathogen. When administered properly, vaccines help prevent severe symptoms, hospitalization, and death (Cocchio, et al., 2022). There is solid evidence presented that vaccination could decrease the risk of many infections (Thompson, et al., 2018).

Many studies examined vaccine promotion, and emphasized the relation of factors that could lead to vaccination intentions and behavior (Dillard, 2011; Ratanasiripong, Cheng & Enriquez, 2013 and Wheldon, et al., 2018). Some researchers explored how vaccination information may convince and change people's attitudes about vaccination. For example, Chanel, Luchini, Massoni and Vergnaud (2011) discovered that people's attitudes toward vaccination improved with sensible information. Generally, scientific information has the essential magnitude to elicit positive impact on people's intentions toward vaccination. Several research works focused on vaccination intentions and behavior, investigating the influence of messages and behavior, making use of message framing theory to conceive the kind of messages that affect behavior in a positive way.

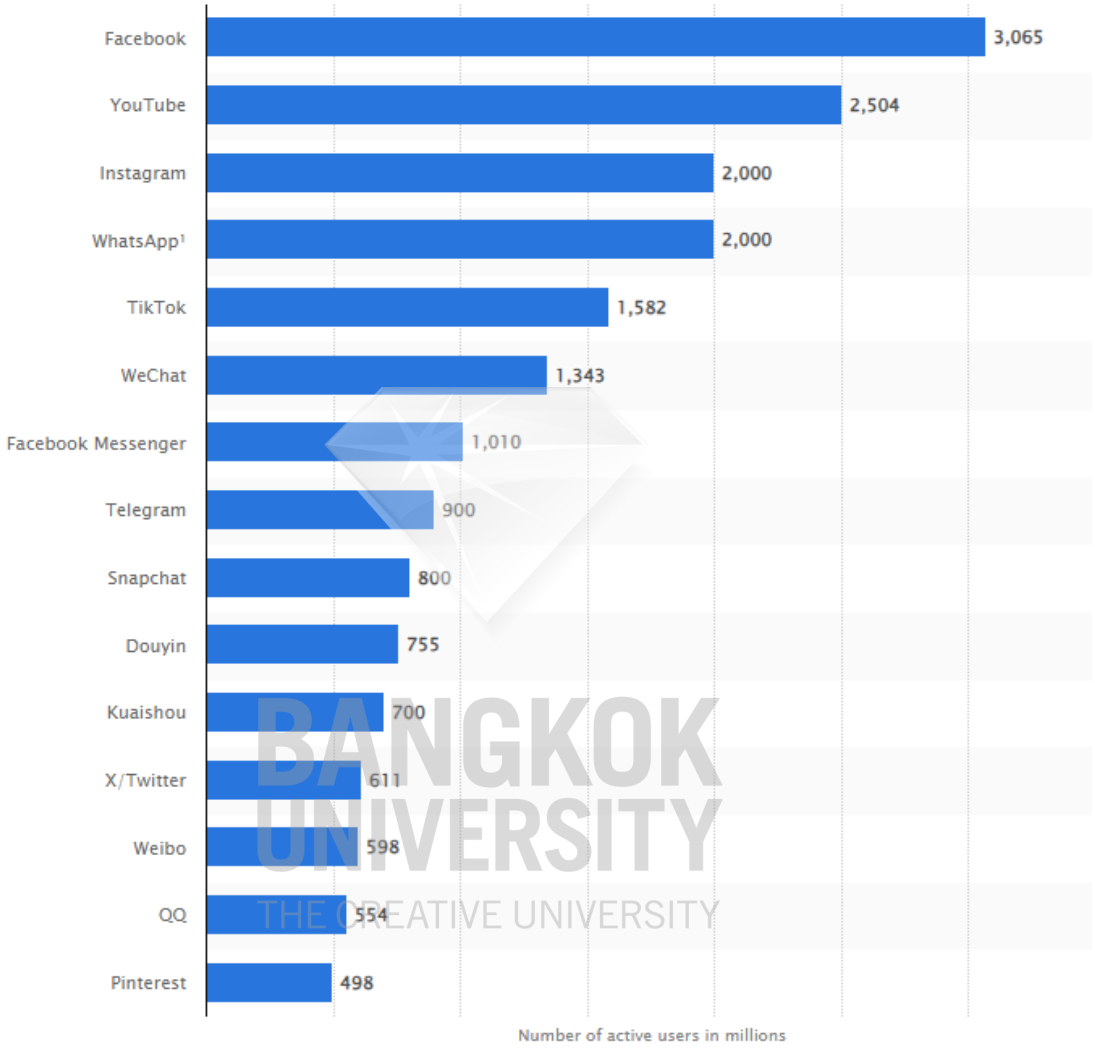
2.1.2 Videos on YouTube

Global Media Insight 's research team revealed that YouTube boasts a monthly userbase exceeding 2.70 billion people globally. Additionally, over 122 million individuals access the platform daily via its website and mobile applications (Global Media Insight, 2024). Presently, YouTube is the second most popular website with many hundreds of millions of users over the world (Karadia, 2021). Figure 2.1

shows a screenshot of the most popular social networks worldwide as of January 2024, ranked by the number of monthly active users. The evidence indicates that YouTube is the second most popular social network (2,491 million users) behind Facebook (3,049 million users) (Dixon, 2024). YouTube is a powerful online video-sharing platform (Khan, 2017) that is intertwined with the daily lives of many people around the world. As such, the platform has a significant impact on society and culture, including being a resource for study and research (Foster, 2020).

Many YouTube videos are related to health and science, making the platform a prime target for people searching for health-related information. YouTube has been acknowledged as a key public information source in recent crises caused by Zika, H1N1, swine flu, and most recently, COVID-19 (Parabhoi, et.al., 2021).
The emergence of the COVID-19 pandemic has further highlighted its usefulness in quickly sharing health-related information with a large number of people. Relevant keywords for COVID-19 were searched in YouTube videos with at least 1 million views (Shukla, 2021).

Figure 2.1: The most popular social networks worldwide (as of January 2024)



Source: Dixon, S. (2024). *Most popular social networks worldwide as of January 2024, ranked by number of monthly active users*. Retrieved from https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/.

2.2 Review of Related Theories

2.2.1 Message Framing

Message framing extends from the "prospect theory" introduced by Tversky and Kahneman (1981), which presumes that people carefully assess information by anticipating benefits and losses. Therefore, people's decisions are influenced by the type of message framing that conveys the information. Gain-framed message focuses on the positive and beneficial aspects when people follow instructions in advertisements. On the other hand, Loss-framed message emphasizes the negative consequences that could occur when people do not follow the requirements presented in the advertisement. Cheng, Woon and Lynes (2011), as well as Kim and Kim (2014), further revealed that the loss-framed message is more successful in reducing behavior with risky consequences, while the gain-framed message is effective in promoting behavior that is deemed safe.

Goffman (1974) proposed that message framing provides useful information in a way to change or influence the recipient's behavior. Cheng, et al. (2011) and Chi, Denton, and Gursoy (2021) argued that message framing is viewed as an essential communication tool that has an influence on people's opinions and behaviors. Similar to the study by Rothman and Salovey (1997), message framing is viewed as a method in which risk is communicated using either positive or negative content, aiming to shape people's perceptions of the consequences of their behavior. Gains to be derived from adopting or converting to a behavior are considered a positive frame, while the losses to be endured from non-adaptation are regarded as a negative frame. Another study on the effects of message-framing models on health-related behaviors yielded the same result: people appear to avoid the risks of treatment when they are encouraged to take actions that could lead to a positive outcome. In contrast, they tend to opt for risky treatments when potential consequences are probabilistic (Detweiler, Bedell, Salovey, Pronin & Rothman, 1999).

In addition, message framing refers to the useful theoretical framework within a health communication approach, specifically for health prevention science (Von Sikorski & Matthes, 2019), including vaccination (Chen, et al., 2021). In applying prospect theory to health communication, Rothman and Salovey (1997) suggested that perceived risks are important factors influencing how people respond

to gain- and loss-framed messages. People tend to perceive risks when presented with loss-framed information; however, they are more likely to exhibit risk-averse behavior when presented with gain-framed information. The impact of a proposed frame on behavior should depend on whether the behavior is perceived as risk-averse (individuals seek to avoid risks when considering potential gains from a decision) or risk-seeking (individuals are willing to take risks when considering potential losses from a decision) (Tversky & Kahneman, 1981).

Rothman, Bartels, Wlaschin and Salovey (2006, p. 2) argued that the information on health behavior highlights the benefit of taking action (gain-framed appeals) or the costs of not taking action. A clear example is provided: "a brochure to promote breast cancer screening could include a series of statements describing the health benefits afforded by being screened or a series of statements describing the health costs that arise if you fail to be screened".

Table 2.1: Difference between gain-and-loss-framed message statements in healthcare communication; each statement explains the positive and negative outcomes for people who take action or do not take action, respectively.

Example of gain-and loss-framed statements
Meyerowitz and Chaiken (1987) Gain frames: By doing BSE now, you can learn what your normal, healthy breasts feel like, so that you will be better prepared to notice any small, abnormal changes that might occur as you get older. Research shows that women who do BSE have an increased chance of finding a tumor in the early, more treatable stage of the disease. You can gain several potential health benefits by spending only 5 minutes each month doing BSE. Take advantage of this opportunity.

(Continued)

Table 2.1 (Continued): Difference between gain-and-loss-framed message statements in healthcare communication; each statement explains the positive and negative outcomes for people who take action or do not take action, respectively.

Example of gain-and loss-framed statements

Meyerowitz and Chaiken (1987)

Loss frames:

By not doing BSE now, you will not learn what your normal, healthy breasts feel like, so that you will be ill prepared to notice any small, abnormal changes that might occur as you get older. Research shows that women who do not do BSE have a decreased chance of finding a tumor in the early, more treatable stage of the disease. You can lose several potential health benefits by failing to spend only 5 minutes each month doing BSE. Do not fail to take advantage of this opportunity.

Apanovitch, et al. (2003)

Gain frames:

There are many benefits, or good things, you may experience if you get tested for HIV. If you decide to get HIV tested, you may feel the peace of mind that comes with knowing about your health. There are many problems, or bad things, you may not experience if you get tested for HIV. If you decide to get HIV tested, you may feel less anxious because you would not wonder if you are ill.

Loss frames:

There are many benefits, or good things, you may not experience if you do not get tested for HIV. If you decide not to get HIV tested, you will not feel the peace of mind that comes with knowing about your health.

There are many problems, or bad things, you may experience if you do not get tested for HIV. If you decide not to get HIV tested, you may feel more anxious because you may wonder if you are ill.

(Continued)

Table 2.1 (Continued): Difference between gain-and-loss-framed message statements in healthcare communication; each statement explains the positive and negative outcomes for people who take action or do not take action, respectively.

Mann, Sherman and Updegraff (2004)
Gain frames: Flossing your teeth daily removes particles of food in the mouth, avoiding bacteria, which promotes great breath. Loss frames: If you do not floss your teeth daily, particles of food remain in the mouth, collecting bacteria, which causes bad breath.

Source: Rothman, A. J., Bartels, R. D., Wlaschin, J., & Salovey, P. (2006). The strategic use of gain-and loss-framed messages to promote healthy behavior: How theory can inform practice. *Journal of Communication, 56*(Suppl 1), S202–S220.

Message framing has been examined in relation to many public health concerns, including vaccinations (Chen, et al., 2021 and Kim, et al., 2020). Information and knowledge about the efficacy of COVID-19 vaccines are crucial for people's willingness to be vaccinated. Therefore, it is of significant interest to examine the effective information (emotional or rational) and message type (objective or subjective) of perceived vaccination intentions and risky vaccines (Gursoy, et al., 2022). Many pieces of evidence show that COVID-19 vaccines are efficient against the COVID-19 virus (Bernal, et al., 2021). Vaccinations show a positive outcome for individuals by having the potential to reduce infection and severe illness. Cummings, Rosenthal and Kon (2021) and Gursoy, et al. (2022) revealed deeply valuable information on the essential frame health messages to raise the rate of COVID-19

vaccination. High vaccine risk perception could result in not only a lower motivation for protection, but also significantly lower intentions for vaccination.

Moreover, individuals with a higher desire for traveling exhibit a lower negative opinion on vaccine-risk perception and vaccination intentions when they are exposed to loss-framed messages containing both objective and subjective information about vaccines (Gursoy, et al., 2022).

2.2.2 Message Appeals

Message appeals are used in advertising and communication approaches, incorporating both linguistic and visual components to convey information to the public and promote products and services (Belch & Belch, 2013). Rational and emotional appeals are commonly employed in advertising and communication studies (Kottler & Armstrong, 2003). Messages can be framed not only with rational content but also with emotional content, using either loss-framed or gain-framed approaches. Messages with emotional appeals aim to evoke positive or negative emotions, depending on the message content, while rational messages seek to appeal to the recipients' rationality by providing objective information (Gursoy, et al., 2022).

Emotional and rational appeals are primarily used in communication and advertising studies. Rational appeals focus on conveying factual information about services and products in advertisements, while emotional appeals typically involve subjective information about people's experiences and feelings, such as sadness, humor, fear, trust, pleasure, and sympathy (Holmes & Crocker, 1987; Rosselli, Skelly & Mackie, 1995 and Sciulli & Bebko, 2006).

In health communication, messages were framed by numerous persuasive message appeals. Zhang, Baker, Pember and Bissell (2017) summarized five types of persuasive message appeals used in health communication, which include statistical evidence appeals, narrative appeals, humor appeals, peer influence appeals, and fear appeals. Statistical evidence appeals use evidence like numbers and facts to present in the advertisement (Feeley, et al., 2006). It could take the format of "a number of deaths per year from some health treat" (Greene & Brinn, 2003, p. 444). Narrative appeals present anecdotal cases; persuasion by eliciting emotional responses from the audience (Allen & Presiss, 1997). Humor appeals draw the attention of the audience by linking positive feelings with the presented issues (Blanc & Brigaud, 2014). Fear

appeals are generally used in the communication of public health messages to encourage individuals to adapt or change their behavior. Fear appeals mean to persuade individuals of a negative social consequence that could happen if individuals engaged in the undesired behavior (Algie, 2010, p. 264). Witte (1992) explained further that fear appeals are usually applied negative appeals for health messages, aimed to frighten people by describing negative consequences resulting from not following the recommended actions. Finally, peer influence appeals refer to the messages dispensed on the social norm of behavior. Cialdini, et al. (1990) defines descriptive appeals norms as those presenting what most people do; and injunctive norms as those presenting what most people believe others think they should do. Norms are generated through communication that can affect individual normative beliefs, and that can be extended to behavioral change (Lapinski & Rimal, 2005). The descriptive appeals involved with the information which is available on the target website, where people can use specific search keywords such as “information”, “updates”, and “symptoms” (Pattison, et al., 2022).

According to a recent study regarding framing effective COVID-19 messages (Pattison, et al., 2022), WHO aimed to understand which message framing, that is, the way in which ad information is worded for the public, leads searchers to click through to reach WHO content. WHO tested 71 text ads in English across four COVID-10 topics using a mix of message frames. The result showed that descriptive appeals that highlight the information, as represented by the keywords “updates”, “information”, “current status”, “symptoms” and “latest”, performed best across all topics overall.

CHAPTER 3
METHODOLOGY

This chapter describes the methodology utilized in this study, comprising the research design, population and sample selection, the research procedure, research instrument, and data analysis. The coding system, reliability, and validity of this study are also explained.

3.1 Research Design

This study used content analysis to explore message framing on COVID-19 vaccination perceived risks, COVID-19 vaccination intentions, and message appeals on COVID-19 vaccination used in 80 YouTube videos.

Content analysis is the method of research that creates sense of messages' symbols, content, audio data, or images to examine textual meaning (Gheyle & Jacobs, 2017). Supported by Krippendorff (2018), the method is "a research technique for making replicable and valid inferences from data to their content".

Content analysis aims to analyze data within a particular context, considering meaning groups, cultural frameworks, or individuals' erspectives. In this study, the use of content analysis fits with the purpose of the research to explore the use of message framing and message appeals on COVID-19 vaccination in YouTube videos. The content of these three aspects of the videos was coded: 1) message framing on COVID-19 vaccination perceived risks (gain or loss frames); 2) COVID-19 vaccination intentions (personal health risk frames, collective health risk frames, or economic risk frames); and 3) message appeals on COVID-19 vaccination (statistical evidence appeals, narrative appeals, humor appeals, fear appeals, peer influence appeals, and descriptive appeals).

3.2 Population and Sample Selection

This study used a purposive sampling method, known as the judgment sampling technique. The nonrandom sampling technique was employed wherein the sample members were selected based on the researcher's knowledge and determination (Dudovskiy, 2018 and Lavrakas, 2008).

A sample of 80 COVID-19 vaccination videos published on YouTube between April 01, 2020, and May 30, 2022, was collected. The videos belonged to either health-focused or non-health-focused sources. As seen in Table 3.1, health-focused sources refer to healthcare organizations, educational institutions, public health departments, government organizations, and other respected medical institutions, such as Nucleus Medical Media (6,500K subscribers), Mayo Clinic (1,070K subscribers), World Health Organization (WHO) (889K subscribers), Dr. Matt & Dr. Mike (693K subscribers), Centers for Disease Control and Prevention (CDC) (648K subscribers), and Healthcare Triage (447K subscribers). The accounts have 1K- 6,500K subscribers. Non-health-focused sources refer to credible sources that do not focus solely on health content, for example, ABC News (16,500K subscribers), CNN (16,200K subscribers), ASAP Sciences (10,600K subscribers), CBS News (5,5780K subscribers), and Good Morning (4,970K subscribers). The accounts have 3K - 16,500K subscribers.

Table 3.1: Number of subscribers of the sampled YouTube channels

Health-focused sources	No. of subscribers	Non-health-focused sources	No. of subscribers
1. Nucleus Medical Media	6,500K	1. ABC News	16,500K
2. Mayo Clinic	1,070K	2. CNN	16,200K
3. World Health Organization (WHO)	889K	3. ASAP Science	10,600K
4. Dr. Matt & Dr. Mike	693K	4. CBS News	5,780K
5. Centers for Disease Control and Prevention (CDC)	648K	5. Good Morning	4,970K
6. Healthcare Triage	447K	6. Today	4,390K
7. Medzcool	334K	7. Channel 4 News	3,270K

(Continued)

Table 3.1 (Continued): Number of subscribers of the sampled YouTube channels

Health-focused sources	No. of subscribers	Non-health-focused sources	No. of subscribers
8. UC Davis Health	207K	8. CGTN (China Global Television Network)	3,100K
9. The Children's Hospital of Philadelphia	202K	9. 60 Minutes	2,900K
10. PAHO TV (PanAmerican Health Organization & World Health Organization)	170K	10. The telegraph	2,840K
11. U.S. Department of Health and Human Service	122K	11. CNBC Television	2,710K
12. Boston Children's Hospital	117K	12. 11 Alive	1,740K
13. Stanford Medicine	116K	13. CBC News: The National	1,680K
14. UC San Diego Health	105K	14. ABC Action News	935K
15. NYU Langone Health	94.7K	14. Vir Das Comedy	912K
16. DaVita Kidney Care	40.7K	18. Mlive	477K
17. MOH Singapore	26.8K	19. HipHollywood	309K
18. Rush University System for Health	20.2K	20. WNBA	270K
19. American Academy of Pediatrics	20K	21. GOVSG (Singapore Government)	218K
20. Australian Government Department of Health	18.8K	22. Hillsborough Country	9K

(Continued)

Table 3.1 (Continued): Number of subscribers of the sampled YouTube channels

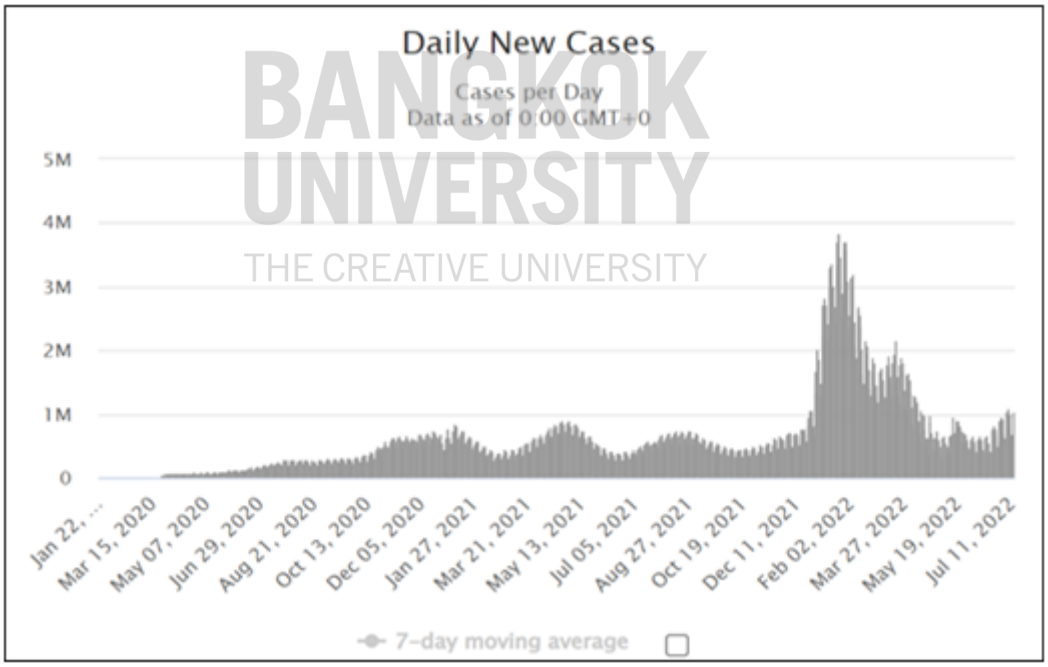
Health-focused sources	No. of subscribers	Non-health-focused sources	No. of subscribers
21. UC Health Cincinnati	11.4K	23. Univ. of California, Riverside	3K
22. Arizona Department of Health Services	7K	-	-
23. Eastern Virginia Medical School	4.75K	-	-
24. Senator Marshall	2K	-	-
25. Sparrow Health System	2K	-	-
26. Idaho Department of Health & Welfare	1K	-	-

The time frame of April 01, 2020 to May 30, 2022 was selected to best encompass the pandemic situation around the world, during which the infection rate, including the number of deaths, was being reported. The COVID-19 virus originated in China in December 2019 and subsequently spread to over 200 countries across Europe, Asia, the Americas, and Africa (McKibbin & Fernando, 2020; Salisu, Ebuh, & Usman, 2020 and Toda, 2020). Italy was the first European country affected, with Lombardy being the epicenter of COVID-19 cases and deaths, leading to a lockdown (Villani, et al., 2021). The World Health Organization (WHO) declared a Public Health Emergency of International Concern in January 2020, and officially classified the outbreak as a pandemic on March 11, 2020 (World Health Organization, 2023b). Figure 3.1 shows the daily new cases of infections (1M) and deaths (2K). This proves that the coronavirus spread every day during the selected timeframe, requiring related divisions and organizations to promote COVID-19 vaccination in order to increase the vaccination rate (Worldometers, 2022).

Vaccination was considered one of the significant preventive measures for the COVID-19 virus, but its success was tied to the people's willingness to get vaccinated (Subedi, et al., 2021). However, vaccine hesitancy was then a global concern (Fronstin & Woodbury, 2020). The main concerns were the side effects of the vaccines, perceptions of insufficient evaluation of the vaccines (Khatri, et al., 2020), and misleading vaccination information (World Health Organization, n.d.).

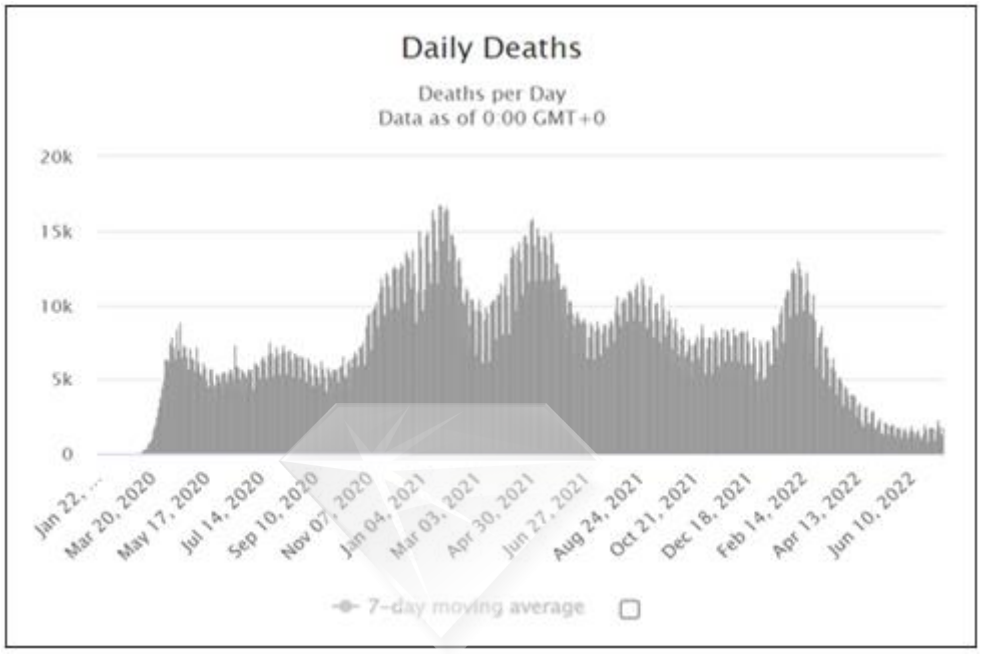
These concerns prompted people to search information on COVID-19 and news through social media (Ahmad & Murad, 2020). YouTube, being one of the most popular social platforms, has been utilized to broadcast information about social and pandemic concerns (Ali & Yang, 2022). It has gained an extraordinary number of viewers during the COVID-19 pandemic (Dutta, et al., 2020).

Figure 3.1: Daily new cases of infections and deaths as of July 15, 2022



(Continued)

Figure 3.1 (Continued): Daily new cases of infections and deaths as of July 15, 2022



Source: Worldometers. (2022). *COVID-19 Coronavirus pandemic*. Retrieved from https://www.worldometers.info/coronavirus/.

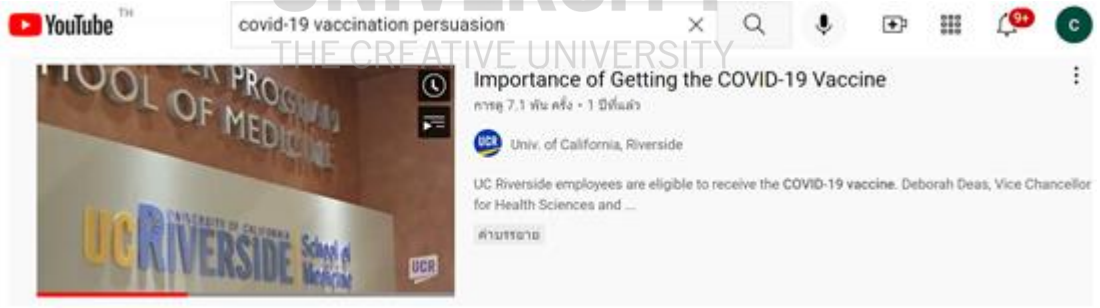
3.3 Research Procedure

Initial searches on YouTube utilized three specific queries: “COVID-19 vaccination,” “COVID-19 vaccination persuasion”, and “public service advertisement COVID-19 vaccination”. The results were shown based on the ranking of video views. Figures 3.2, 3.3, and 3.4 illustrate examples of the videos retrieved for each key phrase.

Figure 3.2: One of the videos obtained from the search results on “COVID-19 vaccination”

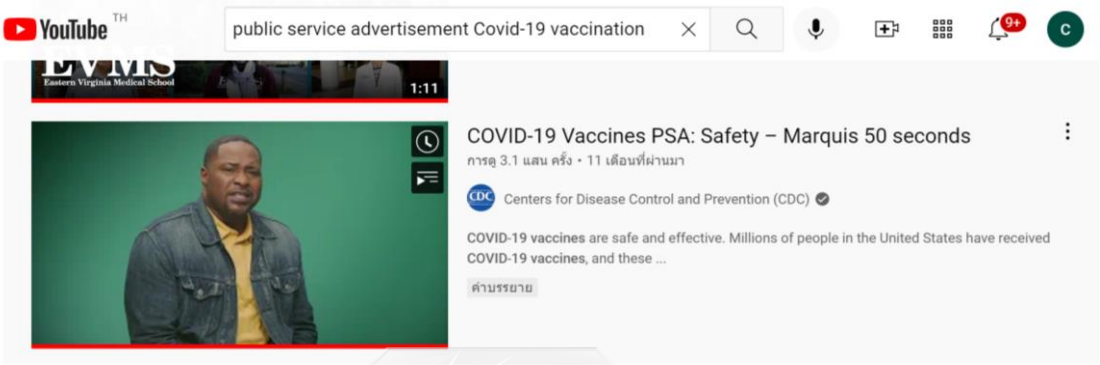
Source: Centers for Disease Control and Prevention. (2021b). *COVID-19 vaccines PSA: Safety – Dr. Walters 30 second*. Retrieved from https://www.youtube.com/watch?v=HtSWov92fSI.

Figure 3.3: One of the videos obtained from the search results on “COVID-19 vaccination persuasion”



Source: University of California, Riverside. (2021). *Importance of getting the COVID-19 vaccine*. Retrieved from https://www.youtube.com/watch?v=kjO3Sy0WRe8.

Figure 3.4: One of the videos obtained from the search results on “public service advertisement COVID-19 vaccination”



Source: Centers for Disease Control and Prevention. (2021c). *COVID-19 vaccines PSA: Safety – marquis 50 seconds*. Retrieved from https://www.youtube.com/watch?v=a7Zz4SxhhvA.

Subsequently, the results from the three aforementioned queries were narrowed down further by selecting videos only in English language, since English is one of the most popular languages used on YouTube (Global Media Insight, 2024). The resulting videos were then filtered by length, keeping only those shorter than ten minutes. Logically, videos that are less than or equal to ten minutes in length tend to receive high numbers of likes, views, comments, and dislikes (Parabhoi, et al., 2021). Video length is important for people’s decision to watch a video (Berger & Milkman, 2012; Jiang, Miao, Yang, Lan & Hauptmann, 2014 and Konnikova, 2014) and viewers prefer shorter videos (Berger & Milkman, 2013; Bentley, Silverman, & Bica, 2019 and Tschopp, 2014). From the final pool of results, 80 videos were selected for further analysis.

A pilot test was conducted with a small sample of 25 YouTube videos (n=25). To ensure intercoder reliability, the videos were coded by two qualified coders who were students in the Master of Arts in Global Communication program at Bangkok University. They documented the frequency of each element discovered in the videos using Microsoft Excel.

Information derived from the samples was used to develop the codebook and code sheet design as follows:

1) Coding scheme based on general information: video source, types of video source, length of video, country of video source, number of account subscriptions, and number of video views

2) Coding scheme based on reviewed literature: frames on COVID-19 vaccination perceived risks, frames on COVID-19 vaccination intentions, and message appeals on COVID-19 vaccination.

Table 3.2: Coding scheme: frames based on COVID-19 vaccination perceived risks

Item No.	Coding Item	Description
1	Gain frames	Gain frames focus on the positive aspects and beneficial outcomes when people follow the guidance and recommendations (Rothman & Salovey, 1997) The first example is drawn from Meyerowitz and Chaiken (1987): "By doing BSE now, you can learn what your normal, healthy breasts feel like so that you will be better prepared to notice any small, abnormal changes that might occur as you get older. Research shows that women who do BSE have an increased chance of finding a tumor in the early, more treatable stage of the disease." "You can gain several potential health benefits by spending only 5 minutes each month doing BSE. Take advantage of this opportunity (p.504)".

(Continued)

Table 3.2 (Continued): Coding scheme: frames based on COVID-19 vaccination perceived risks

Item No.	Coding Item	Description
1	Gain frames	The second example is drawn from Apanovitch, et al. (2003): "There are many benefits, or good things, you may experience if you get tested for HIV. If you decide to get HIV tested, you may feel the peace of mind that comes with knowing about your health"
2	Loss frames	Loss frames focus on the negative aspects and losses when people do not follow the guidance or recommendation (Rothman & Salovey, 1997). The first example is drawn from Meyerowitz and Chaiken (1987): "By not doing BSE now, you will not learn what your normal, healthy breasts feel like so that you will be ill-prepared to notice any small, abnormal changes that might occur as you get older. Research shows that women who do not do BSE have a decreased chance of finding a tumor in the early, more treatable stage of the disease". "You can lose several potential health benefits by failing to spend only 5 minutes each month doing BSE. Do not fail to take advantage of this opportunity. The second example is drawn from Apanovitch, et al. (2003): "There are many problems, or bad things, you may not experience if you get tested for HIV. If you decide to get HIV tested, you may feel less anxious because you would not wonder if you were ill".

Table 3.3: Frames based on COVID-19 Vaccination Intentions

Item No.	Coding Item	Description
1	Personal health risk frames	"The possibility of [oneself] getting seriously sick" (Motta, et al., 2021).
2	Collective health risk frames	"The possibility of infecting others; including vulnerable populations" (Motta, et al., 2021).
3	Economic risk frames	"The financial burdens associated with the economy "shutting down" to contain the virus "spread" (Motta, et al., 2021).

Table 3.4: Coding scheme: Message Appeals

Item No.	Coding Item	Description
1	Statistical evidence appeals	Statistical evidence appeals support the main premise with empirical data and facts summarized from numerous cases (Feeley, et al., 2006). In health communication, typical statistics could be the yearly death count from a specific health threat (Greene & Brinn, 2003).
2	Narrative appeals	Narrative appeals involve anecdotal examples to elicit emotional responses from the audience, compelling them toward the intended persuasion (Allen & Presiss, 1997).
3	Humor appeals	Humor appeals engage the audience by connecting upbeat emotions with the discussed subjects (Blance & Brigaud, 2014).
4	Fear appeals	Fear appeals are persuasive essence that endeavors to terrify people into acquiescence by explaining the awful things that would occur to them if they do not follow the message suggested (Witte, 1992).

(Continued)

Table 3.4 (Continued): Coding scheme: Message Appeals

Item No.	Coding Item	Description
5	Peer influence appeals	Peer influence appeals refer to descriptive norms and injunction norms, presenting what most people do and think which are predictive behaviors (Cialdini, et al., 1990).
6	Descriptive appeals	Descriptive appeals highlight the beneficial information and outcome by using different key phrases for searching such as “COVID-19 information”, “COVID-19 symptoms”, and “COVID-19 updates” (Pattison, et al., 2022).

The frequency of each element found in the videos was recorded in Microsoft Excel. Each coding item used in the videos was denoted by “1”, allowing only a single count. To determine which type of frame was dominant in each video, either the loss-framed or gain-framed messages presented in the video had to last at least two-thirds of the overall length of each video. For example, if a video lasted 3 minutes and the loss-framed message was presented for 2 minutes while the gain-framed messages were conveyed for only 1 minute, the loss frames were determined as the dominant frame of that video.

3.4 Research Instrument and Data Analysis

Following the coding guidelines above, recording and calculating results was performed in Microsoft Excel.

Firstly, the videos were collected, and general information such as video source, types of video source, length of video, country of origin, number of account subscriptions, and number of video views was recorded.

Secondly, the most frequently used frames on COVID-19 vaccination perceived risks frames in the 80 sampled videos were analyzed and recorded.

Thirdly, the most frequently used frames on COVID-19 vaccination intentions in the 80 sampled videos were analyzed and recorded.

Lastly, the most frequently used message appeals in the videos were analyzed and recorded.

3.5 Validity and Reliability

The validity and reliability of this study were thoroughly investigated. A coding scheme was created based on the following theories and literature of message framing and message appeals. Specifically, RQ1 investigated the message frames on COVID-19 vaccination perceived risks that were most frequently used in the COVID-19 vaccination YouTube videos. The created coding scheme was based on Rothman and Salovey (1997), which investigated gain-or loss-framed messages. RQ2 explored the message frames on COVID-19 vaccination intentions in the COVID-19 vaccination YouTube videos. The created coding scheme was based on Motta, et al. (2021), which explored personal health risk frames, collective health risk frames, or economic risk frames. RQ3 examined the message appeals that were most frequently used in the COVID-19 vaccination YouTube videos. This research relied on both Zhang, et al. (2017)'s framework, which included five appeals: statistical evidence appeals, narrative appeals, fear appeals, humor appeals, and peer influence appeals. Additionally, it incorporated Pattison, et al. (2022)'s framework, which introduced descriptive appeals.

Intercoder reliability (ICR) addresses the consistency of implementing a rating system (Lange, 2011) that two or more raters (observers, coders, examiners) agree on. This research measured ICR by inviting a Thai graduate student to serve as assistant coder in the coding phase. The researcher and assistant coder were properly trained to code samples. The coders worked together since the stage of designing the codebooks and code sheets. The pilot study tested a sample of 25 videos with the second coder. Following Perreault and Leigh (1989) formula, the average intercoder reliability was 77, within the acceptable ICR range.

CHAPTER 4
FINDINGS

This chapter presents the results of the content analysis of the examined 80 YouTube videos on COVID-19 vaccination. The findings respond to the following questions:

RQ1: What frames on COVID-19 vaccination perceived risks are most frequently used in the COVID-19 vaccination YouTube videos?

RQ2: What frames on COVID-19 vaccination intentions are most frequently used in the COVID-19 vaccination YouTube videos?

RQ3: What message appeals are most frequently used in the COVID-19 vaccination YouTube videos?

4.1 General Information on Samples

This study examined 80 selected videos to investigate the impact of message framing on COVID-19 vaccination perceived risks, vaccination intentions, and message appeals in COVID-19 vaccination YouTube videos. In terms of video sources, the majority (51.25%) were from non-health-focused sources, followed closely by health-focused sources (48.75%), as detailed in Table 4.1. Among the non-health-focused sources, notable channels included ABC News (16,500K subscribers), CNN (16,200K subscribers), and ASAPscience (10,600K subscribers). Health-focused sources included Nucleus Medical Media (6,500K subscribers), Mayo Clinic (1,070K subscribers), and World Health Organization(WHO) (889K subscribers). Geographically, most videos originated from the USA (88.75%), with smaller percentages from Singapore (5.00%), the UK (2.50%), and Australia, China, and India, each contributing 1.25%. Video durations ranged from 0.3 seconds to 8.52 minutes.

Table 4.1: Video Source Types (n=80)

No.	Type of source	No. of videos	Percentage
1	Non-health-focused source	41	51.25%
2	Health-focused source	39	48.75 %
Total		80	100

Table 4.2: Video source countries (n=80)

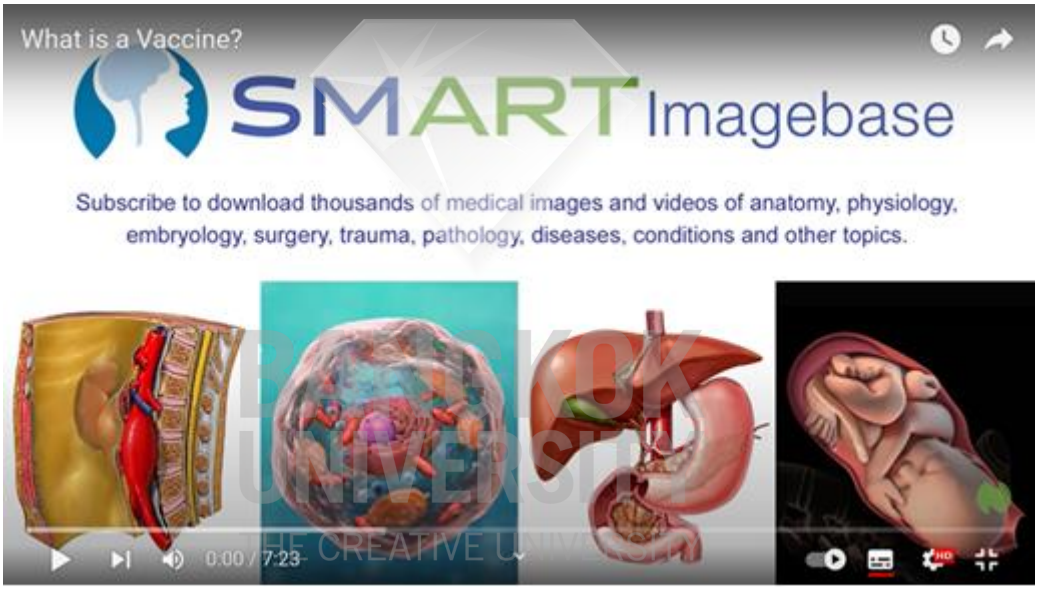
No.	Country	No. of videos	Percentage
1	USA	71	88.75%
2	Singapore	4	5.00%
3	UK	2	2.50%
4	China	1	1.25%
5	India	1	1.25%
6	Australia	1	1.25%
Total		80	100.00%

Regarding the number of views, the study indicated that the three most popular videos originated from health-focused sources. These included “What is a Vaccine?” and “COVID-19 Coronavirus Vaccine: How Does It Affect Your Body?”, produced by Nucleus Medical Media, along with the video “COVID-19: Roll Up Your Sleeve and Get Your Vaccine PSA 5”, released by the Arizona Department of Health Services.

Figure 4.1, 4.2, and 4.3 show COVID-19 vaccination-related content of the sampled videos. In Figure 4.1, the video “What is a Vaccine?” (8,099K views) by Nucleus Medical Media spread positive information about diverse vaccine types, while also clarifying the intricacies of the immune system. In Figure 4.2, the video “COVID-19 Coronavirus Vaccine: How Does It Affect Your Body?” (1,266K views) by Nucleus Medical Media depicted immune system’s response post-COVID-19 vaccination or infection. The discourse encompassed an exploration of side effects, as

well as the inherent risks and complications accompanying the second dose. In Figure 4.3, the video " COVID-19: Roll Up Your Sleeve and Get Your Vaccine PSA 5 " (931K views) by Arizona Department of Health Services. featured an influencer's endeavor to persuade and mobilize individuals towards COVID-19 vaccination. The video emphasized the safety and cost-free nature of vaccination as compelling reasons to partake.

Figure 4.1: The most viewed video among the 80 sampled videos (8,099K views)



Source: Nucleus Medical Media. (2021a). *What is a vaccine?* Retrieved from https://www.youtube.com/watch?v=P8wCk8FU7_o.

Figure 4.2: The second most-viewed video in 80 sampled videos (1,266K views)

Source: Nucleus Medical Media. (2021b). *COVID-19 Coronavirus vaccine: How does it affect your body?* Retrieved from https://www.youtube.com/watch?v=EETuOY3JjfM.

Figure 4.3: The third most-viewed video in 80 sampled videos (931K views)

Source: Arizona Department of Health Services. (2021). *COVID-19: Roll up your sleeve and get your vaccine PSA 5*. Retrieved from https://www.youtube.com/watch?v=W__cTv8J0wo.

4.2 Findings

4.2.1 RQ1: What frames on COVID-19 vaccination perceived risks are most frequently used in the COVID-19 vaccination YouTube videos?

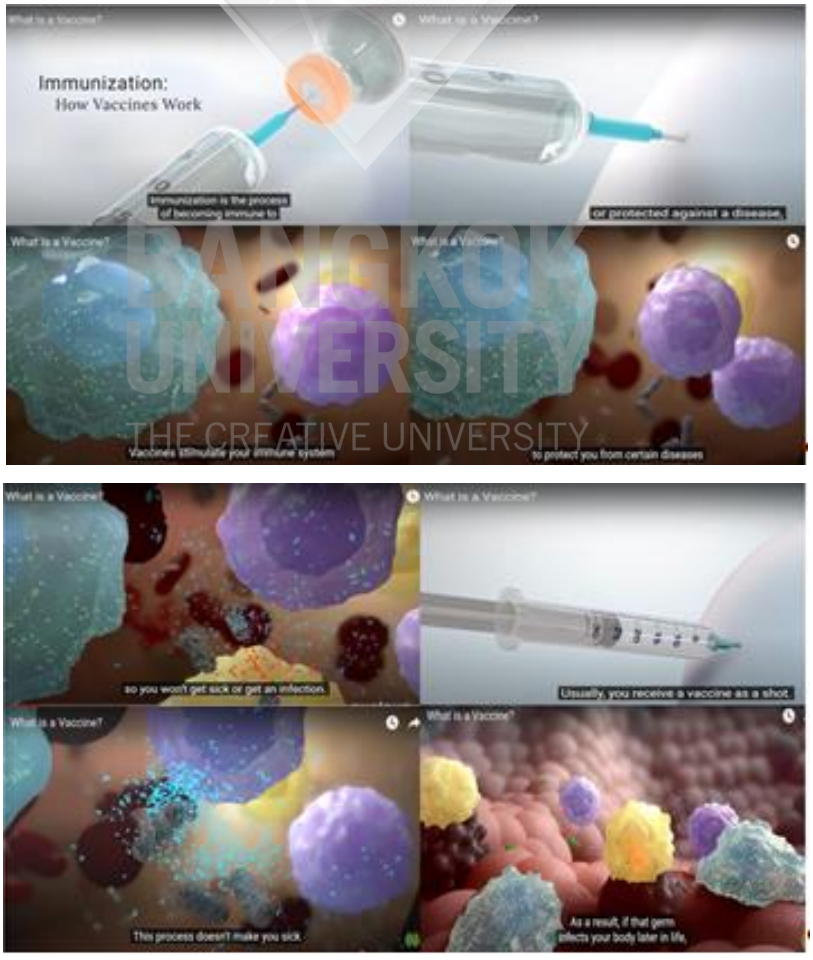
The results in Table 4.3 indicate that gain frames were most frequently used in the videos (82.50%), while loss frames were used in the remaining (17.50%).

Table 4.3: Frequency of frames on COVID-19 vaccination perceived risks in YouTube videos (n=80)

Frames on COVID-19 vaccination perceived risks	Frequency	Percentage
Gain Frames	66	82.50%
Loss Frames	14	17.50%
Total	80	100.00%

Figure 4.4 shows ten screenshots of gain frames used in the video “What is a Vaccine?”. Useful information was provided on how the immune system works after getting a vaccine or infection. The gain frames were used in this video to persuade people to get the COVID-19 vaccination as a means to protect people from severe illnesses and boost the immune system to fight COVID-19. The video used the key phrase “vaccines can protect you from getting these diseases and their harmful symptoms” (CBS News, 2022).

Figure 4.4: Use of gain frames in the video What is a Vaccine? by Nucleus Medical Media



(Contunued)

Figure 4.4 (Contunued): Use of gain frames in the video What is a Vaccine? by Nucleus Medical Media

Source: Nucleus Medical Media. (2021a). *What is a vaccine?* Retrieved from https://www.youtube.com/watch?v=P8wCk8FU7_o.

Figure 4.5 shows four screenshots of the loss frames used in the video "Some Americans continue to refuse COVID-19 vaccine as hospitals feel strain from Omicron", by showing a doctor taking care of unvaccinated patients admitted to the hospital in serious conditions. The videos used the loss frames to show the negative consequences about getting COVID-19 infection while unvaccinated, resulting in serious illness. The video used the key phrases "It's profound sadness because we have the saddest stories" and "It's frustrating to see people getting really sick when we don't feel they have to" (CBS News, 2022).

Figure 4.5: Use of loss frames in the video Some Americans continue to refuse COVID-19 vaccine as hospitals feel strain from Omicron by CBS News

Source: CBS News. (2022). *Some Americans continue to refuse COVID-19 vaccine as hospitals feel strain from Omicron*. Retrieved from https://www.youtube.com/watch?v=B5xJPXm4xX0&t=309s.

4.2.2 RQ2: What frames on COVID-19 vaccination intentions are most frequently used in the COVID-19 vaccination YouTube videos?

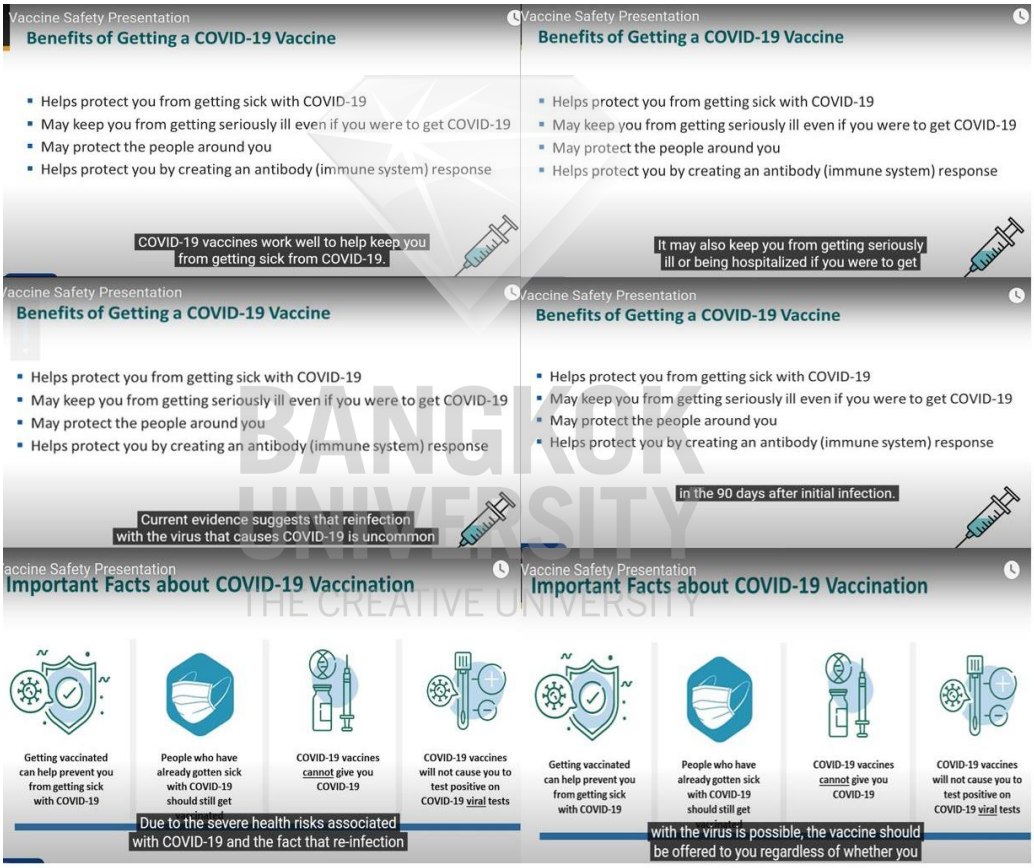
The results in Table 4.4 indicate that personal health risk frames were the most frequently used (92.50%) in the sample videos, followed by a focus on the collective health risk frames (7.50%).

Table 4.4: Frequency of frames on COVID-19 vaccination intentions used in videos (n=80)

Frames on COVID-19 vaccination intentions	Frequency	Percentage
Personal health risk frames	74	92.50%
Collective health risk frames	6	7.50%
Total	80	100.00%

Figure 4.6 shows six screenshots of the frames on COVID-19 vaccination intentions used in the video “Vaccine Safety Presentation”. Personal health-focused frames were used to explain the benefits of getting vaccinated: protection from getting seriously ill, and from being hospitalized after infection.

Figure 4.6: Use of personal health risk frames in the video Vaccine Safety Presentation by Centers for Disease Control and Prevention



Source: Centers for Disease Control and Prevention. (2021d). *Vaccine safety presentation*. Retrieved from https://www.youtube.com/watch?v=dYmkZbCTBog.

Figure 4.7 shows twelve screenshots from the Singapore Government’s video illustrating the use of collective health risk frames. The video featured influencers

who encouraged Singaporeans to get the COVID-19 vaccination, highlighting how safe the COVID-19 vaccine is and given for free.

Figure 4.7: Use of the collective health risk frames in the video Get your shot, steady Pom Pi Pi by GOVSG

Source: GOVSG. (2021). *Get your shot, steady Pom Pi Pi*. Retrieved from https://www.youtube.com/watch?v=Cf2T3YgyaHA.

4.2.3 RQ3: What message appeals are most frequently used in the COVID-19 vaccination YouTube videos?

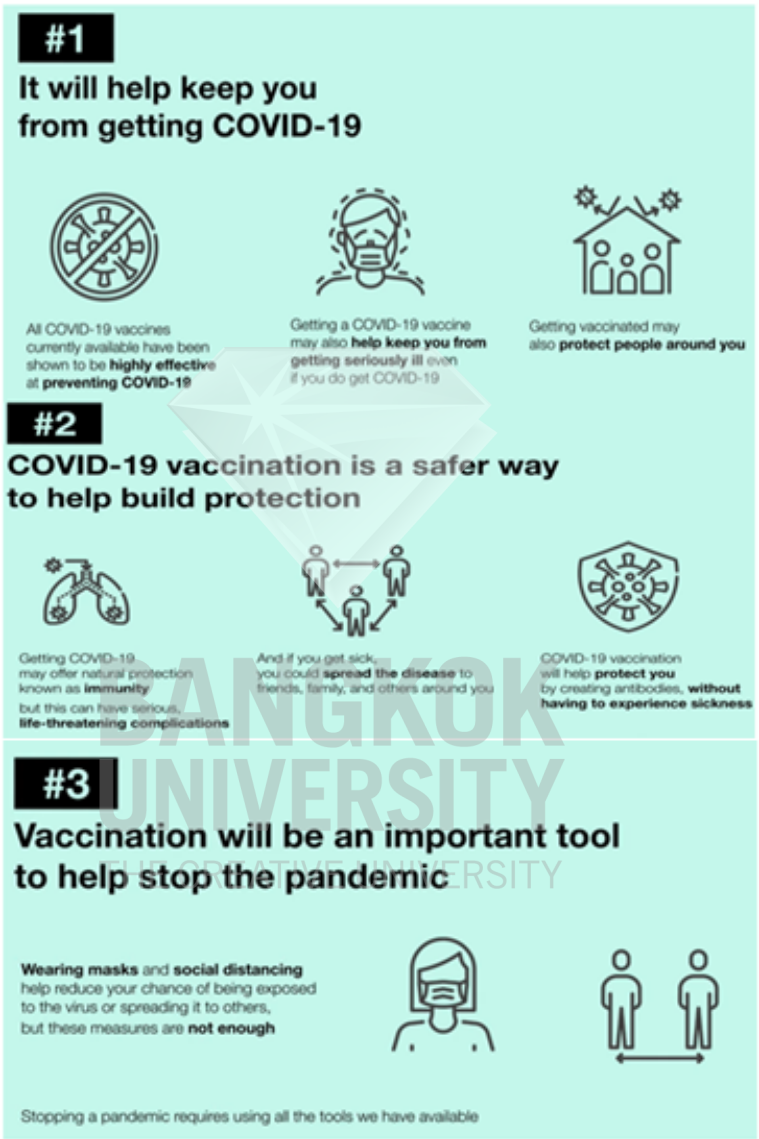
The results of table 4.5 indicate that descriptive appeals (83.75%) were the most frequently used message appeals in videos, followed by peer influence appeals (13.75%), while statistical evidence appeals and fear appeals accounted for 1.25% each.

Table 4.5: Frequency of message appeals used in short videos (n=80)

Message Appeals	Frequency	Percentage
Descriptive Appeals	67	83.75%
Peer Influence Appeals	11	13.75%
Fear Appeals	1	1.25%
Statistical Evidence Appeals	1	1.25%
Total	80	100.00%

Figure 4.8 displays three screenshots from videos produced by Medzcool, showcasing a form of message framing termed as descriptive appeals. These videos elaborated on the effectiveness of COVID-19 vaccines, highlighting their high efficacy in building immunity and shielding individuals from severe illness, thus reducing the likelihood of hospitalization. Moreover, vaccination was underscored as a pivotal measure in combatting the pandemic.

Figure 4.8: Use of the descriptive appeals in the video COVID-19 vaccines and the benefits of getting vaccinated by Medzcool



Source: Medzcool. (2021). *COVID-19 vaccines and the benefits of getting vaccinated*. Retrieved from https://www.youtube.com/watch?v=Pao8171B354.

Figure 4.9 shows four screenshots of the Centers for Disease Control and Prevention (CDC)'s video "COVID-19 Vaccines PSA: Safety – Dr. Walters 30 second", as an example of using peer influence appeals. The doctor encouraged people to get COVID-19 vaccination by promoting its benefits. The doctor also

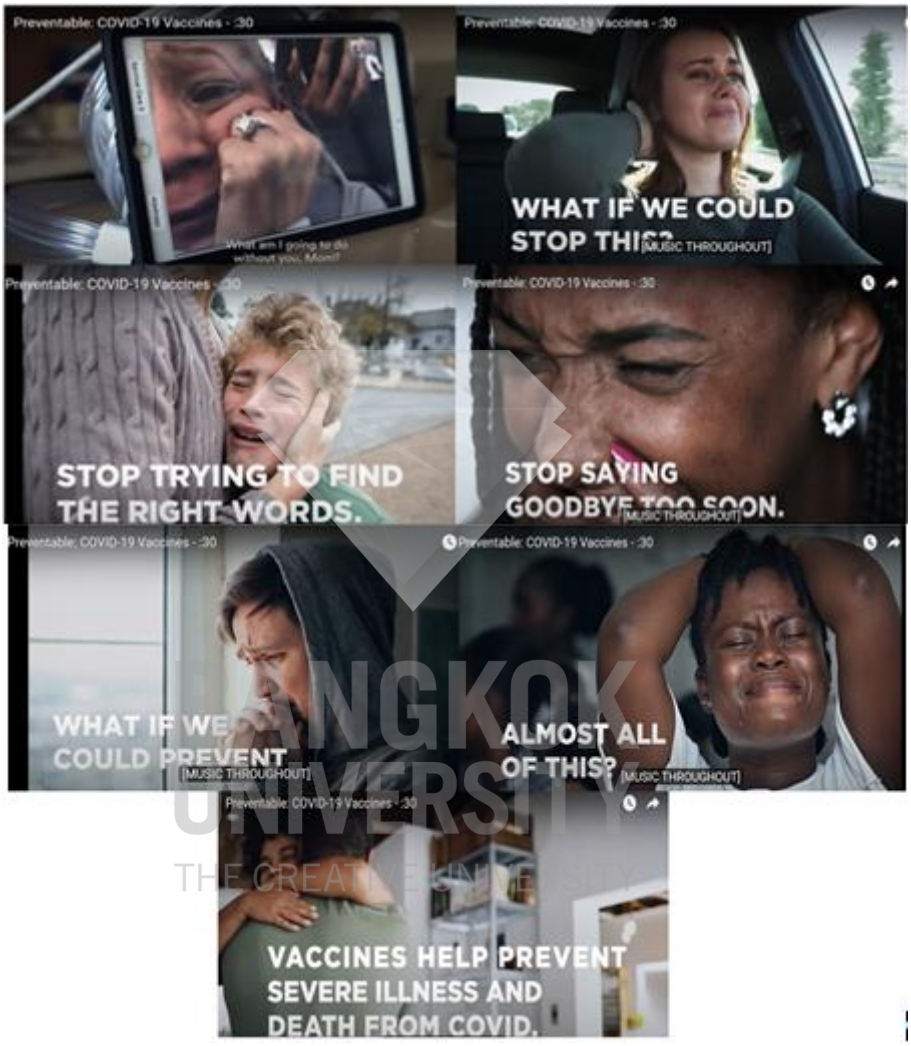
offered help and advice in case people have some concerns and questions about COVID-19 vaccines.

Figure 4.9: Use of peer influence appeals in the video *COVID-19 Vaccines PSA: Safety – Dr. Walters 30 second* by Centers for Disease Control and Prevention

Source: Centers for Disease Control and Prevention. (2021b). *COVID-19 Vaccines PSA: Safety – Dr. Walters 30 second*. Retrieved from https://www.youtube.com/watch?v=HtSWov92fSI.

Figure 4.10 shows seven screenshots of the U.S Department of Health and Human Service's video "Preventable: COVID-19 Vaccines". The video featured sadness and crying to implicitly persuade people to get COVID-19 vaccination before they lost their loved ones, making this a clear example of using fear appeals for persuasion.

Figure 4.10: Use of fear appeals in the video Preventable: COVID-19 Vaccines - :30 by U.S Department of Health and Human Services



Source: U.S. Department of Health and Human Services. (2022). *Preventable: COVID-19 vaccines*: 30. Retrieved from https://www.youtube.com/watch?v=A1gywA49ZsI.

Figure 4.11 shows five screenshots of the CNN news report “Brianna Keillar rolls the tape on Fox’s COVID-19 vaccine misinformation”, which is a clear example of using statistical evidence appeals in a video. The video showed statistical information on unvaccinated people who got COVID-19 infection and were likely to

be hospitalized and/or die, comparing hospitalization rates for vaccinated and unvaccinated people.

Figure 4.11: Use of statistical evidence appeals in the video "*Brianna Keilar rolls the tape on Fox's COVID-19 vaccine misinformation"* by CNN

Source: CNN. (2022). *Brianna Keilar rolls the tape on Fox's COVID-19 vaccine misinformation*. Retrieved from https://www.youtube.com/watch?v=RxN74pcTHdE.

CHAPTER 5
DISCUSSION

This chapter provides a thorough discussion of the research findings, research questions, literature review, and methodology, followed by examining the study's inherent limitations and the applicability of its results. Lastly, potential areas of future research are proposed. The chapter is divided into five parts as follows:

5.1 Summary of Findings

5.2 Discussion

5.3 Limitations

5.4 Recommendations for Further Application

5.5 Recommendations for Further Research

5.1 Summary of Findings

The study mainly explored the message framing and message appeals used in COVID-19 vaccination YouTube videos, by analyzing 80 selected YouTube videos. The findings of the study revealed three significant insights, as outlined below.

5.1.1 Framing on COVID-19 vaccination perceived risks in YouTube videos

The results showed that the predominant message framing strategy was gain framing. To persuade people to get vaccinated, the gain-framed messages presented the benefits of COVID-19 vaccination, including protecting people from serious illness, hospitalization, or death. Moreover, they focused on how vaccines could help strengthen the immune system to fight the COVID-19 virus. To reinforce the message, the videos also provided evidence of scientific information, including extensive research data to reduce people's anxiety and increase trustworthiness.

5.1.2 Framing on COVID-19 vaccination intentions in YouTube videos

The results revealed that personal health risk frames were most frequently used to persuade people to get vaccinated by explaining how vaccines could help protect people from getting the COVID-19 virus. The videos aimed to help people understand how vaccines work and their beneficial effects by comparing the health outcomes of vaccinated individuals with those who were unvaccinated. They particularly emphasized the positive outcomes and benefits of vaccination. It is worth

noting however, that collective health risk frames were rarely used to draw the attention of the audience.

5.1.3 Message appeals used in YouTube videos

The results indicated that the predominant message appeals were descriptive appeals, where greatly simplified information was provided about various aspects of COVID-19 vaccination.

For example, descriptive appeals explained how the vaccine created immunity in people's bodies, particularly how it protected them from severe illness, hospitalization, or death. Moreover, the appeals also informed people what benefits people experienced after vaccination.

5.2 Discussion

Message framing derives from the "prospect theory" established by Tversky and Kahneman (1981), which posits that individuals evaluate information by considering potential benefits and losses. Consequently, the framing of messages plays a crucial role in shaping people's decisions. In the context of health communication, gain framing focuses on highlighting the positive aspects and beneficial outcomes related to health that individuals experience when they adhere to guidance and recommendations (Rothman & Salovey, 1997). Conversely, loss framing emphasizes the negative aspects and potential losses related to health that occur when individuals fail to follow such guidance or recommendations (Rothman & Salovey, 1997).

One of the interesting points this study uncovered regarding the results of RQ1 is that gain-framed messages on COVID-19 vaccination perceived risks were most frequently used in the examined YouTube videos. To provide benefits of getting COVID-19 vaccination, the findings of this study aligned with those of Amoako's (2023, p. 34) research, indicating that the predominant framing strategy adopted by the CDC on their Facebook page was gain-framing strategy. An example of gain-framed messages by CDC was "Getting vaccinated against COVID-19 helps protect you from getting sick or severely ill with COVID-19".

It is worth noting that vaccination promotion messages could lead to vaccine intentions and behavior (Dillard, 2011; Ratanasiripong, et al., 2013 and Wheldon, et al., 2018). Motta, et al. (2021) focused on the investigation of the effectiveness of COVID-19 health communication frames to increase vaccine intention. The frames highlighted personal health risk frames, collective health risk frames consequences, and associated costs (Motta, et al., 2021). The results of RQ2 revealed that personal health risk frames on COVID-19 vaccination intentions were most frequently used in the YouTube videos. The results of this research differ from those of Malik, Shak and Hasni's (2023) research, which showed that English Malaysian newspapers used messages that highlighted both the personal health risks and collective health risks consequences regarding COVID-19 vaccination. The vaccine was described with keywords like "special", "effective", and "important", implying the importance of both one's individual health and that of the masses.

Message appeals, which integrate linguistic and visual elements to convey information to the public and promote products and services (Belch & Belch, 2013), are fundamental in advertising and communication strategies. Rational and emotional appeals, frequently used in advertising and communication studies (Kotler & Armstrong, 2003), contribute to these strategies. Messages can be structured with logical or emotional content, employing either loss-framed or gain-framed approaches. In health communication, messages were framed using various persuasive message appeals, including statistical evidence appeals, narrative appeals, humor appeals, peer influence appeals, fear appeals (Zhang, et al., 2017), and descriptive appeals (Pattison, et al., 2022). According to the results in RQ3, descriptive appeals were dominantly used in YouTube videos. As Pattison, et al. (2022) suggested, descriptive appeals highlighted the beneficial information and outcome by using different key phrases for queries such as "COVID-19 information", "COVID-19 symptoms", and "COVID-19 updates". An example of descriptive appeals used in the videos helped clearly inform people about the effectiveness of the COVID-19 vaccines, which helped build immunity and protect people from serious illnesses. This message was conveyed by using key phrases such as "all COVID-19 vaccines currently available have been shown to be highly effective at preventing COVID-19".

5.3 Limitations

There were some limitations to the research. First, as video hosting services formulate their own unique policies, run their own algorithms, and enforce their own rules regarding the types of videos being hosted and promoted, it could be reasonably assumed that the research outcome might have been different if videos from other platforms were also included in the studied sample.

Second, the videos selected were in English language only, as English is one of the most popular languages used on YouTube (Global Media Insight, 2024). However, videos about COVID-19 vaccination may have been published in other languages. Given the situation, if the researcher had included videos produced in other languages, the results might have been different.

Third, the videos were recruited from a specific period and were limited to that timeframe. Considering the dynamically changing situation regarding COVID-19, different types of message framing and message appeals could have been dominant at various other time points. Thus, expanding the timeframe could have also altered the results of this study.

5.4 Recommendations for Further Application

The research findings shed light on the use of message framing and message appeals in health-related YouTube videos. The research outcomes offer interesting insights with managerial implications for healthcare organizations, educational institutions, public health departments, government agencies, other reputable medical organizations, and health-related companies aiming to utilize message framing and message appeals to promote their health-related initiatives in social advertising, mass advertising, and online platforms.

First, health-related organizations should consider the use of gain-framed messages to raise awareness of health-related initiatives, in particular, vaccination for new disease outbreaks, to control the spread of newly emerging diseases. For example, gain-framed messages provided information that getting the COVID-19 vaccination helped protect people from severe illnesses and boosts the immune system to fight COVID-19.

Secondly, health-related organizations should prioritize the use of health-focused frames regarding the promotion of vaccination for new disease outbreaks. For example, health-focused frames explain the benefits of getting a vaccination: protection from getting serious illnesses, and a smaller chance of being hospitalized after infection.

Thirdly, health-related organizations should rely on descriptive appeals in order to inform people about health initiatives. For example, a video on COVID-19 vaccination informed audiences about symptoms of getting COVID-19, and provided information about the vaccine.

5.5 Recommendations for Further Research

Future research may investigate the effects of message framing used in COVID-19 vaccination YouTube videos. The results will then provide implications for effective health communication, especially during times of crisis or disease outbreaks. Furthermore, conducting a comparative study of COVID-19 vaccination videos from video sources in different countries – and different languages in particular – would yield valuable insights by introducing cultural dimensions. Such cross-cultural research will foster a better, more globalized understanding of using message frames and appeals to raise awareness of health-related initiatives in different cultures.

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APPENDIX

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
1. DaVita Kidney Care	Important Information about COVID-19 vaccines	https://www.youtube.com/watch?v=fHyrGfseOQI&t=17s	Health-focused	3.16	29K	40.7K	10/2/2021	1	0	1	0	0	0	0	0	0	0	1	USA
2. Univ. of California, Riverside	Importance of Getting the COVID-19 Vaccine	https://www.youtube.com/watch?v=kjO3Sy0WRe8&t=41s	Non-health-focused	3.43	6K	3K	3/3/2022	1	0	1	0	0	0	0	0	0	0	1	USA
3. Medzcool	COVID-19 vaccines and the Benefits of Getting Vaccinated	https://www.youtube.com/watch?v=Pao8171B354	Health-focused	1.45	102K	334K	18/01/2021	1	0	1	0	0	0	0	0	0	0	1	USA

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								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
4. Stanford Medicine	COVID-19 vaccine: Bringing us together	https://www.youtube.com/watch?v=_JB8IEPqd1o	Health-focused	4.00	651K	116K	4/3/2021	1	0	1	0	0	0	0	0	0	0	1	USA
5. Australian Government Department of Health	COVID-19 vaccination – Video– How COVID-19 vaccines work	https://www.youtube.com/watch?v=hFHfhjCAwzk	Health-focused	1.14	8K	18.8K	26/03/2021	1	0	1	0	0	0	0	0	0	0	1	Australia
6. Channel 4 News	Scientists call for action to persuade people hesitant to take COVID-19 vaccine	https://www.youtube.com/watch?v=Zqt3KmrZVhc&t=23s	Non-health-focused	3.50	6K	3,270K	28/11/2020	1	0	1	0	0	0	0	0	0	1	0	UK

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
7. Hip Hollywood	Will Tyler Perry's Televised COVID-19 Vaccine Persuade You to Get One Too?	https://www.youtube.com/watch?v=3_fI-qdxDew	Non-health-focused	2.15	1K	309K	28/01/2021	1	0	1	0	0	0	0	0	0	1	0	USA
8. U.S Department of Health and Human Service	Preventable: COVID-19 Vaccines - :30	https://www.youtube.com/watch?v=A1gywA49ZsI	Health-focused	0.30	572K	122K	11/1/2022	1	0	1	0	0	0	0	0	1	0	0	USA
9. Nucleus Medical Media	What is a Vaccine?	https://www.youtube.com/watch?v=P8wCk8FU7_o	Health-focused	7.23	8,099K	6,500K	N/A	1	0	1	0	0	0	0	0	0	0	1	USA

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								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
10. CBC News: The national	Benefits of COVID-19 vaccine outweigh low risk of heart inflammation, experts say	https://www.youtube.com/watch?v=x-cHx93Mm2c	Non-health-focused		33K	1,680K	28/06/2021	0	1	1	0	0	0	0	0	0	0	1	USA
11. NYU Langone Health	Why It's Important to Get the COVID-19 Vaccine	https://www.youtube.com/watch?v=45QkwPXP21Y	Health-focused	1.44	37K	94.7K	29/12/2020	1	0	0	1	0	0	0	0	0	0	1	USA
12. Hillsborough Country	Benefits of Getting a COVID-19 Vaccine	https://www.youtube.com/watch?v=t4Sz1E_NG3k	Non-health-focused	2.42	22K	9K	N/A	1	0	1	0	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
13. PAHO TV (PanAmerican Health Organization & World Health Organization)	Why Should We Get a COVID-19 Vaccine?	https://www.youtube.com/watch?v=uxcb9s0dpJg	Health-focused	1.57	7K	170K	24/09/2021	1	0	0	1	0	0	0	0	0	0	1	USA
14. Vir Das Comedy	Convincing Educated Useless Friends to Get Vaccinated | Vir Das	https://www.youtube.com/watch?v=jxtHAI0GTDU	Non-health-focused	4.45	462K	912K	N/A	1	0	1	0	0	0	0	0	0	0	1	India

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
15. CGTN (China Global Television Network)	Animation: Why is COVID-19 vaccine so important?	https://www.youtube.com/watch?v=Ws9hdjs_lds	Non-health-focused	3.29	42K	3,100K	31/12/2020	1	0	1	0	0	0	0	0	0	0	1	China
16. The Telegraph	Celebrity advert urges ethnic minorities to get COVID-19 vaccine	https://www.youtube.com/watch?v=jVlIEPwJb0Q	Non-health-focused	3.31	231K	5,500K	19/02/2021	1	1	1	0	0	0	0	0	0	1	0	UK
17. GOVSG (Singapore Government)	Get your shot, Steady Pom Pi Pi	https://www.youtube.com/watch?v=Cf2T3YgyaHA	Non-health-focused	2.00	1674K	218K	2/5/2021	1	0	0	1	0	0	0	0	0	1	0	Singapore

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
18. Nucleus Medical Media	COVID-19 Coronavirus Vaccine: How Does It Affect Your Body?	https://www.youtube.com/watch?v=EETuOY3JjfM	Health-focused	5.41	1,266K	6,500K	N/A	0	1	1	0	0	0	0	0	0	0	1	USA
19. WNBA	"Our Health Is Worth A 'Shot'" - COVID-19 Vaccine PSA	https://www.youtube.com/watch?v=_XNLkNyBygQ	Non-health-focused	0.30	4K	270K	16/04/2021	1	0	1	0	0	0	0	0	0	1	0	USA
20. The Hollywood Reporter	'Family Guy' Releases A PSA Encouraging COVID-19 Vaccination I THR News	https://www.youtube.com/watch?v=PM5cfmcP7Kg	Non-health-focused	1.41	1,712K	1,140K	22/09/2021	1	0	1	0	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
21. Eastern Virginia Medical School	EVMS COVID-19 Vaccine PSA	https://www.youtube.com/watch?v=7iX91WSV0JM	Health-focused	1.10	3K	4K	27/02/2021	1	0	0	1	0	0	0	0	0	0	1	USA
22. Senator Marshall	Doc Caucus PSA on COVID-19 Vaccine	https://www.youtube.com/watch?v=h7PB1-66ues	Health-focused	2.06	9K	2K	27/04/2021	1	0	1	0	0	0	0	0	0	1	0	USA
23. Idaho Department of Health & Welfare	Idaho Vaccine Confidence TV:30	https://www.youtube.com/watch?v=49G_DCaeBAo	Health-focused	0.30	571K	1K	24/03/2021	1	0	0	1	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
24. Centers for Disease Control and Prevention (CDC)	COVID-19 Vaccines PSA: Safety – Dr. Walters 30 second	https://www.youtube.com/watch?v=HtSWov92fSI	Health-focused	0.30	30K	648K	1/6/2021	1	0	1	0	0	0	0	0	0	1	0	USA
25. Arizona Department of Health Services	COVID-19: Roll Up Your Sleeve and Get Your Vaccine PSA 5	https://www.youtube.com/watch?v=W__cTv8J0wo	Health-focused	0.30	931K	7K	14/04/2021	1	0	1	0	0	0	0	0	0	1	0	USA
26. Centers for Disease Control and Prevention (CDC)	COVID-19 Vaccines PSA: Safety – Cody 30 seconds	https://www.youtube.com/watch?v=jMTH18T_dGk	Health-focused	0.30	315K	648K	4/1/2021	1	0	1	0	0	0	0	0	0	1	0	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
27. Centers for Disease Control and Prevention (CDC)	Vaccine Safety Presentation	https://www.youtube.com/watch?v=dYmkZbCTBog	Health-focused	3.30	6K	648K	3/6/2021	0	1	1	0	0	0	0	0	0	0	1	USA
28. Good Morning America	Are vaccinated people dying from COVID-19?	https://www.youtube.com/watch?v=Ph6wsRHMbQo	Non-health-focused	2.31	1,437K	4,970K	19/02/2022	0	1	1	0	0	0	0	0	0	0	1	USA
29. UCHealthcincinnati	Getting your COVID-19 Vaccine: Risks & Benefits	https://www.youtube.com/watch?v=fH9Rhmj4chQ	Health-focused	3.32	35K	11.4K	18/01/2021	0	0	1	0	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
30. Sparrow Health System	COVID-19 Vaccine PSA	https://www.youtube.com/watch?v=9QzuV4LHhc4	Health-focused	0.30	2K	2K	24/03/2021	1	0	1	0	0	0	0	0	0	0	1	USA
31. ABC Action News	Health officials urge COVID-19 vaccinations and boosters as cases rise	https://www.youtube.com/watch?v=Xd5rXp8CwXY	Non-health-focused	1.54	3K	935K	13/05/2022	0	1	1	0	0	0	0	0	0	0	1	USA
32. 60 Minutes	COVID-19 vaccine hesitancy	https://www.youtube.com/watch?v=lUL9BXf59BU	Non-health-focused	1.56	658K	2,900K	7/3/2022	1	0	1	0	0	0	0	0	0	0	1	USA

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								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
33. Medzcool	COVID-19 vaccines and the Benefits of Getting Vaccinated	https://www.youtube.com/watch?v=Pao8171B354&t=46s	Health-focused	1.45	104K	334K	18/01/2021	1	0	1	0	0	0	0	0	0	0	1	USA
34. CNBC Television	How the various COVID-19 vaccines work	https://www.youtube.com/watch?v=yp9p0ieLZZ0	Non-health-focused	2.33	398K	2,710K	11/11/2020	1	0	1	0	0	0	0	0	0	0	1	USA
35. CNN	Official who spoke against vaccines dies from COVID-19 and sparks big reaction	https://www.youtube.com/watch?v=ji6XffNQup0&t=70s	Non-health-focused	8.41	3,224K	16,200K	15/03/22	0	1	1	0	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
36. 9 News Australia	Human trials for new COVID-19 vaccines to target variants | Coronavirus | 9 News Australia	https://www.youtube.com/watch?v=jU7N01SeeiA	Non-health-focused	2.05	4K	1,140K	12/5/2022	0	1	1	0	0	0	0	0	0	0	1	USA
37. CBS News	Some Americans continue to refuse COVID-19 vaccine as hospitals feel strain from Omicron	https://www.youtube.com/watch?v=B5xJPXm4xX0	Non-health-focused	8.52	490K	5,780K	20/01/2022	0	1	1	0	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
38. World Health Organization (WHO)	WHO's Science in 5 on COVID-19: Vaccines and children	https://www.youtube.com/watch?v=hmIK-nZ3ukA	Health-focused	6.24	3K	889K	13/05/2022	1	0	1	0	0	0	0	0	0	0	1	USA
39. Good Morning America	New study shows COVID-19 vaccines reduce risk of severe illness, death l GMA	https://www.youtube.com/watch?v=XaDaHsMsil0	Non-health-focused	3.02	499K	4,970K	7/1/2022	1	0	1	0	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
40. CNN	'Shameful': Doctor on Supreme Court's COVID-19 vaccine mandate decision	https://www.youtube.com/watch?v=rzUASFzT_2k	Non-health-focused	8.00	948K	16,200K	15/01/2022	0	1	1	0	0	0	0	0	0	0	1	USA
41. 11Alive	A fourth dose of COVID-19 vaccines may be recommended this fall, experts say	https://www.youtube.com/watch?v=omsP26Y9wXk&t=3s	Non-health-focused	2.44	636K	1,740K	23/02/2022	1	0	1	0	0	0	0	0	0	0	1	USA
42. Good Morning America	COVID-19 vaccine: booster or additional dose?	https://www.youtube.com/watch?v=993fhfgI2zM	Non-health-focused	1.49	126K	4,970K	7/10/2021	1	0	1	0	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
43. Dr. Matt & Dr. Mike	COVID-19 vaccines | Why do vaccinated people still get infected? - w/ President of AMA Dr. Omar	https://www.youtube.com/watch?v=k8csnR--JzI	Health-focused	4.07	106K	693K	24/09/2021	1	0	1	0	0	0	0	0	0	0	1	USA
44. Healthcare Triage	Covid Natural Immunity vs Vaccine Immunity	https://www.youtube.com/watch?v=oDxlG_Dtj_o	Health-focused	3.57	103K	447K	30/09/2022	1	0	1	0	0	0	0	0	0	0	1	USA
45. UC Davis Health	COVID-19 vaccine for 5-to-11-Year-Old Children Explained	https://www.youtube.com/watch?v=8p3kK_7WSYM	Health-focused	6.35	16K	207K	3/11/2021	1	0	1	0	0	0	0	0	0	0	1	USA

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								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
46. CNN	Brianna Keilar rolls the tape on Fox's COVID-19 vaccine misinformation	https://www.youtube.com/watch?v=RxN74pcTHdE	Non-health-focused	4.59	957K	16,200K	26/01/2022	0	1	1	0	0	1	0	0	0	0	0	USA
47. Good Morning America	What pregnant people need to know about the COVID-19 vaccine l GMA	https://www.youtube.com/watch?v=QVgXNSuo-PI	Non-health-focused	2.39	1,124K	4,970K	1/1/2021	1	0	1	0	0	0	0	0	0	0	1	USA
48. UC San Diego Health	Kids and COVID-19 vaccine: Doctor Answers Your Questions	https://www.youtube.com/watch?v=ND6UFshP5fs	Health-focused	6.17	140K	105K	19/11/2021	1	0	1	0	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
49. American Academy of Pediatrics	COVID-19 and kids: How mRNA vaccines work	https://www.youtube.com/watch?v=YOlrNlvEiMw	Health-focused	2.53	184K	20K	21/10/2021	1	0	1	0	0	0	0	0	0	0	1	USA
50. Rush University System for Health	Kids Getting the COVID-19 Vaccine	https://www.youtube.com/watch?v=TtwBplsGeAQ	Health-focused	3.21	49K	20.2K	12/11/2021	1	0	1	0	0	0	0	0	0	0	1	USA
51. ABC News	FDA authorizes COVID-19 vaccine for children 5 to 11	https://www.youtube.com/watch?v=kvSPNVSBvK4	Non-health-focused	4.19	199K	16,500K	30/10/2021	1	0	1	0	0	0	0	0	0	0	1	USA
52. Today	Why Are Vaccinated People Testing Positive For COVID?	https://www.youtube.com/watch?v=UdQri8yLXFA	Non-health-focused	4.35	231K	4,390K	13/12/2021	1	0	1	0	0	0	0	0	0	0	1	USA

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								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
53. MOH Singapore	Why and How COVID-19 Vaccines Help	https://www.youtube.com/watch?v=YDbLi71hAkc	Health-focused	2.57	13K	2.68K	27/12/2021	1	0	1	0	0	0	0	0	0	0	1	Singapore
54. CNBC Television	CDC endorses Pfizer's COVID-19 vaccine for kids age 5 to 11	https://www.youtube.com/watch?v=2gJD-j9hZoo	Non-health-focused	2.42	65K	2,710K	3/11/2021	1	0	1	0	0	0	0	0	0	0	1	USA
55. World Health Organization (WHO)	WHO's Science in 5 on COVID-19 : vaccines explained - 12 February 2021	https://www.youtube.com/watch?v=ihi55JzTCqU	Health-focused	5.41	76K	889K	12/2/2021	1	0	1	0	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
56. Today	Breaking Down the Latest Mask Guidance and COVID-19 vaccine Data	https://www.youtube.com/watch?v=GbgFNmM51VM	Non-health-focused source	4.52	780K	3,490K	1/2/2022	1	0	1	0	0	0	0	0	0	0	1	USA
57. Good Morning America	How protected are you after receiving the COVID-19 vaccination?	https://www.youtube.com/watch?v=JxdbYwkbBw8	Non-health-focused	2.20	561K	4,970K	3/9/2022	1	0	1	0	0	0	0	0	0	0	1	USA
58. The Children's Hospital of Philadelphia	Do COVID-19 vaccines Cause Infertility?	https://www.youtube.com/watch?v=rUO6hzaXixM	Health-focused	3.07	14K	202K	2/06/2022	1	0	1	0	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
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59. Centers for Disease Control and Prevention (CDC)	COVID-19 vaccines PSA: Safety – Marquis 50 seconds	https://www.youtube.com/watch?v=a7Zz4SxhhvA	Health-focused	0.50	315K	648K	26/07/2021	1	0	1	0	0	0	0	0	0	1	0	USA
60. GOVSG (Singapore Government)	Benefits of COVID-19 vaccine outweigh risks	https://www.youtube.com/watch?v=C8Jsq7YW298	Non-health-focused	2.05	12K	218K	1/02/2021	1	0	1	0	0	0	0	0	0	0	1	Singapore
61. Mayo Clinic	Mayo Clinic expert discusses how COVID-19 vaccination during pregnancy may help protect babies after	https://www.youtube.com/watch?v=necK7hmJswU	Health-focused	1.50	312K	1,070K	25/02/2022	1	0	1	0	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
62. Good Morning America	Can the COVID-19 vaccine affect a woman's menstrual cycle?	https://www.youtube.com/watch?v=TWk2Z6mzZUU&t=6s	Non-health-focused	2.32	936K	4,970K	26/01/2022	1	0	1	0	0	0	0	0	0	0	1	USA
63. Good Morning America	A 4th COVID-19 vaccine dose? What to know	https://www.youtube.com/watch?v=aQNrG7ag2G4	Non-health-focused	1.44	951K	4,970K	19/01/2022	1	0	1	0	0	0	0	0	0	0	1	USA
64. CNN	NYC to mandate COVID-19 vaccines for all private sector workers	https://www.youtube.com/watch?v=-Sp1aAlYUcY	Non-health-focused	5.11	740K	16,200K	7/12/2021	1	0	1	0	0	0	0	0	0	0	1	USA

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65. Boston Children's Hospital	COVID-19 vaccine for ages 5-11 Frequently Asked Questions | Boston Children's Hospital	https://www.youtube.com/watch?v=2vkWBCHqBOQ	Health-focused	5.14	65K	117K	8/11/2021	1	0	1	0	0	0	0	0	0	0	1	USA
66. Centers for Disease Control and Prevention (CDC)	Neela's COVID-19 Vaccine Story	https://www.youtube.com/watch?v=zLL3Glz6Z5c	Health-focused	0.30	1K	648K	18/05/2022	1	0	1	0	0	0	0	0	0	0	1	USA

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								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
67. U.S. Department of Health and Human Service	COVID-19 vaccines: How Do We Know They Are Safe? | April 2, 2021	https://www.youtube.com/watch?v=7bBmQaX2k4w	Health-focused	3.22	624K	u.s.	2/4/2021	1	0	1	0	0	0	0	0	0	0	1	USA
68. Today	Parents Are Hesitant to Give Their Kids The COVID-19 Vaccine – How Safe Is It?	https://www.youtube.com/watch?v=Mw-NsoY0LPE	Non-health-focused	3.06	185K	4,390K	30/10/2021	0	1	1	0	0	0	0	0	0	0	1	USA
69. Boston Children's Hospital	A kid's guide to COVID-19: How vaccines work	https://www.youtube.com/watch?v=p7fDNWwWyBE	Health-focused	1.43	409K	117K	18/12/2020	1	0	1	0	0	0	0	0	0	0	1	USA

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								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
70. World Health Organization (WHO)	COVID-19 vaccine side effects	https://www.youtube.com/watch?v=xn0pRq84j_M	Health-focused	1.00	376K	889K	31/03/2021	1	0	1	0	0	0	0	0	0	0	1	USA
71. Mlive	VP Harris talks Delta variant, encourages COVID-19 vaccinations	https://www.youtube.com/watch?v=V-zKH257hCE	Non-health-focused	1.43	63K	477K	13/07/2021	0	1	1	0	0	0	0	0	0	1	0	USA
72. Good Morning America	How effective are COVID-19 vaccines against variants?	https://www.youtube.com/watch?v=IePD4OdyDFI	Non-health-focused	2.12	375K	4,970K	21/07/2021	1	0	1	0	0	0	0	0	0	0	1	USA

Video Source	Title	Link	Type of source	Length (min.)	No. of views	No. of subscribers	Publication date	Message framing		COVID-19 vaccination intentions			Message appeals						
								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
73. ASAP Science	What The COVID Vaccine Does To Your Body	https://www.youtube.com/watch?v=the81FQoAUI	Health-focused	5.33	12,411K	10,600K	8/12/2021	1	0	1	0	0	0	0	0	0	0	1	USA
74. Mayo Clinic	Mayo Clinic Insights: Why do the COVID-19 vaccines cause side effects	https://www.youtube.com/watch?v=lD01ItAGvzQ	Health-focused	2.10	692K	1,070K	20/05/2021	1	0	0	1	0	0	0	0	0	0	1	USA
75. MOH Singapore	Children & COVID-19 Vaccination	https://www.youtube.com/watch?v=2umnzZTPJuU	Health-focused	3.54	23K	27K	29/01/2022	0	1	1	0	0	0	0	0	0	0	1	Singapore

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								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
76. Healthcare Triage	Covid Natural Immunity vs Vaccine Immunity	https://www.youtube.com/watch?v=oDxlG_Dtj_o&t=26s	Health-focused	3.57	103K	447K	30/11/2021	1	0	1	0	0	0	0	0	0	0	1	USA
77. CBC News: The national	What we know about COVID-19 vaccines in pregnant people	https://www.youtube.com/watch?v=I0xaJ3Chd4c	Non-health-focused	5.43	96K	1,680K	18/09/2021	1	0	1	0	0	0	0	0	0	0	1	USA
78. CBC News: The national	Which COVID-19 vaccine is better? (spoiler, they're all good)	https://www.youtube.com/watch?v=V4cyYvmU5Cc	Non-health-focused	4.34	243K	1,680K	3/4/2021	1	0	1	0	0	0	0	0	0	0	1	USA

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								Gain frames	Loss frames	Personal health risk frames	Collective health risk frames	Economic risk frames	Statistical evidence appeals	Narrative appeals	Humor appeals	Fear appeals	Peer influence appeals	Descriptive appeals	Country
79. World Health Organization (WHO)	WHO's Science in 5 on COVID-19: vaccine dosage-19 February 2021	https://www.youtube.com/watch?v=GnwW0baQ1_Q	Health-focused	5.59	561K	889K	19/02/2021	1	0	1	0	0	0	0	0	0	0	1	USA
80. World Health Organization (WHO)	WHO's Science in 5 on COVID-19: vaccines and children	https://www.youtube.com/watch?v=hmIK-nZ3ukA	Health-focused	6.24	3K	889K	13/05/2022	1	0	1	0	0	0	0	0	0	0	1	USA

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