

Do Message Framing and Source Credibility Matter? : Examining Framed COVID- 19 Prevention Messaging in Saudi Arabia

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Abstract: This paper aims to examine the influence of different message framings (utilitarian, deontological, religious, virtue-based message, and God's punishment-based messages) on Saudi Arabians' beliefs and behavioral intentions related to COVID-19 and the influence of message source (religious advocate, Saudi COVID-19 monitoring committee member, close person, physician, journalist, and social media influencer) on communicating messages in the COVID-19 pandemic context. The between-subject design experiment (n =222) was conducted online due to the Covid-19 restrictions in force at the time of this study and in an attempt to derive a representative sample from the general Saudi population. The results showed that the God's punishment-based message was less effective than other moral and religious messages, including the non-framed messages, and member of the Saudi COVID-19 monitoring committee, followed by physicians, were believed to be the most effective message sources. Overall, the current research contributes to the knowledge about health and crisis communications in the collectivistic cultural context.

Keywords: COVID-19, health communication, message framing, source of the messages

هل لتأطير الرسائل ومصدقية مصدرها أهمية؟ : بحث رسائل الوقاية من كوفيد-19 المؤطرة في المملكة العربية السعودية

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الملخص: أجريت هذه الدراسة ذات التصميم التجريبي لبحث تأثير تأطير الرسائل (رسائل مؤطرة وفقاً: للفلسفة النفعية، ولأخلاق الواجب، وللفضيلة، وللدِين، ولعقاب الله) على اعتقادات السعوديين ونواياهم السلوكية المتعلقة بكوفيد-19، والكشف عن تأثير مصدر الرسائل (داعية دين، عضو اللجنة المعنية بكوفيد-19، شخص مقرب، طبيب، صحفي، مؤثر على وسائل التواصل الاجتماعي) في إيصال الرسائل في سياق وباء كوفيد-19. أجريت هذه الدراسة عبر الإنترنت (العدد = 222) بسبب القيود المفروضة جراء كوفيد-19 وفي وقت هذه الدراسة، ولمحاولة الحصول على عينة مُتمثلة من عموم السعوديين. أظهرت النتائج أن الرسالة المؤطرة التي تبرز عقاب الله كانت أقل فعالية من الرسائل الأخلاقية والدينية الأخرى، بما في ذلك الرسائل غير المؤطرة. بالإضافة إلى ذلك، كان أكثر مصادر الرسالة فعالية هم أعضاء اللجنة المعنية بكوفيد-19، يلهم الأطباء.

الكلمات المفتاحية: كوفيد-19، التواصل في مجال الصحة، تأطير الرسائل، مصدر الرسائل

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Introduction

Against the backdrop of the COVID-19 pandemic, an unprecedented global crisis, one of the immense tasks that countries are confronted with is encouraging collective action and efforts to mitigate the spread of the virus. Like any emerging infectious disease, and in light of the lack of drug treatment and vaccine options, social and behavioral solutions, or what been called “social vaccines”, are our only viable and critical tool to slow and overcome the transmission of the COVID-19 virus (Holmes, 2008; Sharma & Singh, 2020). Hence, communication is regarded as a key component of containment strategies pertaining during the pandemic (Freimuth et al., 2000).

Perhaps, then, some of the essential questions to be asked are: What constitutes an optimal approach to communicating health guidelines and measures during the current pandemic, and which messages work best at driving public preventive efforts and motivating behavior change? Here comes the instrumental role of the social researchers in offering informed insights regarding effective crisis management and communication strategies (Van Bavel et al., 2020).

Such researchers’ proactive role has manifested in wide range of studies. For instance, one study investigated the effectiveness of reminders that encourage social distancing (Falco & Zaccagni, 2020). Other efforts were directed to explore threat and prosocial appeals related to COVID-19 in the USA (Heffner et al., 2020). Furthermore, in the USA, researchers examined the persuasiveness of personal and public message framing in promoting COVID-19 prevention intentions (Jordan et al., 2020). Nevertheless, most of these studies were conducted in American and European societies, and similar research remained to be carried out in other cultural contexts (Puthillam, 2020).

The present study, therefore, takes place in Saudi Arabia, and joins the continuously accumulating research that deals with the Covid-19 crisis. To introduce this research, certain aspects of effective communications that are relevant to the study are considered briefly. After this, the need to bear in mind the cultural context when communicating public health policies aimed at preventing the spread of COVID-19 was addressed.

How to Effectively Communicate COVID-19 Prevention Messaging

Message Framing

Over the years, numerous scientific fields have contributed to the substantial and expanding body of literature on framing research (Shah et al., 1996). The framing effects have been examined and documented in domains such as environmental psychology (Hurst & Stern, 2020), marketing (Lee et al., 2018), health communication (Cohen, 2010), mass communication (Wicks, 2005), journalism (Castelló, 2010), crisis communication (Kim & Cameron, 2011), and decision-making studies (Levin et al., 1998).

The concept of a “frame” was proposed by the sociologist Erving Goffman (1974). He defines it as a “schemata of interpretation” through which people constructed their reality in a meaningful way. The underlying premise of framing is that the impact of a message is not solely a matter of its contents or information, but also lies in how these messages are presented and formed, which influences how individuals perceive them (Nisbet & Newman, 2015). In this regard, Entman (1993, p. 52), elucidated that “to frame is to select some aspects of perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described.”

There are different frameworks that serve as a lens to understand and guide message framing research. For example, prospect theory has been prominent in the framing literature (Kahneman & Tversky, 1984). This framework stems from risk-gain research and is sometimes labeled as equivalence framing (Druckman, 2004; Kahneman & Tversky, 1979). This framework contends that despite being presented with the same contents, people tend to take risks when potential losses are made salient but avoid taking risks when possible gains are highlighted, indicating that the way in which information is presented leads to a significant impact on people’s decision-making (Kahneman & Tversky, 1979; Kahneman & Tversky 1984). This message framing has been extensively tested across a broad range of health communication studies in which different conceptualizations have been utilized, such as gain/loss framing, positive/negative framing, and advantage/ disadvantage framing (Kang & Lee, 2018). Here, researchers compared various framed messages against each other as well as with non-framed messages, that is,

those which had the same content but did not frame it in a particular way.

Another theory that has been used in the scholarly work on message framing is exemplification theory (Zillmann, 2006). The cornerstone of this theory is that for the messages to be effective people must be provided with evidence. According to this theory, there are two types of evidence: statistical and narrative. This theory presumes that using exemplars or stories to present particular behaviors or issues (e.g., narrating a story about person who engages in a behavior) would be more persuasive and appealing than providing factual informational like statistics or facts about the behavior (Greene & Brinn, 2003; Kang & Lee, 2018). This assumption is justified by the claim that people are better at processing and using information to which they can personally relate than quantitative or abstract information.

Emphasis framing is another approach, which is also the focus of this study, and perhaps overlaps with the above-mentioned narrative evidence. This type of framing involves presenting messages that highlight certain elements or aspects that can attract people's attention and then enhancing the appeal of this message (Entman & Rojecki, 1993). It is noteworthy that scholars diverge in their views about whether framing, in this manner, is theoretically and empirically distinct from the priming concept or they both overlap considerably (see, for example, Chong & Druckman, 2007; Sherman et al., 1990).

Generally speaking, emphasis framing is used to communicate an accurate statement while assigning great weight to potentially relevant aspects (de Vries et al., 2016). To give some examples of how emphasis framing has been applied, Druckman and Bolsen (2011) presented a sample message that emphasized the role of genetically modified (GM) foods in efforts to reduce world hunger. This was persuasive for participants and made them evaluate such food positively (Druckman & Bolsen, 2011). Likewise, in the USA, republican politicians have usually accentuated the economic consequences in their arguments against climate change policies (Bidwell, 2016). Research has also demonstrated the persuasive effect of empathy-appeal antismoking messages in inducing behavior change (Shen, 2015). Furthermore, scientific frames, secular moral frames, and economic equity frames have been found effective at motivating people to support climate change mitigation policies, whereas the religious-moral frame has not (Severson & Coleman, 2015). Similarly, with respect to crisis

communication, crafting and conveying messages that stress public self-efficacy can be conducive to reviving some sense of control and alleviating the harm caused by the crises (Seeger, 2006).

The Role of the Message Source

The source of the message is another factor that influences people's perceptions and thus their responses to persuasive messages (Rains & Karmikel, 2009). Some have argued that the messenger could have more impact than the content of the message (Hauw-Berlemont et al., 2020). Such a factor has been often called "Source Credibility" in the literature (Emmers-Sommer & Terán, 2020; Gotlieb & Sarel, 1991; Pornpitakpan, 2004; Tormala, et al., 2006), and credibility can be defined as "judgments made by a perceiver concerning the believability of a communicator" (O'Keefe, 2002, p.181). Regarding the COVID-19 pandemic setting, Van Bavel and collaborators in their recent and timely paper (Van Bavel et al., 2020) pointed out the role of the credibility of message sources as one of the aspects to be considered by researchers when they conduct behavioral and social research on the current pandemic. The typical approaches with which the researchers approach source credibility concern how the communicators are perceived in terms of their trustworthiness (O'Keefe, 2002). Perceptions of characteristics such as intelligence and expertise (Jones et al., 2003), as well as the perceived reputation of the source (Arora & Arora, 2004), are ways of conceptualizing source credibility. Along with these approaches, researchers seek to identify which messengers are likely to be more trusted and influential in conveying messages; for instance, one study found that a message from a celebrity about breast cancer screening is more credible than one delivered by a medical expert (Emmers-Sommer & Terán, 2020). Likewise, a study demonstrated that young African Americans perceive doctors as a more credible source than non-expert sources (Major & Coleman, 2012). In the same vein, and during the West African Ebola virus epidemic, the involvement of religious leaders from various faiths in promoting practices such as handwashing was thought to be a game changer in public compliance with protective public health behaviors during this crisis (Greyling et al., 2016).

Mind the Cultural Settings

The scientific literature on effective communications that I have explored so far is heavily skewed towards Western countries. Similarly, analysis of COVID-19

studies published in PsyArxiv indicates that the samples were drawn predominantly from the USA; hence, this justified calling this research “Too WEIRD” and launching the call for recruiting more representative data (Puthillam, 2020). WEIRD here is an acronym for Western, Educated, Industrialized, Rich, and Democratic societies, on which scholars have disproportionately placed their attention and efforts when studying psychological phenomena and then dawning general claims about the role of culture in patterning behavior (Henrich et al., 2010).

To elaborate further, WEIRD societies, such American and European countries, are classified as individualistic cultures, where great emphasis is placed on personal autonomy, freedom, and self-fulfillment (Hofstede, 2001; Hofstede et al., 2010). In contrast, non-WEIRD societies, mainly collectivistic cultures, prioritize loyalty to groups, mutual obligations, and conformity to societal norms (Kim, 1995; Triandis, 1995).

With respect to the interests of the current study, culture matters when facing social dilemmas such as the current pandemic, as substantial effort needs to be devoted to crafting messages that resonate with people’s cultural scripts, yet little has been done in this regard (Uskul & Oyserman, 2010). It has been shown that accentuating relevant cultural aspects in communication strategies is likely to produce persuasive effects (for an extensive review, see Oyserman & Lee, 2008). As such and considering what mentioned above regarding American and European people having been oversampled in the COVID-19 research, there is indeed room to question whether the findings of COVID-19 research are applicable beyond WEIRD samples (Cheon et al., 2020; Puthillam, 2020). Hence, in an attempt to fill this gap, this research aims to investigate how message framing influences people’s behavioral intentions in relation to COVID-19, and it also looked at the possible role of message source in the Saudi cultural context. The hope here is to expand our knowledge and incorporate other non-WEIRD cultures while investigating this important and timely topic.

The current study sought to build on previous message framing research by adopting the emphasis framing approach to examine the effect of different types of message framing in Saudi individuals’ COVID-19 pandemic-related intentions and beliefs. The moral framed messages in this research were crafted based on different ethical theories. Utilitarianism theory focuses on outcomes; thus, it argues that

the moral or right choice is the one that produces, as much as possible, the greatest benefits or goodness for the greatest number of people (Goodin & Goodin, 1995; Singer, 1972). Deontological moral theory is termed as duty-based ethics, since it holds that moral judgments have to be based on the rightness of the action itself rather than its consequences (Bucciarelli & Johnson-Laird, 2005; Casebeer & Churchland, 2003). Meanwhile, virtue theory concerns the individual’s character or disposition (Weaver, 2006). Along with moral framings, the effects of messages based on religion was examined, given the fact that little attention has been directed to examining the role of religious messages in health communications in general and in the context of the current pandemic in particular. An additional reason for this is that religious concerns are considered to be among the moral foundations found in all societies, especially collectivist cultures like Saudi Arabia (Graham et al., 2009; Graham et al., 2011). Indeed, Saudi Arabia is one of the most religious societies in the world (Cruz et al., 2017). Thus, two messages were tailored to match the Saudi religious frame: One stresses Muslim identity, and the other emphasizes the idea that the COVID-19 pandemic is God’s punishment. The effectiveness of these message framings was assessed with these two questions:

RQ1: How do various framed messages and non-framed messages differently affect participants’ behavioral intentions and beliefs related the COVID-19 pandemic?

RQ2: Which framed messages do participants perceive to be more effective?

Also, this study interested in the perceptions of the messenger’s credibility. Following Everett et al. (2020), I examined whether framed and non-framed messages influence participants’ impressions of the source’s morality and trustworthiness. Accordingly, the following research question was proposed:

RQ3: Do the included framed and non-framed messages impact participants’ perceptions of the messenger?

Furthermore, considering that there remains little known about the role of the communicator during the COVID-19 outbreak, this study sought to build and expand upon theoretical and empirical literature on message source to investigate participants’ beliefs regarding the most effective source of COVID-19 prevention messages. Assessing participants’ choices in this way can provide valuable knowledge about how

persuasive individuals perceive various communicators to be in the context of the COVID-19 pandemic. Of the various message sources examined, some have been tested in the literature (e.g., religious advocate), while others are thought to be more specifically relevant to the COVID -19 contexts. To the best of the author's knowledge, such messages sources have not been investigated in any pandemic context, particularly in collectivist cultures. Thus, these two research questions were asked:

RQ4: Which message source do participants think would be more convincing in persuading them to adopt COVID-19 preventive measures?

RQ5: Which message source will participants choose as more effective in persuading others to adopt COVID-19 preventive measures?

Method

Participants and Procedure

Considering that the aim was to evaluate the differences between groups means, with the probability of alpha errors at .05 and powers of .80 to detect a medium effect size (.25), the sample size was calculated by using G*Power program 3.1.7 (see Cunningham & McCrum-Gardner, 2019). The required sample

was 216 participants with a minimum of 36 participants in each group.

This study was conducted online between April 30 and March 5, 2020. The study's weblink was posted on various social networks such as Facebook and Twitter. Participants were offered an opportunity to be entered into a draw for three 100 Saudi Riyal gift cards as a thank you for their participation. I excluded 37 participants for failing an attention check (described below), leaving 222 participants. Table 1 presents the demographic characteristics of the total sample.

The morally framed messages used in Everett et al.'s (2020) research were translated from English to Arabic and used in this study, while the other two religious messages were created by the researcher.

This study followed the ethical principles of research with human participants and ethical review in the human sciences in Saudi Arabia (National Committee of Bioethics' Code of Ethics for Research on Living Creatures, 2016). The provided information will be anonymised and kept strictly confidential. Data will be accessible only to the researcher. All participants' data will be identified only by a unique identification number and kept strictly confidential.

Table 1. Demographic Characteristics of Study Participants

Demographic	Categories	n	%
Age		Age range from 18 to 65 (M= 29.6; SD=9.51)	
Gender	Male	97	43.7 %
	Female	125	56.3 %
Marital status	Single	142	64.0 %
	Married	69	31.1 %
	Divorced	9	4.1 %
	Widowed	2	0.9 %
Education	Primary school	3	1.4 %
	Middle school	2	0.9 %
	High school	22	9.9 %
	Graduate	140	63.1 %
	Postgraduate	51	23.0 %
	Other	4	1.8 %
Occupation	Student	81	36.5 %
	Employed	93	41.9 %
	Unemployed	42	18.9 %
	Retired	6	2.7 %
Monthly income (SR)	< 2000	71	32.0 %
	2000 - 5000	23	10.4 %
	5000 - 10000	43	19.4 %
	>1000	85	38.3 %

Design

After reading the informed consent and agreeing to participate in the study, participants were randomly assigned to one of six conditions, namely a control condition (involving no message) and five (additional framed messages) conditions. All participants first read this fictitious tweet created by the researcher:

“Stay home. Partial curfew doesn’t mean the risk is gone, even if you don’t feel sick.”

“Coronavirus is contagious even if you don't have symptoms.”

“We all need to stay home and follow the recommended preventive measures”

“As much as we can, however difficult, because “

Thereafter, the experimental manipulation presented here was carried out, where participants read one of six messages that varied by condition. The framed message was one of the following:

1- Any sacrifices we take are nothing comparing with the very worst consequences for everyone if we do not stay at home and ignore the recommended preventive measures. **Think of the consequence.** (Utilitarian condition: the emphasis is on the outcomes of individual’s behavior)

2- Because this is the right thing to do. It is our duty and responsibility to protect our families, friends, and all people in our society. **It is your duty.** (Deontological condition: the emphasis is on the rightness of actions)

3- Because this is what a good person would do. Think about people you admire morally – what would they do? **Be a good person.** (Virtue condition: the emphasis is on the individual’s morality and character)

4- Because this is what a religious person would do. Islam commands us to protect human life and health. **Think as a Muslim person.** (Religion condition: the emphasis is on the individual’s religious identity)

5- Because corona is a God’s punishment for humans due to their sins and ignoring God’s words. **Think about God’s punishment.** (God’s punishment condition: the emphasis is on God’s punishment as a reason for Covid-19).

6- **Without any framed message.** (Non-framed message condition: no justification is given for the need to stay home and follow the recommended preventive measures)

Next, participants answered a series of questions about their behavioral intentions and beliefs regarding the COVID-19 pandemic, as well as other questions as detailed below. Demographic information was reported last. ensure that participants attended to the presented.

Measures

Attention Check Question

The attention check question was presented for framed message conditions only to ensure that participants attended to the presented messages. The question was: What justification does the Twitter post give for encouraging people to stay home and follow the recommended preventive measures? Participants choose one of the five phrases: *Think of the consequence, it is your duty, be a good person, think as a Muslim person, think about God’s punishment.*

Dependent Measures

Self-behavioral intentions. To answer research question 1, participants indicated their intentions to the COVID-19-related recommended preventive measures which they read in the fictitious tweet created by the researcher. Five questions begin with this phrase: “After reading this message, how likely is it that you will always stay at home, avoid public gatherings, avoid social event gatherings, avoid handshaking, and share this Twitter post. Responses were recorded on a 7-point Likert-type scale (1 = “strongly disagree” to 7 = “strongly agree”).

COVID-19 Beliefs. To answer the second part of research question 1 concerning beliefs related the COVID-19 pandemic, participants were then asked to answer two questions about their own and other people’s responsibility in preventing further spread of the COVID-19 pandemic. Responses were recorded on a 7-point Likert-type scale (1 = “not at all responsible” to 7 = “very responsible”).

Message Effectiveness. To answer research question 2, participants were asked the following question: “If you were trying to convince someone to follow the recommended preventive measures to reduce the spread of the COVID-19 virus, which of these messages do you think would be most effective?” Participants selected between the following five messages: utilitarian, deontological, religious, virtue-based, and God’s punishment-based. The five written messages were the same as outlined in the design section.

Perceptions of Messenger. To answer research question 3, participants answered two questions

about their perception of the person who posted the tweet. The first question was about how moral they thought this person to be? Responses were recorded on a 7-point Likert-type scale (1= “very immoral/bad” to 7= “extremely moral/good”). The other question was about the perception of the person’s trustworthiness, and answers were recorded on a 7-point Likert-type scale (1= “not trustworthy at all” to 7 = “extremely trustworthy”).

Source of the Message. To answer research question 4 and 5, participants were asked the following two questions: “Which one of these listed people’s message do you think would be more effective and convincing for you to follow the recommended preventive measures to reduce the spread of COVID-19?”

The second question was: “If you were trying to convince someone to follow the recommended preventive measures to reduce the spread of COVID-19, which one of these listed people’s messages do you think would be more effective and convincing? Participants selected from the following six people: religious advocate, Saudi COVID-19 monitoring committee member, close person, physician, journalist, and social media influencer.

Results

Effect of Message Framing in Self-behavioral Intentions

The means and standard deviations of participants’ self-behavioral intentions in each message conditions presented in Table 2.

Table 2. Means and standard of participants’ self-behavioral intentions in each message conditions

Messages	Stay at Home		Avoid Public Gatherings		Avoid Social Events		Avoid Handshaking		Share this Tweet	
	M	SD	M	SD	M	SD	M	SD	M	SD
Utilitarian	6.19	1.35	6.32	1.08	6.32	1.00	6.08	1.32	3.97	1.92
Deontological	5.83	1.89	6.00	1.77	5.89	1.80	5.72	1.68	3.94	1.74
Virtue	5.70	1.66	5.73	1.97	5.41	2.03	5.86	1.84	3.32	1.83
Religious	5.11	2.07	5.25	1.95	5.03	1.93	5.39	2.02	2.47	2.05
God’s punishment	3.51	2.28	4.22	2.33	3.89	2.33	4.05	2.40	2.00	2.07
Non-framed	6.03	1.64	6.41	1.23	6.26	0.96	6.13	1.32	4.00	2.08

Five Analysis of variance (ANOVA) were conducted to examine the effect of framed messages (the independent variables) on participants’ behavioral intentions (the dependent variables). Then, each message group was compared separately with other groups. In order to reduce Type I errors, statistical significance was set for pairwise comparisons at .003 (.05/15) using Bonferroni-Dunn’s procedure (Demšar, 2006).

The ANOVA revealed significant differences between message conditions on participants’ behavioural intention to stay at home ($F(5, 212) = 10.7, p < .001$). Pairwise comparisons between message conditions showed that participants had higher intentions to stay at home in the utilitarian condition ($M = 6.19, t(212) = 6.25, p < .001$), the deontological condition ($M = 5.83, t(212) = 5.38, p < .001$), the virtue condition ($M = 5.70, t(212) = 5.11, p < .001$), the religious condition ($M = 5.11, t(212) = 3.70, p < .001$), and the non-framed message condition ($M = 6.03, t(212) = 5.80, p < .001$) compared to the God’s punishment condition ($M = 3.51$).

Likewise, ANOVA indicated significant differences between message conditions on participants’ behavioural intentions to avoid public gatherings ($F(5, 212) = 9.46, p < .001$). Paired comparisons between message conditions demonstrated that the utilitarian message ($M = 6.32, t(212) = 5.17, p < .001$), the deontological message ($M = 6.00, t(212) = 5.21, p < .001$), the virtue-based message ($M = 5.73, t(212) = 4.01, p = .001$) and the non-framed message ($M = 6.41, t(212) = 4.98, p < .001$) all elicited more intention relative to the God’s punishment-based message ($M = 4.21$).

Analysis also found significant differences between message conditions on participants’ behavioural intentions to avoid social event gatherings ($F(5, 216) = 10.3, p < .001$). Paired comparisons between message conditions showed that the utilitarian message ($M = 6.32, t(216) = 5.98, p < .001$), the deontological message ($M = 5.89, t(216) = 4.88, p < .001$), the virtue-based message ($M = 5.41, t(216) = 3.72, p = .001$), and the non-framed message ($M = 6.26, t(216) =$

5.90, $p < .001$) all evoked significantly higher intention to avoid social events than the God's punishment-based message ($M = 3.89$).

Analysis indicated significant differences between message conditions on participants' behavioural intention to avoid handshaking ($F(5, 216) = 6.90$, $p < .001$). Paired comparisons between message conditions showed that reading the utilitarian message ($M = 6.08$, $t(216) = 4.38$, $p < .001$), the deontological message ($M = 5.72$, $t(216) = 3.95$, $p < .001$), the virtue-based message ($M = 5.86$, $t(216) = 4.32$, $p < .001$), the religious message ($M = 5.39$, $t(216) = 3.16$, $p = .002$), and the non-framed message ($M = 6.13$, $t(216) = 5.01$, $p < .001$) all led to a stronger intention to avoid handshaking relative to the God's punishment-based message ($M = 4.05$).

Furthermore, ANOVA indicated significant differences between message conditions on participants' behavioural intentions to share the Twitter post ($F(5, 216) = 7.24$, $p < .001$). Paired comparisons between message conditions indicated that participants were more willing to share the utilitarian message ($M = 3.97$, $t(216) = 4.34$, $p < .001$), the deontological message ($M = 3.94$, $t(216) = 4.25$, $p < .001$), and the non-framed message ($M = 4.00$, $t(216) = 4.46$, $p < .001$) relative to the God's punishment-based message ($M = 2.00$).

Effect of Message Framing on COVID-19 Beliefs

The results of the ANOVA analysis conducted to examine the effect of framed messages (the independent variables) on participants' feelings of personal responsibility in preventing further spread of COVID-19 (the dependent variables) did not reveal significant differences between message conditions in participants' beliefs regarding their own responsibility for preventing further spread of COVID-19 ($F(5, 216) = 1.18$, $p = .32$). Likewise, analysis showed no significant differences in participants' beliefs in people's responsibility in preventing further spread of COVID-19 ($F(5, 216) = 1.09$, $p = .37$).

Message Effectiveness

A Chi-square goodness of fit test was performed to examine participants' choices regarding which message (utilitarian, deontological, religious, virtue-based message, and God's punishment-based messages) would be likely to convince people to follow preventive measures to reduce the spread of the COVID-19, and the results found a significant differences $X^2(4) = 248$, $p < .001$, see Figure 1.

As with previous analyses, statistical significance was set for pairwise comparisons at .005 (.05/10) using Dunn's procedure with the Bonferroni correction in order to reduce Type I errors (Demšar, 2006). Follow-up analysis demonstrated that the utilitarian message was more effective than the deontological message ($X^2(1) = 29.4$, $p < .001$), the virtue-based message ($X^2(1) = 93.4$, $p < .001$), the religious message ($X^2(1) = 86.9$, $p < .001$), and the God's punishment-based message ($X^2(1) = 127$, $p < .001$). Likewise, the deontological message was found to be more effective than the virtue-based-message ($X^2(1) = 25.2$, $p < .001$), the religious message ($X^2(1) = 20.8$, $p < .001$), and the God's punishment-based message ($X^2(1) = 53.1$, $p < .001$). The virtue-based message was also found to be more effective than the God's punishment-based message ($X^2(1) = 11.3$, $p < .001$). In addition, the religious message was more effective than the God's punishment-based message ($X^2(1) = 14.2$, $p < .001$).

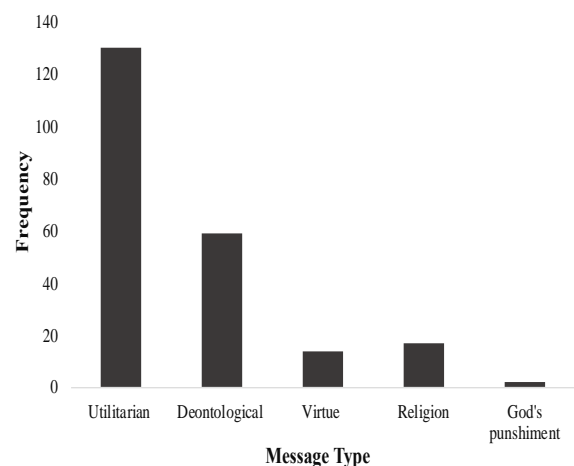


Figure 1. Participants' choice of effective messaging

Perceptions of the Messenger

The ANOVA analysis was carried out to examine the effect of framed messages (the independent variables) on participants' perception of messenger's morality (the dependent variables), and the results revealed significant differences between message conditions on such perceptions ($F(5, 218) = 4.26$, $p = .001$). Follow-up analysis indicated that participants perceived that the person who posted the virtue-based message ($M = 4.97$, $t(218) = 3.87$, $p = .003$) was more moral than the one who tweeted the God's punishment-based message ($M = 4.05$).

Analysis also indicated significant differences in participants' perception of trustworthiness of the messenger ($F(5, 217) = 9.60, p = .001$). Paired comparisons showed that the messenger was perceived as more trustworthy on the utilitarian message group ($M = 4.41, t(217) = 5.51, p < .001$), the deontological message group ($M = 4.33, t(217) = 5.25, p < .001$), the virtue-based message group ($M = 4.43, t(217) < 5.60, p = .001$), and non-framed message group ($M = 4.26, t(217) = 5.12, p < .001$) as compared to the messenger on the God's punishment-based message group ($M = 2.62$).

Source of the Messages

A Chi-square goodness of fit test was performed to examine which message source (religious advocate, Saudi COVID-19 monitoring committee member, close person, physician, journalist, and social media influencer) participants believe to be more effective in convincing them. The analysis indicated significant differences ($X^2(5) = 371, p < .001$, see Figure 2). Also, participants' choices on which type of message source would be more effective in convincing people was examined, and the analysis showed significant differences ($X^2(5) = 300, p < .001$), see Figure 2.

As mentioned earlier, statistical significance was set for pairwise comparisons at .003 (.05/15) using Dunn's procedure with the Bonferroni correction in order to reduce Type I errors (Demšar, 2006). Paired comparisons showed that Saudi COVID-19 monitoring committee members as a message source were more effective in convincing participants than religious advocates ($X^2(1) = 112, p < .001$), close persons ($X^2(1) = 112, p < .001$), physicians ($X^2(1) = 19.6, p < .001$), journalists ($X^2(1) = 123, p < .001$), and social media influencers ($X^2(1) = 107, p < .001$). Also, results showed that physicians would be more effective in delivering COVID-19 related messages than religious advocates ($X^2(1) = 51, p < .001$), close persons ($X^2(1) = 51, p < .001$), journalists ($X^2(1) = 61.2, p < .001$), and social media influencers ($X^2(1) = 46.4, p < .001$).

In regard to the effectiveness of message source in convincing people, paired comparisons revealed that Saudi COVID-19 monitoring committee members as a message source would be more effective than religious advocates ($X^2(1) = 83.3, p < .001$), close persons ($X^2(1) = 85.7, p < .001$), journalists ($X^2(1) = 104, p < .001$), and social media influencers ($X^2(1) = 93.2, p < .001$). Moreover, results showed that physicians were more effective in delivering COVID-19

related messages than religious advocates ($X^2(1) = 55, p < .001$), close persons ($X^2(1) = 57.6, p < .001$), journalists ($X^2(1) = 75.2, p < .001$), and social media influencers ($X^2(1) = 64.7, p < .001$).

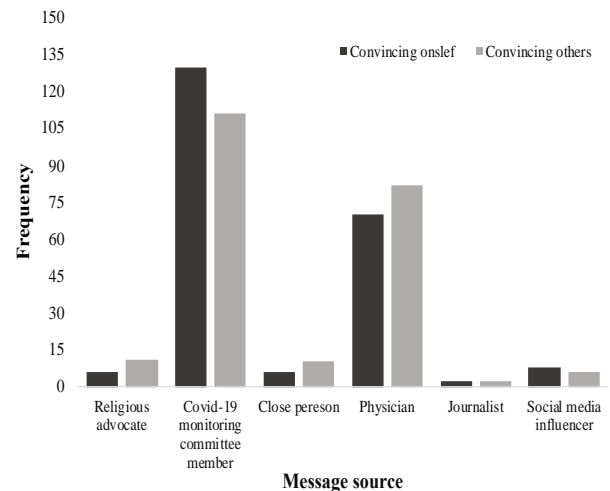


Figure 2. Participants' choice of message source

Discussion

Message framing strategies have been widely studied in a broad range of health and scientific issues. While the literature on message framing is well established on many health topics, it focuses nearly exclusively on the Western context. I provide here the first study of the role of framing messages in enhancing the appeal of public health measures that can help slow the spread of COVID-19 in Saudi Arabia.

Central to this study is to look at how morality- and religion-based messages might influence people's intentions of adopting COVID-19 preventive guidelines. Overall, the results of all five questions about participants' intentions indicated that the God's punishment-based message was less appealing to participants than other framed messages, including non-framed messages. The analyses did not identify any other framing effects on participants' self-reported intentions. The results differed from the study by Everett et al. (2020), which found that the deontological messages led to significantly stronger intentions to share a public health message compared to the non-moral messages, while there were no differences between the deontological messages and virtue-based messages, as well as no observed effects of message framing in other self-reported behavioral intention measures. It deserves attention that Everett et al.'s

(2020) study did not include the religion-based message condition and that it was based on an American sample. Here, the lack of other significant effects of message framing may have resulted from ceiling effects, which reduced the amount of variability in the self-reported intentions scores, making it difficult to detect the efficacy of message framing. These ceiling effects could emerge from the social desirability of reporting compliance with public health policies during the pandemic. The social desirability bias might be likely to be stronger in collectivist culture in comparison with individualistic culture in the context of the COVID-19 crisis, considering that people in collectivist cultures are more attuned to what is considered to be socially desirable behavior and are expected to be more obedient to authority (Hofstede, 2001; Hofstede et al., 2010).

With respect to message framing and participants' beliefs in their and other people's responsibilities to prevent the spread of COVID-19, the results did not show any effect of message framing on these beliefs. These results are at odds with Everett et al.'s (2020) study, which indicated that virtue-based messages led to stronger feelings of personal responsibility than non-framed messages. The above-mentioned factor (the ceiling effects) may be responsible for the absence of the effect of message framing.

Regarding the question participants answered about which of the five messages they believed would be more appealing and effective, results revealed that participants thought that the utilitarian message was more effective than the other messages. In addition, participants thought that the deontological message was more effective than the virtue based-message, the religious message, and the God's punishment-based message, and the religious and virtue-based messages were more effective than the God's punishment-based message. These observed differences are inconsistent with Everett et al.'s (2020) findings in which all pairwise comparisons between moral messages were non-significant. These mixed results of examinations of people's thoughts regarding the appeal of multiple frames are important since most of the existent literature has primarily centered on the differences between various framed messages across conditions and little attention has been given to examining the appealing of multiple framed messages presented to the same participants (Borah, 2011).

In terms of the effects of various messages on participants' perceptions of the morality and trustworthiness of the messenger, participants perceived the per-

son who tweeted the God's punishment-based message as less moral than the one who posted the virtue-based message. Also, the person who tweeted the God's punishment-based message was perceived as significantly less trustworthy than the people who communicated the utilitarian message, the deontological message, the virtue-based message, and the non-framed message. Everett et al.'s (2020) study did not find any effects of message framing on perception of the messengers. Nonetheless, the results here are in disagreement with previous work that indicated that people perceive the person who expresses the deontological moral view as more trustworthy than the one who expresses the utilitarian view (Rom & Conway, 2018).

Lastly, in probing which message sources were thought to be more effective, I found that the member of the Saudi COVID-19 monitoring committee was seen as the most effective source of messages for convincing participants to follow preventive measures, followed by the physician, and the other remaining sources. When it comes to convincing people, participants thought that, a member of Saudi COVID-19 monitoring committee was the most effective source. No differences were found between the effectiveness of message delivered by a committee member and a physician. Also, physician thought to be more convincing for people than other remaining sources. Hence, and based on these results, participants did not believe in the effectiveness of the religious advocate, close person, journalist, and social media influencer. These results could be attributed to the Saudi Arabia Ministry of Health (MOH)'s national awareness campaign for educating the public about COVID-19 preventive and control measures (Al-Hanawi et al., 2020), as this campaign might have helped to consolidate the credibility and appeal of the member of the Saudi COVID-19 monitoring committee and the physician as communicators.

Taken together, the results carry an important implication regarding source credibility and communicating health messages in the COVID-19 pandemic context in Saudi Arabia, as collectivist culture. The present findings, while preliminary, suggest that the utilitarian message that emphasize consequences, followed by deontological message that places special emphasis on whether a certain action or behavior is right or wrong, are the most effectively framed messages, according to Saudi participants. Furthermore, the research demonstrated that framing communication in terms of outcomes and rightness of actions might foster compliance in national crises such as the

prevention of COVID-19 infection. Such findings may be useful to inform Saudi healthcare policymakers in the development and improvement of COVID-19 public health guideline. Additionally, the results of this study show that Saudi COVID-19 monitoring committee members, then physicians were deemed to be the most effective as messages sources on the persuasion people to follow preventive measures to reduce the spread of COVID-19. Such results may be helpful in making COVID-19 public health messaging more effective.

Limitations and Avenues for Future Research

The study presented here is not without limitations that need to be taken into account when interpreting the results; however, it also yields promising avenues for future research. It has already pointed out that with exception of the God's punishment-based message, significant differences were not found between study conditions due to ceiling effects on intention measures. I highlight other potential limitations below.

First and foremost, a limitation arises from the content of the messages. In this study, the same moral messages as those in Everett et al.'s (2020) study were used, as well as two further types of religious message. Here, only one of several possible formulations of each ethical theory were tested (Everett et al., 2020), and the same applied to the religious messages. Accordingly, the revealed findings need to be considered as a starting point for accumulated empirical work rather than an end point, as we lack the knowledge to know for certain the impact of various illustrations of relevant ethical theories as well as religious justifications. Indeed, much research remains to be done in this regard. For example, there is a need for an examination of the effect of messages based on the Moral Foundations Theory (Hurst & Stern, 2020) in engagement with COVID-19 prevention behaviors.

Another limitation is that Twitter was used as the message platform, premised on its huge popularity Saudi Arabia. Therefore, it cannot be determined, for instance, whether presenting framed messages on Facebook or any other social media sites might influence the recipients of these messages. Accordingly, and to increase external validity, more research is needed to examine the impact of the online medium in message perception and to compare the influence of various platforms.

A possible limitation also could be that this study found that a member of the Saudi COVID-19 monitoring committee, followed by a physician, was thought to be a better source to deliver public health messages, yet the present findings did not examine the interplay between message framing and messages source. Consequently, future research needs to probe this possible interaction between framed messages and their sources more thoroughly.

A further limitation is that intentions to engage in protective public health behaviors related the COVID-19 were measured instead of measuring participants' actual behaviors, as these behaviors are hard to observe and assess in reality. Here, it is worth mentioning that research has shown that intentions to engage in health behaviors are strongly correlated with behaviors (Fishbein & Ajzen, 2010).

Another point that needs to be taken into consideration is that relying on cross-sectional survey that use self-reports limits the certainty with which the causal direction of the research findings.

In addition, as mentioned earlier, the lack of other significant effects of message framing that may have resulted from ceiling effects may threaten the internal validity of this research.

To conclude, the present study aimed to provide an initial inquiry into the moral and religious message framing impacts on intentions to engage in COVID-19 mitigating behaviors in collectivist culture. The results of this study suggest that the moral and religious framing of COVID-19 messages probably does not play a main role in people's behavioural intentions. Yet, more research is needed to replicate this study and to further examine the impact of message framing on people's willingness to comply with preventive health behaviors during the pandemic. This examination is much needed while the world is going through this crisis, and the continuing focus and efforts regarding how people can be motivated to adopt public health measures will indeed help cultivate a deeper understanding of communicating health messages during the COVID-19 pandemic. On the other hand, conducting research in non-WEIRD societies not only matters in terms of making psychology research more inclusive, but also improves its credibility and replicability (see Cheon et al., 2020).

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