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Using the Protection Motivation Theory to Examine the Effects of Fear Arousal on the Practice of Social Distancing During the COVID-19 Outbreak in Rural Areas

The world is currently experiencing a global pandemic, the novel coronavirus (SARS-CoV-2) that causes coronavirus disease (COVID-19) which is commonly transmitted via the respiratory route (Wang, Horby, Hayden, & Gao, 2020). As of April 10, 2020, 1.7 million people worldwide have been confirmed to have been infected with the virus and 102,900 deaths have been reported In the United States, more than 500,000 people have been infected with the virus with over 18,000 deaths recorded (Johns Hopkins University [JHU] (2019). The COVID-2019 pandemic is now growing exponentially, and its health consequences, and economic impacts are more severe than any other public health emergencies in modern times (Wang, Horby, Hayden, & Gao, 2020). To protect public health and slow the rate of transmission of COVID-19, public health officials have pleaded with the American public to practice good hygiene (e.g., respiratory etiquette, frequent handwashing, etc.) and social distancing (White House, 2020).

Social Distancing Defined and Exemplified

More specifically, "Social distancing means remaining out of congregate settings, avoiding mass gatherings, and maintaining distance (approximately 6 feet or 2 meters) from others when possible" (Centers for Diseases Control and Prevention [CDC] (2020, para. 3). With COVID-19, increased social distancing measures were taken to not only reduce the chance of infection among high-risk populations but most importantly to delay and reduce the size of the pandemic peak, thus reducing the burden on health care systems and health care workers on the front lines of the pandemic.

For example, public health intervention policies in Chinese provinces early during this pandemic significantly contributed to the gradual decrease in the number of detected COVID-19

cases reported across the country (Zhang, et al., 2020). Furthermore, data from mathematical modeling of SARS-CoV-2 transmission dynamics have suggested that strict adherence to social distancing measures (in addition to other non-pharmaceutical interventions) will significantly reduce transmission and disease burden (Koo et al., 2020).

Rural Areas and the Challenges of COVID-19

The fight against the spread of the COVID-19 pandemic can provide groundbreaking insights into risk perception, decision-making processes, and change in behavioral intention to comply with social distancing guidelines. Common belief is that rural areas may be shielded from the pandemic, as they tend to be more spread out, which potentially means less motivation for self-protective behaviors of social distancing. Although some publications have designed and proposed different health behavior models to explain the interplay between disease prevention or treatment and individual risk-taking behavior, few studies have considered a health threat with the magnitude of the COVID-19 in rural areas. Hence, the justification for this commentary.

Rural residents in the USA tend to be older, sicker, and more likely to be underinsured or uninsured than their urban counterparts. Rural areas also have a higher proportion of veterans and people with disabilities (Meit, et al., 2014; Moy, et.al, 2017). Rural area considerations also include prevalence of revenue-generating hazardous jobs, disparity between rural and non-rural Americans in access to and use of Internet (‘digital divide’), less educational attainment, lower wages, and reduced infrastructure (Crosby, 2012). Those that are self-employed, or small business owners may be less likely have health benefits, or paid sick leave. Thus, staying at home may not be financially viable.

Digital Divide and Internet Challenges in Rural Areas

The digital divide that is prevalent in rural areas may result in some individuals not having reliable internet access at home, which can impact the ability to work from home and socially distance (Ajilore & Willingham, 2020). The nature of jobs that dominate the rural landscape (e.g., agriculture, mining, forestry, and fishing) include many jobs that cannot be done remotely, or online (Crosby, 2012). Social norms and cultural values around interpersonal relations are also an integral aspect of individual and communal identity, particularly in rural areas, are not easily transmitted online.

Social distancing guidelines therefore, pose significant threats to strongly held communal values in relation to social interaction patterns. More specifically, the requirements to be socially distant creates distortions in the experience of daily life for rural dwellers and in the absence of technologically mediated, or alternative means of social interaction, create conditions which could negatively affect wellbeing. Importantly, the desire to sustain communal values which are meaningful for existence amongst an ageing population may pose significant health risks from the pandemic. Rural areas therefore warrant attention due to factors that make them particularly susceptible to COVID-19

Protection Motivation Theory (PMT), Rural Areas and COVID-19

In this respect, there is a lack of population-based and large scale studies aimed at characterizing the behavioral component of social distancing during and following a pandemic in rural areas. Nevertheless, a particular framework that could help advance research in this area is the Protection Motivation Theory (PMT). The theory was originally proposed by Ronald Rogers in 1975 and later revised and built upon by Rogers in 1983 (Rogers, 1975, 1983). The PMT

addresses how the components of an individual's fears concerning a specific event or outcome could facilitate a change in the individual's behavior to protect them from that event (Prentice-Dunn & Rogers, 1983; Rogers, 1983). The PMT is a preventative health behavior theory that has been used to study intentions and behavior in several health-related fields (Rogers, 1975). However, the application of PMT can potentially enhance our understanding of social distancing behavior in response to the COVID-19 pandemic, which incorporates not only fear of contamination but also other individual and collective cues which provide motivation for social distancing.

Applying PMT to Social Distancing in the COVID-19 Era in Rural Areas

With a successful application in healthcare of PMT in rural setting, its constructs could be applied to explain the motivations of individuals at risk of being infected with the SARS-CoV-2 coronavirus. PMT assumes that an individuals' decision to participate in risk preventative behaviors is made based on their motivation to protect themselves from threats such as epidemics and pandemics (Rogers, 1975). People weigh in between different risks and potential benefits. The decision is made based on the results of threat appraisal and coping appraisal (Rogers, 1983). Threat appraisal is a cognitive process that individuals use to estimate the level of threat. It includes two important elements: assessment of the perceived severity of the threat and the perceived probability of receiving adverse impacts from the threat (vulnerability) (Rogers, 1983).

Perceived Severity of the Threat

Perceived severity of the threat means the degree of seriousness of the possible harms that is perceived by an individual. Perceived vulnerability reflects an individual's perceptions of their susceptibility to the harms. Threat appraisal also includes the perception of the reward,

which refers to perceived benefits of current practices (maintaining risky behaviors). These perceptions of vulnerability, severity, and the reward can motivate individuals to perform adaptive responses, such as pro-environmental behaviors. Higher perception of severity and vulnerability is likely to enhance individual motivation to perform risk preventative behavior, while higher perception of rewards from current practices will inhibit risk preventative behaviors.

For instance, individuals that perceive COVID-19 as a severe disease with a high mortality rate, and understand that they have an increased probability of being infected may be more motivated to adopt preventative practices (including social distancing) to minimize or eliminate their risk. In addition to threat appraisal, coping appraisal, which refers to the estimation of an individual's capacity to perform risk preventative behaviors, also influences the protection motivation.

Coping Appraisal, Self-Efficacy and Response Efficacy

The coping appraisal includes self-efficacy and response efficacy. Self-efficacy is an individual's perception of their capability to perform the behaviors. Response efficacy refers to the perceived effectiveness of the recommended risk preventative behaviors. This measure of coping appraisal is very crucial in ensuring that individuals are not only willing to adopt these measures, but are also able and motivated enough to continue with the disease preventative measures regardless of their own personal discomfort, perceived lack of results or slow pace of intervention effectiveness.

Coping appraisal also considers the response cost, which is the cost of performing the recommended behavior (Rogers, 1983). A high cost of performing preventative behaviors might

hinder people from being involved in recommended behaviors. The response cost of social distancing far exceeds mere societal disruption especially for the poor and low-income workers in the society who may experience lost wages and unemployment (Deluca & Kalich, 2020). The consequence of which will result in the slippery downhill slope of increases in suicide rates, substance abuse, domestic violence, homelessness and food insecurity particularly among this population (Deluca & Kalich, 2020).

The coping appraisal is the product of the appraisals of the self-efficacy and the response efficacy minus the costs of performing the recommended preventive behavior. The model predicts that the higher the response efficacy, self-efficacy, and the lower response cost, the more possible one will decide to perform adaptive behaviors. Thus, to help promote a lower response cost, especially within the context of social distancing, provision of support systems such as essential medication, food, access to healthcare, financial compensation, housing vouchers as well as encouraging measures to promote mental well-being are crucial (Adloch et al., 2020).

PMT, Social Distancing, and Epidemics

A study by Williams and colleagues investigated whether PMT is a useful framework for understanding social distancing behavior in response to a simulated infectious disease epidemic (Williams, Rasmussen, Kleczkowski, Maharaj, & Cairns, 2015). The study found that PMT variables did not predict social distancing behavior in the computer game scenario (Williams et al., 2015). Nevertheless, three PMT factors (fear, response-efficacy, and self-efficacy) were significant predictors of intention to engage in social distancing (Williams et al., 2015). The study posits that despite a willingness of intent to align with the measure of social distancing, this is a practice that can be difficult to apply even in light of the risk of infection. According to

their results, despite understanding the need for the measure of social distancing, people are against the idea of being restricted. We argue that the COVID-19 pandemic would tell us otherwise, and if applied in the rural areas, we will likely find that that PMT factors would be significant predictors of intention to engage in social distance. We also hypothesize that there will be a strong association between PMT variables and social distancing behavior during the COVID-19 pandemic in rural areas.

Conclusion

In conclusion, we believe that the PMT is a useful framework to tease out key motivating dimensions that should underpin social distancing to stop or slow down the spread of the COVID-19 in rural areas, and need to be applied in future research. The emergence of COVID-19 presents a rare opportunity to apply theoretical frameworks to understand social distancing behavior during this pandemic, with a goal of mitigating adverse health outcomes among rural and underserved populations.

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