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COVID-19 Compliance across Societies: Testing Health Messaging Models in the US and Kingdom of Saudi Arabia

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Abstract

The purpose of this study is to test one of the theories of persuasive health communication that have been applied to COVID-19 in a different cultural context in order to understand this model needs to be adapted for a global pandemic. By utilizing a survey, this study used the health belief model (HBM) to test whether using the components of HBM cues affect behavioral intentions to follow government-enforced health policies to contain COVID-19. The results of this study led to conclude that cultural differences do exist, but the tools to theorize about these differences need to be developed and refined. The findings reported in this study highlight contributions to the use of the HBM in non-Western contexts in both research and practice.

Keywords

COVID-19, Health Belief Model, Health Communication, Cultural Context, Persuasion

1. Introduction

A novel coronavirus disease (COVID-19) spread from Wuhan, China, in late December 2019, affecting most countries worldwide (Xu et al., 2020). The symptoms of COVID-19 include fever, cough, shortness of breath, and loss of smell (Menni et al., 2020; Sohrabi et al., 2020). However, the prognosis can be more serious as COVID-19 can lead to pneumonia, kidney failure, and other complications. The complications can also worsen over time (Sohrabi et al., 2020). As the pandemic spread globally, governments significantly restricted public gatherings and put other measures in place to combat the further spread of COVID-19. According to Bock (2020), several countries implemented re-

strictions on public gatherings, travel bans, mass event cancellations, temporary closures of public venues, schools and universities, non-essential businesses, and recreational centers. In April 2020, lockdowns covered more than one-third of the global population (Kaplan et al., 2020). Stay at home orders and social distancing measures have been enacted or recommended worldwide to slow transmission and reduce both the load on the healthcare system and overall mortality. Public health interventions, such as case isolation, school closures, prohibiting mass gatherings and public events, and mobility limitations, tend to be the best method for slowing the spread of COVID-19 and, therefore, reducing the death rate and the deterioration of national healthcare systems. The success of these measures depends primarily on the general public's willingness to comply (Brailovskaia & Margraf, 2020). However, there may be considerable differences within and across countries. First, at the government level, some countries were more aggressive than others in imposing measures to limit the entry and spread of COVID-19 (Al-Tawfiq & Memish, 2020). On March 16, 2020, the COVID-19 Response Team of Imperial College announced a report that reveals that carrying out certain strategies helps attain the effective suppression of the pandemic (Ferguson et al., 2020). Second, at the citizen level, although some people think the steps are helpful and follow the regulations, others doubt the measures and refuse to comply (Clark et al., 2020). This study contributes to the already considerable literature on COVID-19. This study utilizes the health belief model, and I expected this model to work in a novel socio-political context (Saudi Arabia). Saudi Arabia is an important point of comparison in part because the psychological characteristics that are present among Saudis are also applicable to populations in many other non-democratic countries.

2. COVID-19 in the Global Context

As the COVID-19 pandemic spread globally, various countries have taken different approaches to study the virus, which is still developing. As such, people need information in order to better understand how to safeguard themselves and their households from the looming health crisis (Bento et al., 2020). To understand people's attitudes about the threat of COVID-19 and adherence to health recommendations, Ranjit et al. (2021); Kim & Kim, (2020); Bolsover & Tizon (2020); Tasnim, Hossain, & Mazumder (2020); Pennycook et al. (2020) found that information inadequacy and misinformation were negatively correlated with susceptibility to misinformation, suggesting that instead of systematically processing factual information, people are more willing to disregard it because they believed they knew that much about COVID-19 as a function of misinformation exposure, thus, misinformation leads to cloaking healthy habits and encouraging harmful procedures, which helps the virus spread and leads to a breakdown in health and social outcomes.

Although how information is handled during a pandemic can impact human actions, studies have also looked at social or structural inequality concerning COVID-19. Van Bavel et al. (2020) showed that inequitable access to services di-

rectly impacts those who are most likely to become infected or fall prey to the disease, as well as those who can follow guidelines to halt the disease's transmission (Van Bavel et al., 2020). Moreover, Anyane-Yeboa, Sato, & Sakuraba (2020); Tai et al. (2020) found racial differences in COVID-19 deaths are most likely the product of structural inequalities that minority groups experience as a result of racial and social discrimination, wages, infrastructure and academic disparities, as well as limited access to healthcare. A more comprehensive analysis is obvious in the work of Ledur (2020), who found that the mortality rate of black or African American people is 2.4 times higher than that of whites, and blacks accounted for 21% of all COVID-19-related deaths. This subject matter also surfaced in the work of Arber and Meadows (2020). They pointed to major socioeconomic disparities in the ability to self-isolate in the United Kingdom, citing gaps in house size, access to gardens, food allocations, and technologies. Thus, defining moments in human history, such as the COVID-19 pandemic, illustrate pre-existing social and structural issues, and one of those is social and structural inequities.

Leadership is another element that studies have looked into during the pandemic. Effective and decisive leadership is vital in crises for making time-critical decisions (Bhalla, 2021). A more explicit explanation is given in the works of Haslam et al. (2021); Bhalla (2021); and Antonakis (2021) as they highlighted the importance of leadership during the COVID-19 pandemic. They argue that a leader's charisma, practicality, and dedication can impact followers' desires and opinions and then promote the common interests of community members, as well as build and establish a relationship of shared social identity within members. That is important because of the followers' behavior—having trust in leaders as well as self-control—is crucial in achieving good performance in terms of low fatalities and infection rates. For example, Sadiq, Kapuchu, & Hu (2021) stressed that the governors' clear-sighted actions and emergency communication techniques safeguard frontline workers and also inculcate trust in people, allowing them to resolve panicked behaviors during a disaster. Further, in another study, Wilson (2020) analyzed the approach of the New Zealand government in response to COVID-19. The study showed that due to a good leadership style, the New Zealand government was able to achieve tremendous success in combating the virus. On the contrary, a Pew Research Study (Tyson et al., 2020) showed that in comparison to Whites, Hispanics, and Asian Americans, fewer African Americans are willing to get vaccinated, and this was attributed to a lack of confidence in leadership.

These studies represent some of the existing research on COVID-19 in the Western context. More will be reviewed when this chapter turns to the theoretical framworks that inform this analysis. However, prior to that, it is important to illustrate the need for research outside of the Western context.

3. Saudi Arabia Context

In Saudi Arabia, the position of Islamic legislation is substantial as it is not merely a religious code of conduct, it is the state's constitution. It is admitted

that Islamic legislation is the only formal source of common law or political authenticity in the country, and recognized as the sole source of binding norms within private and civil spheres (Vassiliev, 2000; Alfaleh, 2019). Thus, Islamic legislation is generally involved across all politics (Vogel, 2012). In other words, the primary reference in Saudi law is political and religious institutions (Al-Atawneh, 2009).

Further, Saudi society is a highly collectivist society. Collectivism is a strong devotion to social traditions and practices (Gelfand et al., 1996). Duckitt (1989) assumes that in such societies the interests of the in-group are superior to the private pursuits of individuals. This not only reinforces the priority of social norms and group authority, but it also gives the in-group the permission to enforce rules and penalize those who deviate from them.

4. Health Belief Model

One of the most commonly used models to ascertain health behavioral intention is the health belief model (HBM), which helps explain a diversity of human behaviors (Coe et al., 2012). It consists of major constructs such as perceived susceptibility, severity, benefits, barriers, and self-efficacy to engage in a behavior (Glanz et al., 2008). Perceived susceptibility refers to beliefs about infection vulnerability, whereas perceived severity refers to beliefs about the infection's negative consequences (Lin et al., 2020). In the context of vaccination, perceived benefits refer to people's belief about getting vaccinated, while perceived barriers refer to the belief that getting vaccinated is limited due to social and psychological, physical, or financial factors (Lin et al., 2020). Lastly, self-efficacy is focused on an individual's ability to implement a behavior and personal control (Yang, 2014). The health belief model (HBM) provides a useful understanding of intentions when attempting to understand the intentions of adopting healthy behaviors to contain the COVID-19 pandemic. That is because the HBM has been tested in contexts similar to COVID-19. Besides, significant evidence has been found to confirm that this model was able to explain and predict behaviors related to individuals' health (Janz & Becker, 1984; Edmonds et al., 2012; Hashemiparast et al., 2015). Thus, HBM provides an opportunity to understand the decision-making process regarding compliance with COVID-19 recommendations, which interprets compliance behaviors as a result of individuals' perceptions about this disease (Grinberg & Sela, 2021). Several studies have tested the HBM in the context of COVID-19. In a cross-sectional survey to look into the factors that influence COVID-19 vaccination intentions, Alfageeh et al. (2021) found that only about 48% of Saudi adults were willing to receive the COVID-19 vaccine, and participants were more likely to receive a vaccination if they lived in the southern region, had previously received seasonal influenza vaccination, believed in mandatory COVID-19 vaccination, or reported high levels of concern about contracting COVID-19. The researchers argued that vaccination intentions were linked to perceived risk toward oneself, past vaccination behavior, contracting COVID-19, and support for mandatory vaccination. Moreover, if

participants had a history of vaccine refusal, they were less likely to want to be vaccinated. In a U.S. study, Walker et al. (2021) investigated maternal perceptions of COVID-19 threat and willingness to accept a COVID-19 vaccine in light of their expressed vaccine aversion to previous school-mandated and routinely recommended vaccines, as well as the HPV vaccine for their children. Mothers' decisions about COVID-19 protective behaviors (e.g., handwashing, mask wearing, and distancing) were found to be influenced by their perceptions of the virus's threat. However, they were hesitant to accept the COVID-19 vaccine across all vaccine hesitancy categories, quoting wellbeing, potency, and uncertainty over conflicting reports as major roadblocks to immediate COVID-19 vaccine acceptance. The primary strategies used to prevent COVID-19 transmission are social distancing measures such as avoiding travel, limiting physical contact with people outside of one's household, and maintaining a one- or two-meter distance between oneself and others when in public (Coroiu et al., 2020). As such, Al-Hanawi et al. (2020) looked into the Saudi public's knowledge, attitudes, and practices regarding COVID-19. It was discovered that understanding the causes and transmission sources of a disease increases the likelihood of people becoming more aware of the spread of communicable diseases and adopting the preventive measures available to slow transmission.

Meanwhile, adherence to social distancing guidelines varies (Coroiu et al., 2020). Based on the Health Belief Model application, Sahputri et al. (2021) conducted a descriptive-analytic study to determine COVID-19 transmission prevention behavior among some medical students. According to the study, the perceived barrier factor had a significant relationship with COVID-19 prevention behavior. Similarly, Tong et al. (2020) also looked at strategies for promoting adherence to COVID-19 precautionary measures using the HBM and generalized social axioms. Some COVID-19 precautionary measures, such as face mask wearing, were found to be more adhered to and were also significantly associated with HBM (Tong et al., 2020). Birihane et al. (2020) also found that inadequate training, a lack of policy, a lack of commitment to infection prevention and control, and resource constraints were all cited as major potential barriers to implementing preventive measures during the pandemic. To better understand the novel virus, people are increasingly engaging with information through interpersonal communication, traditional media, and social media. Changing behaviors to maintain good health necessitates providing people with reliable information, acknowledging why they may find the behavioral changes difficult, and devising strategies to assist them in making the behavior change (Amankwah-Poku, 2020). The flood of information may make it more difficult to contain this disease (Ranjit et al., 2021). Research has been carried out on the impact of various nudging communication strategies on perceived threat and stockpiling intention (Giroux et al., 2021). According to the researchers, negative information about virus-related deaths raises the level of perceived threat and stockpiling intention, especially among people of low childhood socioeconomic status. This is consistent with the finding of Ranjit et al. (2021) that informa-

tional signals shape the perceptions of staying at home and promoting social distance, which is mediated by perceived susceptibility and perceived severity. The use of social media was found to have a negative impact on perceived susceptibility and social distance, implying that inaccurate information plays a role in influencing people's perceptions of COVID-19 threat and compliance with health recommendations (Kadam, & Atre, 2020; Ranjit et al., 2021; Yas et al., 2021). Regarding COVID-19, perceived susceptibility alludes to an individual's belief about their ability to become infected with the virus (Park & Oh, 2022). Conversely, Ahmad & Murad (2020) discovered a statistically significant positive correlation between self-reported social media use and the spread of COVID-19 panic. According to review analyses of the Health Belief Model, perceived susceptibility is one of the most powerful components in modeling preventive behaviors (Harrison et al., 1992; Janz & Becker, 1984). Providing health education and raising awareness during an outbreak is an effective way to help stop the disease from spreading (Johnson & Hariharan, 2017). Park & Oh (2022) found that wearing masks had the highest COVID-19 preventive behavior score among adolescents, while distancing had the lowest. Adolescents' adherence to COVID-19 preventive behaviors was linked to their perceived susceptibility, severity, subjective norms, perceived behavioral control, and intention, either directly or indirectly. Infectious disease prevention efforts, including COVID-19 behavior, were also found to be positively associated with perceived threat (Brug et al., 2009; Dryhurst et al., 2020; Harper et al., 2020). Plans to take the approved precautionary measures were favorably associated with higher levels of self-efficacy and perceived severity of the illness in relation to the health experts (Berg & Lin, 2020). Thus, COVID-19 prevention communication may be most effective when it emphasizes the increased risk of illness, the efficiency with which preventative measures behaviors can be implemented, and affirmation that the medical world is acting in the best interests of individuals when making specific suggestions. To wit, Alsulaiman & Rentner (2018) discovered that survey respondents in Saudi Arabia who had higher levels of perceived susceptibility and severity for the coronavirus Middle East respiratory syndrome, as well as relatively high levels of perceived benefits and fairly low levels of perceived barriers for disease prevention, were more inclined to follow the government's guidelines. Studies have also been carried out to determine the relationship between perceived benefit and intention to adhere to health guidelines (Glanz et al., 2008; Lin et al., 2020; Tang & Wong, 2004). The analytic value or self-efficacy that emerges when participating in health-promoting behaviors to mitigate disease risk is referred to as perceived benefits (Janz & Becker, 1984). Individuals practicing preventive behaviors, according to researchers, is one of the most effective ways to prevent disease and promote health (Berrigan et al., 2003; Johansson & Sundquist, 1999). To confirm this claim, Lin et al. (2020) conducted a study to better understand vaccine demand and hesitancy for COVID-19, where it was found that the intention to take the COVID-19 vaccine was significantly correlated with perceived benefit. This is consistent with a recent study by

Almazyad et al. (2021) that perceived health benefits significantly correlated with preventive health behavior to combat the spread of COVID-19. Regression analysis showed that perceived benefits positively affected preventive actions against COVID-19 (Kim & Kim, 2020). Based on the considerable accumulation of evidence supporting the HBM in the context of COVID-19, the following hypotheses are proposed:

*H*1: Perceived barriers will be associated with less intent to follow preventive health advice to prevent the prevalence of COVID-19.

*H*2: Perceived benefits will be associated with more intent to follow preventive health advice to prevent the prevalence of COVID-19.

*H*3: Perceived Susceptibility will positively be related to behavioral intentions to follow preventive health advice to prevent the prevalence of COVID-19.

*H*4: Perceived Severity will positively be related to behavioral intentions to follow preventive health advice to prevent the prevalence of COVID-19.

*H*5: Self Efficacy will positively be related to behavioral intentions to follow preventive health advice to prevent the prevalence of COVID-19.

Additionally, the previous variables can be different depending on cultural context and the population under inquiry. Thus, cultural differences need to be accounted for in the integrated model proposed here. First, because it is a global pandemic, solutions need to reach all types of societies. Yet most of the theoretical frameworks are derived from western democracies. Second, Saudi culture is distinct from the western societies that generated HBM on a variety of dimensions, perhaps most importantly on collectivism.

My expectation was that the other elements of this theoretical model would be the same, however, it was possible that there are differences in the contexts that I did not anticipate, therefore, I ask the final research question:

*RQ*1: Will there be differences in any of the previous variables depending on the sample?

5. Methods

This study examines how using a message cue manipulated to influence behavioral intentions to follow government-enforced health policies to contain COVID-19. In addition, this study examines the effect of outcome expectations, perceived threat, and self efficacy on behavioral intentions to follow government-enforced health policies to contain COVID-19.

6. Sample

To test the hypotheses of this study, two samples were recruited. One from King Saud University (KSU) students and the other sample from University of Missouri (Mizzou) students.

An a priori G*Power analysis was conducted with an expected effect size of d = 0.5, power = 0.8, and an $\alpha = 0.05$ to recommend 204 participants (102 KSU students and 102 Mizzou students). The recommended sample size per group was 34.

Sample overview. The initial sample obtained for participants from KSU was 168. After the data was cleaned, a total of 139 responses were obtained. This sample had an average age of 20.92 (SD = 2.26), there were more females (n = 84, 60.4%) than males (n = 55, 39.6%).

With respect to US Sample, the initial sample obtained for participants from Mizzou students was 151. After the data was cleaned, a total of 142 responses were obtained. This sample had an average age of 18.42 (SD = 3.34), and there were more females (n = 78, 54.9%) than males (n = 61, 43.0%), with 2.1% preferring not to say (n = 3). Participants were mostly White/Caucasian (n = 118, 83.1%), followed by Black/African American (n = 14, 9.9%) and then Asian/Asian America (n = 5, 3.5%). There were 4 (2.8%) participants who indicated they were Spanish/Hispanic/Latino and other (n = 1, 0.7%). For religious beliefs, 28 (19.7%) described themselves as evangelical Christians. Lastly, participants' political ideology was recorded. The majority of participants were liberal (n = 32, 22.5%), followed by no preference (n = 28, 19.7%), somewhat liberal (n = 26, 18.3%), conservative (n = 28, 19.7%), somewhat conservative (n = 19, 13.4%), extremely liberal (n = 5, 3.5%), and extremely conservative (n = 4, 2.8%).

7. Results

Table 1 presents the estimates of a multiple regression model to predict intent to engage in healthy COVID19 behaviors. Model 1 includes results from both sample (KSU students and Mizzou students). The overall model is significant F (11, 267) = 61.74, $p < 0.001$, the Adjusted R^2 indicates that the model's variables explain 70.6% of variations in intent to engage in COVID-19 healthy behaviors. Table 1 presents the standardized coefficient of each variable.

Table 1. Results for regression models predicting intent to engage in health COVID-19 behavior.

	Model 1	Model 2 (USA)	Model 3 (SA)	Model 4 (Moderator)
Perceived Barriers	−0.080#	−0.197***	0.052	0.107***
Perceived Benefits	0.297***	0.255**	0.372***	−0.021**
Perceived Susceptibility	0.007	0.019	−0.007	−0.059***
Perceived Severity	0.023	0.133#	−0.045	−0.051***
Self-Efficacy	0.114**	0.108	0.150#	−0.041***
Country _SA	0.297***	–	–	
Adjusted R^2	0.706	0.72	0.410	
F	61.742	36.508	10.508	
df	11,267	10,130	10,127	

Standardized coefficients reported, #$p < 0.1$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. Model 1; samples from the USA and Saudi Arabia, Model 2; samples from the USA, Model 3; samples from Saudi Arabia. Model 4: Inetraction effect of country (Saudi Arabia* Independ-

ent variable).

Predictors were significant at an alpha level of 0.05. A collinearity test was also performed to check for multiple correlations among the variables. Perceived benefits (PB) had the highest variance inflation factor (VIF) scores were, ranging from 2.34 to 2.68. However, these values are still within the 4.0 threshold.

I hypothesized in H_1 that perceived barriers would be associated with less intent to follow preventive health advice to prevent the prevalence of COVID-19. The regression model showed that the relationship did not meet conventional levels of statistical significance but was approaching the 0.05 threshold. There was an inverse relationship between perceived barriers and intent to engage in COVID-19 healthy behaviors. The relationship was such that, for every one-unit increase in perceived barriers on the 7-point likert scale, behavioral intent was lower by 0.12 points ($se = 0.07$), holding all other variables constant.

Hypothesis H_2 predicted that perceived benefits would be associated with greater intent to follow preventive health advice to prevent the prevalence of COVID-19. As reported in Table 1, the estimates support this hypothesis. The nature of the effect was such that, when controlling for other theoretical factors, every one-unit increase in the perceived benefits scale was associated with a corresponding increase of 0.31 ($se = 0.06$) in behavioral intention.

The third hypothesis, H_3 predicted that perceived susceptibility would be positively associated with intent to follow preventive health advice to prevent the prevalence of COVID-19. After accounting for other theoretical factors, the association between perceived susceptibility and behavioral intention was not distinguishable from zero, as presented in Table 1. The influence of perceived susceptibility on behavioral intent did not achieve conventional levels of statistical significance.

Hypothesis H_4 predicted that perceived severity would be positively associated with intent to follow preventive health advice to prevent the prevalence of COVID-19. After accounting for other theoretical factors, the regression result indicated a positive relationship; however, the influence of perceived severity on behavioral intent did not achieve conventional levels of statistical significance as presented in Table 1.

For hypothesis H_5, I tested the effect of self-efficacy on intent to follow preventive health advice to prevent the prevalence of COVID-19. The regression model supports this hypothesis. After holding other factors constant, a one-unit increase in the perceived behavioral control increases behavioral intent by 0.14 ($se = 0.05$).

Finally, the regression model also identifies the country as a significant predictor of intent to follow preventive health advice to prevent the prevalence of COVID-19. After accounting for the effect of other variables, participants from Saudi Arabia have 1.01 higher behavioral intent than the reference country (United States). This effect can also be observed in the average score of behavioral intention in both countries. United State participants have a mean of 4.15 (sd = 1.71), and Saudi Arabia has an average of 5.87 (sd = 1.19). Having demon-

strated that country plays a significant role in intention to engage in health COVID19 behavior, model 2 and 3 present the regression estimates of samples from the United States and Saudi Arabia, respectively.

Model 2 in Table 1 presents the regression model's estimates using sample from the United States only. The adjusted R^2 is 0.72. This propounds that the variables included in the model explain 72% of the variations on behavioral intent. The overall model attains a statistically significant level $F(10, 130) = 36.51$, $p < 0.001$.

Model 3 in Table 1 presents the regression model's estimates using samples from Saudi Arabia only. The adjusted R^2 is 0.41. This suggests that the variables included in the model explain 41% of the variations on behavioral intent. The overall model attains a statistically significant level $F(10, 127) = 10.51$, $p < 0.001$.

Considering all of that, the first research question asks: will there be differences in any of the previous variables depending on the sample. Since Model 1 highlights "country" as a significant predictor of behavioral intention to engage in health COVID-19 policies, Model 2 shows the regression weights for US samples, Model 3 presents the regression weights for Saudi Arabia samples, and the Model 4 reports the coefficient for the interaction term for each independent variable (identified in the row label) and a dummy-variable for country (0 = US, 1 = Saudi Arabia) on behavioral intention. The interaction effect between the country and the predictors shows the two countries' influence and how they behave toward COVID-19 preventative measures.

The country has a significant influence on the effects of perceived barriers in predicting behavioral intention. The significance is such that the effect of perceived barriers on behavioral intention increases by 0.73 (se = 0.15, $p < 0.001$) given that the participant is from Saudi Arabia compared to those from the USA. Model 2 and Model 3 also suggest that perceived barriers has a negative effect on behavioral intention in the USA; this effect is positive but not distinguishable from zero in Saudi Arabia.

The effect of perceived benefits on intent to engage in healthy COVID-19 is significantly lower in Saudi Arabia than in the United States. The effect of perceived benefits is 0.26 (se = 0.08, $p < 0.01$) lower, given that the participant is from the United States. As illustrated in Models 2 and 3, perceived benefits were significant and positive for both samples, but perceived benefits were more influential for Saudi respondents.

The effect of perceived susceptibility on intent to engage in healthy COVID-19 behavior was different depending on whether participants were from Saudi Arabia ($B = 0.49$, $se = 0.12$, $p < 0.001$). As found in Model 2 and Model 3, the relationship between perceived susceptibility and intent to engage in healthy COVID-19 behaviors is positive in the United States but negative in Saudi Arabia. However, the effect of perceived susceptibility was not statistically significant in either Model 2 or Model 3.

The country is a significant moderator with perceived severity in predicting intention to engage in healthy COVID-19 behaviors. The weight of perceived

severity on behavioral intention reduces by 0.55 ($se = 0.09$, $p < 0.001$) for participants from Saudi Arabia. Model 2 and Model 3 suggest that perceived severity increased intent to engage in healthy behaviors in the USA but had a negative and non-significant effect in Saudi Arabia.

The effect of Self-Efficacy on intent to engage in healthy COVID-19 is significantly lower in Saudi Arabia than in the United States. The effect of Self-Efficacy control is 0.43 ($se = 0.10$, $p < 0.001$) lower, given that the participant is from the United States. As illustrated in Models 2 and 3, Self-Efficacy was more influential for Saudi respondents.

Finally, country significantly affects the influence of past behavior in predicting intent to engage in healthy COVID-19 behaviors. Past healthy behavior is associated with greater intent to engage in healthy COVID-19 behaviors in both countries, but the relationship is weaker in Saudi Arabia than in the USA ($B = 0.55$, $se = 0.199$, $p < 0.01$).

8. Discussion

This study contributes to testing the external validity of the health belief model in a context that differs substantially in social, religious, political, and media culture compared to the Western societies in which it has been developed.

Testing the HBM components in the context of COVID-19 could benefit future theory development by providing health-specific constructs that might strengthen the predictive validity of other theories components (Yang, 2014). In more detail, although the country has a significant influence on the effects of perceived barriers in predicting behavioral intention, the results related to the first hypothesis suggest that perceived barriers has a negative effect on behavioral intention in the United States; this effect is positive but not distinguishable from zero in Saudi Arabia. It is difficult to know why perceived barriers were not influential in Saudi Arabia, perhaps it is related to structural factors associated with access to the vaccine or the universality of lock-downs and social distancing in Saudi Arabia.

In the case of perceived benefits, the effect of it on intent to engage in healthy COVID-19 is significantly lower in Saudi Arabia than in the United States as indicated in the results of the second hypothesis. I theorize that the smaller effects of perceived benefits on behavioral intentions among Saudis is less the product of uncertainty about the perceived benefits or disdain for health risks, rather, it is the dominance of religiosity in Saudi society. In other words, faith in divine intervention may reduce the influence of perceptions of personal benefit. Knowing that one of the main characteristics of Saudi society is that it is a religious society. This is an important direction for future cross-cultural research especially regarding issues that may engage life-and-death calculations. These considerations may be more prone to religious considerations and thus more influenced by differences in religiosity. More, the relationship between perceived susceptibility and perceived severity with intent to engage in healthy COVID-19 behaviors is positive in the United States but negative or insignificant in Saudi Arabia

as shown in the results of the third and fourth hypothesis. Such a negative relationship with the intent to engage in healthy COVID-19 behaviors among Saudis could be justified by the source of the information. This is because the Saudi government is positioning itself as the only source of trustworthy information despite the ambiguity around this pandemic. Basically, information inadequacy and misinformation are negatively correlated with susceptibility to misinformation, suggesting that instead of systematically processing factual information, people are more willing to disregard it because they believed they knew that much about COVID-19 as a function of misinformation exposure, thus, misinformation leads to cloaking healthy habits (Pennycook et al., 2020). Many societies, especially less democratic political cultures, have a centralized information environment similar to Saudi Arabia. If this creates differences in the way information about susceptibility and severity are perceived in Saudi Arabia, it could have similar effects around the globe. Thus, future research on the HBM should consider the role of the information environment (independent media vs. centralized state media) as a potential moderating variable. This suggests that, though most elements of each theory were generally supported in each country, the key predictions were better supported in the United States. It is likely that there are some socio-cultural factors that can be theorized to explain why the HBM was weaker model in Saudi Arabia. Further, consider the difference in R2, which is only 41% in SA and 72% in the US. Consequently, the model performed much better in the US than in SA. This could be due to the increased compliance in SA. Moreover, as they live in centralized societies, they delegate difficult decision-making and worrying to the government and religious authorities. In this vein, for example, people in the US may spend significant time worrying about whether it is safe to stop wearing masks or start going to restaurants again, whereas people in SA delegate that responsibility to the governmental and religious authorities. As a result, there is less individual risk-benefit calculous going on, and thus, less role for components such as perceived benefits and perceived susceptibility to influence outcomes. In essence, a healthy portion of the variance in SA is explained by "this is what was decided".

To conclude, it may be useful to develop theories to explain what is socially and culturally different between different contexts. At this point, a major direction for future research is generated; what does explain these differences observed in this study. This illustrates that we need more theories of why societies respond differently to health communication. Therefore, we need better cross-cultural theories.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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