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## Health Behaviors and Pandemics

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## Health Behaviors and Pandemics

### Abstract

Human health behaviors are essential to reducing the spread and impact of pandemics. However, most behavioral scientists do not work in the area of pandemics given the infrequency of their occurrences. This editorial examines relevant health behavior theories, in particular the precaution adoption process model, and how these apply to the COVID-19 pandemic.

### Keywords

pandemics, health behaviors, COVID-19, health communications

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## Health Behaviors and Pandemics

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### Abstract

Human health behaviors are essential to reducing the spread and impact of pandemics. However, most behavioral scientists do not work in the area of pandemics given the infrequency of their occurrences. This editorial examines relevant health behavior theories, in particular the precaution adoption process model, and how these apply to the COVID-19 pandemic.

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For many of us in public health, the COVID-19 pandemic is not a surprise, although the rapid transmission and virulence may be higher than expected. Public health officials have been planning for a global pandemic for decades now that would most likely start in China, be of zoonotic origin, and affect the respiratory system (Osterholm & Olshaker, 2017). Though most scientists believed that the disease would be a novel influenza virus, both SARS and MERS were coronaviruses (LePan, 2020). While much attention has been paid to virologists and epidemiologists and their response to the pandemic, human behavior plays an integral role in the development, spread, and mitigation of pandemics. However, given the rare and sporadic nature of pandemics, most behavioral scientists work on more common issues like chronic disease prevention, injury prevention, or chronic infectious diseases like HIV/AIDS. This may explain why health communications regarding COVID-19, especially in the early phases of the pandemic, were inconsistent, and not based on theory or on strong behavioral change principles. This commentary reviews relevant theoretical principles and how they were implemented during the start of the current pandemic. The goals of this commentary are to provide a better understanding about how human behavior affects

pandemics and how behavioral scientists can do a better job communicating messages in future pandemics. This commentary also focuses on the spread and mitigation of pandemics rather than their origin, which falls mostly into a global health paradigm.

### Defining the Behavior

Human behavior during a pandemic is multifaceted, which brings many challenges. First, there is not one behavior that we are trying to get people to perform, but many. In the first few months of the pandemic, the behaviors that were encouraged included proper handwashing with soap and water, wearing a face covering if one was showing symptoms, social distancing, and staying at home except for essential trips. The rapid uptake of these behaviors is essential in slowing and potentially stopping the spread of infectious agents. The use of a face covering for asymptomatic people was recommended by the Centers for Disease Control and Prevention (CDC) on April 3, 2020 (CDC, 2020). Many other behaviors were recommended sporadically and without research evidence throughout the world including wearing gloves, avoiding ibuprofen, and using untested drugs approved for other purposes, which led to confusion in the actual behaviors that were recommended.

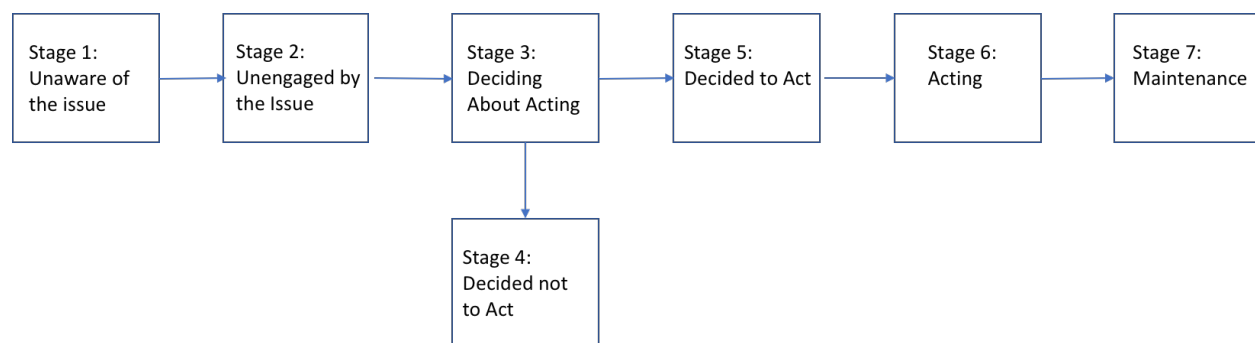
Furthermore, target behaviors can change dramatically within a few weeks. For example, on March 12, 2020, California Governor Gavin Newsom asked people to avoid gatherings of 250 or more people (Ryan & Reichert, 2020). One week later, he issued a stay-at-home order for the entire state (Ryan & Reichert, 2020). Similar rapid changes were made across the country related to timing of school closures, shelter-in-place orders, and stay-at-home orders.

Finally, the speed of disease spread is beyond what most behavioral scientists are used to dealing with. The number of cases in the United States rose from 1,000 on March 11 to over 175,000 twenty days later. Many theories developed for chronic disease prevention do not apply. Given the rapid spread of disease, someone cannot be in contemplation to start social distancing in the next six months, they need to do it now.

### What Behavioral Theories Apply to Pandemics?

Given the speed of the virus spread and the changing behavioral recommendations, theoretical models that apply to chronic disease prevention and a gradual change

process are not relevant in this case. The transtheoretical model with a focus on gradual process of change over 30-day and six-month periods does not adapt well to quick changes. Likewise, the theory of reasoned action/planned behavior with a focus on intentions, attitudes towards a behavior, and subjective norms can be applied in the longer timeframe of a pandemic. For novel behaviors, attitudes and norms for a behavior have not yet been established. Self-efficacy for simple behaviors (e.g., social distancing, hand washing, wearing a face covering) also appears to be of limited utility. While several theories could be adapted for pandemics, we feel that the most relevant framework for pandemic behavior change is the precaution adoption process model (PAPM; Weinstein, 1988). The model was developed to address new and relatively complex behaviors and answers a simple question, “When will people act to protect themselves from harm?” (Weinstein, 1988, p. 355). Weinstein and colleagues (2008) theorize that people go through a series of stages when deciding to adopt a precaution. The stages are:



*Figure 1.* Stages of the precaution adoption process model.

These stages can be passed through rapidly or a person can linger in a certain stage indefinitely. At the start of 2020, almost the entire world was in stage one. On December 31, 2019, public health officials in Wuhan, China, reported that they were treating about a dozen cases. The coronavirus was first identified within the week but it was still unknown whether there was human-to-human transmission (Taylor, 2020)\*. On January 11, the first known fatality from the disease occurred in Wuhan and by January 20<sup>th</sup>, the first U.S. (United States) case had been identified in Seattle, Washington, related to travel to Wuhan. According to the PAPM, media messages about the hazard are the likely factor to move people from stage 1 to stage 2 (Weinstein, Sandman & Blalock, 2008). This was certainly the case at the time where millions of people outside of China learned about this new disease but were unengaged assuming that it would not likely come to the United States, or would not be severe if it did.

Within three days, Wuhan and the surrounding Hubei province were closed off from the rest of China. A week later on January 30, the World Health Organization (WHO) declared a global health emergency and flights to the United States from China were restricted the following day. At that point, many Americans were becoming engaged with the issue. However, there were limited specific actions that were encouraged of Americans. Throughout February, the disease spread through Wuhan, infected the Diamond Princess cruise ship, and caused deaths in Asia. By February 11, the disease was named COVID-19 and the death toll had exceeded 1,000. February saw outbreaks occurring in Italy and Iran but U.S. numbers remained low (35 cases by February 24) and risk appeared to be low, potentially keeping most people in stage 2 or 3 of the PAPM.

The first week in March was the first time that real risk communications occurred in the

United States. The first U.S. death occurred on February 28 and travel restrictions were announced to South Korea, Italy, and Iran. In early March, it was still unclear what precautions were recommended to slow the spread of the pandemic. Early messaging was to cancel gatherings of more than 250 people. The *American Academy of Health Behavior* decided to postpone their annual meeting on March 5. The annual South by Southwest Festival was cancelled on March 6. College basketball and the NBA announced that spectators would not be allowed, and then cancelled the seasons within days of each other. Within a week of the first known death in the United States, major changes occurred throughout the country to slow the spread of the pandemic.

After losing more than a month of health communication messaging, the United States needed rapid behavior change from millions of citizens to prevent the spread of the virus. According to the PAPM, the factors likely to influence movement from stage 3 (deciding) to either stage 4 (deciding not to act) or stage 5 (deciding to act) are: beliefs about hazard likelihood and severity; beliefs about personal susceptibility; beliefs about precaution effectiveness and difficulty; behaviors and recommendation of others; perceived social norms; and fear and worry (Weinstein, Sandman, & Blalock, 2008).

### **Beliefs about Hazards Likelihood, Severity, and Personal Susceptibility**

Throughout the pandemic, various media outlets and the CDC reported the daily total of confirmed COVID-19 cases throughout the United States and the world. For example, CNBC reported that there were 100 U.S. cases on March 4, and 1,000 cases on March 10. With over 327 million people living in the United States, one could reasonably assume that the chances of coming into contact with an infected person would be almost zero,

especially outside of the Pacific Northwest. What was not reported at the time was how limited the testing was, and what was unknown is how prevalent asymptomatic carriers were.

The messaging around the severity of coronavirus was also unclear. While the fatality rate in China was around 3%, several media outlets compared the coronavirus to the flu, making it seem less dangerous. Even as the death totals increased, messaging indicated the coronavirus killed older adults and those with underlying conditions. For example, an article in the Washington Post was entitled, “Coronavirus is mysteriously sparing kids and killing the elderly. Understanding why may defeat the virus” (Wan & Achenback, 2020).

These news stories occurred in the context of most of the nation’s colleges and universities going on spring break. It should not be surprising that millions of college students decided to travel to beach locations during this time. The message provided by the government and media was: we have 1,000 cases, mostly in the Seattle area and young, healthy people get a mild case of the virus if they get it at all. Given these parameters, the rational decision for college students would be to travel and enjoy themselves.

### **Beliefs about Precaution Adoption Effectiveness and Difficulty**

For this factor, most people believe that if they stay home, they will avoid the virus. Effectiveness of social distancing does not appear to be the problem if likelihood, severity, and susceptibility are handled well. The difficulty of stay-at-home orders, as well as school and work closures, is that these measures have had major effects on our emotional, physical, social, and economic wellbeing. Of all the health behavior recommendations that are made, social

distancing is one of the most disruptive to our lives. It also disproportionately affects people in the lower socioeconomic strata that may be working hourly jobs or laid off, be food insecure, have no access to tablets or Internet for students’ distance learning, or live in substandard housing. One prominent Yale public health professor has even argued against widespread stay-at-home orders in the *New York Times*, just preceding the outbreak in New York City (Katz, 2020). The messaging here needs to be clear. Social distancing is an essential behavior to get through this pandemic. Government leaders cannot waiver on the essential need to follow the majority of state orders or our healthcare system will be overwhelmed. This was seen in Texas, Florida, and Arizona during the summer of 2020, where stay-at-home orders were ended and cases rose rapidly.

That being said, efforts are needed to minimize the difficulty of staying at home, particularly among those with fewer socioeconomic resources and those whose homes are not safe. For example, schools around the United States have offered free meals to students during school closures related to the coronavirus due to waivers provided by the USDA’s Food and Nutrition Services (USDA, 2020). In France and Spain, those experiencing domestic violence can enter pharmacies and use code words to communicate discreetly about domestic violence they are experiencing (Kottasová & Di Donato, 2020).

### **Social Norms, Behaviors, and Recommendation of Others**

People tend to follow social norms closely. What are our leaders recommending? The government has recommended keeping a six-foot buffer between people, keeping gatherings small, and wearing a face mask in public. While these are the government’s recommen-

dations, their behaviors at times indicate otherwise. For example, for months at every daily White House briefing several people stood shoulder to shoulder without face masks and took turns speaking at the same microphone. The President also stated that the CDC recommendation for wearing a face covering is only a recommendation and that he would not be wearing one. This creates a dissonance between the recommendations of the government and the behaviors of its members. From a theoretical standpoint, it will reduce compliance with the health behavior recommendations.

### **Fear and Worry**

This pandemic has certainly caused a lot of fear and worry in the population. The difficulty in health behavior change is to manage the right amount of fear in a pandemic. The goal is for people to be concerned, believe in the severity of the virus as well as their susceptibility to it, and to take the recommended precautions all without being terrified or trying unproven recommendations or home remedies, or not taking care of themselves. This balancing act is one of the most important in creating actionable messages that people can do without creating additional mental distress.

### **Conclusions**

All of the factors discussed above along with stay-at-home or shelter-in-place orders have led millions of Americans to enact the needed precautions to get through this pandemic. However, poor health communications have allowed the virus to spread more in the United States than in any other country by the summer of 2020. The last stage, moving from action to maintenance, is also important. By the fall of 2020, we are seeing cases rise again throughout the country. As people experience pandemic

fatigue, it is likely that convincing people to practice social distancing will become more difficult. Health behavior scientists need to prepare now for longer-term messaging. For example, how do we convince people to maintain healthy behaviors like proper hand washing after this pandemic has subsided?

In many ways, the behavioral science community was unprepared for this pandemic. The messaging surrounding the virus in the United States did not appropriately address many of the factors that would help move people into the action stage early, resulting in a widespread epidemic throughout the country. Behavioral scientists need to remain engaged in theory-based health communications around epidemics and pandemics. While the PAPM provides a good framework for addressing pandemics, it was not developed for this purpose. The development of a strong theoretical model for pandemic preparedness and response would be an important step toward improving our response to the next pandemic. It might be five years, ten years, or 100 years before the next pandemic strikes the globe, but there will be another one. As behavioral scientists, we need to be better prepared next time.

\*Taylor (2020) was used to recreate the timeline of events used throughout this article unless otherwise noted.

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