The Dissertation Committee for Kendall Paige Tich Certifies that this is the approved version of the following Dissertation:

Unprecedented or unprepared? Exploring the role of organizations in motivating employee protective behaviors during a health crisis

Committee:

Keri K. Stephens, Supervisor

Erin Donovan

Jeffrey W. Treem

Amy O'Connor

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By Kendall Paige Tich

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Dedication

This dissertation is dedicated to my family, friends, and all those who supported me throughout this journey. Thank you for helping me to see this through to the end.

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The process of writing a dissertation and completing a doctoral degree has been over the course of some of the most challenging years of my life, but has also been the most rewarding. That said, this is not just my own accomplishment, but the accomplishment of those who helped me here. And to all those who helped me see this through, thank you.

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Abstract

Unprecedented or unprepared? Exploring the role of organizations in motivating employee protective behaviors during a health crisis

Kendall Paige Tich
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Supervisor: Keri K. Stephens

The world has experienced an increase in crises and disasters like wildfires, hurricanes, and most recently the COVID-19 pandemic. As a result, practitioners and scholars alike have looked for ways to prepare and empower people to understand risk, prepare for disasters, and protect themselves. During health crises like the COVID-19 pandemic, organizations, the government, public health officials, and the media shared information around safety measures and healthy behaviors (Kim & Kreps, 2020; Stephens, et al., 2020) to invoke positive behaviors such as taking protective action (Liu, et al., 2020; Stephens, et al., 2020). Guided by the use of Protection Motivation Theory (Maddux & Rogers, 1983), PMT, this study applied a new perspective to our understanding of risk communication and protective action-taking: incorporating the role of organizations in risk communication to understand how people intend to respond to threats, such as the COVID-19 health threat.

The current study extended research in risk information seeking, risk and disaster preparedness, and protective behaviors taken during crises by drawing on variables in the PMT. The findings revealed that although organizational relationship variables are important in understanding protection motivation behaviors, it is the exposure of employees to messages about protective action and how satisfied they are with those messages that tell the story of an organization's role in influencing employee behavior. The connectedness one feels to their

organization (i.e. identification) and the behaviors of employees around them (i.e. norms), did not significantly influence employee protective action-taking above and beyond PMT variables. The application of PMT alongside organizational variables, led to a deeper understanding of the role organizations and message exposure play in helping employees take protective actions during a crisis. This provided an important space for organizational communication scholarship to contribute to the growing body of literature in risk and crisis communication.

The purpose of this study was to understand the potential impact of organizational variables on engagement in protective behaviors, above and beyond the role that PMT variables play, during a health crisis. The results build upon our understanding of the role organizations can play in the crisis context and provide significant theoretical and practical implications for organizational and risk communication and the practice of communication during a crisis. This understanding of the role message exposure and organizational message satisfaction can play during crises can help organizations make communicative improvements with the hope that future efforts can facilitate and encourage a more prepared workforce so that an "unprecedented" crisis is prepared for and "precedented."

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Chapter 1: Introduction

> *"…And here it is, it's happened — your worst nightmare, the perfect storm. It's one of those things where you're really, just functioning on adrenaline. This is a really serious problem. It is truly historic. We haven't even begun to see the end of it yet. It's still globally threatening. Some countries are doing better than others, but until you get it completely under control, it's still going to be a threat. So, it is truly unprecedented."*
> (Dr. Anthony Fauci, Director of the National Institute of Allergy and Infectious Diseases and Chief Medical Advisor to the President of the United States, 2020)

Disasters and crises often deliver an unprecedented blow to the world. As the world continues to experience crises and disasters like wildfires, hurricanes, and most recently the COVID-19 pandemic, practitioners and scholars look for ways to prepare and empower people to understand risk, prepare for disasters, and respond in a way that protects themselves and others. The COVID-19 pandemic was declared a public health emergency of international concern by the World Health Organization (WHO) in January 2020, and a pandemic in March 2020. As of February 2023, the pandemic has caused more than 670 million cases and over 6 million confirmed deaths worldwide, making it one of the deadliest health crises in history (WHO, 2023). During the COVID-19 pandemic, the WHO encouraged the public to seek health information, engage in protective actions, and understand risk information (Zhou, et al., 2021). Thus, protective action-taking during crises can improve risk response and mitigate harm from crises.

During health crises, like the COVID-19 pandemic, organizations and public health officials share information, including instruction around safety measures and healthy behaviors (Reynolds & Seeger, 2005; Stephens, et al., 2020) to invoke positive behaviors such as protective action (Liu, et al., 2020; Stephens, et al., 2020), which include actions to reduce the threat of harm and keep oneself and others safe. In line with this, this study uses Protection Motivation Theory (Maddux & Rogers, 1983), PMT, as a guide to understand how people intend to respond to threats, such as the COVID-19 health threat.

This study extends our understanding of risk communication and protective action-taking by incorporating the role of employing organizations (an organized body of people who share a similar purpose by which a person is employed) in risk communication and motivation or intention to take protective action. The PMT poses that propensity to engage in protective behaviors in response to a threat is determined by (1) an appraisal of the threat itself and the belief about the seriousness of the consequences and the susceptibility one has to the threat, and (2) a coping appraisal determined by beliefs about the effectiveness of the protective or preventative behavior, one's confidence in performing the behavior, and barriers to performing the behavior (Ling, et al., 2019). Individuals are motivated to take protective actions when there is a high threat and performance of protective behaviors can reduce that threat (Ling, et al., 2019).

The current study extends research in risk and disaster preparedness and communication, and protective behaviors during crises by drawing on variables in the PMT to examine factors that motivate people to take protective action, and the addition of organizational variables as potential influencers of protective behaviors. During crises and disasters, individuals turn to organizations for information (Seeger, 2006) to reduce feelings of discomfort, fear, or

uncertainty, and to understand what behaviors are expected of them to address the crisis. Therefore, organizations likely play a role in motivating protective action-taking, acting as providers of risk and response communication to guide individuals to take actions to reduce the harm from a crisis.

Guided by components of the PMT, this study tests the organizational variables in the context of protective behaviors during disasters, specifically the COVID-19 pandemic, including message exposure, organizational information satisfaction, organizational identification, and organizational norms. This expands our understanding of the role organizations play in motivating protective actions during crises. Additionally, it provides a space for organizational communication to contribute to the growing body of literature in risk and crisis communication. Understanding the role of organizations in protective behaviors during crises can help organizations make communicative improvements to facilitate and encourage a more prepared workforce so that an "unprecedented" crisis is prepared for and "precedented."

Dissertation Overview

This dissertation will begin by conceptualizing risk communication. Next, it will explain the Protection Motivation Theory (PMT) and the use of organizational variables guided by this theory. It will then outline the methods used to address the questions and hypotheses in this study, including research design, measures, and analysis for the study. Next, it will share the results from analyses performed in this study. Lastly, it explains the findings through a discussion, posing ideas for a future research agenda, and will conclude with closing remarks on the importance of the study's findings in the scholarship and practice of risk communication.

Chapter 2: Literature Review

When a crisis such as a pandemic is spreading, the public often seeks information to understand the behaviors in which they should engage to protect themselves and others from harm. With this urgent response to the health risk, comes the need to seek information to make decisions for their response and behaviors (Kim & Kreps, 2020). During crises and disasters, individuals turn to organizations for information (Seeger, 2006), response directives (Kim, et al., 2018; Liu, et al., 2020), and help in making sense of the ongoing crisis (Stephens, et al., 2020; Weick, 1988). The literature review chapter will address the field of risk, crisis, and disaster communication, conceptualizing risk communication during crises and disasters, identifying COVID-19 as an unprecedented crisis, addressing protective behaviors during crises, the Protection Motivation Theory (PMT) that guides this study, organizations in protective behaviors including the addition of organizational variables in this study, and a presentation of the research questions and hypotheses this study hopes to answer.

Risk, Crisis, and Disaster Communication

Disasters and crises can be conceptualized as significant events with the potential to threaten operations or lead to negative consequences without proper management (Coombs, 1999). Crises cause the social fabric to be disrupted and become dysfunctional (Ulmer, et al., 2015). Hermann (1963) identified three key characteristics that separate a crisis from an unpleasant event: (1) surprise, (2) threat, and (3) short response time (Ulmer, et al., 2015). Crises can include natural disasters, intentional disastrous events, or accidents (Seeger, 2006). The goal of crisis communication at the organizational level is to protect or restore an organization's reputation and disseminate information to protect stakeholders and the public (Utz, et al., 2013).

In the research, the public refers to those external to the organization and its immediate stakeholders, i.e. individual citizens, while stakeholders accounts for organizational members and those closely related to the organization. The vast majority of crisis and disaster communication research focuses on best practices before, during, and after a crisis or disaster in the context of risk communication and prevention prior to a disaster event, response during or after a crisis occurs, and rebuilding or resilience in the aftermath of a crisis or disaster (Liu, et al., 2016).

During crises, there are elements of surprise, threat, and required short response time (Ulmer, et al., 2015), leading to the primary goal of organizations being quick involvement in the dissemination and reception of information to mitigate harm to the organization, the public, and stakeholders. Additionally, crises create high levels of uncertainty (Seeger, 2006) and response is often characterized by acknowledgement of uncertainty and working to reduce the threat (Lachlan, et al., 2010). Before, during, and after crises, the public turns to organizations for information about the crisis (Coombs, 1999). Crisis and disaster communication therefore refers to the communicative actions of an organization before, during, and after a crisis to resolve issues that emerge, respond to stakeholders, explain the crisis events and actions being taken, and ultimately mitigate harm (Marsen, 2019).

In recent years, the research has expanded to include communication strategies that better address the complete crisis cycle – before, during, and after a crisis or disaster event – thus, risk, disaster, and crisis communication fall under the umbrella of crisis communication (Rossman, et al., 2018). The merging of risk, disaster, and crisis communication is part of a larger acknowledgment that effective communication is an integrated and ongoing process (Seeger, 2006). For the purpose of this study, the umbrella of crisis, risk, and disaster communication will

be consolidated to risk communication with the understanding that the context of this study was conducted during an ongoing crisis with the intention of the promotion of health behaviors to reduce the risk of harm to organizations and its members.

Risk Communication during Crises and Disasters

As crises and disasters unfold, those affected look for meaning, guidance, explanations, and directives. In risk communication, information seeking and processing are driven by a motivation to reduce uncertainty (Kim, et al., 2020). Based on the Protection Motivation Theory (Rogers, 1975), often applied in risk communication, it can be assumed that risk perceptions (severity, susceptibility, and efficacy) lead to information seeking, and a motivation of individuals to take protective action. Individuals look to the organizations at which they are employed for information and response, resulting in messages and stories that shape perceptions of risk and blame during crises (Kim, et al., 2018; Liu, et al., 2020). Higher levels of perceived severity, susceptibility, and response efficacy result in greater motivations to carry out protective actions (Park & Lee, 2018).

During past crises, and perhaps even more apparently in the COVID-19 pandemic, individuals turn to organizations and others for information to make sense of the ongoing pandemic (Stephens, et al., 2020). According to the 2021 Edelman Trust Barometer, a measure of public trust of information sources, trust in for-profit organizations is at an all-time high. The 2021 study showed that businesses are not only the most trusted institution (before NGOs, government, and media), but it is the only trusted institution with a 61 percent trust level globally and the only seen as both ethical and competent (Edelman, 2021). The relationship between

individuals and organizations, particularly their own organization, is crucial in preparing for and responding to the pandemic.

COVID-19 Pandemic and Organizations

Beginning in late 2019/early 2020, the coronavirus disease (COVID-19) pandemic developed into a worldwide, unexpected, and massive crisis that caused disruption to all individuals and parts of society across the globe. Organizations and their employees were forced to change their operations and adapt to what was coined the "new normal," which included moving operations virtually, adjusting to remote work and workplaces, putting policies in place to protect the organization, employees, and stakeholders, and continuously evaluating the ongoing crisis and adapting business practices as it evolved. The nature of the COVID-19 pandemic is unlike any other health crisis in our studied history in terms of its impact on organizations and their decisions and communication during uncertain conditions. During COVID-19, and other crises, employees turn to organizational leaders for information (Van der Meer, 2015), which led organizations to operate in new ways as they adapted to communicating within their new structures, responding to a wide range of communication challenges, and attempting to keep the organization and its employees safe.

The impact of COVID-19 was felt globally, and affected every section of organizational life and operations. The uniqueness of the COVID-19 pandemic as an unprecedented crisis created unique challenges for organizations and communicators globally, an impact that has not been as widespread in prior crises or research around those events. Nearly every organization or source of information was communicating about the virus, including information on hygiene rules, adjustment to working remotely to stay safe, procedures related to the consequences of the

pandemic, and protective behaviors to aid in returning to normal life. This first-of-its-kind crisis set the stage for this research. Despite the challenges that the COVID-19 pandemic brought across the world, it provided a unique context to understand health crises, response, and protective behaviors, particularly when the entire world was forced to immediately and effectively adapt to new organizational and communication practices.

Risk Communication and Protective Behaviors

Risk communication is primarily based on the relationship between risk and mitigation behaviors (Binh, et al., 2020). Risk communication is best understood both in this study and in practice as the exchange of information related to risk types and levels, and methods for managing risk (Covello, 1992). The exchange of risk information is often designed to not only inform, but also to motivate or change behavior, including the adoption of protective behaviors. During a crisis event, protective behaviors involve any activity that people perform to maintain or promote their health or well-being (Godin & Kok, 1996). Protective behaviors have been studied across health communication research (e.g., Gutteling & Vries, 2012; Maiboch & Parrot, 1995; McGlone, et al., 2017; Yang & Wu, 2021) and more recently incorporated into risk and crisis research in the context of safety before and during disasters (e.g., Kievik & Gutteling, 2011; Will & Geller, 2004; Winters, et al., 2018). Risk communication involves the development and delivery of preventive messages (Cutter, 1993), and during a crisis like the COVID-19 pandemic, this involves protective behaviors people can take to stay safe during the pandemic.

With the increase of risks and crises in modern society, including health crises, enhancing self-protectiveness is recognized as one of the key practices by governments and organizations and has gained scholarly attention as crises and disasters become more widespread (Rickard, et

al., 2014). The emphasis of recent risk communication research and practice has been to increase protective behaviors during a crisis and offer tools for individuals to cope with risk in order to overcome harm or prevent it (McComas, 2006; Witte & Allen, 2000).

Protection Motivation Theory (PMT)

Disaster preparedness and response, including risk communication, is not only a form of disaster management but also of health promotion (Tang & Feng, 2018). To improve disaster response and risk communication, it is necessary to explore motivations and behaviors related to taking protective actions. Protection Motivation Theory (Rogers, 1975), PMT, is a health promotion model that addresses risk information as providing the impetus for behaviors related to the severity of a risk, their vulnerability to the risk, and their ability to reduce the risk (Rogers, 1975; Rogers, 1985). PMT has become a widely researched decision-making model in the context of disaster preparation and health prevention and is one of the most comprehensive models used empirically to address protective health behaviors (Floyd, et al., 2000).

PMT is used to explain when individuals undertake preventative measures to reduce health-related risk (Floyd, et al., 2000). The model consists of two phases: threat appraisal and coping appraisal. While the model's variables have been explained to predict behavior in a variety of contexts (Bubeck, et al., 2012), several other factors such as social norms, may also influence protective action decisions (Botzen, et al., 2019). Studies that have used the PMT have extended the model (Botzen, et al., 2019), or addressed and integrated individual components within the model to answer questions related to preventative behaviors (Janmaimool, 2017; Ong, et al., 2021). In the disaster context, the PMT has been used to explain why people having necessary information choose to or not to engage in protective behaviors (Ong, et al., 2021).

The conceptual framework of the PMT is used to explain factors predicting risk prevention and protective behaviors. PMT assumes that individuals make decisions to participate in behaviors based on their motivation to protect themselves from threats (i.e. disasters) by essentially balancing risks and benefits (Rogers, 1975; Rogers, 1985). The decision to engage in protective behavior is determined by assessing the threat (threat appraisal) and coping appraisal. Within the threat appraisal, individuals address (1) the severity of the threat and (2) the probability of the threat negatively affecting them (vulnerability or susceptibility). In this study, threat arises from the potential health threat of the disease. Higher perceptions of severity and vulnerability have been found to lead to greater adaptation of protective behaviors (Keshavarz, et al., 2014).

The coping appraisal, the other component of the PMT, refers to an individual's assessment of their ability to respond to the threat and avoid risk from the threat (Woon, et al., 2015). Within this appraisal, response efficacy, self-efficacy, and response cost, are measured (Floyd, et al., 2000). Response efficacy relates to a behavior to reduce the risk, self-efficacy emphasizes one's ability to cope with the threat or risk, and response costs address the time, effort, or emotional costs connected to taking protective action (Bubeck, et al., 2013; Floyd, et al., 2000). Past research has shown that for an individual to take protective behaviors, certain levels of self-efficacy and response efficacy are required (Rimal & Real, 2003). The coping appraisal therefore comprises balancing the ability to reduce risks from the threat and the cost of doing so. Higher self and response efficacies have generally been found to increase the adaptation of protection behaviors (Bubeck, et al., 2013).

According to the PMT, intention is the most powerful predictor of behavior, so intention to engage in protective behaviors (i.e., protection motivation behavior) is determined by the

threat and coping appraisals. Individuals are most motivated to engage in protective behaviors when they believe that if they do not take protective action, there is a threat to themselves (high threat appraisal) and that performing the protective behavior can reduce the threat (high coping appraisal) (Ling, et al., 2019). While useful, the PMT focuses on people's cognitive evaluations of the consequences of health-related choices they make (Kowalski & Black, 2021). There are, however, the possible influences of external factors related to one's organization.

Most studies using the PMT have considered the direct effects of attributes (threat appraisal and coping appraisal) on the protection motivation behavior through linear regression analysis (Bockarjova & Steg, 2014; Bubeck, et al., 2013; Keshavarz & Karami, 2016). This study will employ this same technique with the inclusion of organizational variables to understand the potential effect they may have on taking protective behaviors or actions alongside variables within the PMT, including perceived vulnerability/susceptibility, perceived severity, self-efficacy, and response efficacy. These variables were selected due to the effects they have been found to have on protection motivation behavior (Bockarjova & Steg, 2014). During crises, since people turn to organizations for information (Seeger, 2006), both these individual level factors are important as well as addressing the role the organization plays in communicating and influencing protective behaviors.

The Role of Organizations in Risk Communication and Protection Motivation

During crises, the public seeks crisis information regarding whether the crisis will affect them, and what they should do (Reynolds & Seeger, 2005). As events unfold, warnings and response messages are transformed into timely, credible, and accurate information. Multiple organizations are responsible for communicating information to the public (Reynolds & Seeger,

2005) and adapting to public response as crises unfold over time. Although mitigating harm to the public is important during crises, the primary goal of communication and information dissemination as it relates to organizational communication is to protect the organization and its stakeholders (e.g., employees). Crises test preparedness, resilience, and the strength of organizations (McGuire, et al., 2020), leading to the need for effective communication to engage in mitigation and protective behaviors. After all, prepared organizational members (i.e. employees) make for a prepared organization.

During crises, organizations often communicate about what to do and provide updates on why and how they are doing it. This requires clarity, consistency, and repetition of information (Noar, 2006). Many of these updates provide information on how to respond to the crisis in order to protect oneself, others, and the organization. During health crises, organizations communicate with stakeholders, including employees, with safety and protective behaviors that can be performed to stay safe. These safety and protective behaviors are encouraged in order to avoid harm (Shao, et al., 2008). Prior scholars have addressed protective behaviors, including understanding compliance with those behaviors, participation in the protective behaviors, and adapting safety measures (Lee, 2022). The majority of studies focused on employees taking protective action are in the context of high-risk activities or occurrences, which would naturally include crises.

Much of the risk communication research within organizational communication has to do with the practical application of crisis response in order to guide organizational leaders in responding to a crisis (Coombs & Holladay, 2012). During crises, there are high stakes for communication needs and additional pressure to communicate transparently, efficiently, accurately, and urgently (Auer, 2021). The COVID-19 pandemic, as well as other current

disasters, have shown that the modern communication landscape has created new challenges for communicating during a crisis, and organizations are presented with these challenges as well as opportunities to improve communication with their stakeholders, employees, and the public.

Organizations play a crucial role in risk and crisis communication (Guzzo, et al., 2021). During times of crisis, employees turn to their organizational leaders for information, making effective crisis communication and directives for actions and response very critical (Van der Meer, et al., 2017). In particular, the way organizations react to a crisis and the way they communicate both internally and externally can have a large impact on the organization's stakeholders, including its employees. Employee attitudes toward the organization can be greatly affected by the crisis response of the organization and the way their employing organization is communicating during a crisis (Bundy, et al., 2017). During a crisis, what organizations communicate to their employees can greatly impact organizational attitudes and response to the crisis (Guzzo, et al., 2021), including the behavioral responses to the crisis itself. In many organizations, during crises like the COVID-19 pandemic, organizational leaders generate a large amount of communication. During health crises in particular, many of these communications focus on news about infection rates and how the virus is spreading, encouragement to take protective action like following hygiene rules and maintaining distance from others, and procedures related to work during the crisis (Sanders, et al., 2020). Given the crucial role organizations play in risk and crisis communication, providing directives to stakeholders and the public, and encouraging or discouraging particular behaviors during a crisis, this study sought to understand the role organizations played in crisis response during the COVID-19 pandemic, a public health crisis that happened around 2020.

Organizational Identification

Many individuals turn to their employers, i.e., their organizations, to make sense of risk, crises, or disasters and to know how to respond to the crisis. The way one feels toward their belonging within their organization has been characterized as organizational identification. In other words, organizational identification can be best understood as an organizational member's feelings of connectedness or belonging toward an organization (Ashforth & Mael, 1989), or the communicative bond formed between an organization and an individual or audience (Stephens, et al., 2014). The notion of organizational identification is derived from Social Identity Theory (Tajfel, 1978), SIT, which assumes that people have both a personal identity and social identities that allow them to understand their place within the context of others in the world. Putting this within the context of organizations, individuals assume their identity and social identity in the context of their belonging and connectedness to their organization.

In identification research related to organizational identification, the site of identification is the organization (O'Connor, 2006). Organizational identification can be a positive outcome for both organizations and their members because when organizational members feel like they belong and identify with their organization, organizations have better outcomes in commitment, retention, participation, and cooperation (Ashforth & Mael, 1989; Stephens, et al., 2015). Additionally, people who identify with their organization pay more attention to information from their organization (Stephens, et al., 2014), and respond more positively to that information (Stephens, et al., 2014). Thus, an individual's propensity toward engaging in protective behaviors during a crisis may vary depending on organizational identification and the information organizations are sharing with their stakeholders.

When one identifies with their organization, they share its values (Cheney & Tompkins, 1987), and their attitudes, behaviors, and commitment to the organization are often shaped by the identification (Ashforth, et al., 2008; Stephens et al., 2015). Organizational identification has also been shown to affect the way employees communicate and engage with health information (Stephens, et al., 2015). Communication from one's organization is essential in forming organizational identification (Oksa, et al., 2020).

A strong sense of organizational identification has been found to affect several behaviors related to positive organizational outcomes (Stephens, et al., 2014). It plays a key role in shaping attitudes and behaviors related to the organization and practices within it (Ashforth, et al., 2008). Organizational identification has been found to contribute to positive responses to organizational messages (Stephens, et al., 2014) and positive behavior outcomes as a result of responding to messages from the organization (Cheney, 1987; Stephens, et al., 2014). Therefore, organizational identification may play a role in intentions to take protective behaviors related to risk. Thus, the following hypothesis and research questions are presented and asked in relation to organizational identification and protective motivation:

H1: Controlling for perceived susceptibility, severity, self-efficacy, response efficacy, organizational identification will be positively related to protection motivation behavior.

RQ1a: How does organizational identification impact the relationship between perceived susceptibility and protection motivation behavior?

RQ1b: How does organizational identification impact the relationship between perceived severity and protection motivation behavior?

RQ1c: How does organizational identification impact the relationship between perceived self-efficacy and protection motivation behavior?

RQ1d: How does organizational identification impact the relationship between perceived response efficacy and protection motivation behavior?

Organizational Norms

Social norms refer to a shared understanding of appropriate behavior (Thogerson, 2006). Within the context of an organization, social norms can regulate organizational members' behavior and present rewards for compliance or punishment for noncompliance (Janmaimool, 2017). Norms are established within organizations to guide what employees should and shouldn't do (behavior) or be (attitudes) as participants in the group (i.e. organization) (Applbaum & Anatol, 1979). Prior studies have characterized organizational norms into categories including organizational pride, teamwork and communication, performance, leadership, profitability, colleague relations, customer relations, innovativeness, training and development, and candor (Applbaum & Anatol, 1979). Most components of organization norms are related to communication practices and processes within organizations – these norms shape communication both within regular day-to-day processes as well as communication processes during crises.

Often, individuals within organizations communicate with others in the organization to gain information about organizational norms (Treem & Leonardi, 2015). Communication and information norms within an organization provide directives for employees to follow (Ford & Stephens, 2018). Organizations generally promote their norms for how employees should communicate, causing norms to develop around organizational activities in order to maintain relationships within the organization and manage organizational tasks (Feldman, 1984; Ford & Stephens, 2018). Communication and information sharing impact individuals' attitudes toward their organization, helping to create a common sense of organizational norms, values, and culture

(Bencsik & Csinger, 2021). Scholars have also suggested that organizations create norms and their own sense of identity through communication (Robichaud, et al., 2004).

Consistent with theories on norms and behaviors (e.g., Theory of Planned Behavior), norms are social pressures felt by individuals that affect intentions and behaviors (Bai & Bai, 2020). Thus, norms and the pressure to mold to social and organizational norms are at play in behavioral decisions. Many communication norms in place within organizations provide rules for employees to follow (Turner, et al., 2006). The social context of individuals, including their workplace, can influence people's behavior and persuade them to engage in protective behaviors or behaviors that mitigate risk (Lindell & Perry, 2000). Additionally, peers can influence behavior, since the information being shared across peers is often viewed as trustworthy and important (Vieweg, et al., 2010). Within an organization, individuals are influenced by the social context of the organization (i.e., the organizational norms), as well as the exchange of information and behaviors with their peers (i.e., colleagues). Due to the researched relationship between norms and the social pressure to abide by norms in behavior, the following hypothesis and research questions will be tested in relation to the role organizational norms play in behavior:

H2: Controlling for perceived susceptibility, severity, self-efficacy, and response efficacy, organizational norms will be positively related to protection motivation behavior.

RQ2a: How do organizational norms impact the relationship between perceived susceptibility and protection motivation behavior?

RQ2b: How do organizational norms impact the relationship between perceived severity and protection motivation behavior?

RQ2c: How do organizational norms impact the relationship between perceived self-efficacy and protection motivation behavior?

RQ2d: How do organizational norms impact the relationship between perceived response efficacy and protection motivation behavior?

Message Exposure

During crises, organizations often communicate information on how to stay safe and protect oneself, others, and the organization. Prior health crisis research has found there are benefits from effective communication to guide compliance and recommendations (Reynolds & Quinn, 2008). Message exposure, including message repetition can contribute to individuals' abilities to process information, with many studies finding that message exposure positively influences intent to engage in recommended behavior (Bickham & Francis, 2021; Ernst, et al., 2017).

During the COVID-19 pandemic, one source of messages exposure related to how to stay safe was organizations. Organizations throughout the country communicated publicly and with stakeholders and employees, spreading information and guidance on how to stay safe, how to slow the spread of the virus, and how to protect each other from COVID-19 (Kates, et al., 2020). Official information often came from organizations, as well as many other sources of information, and employees received guidance from their organizations in the form of digital messages, emails, live communication, and others. Message exposure was addressed in this study as exposure to messages across various sources of information related to COVID-19, including message exposure to information related to COVID-19 from one's organization and other sources of information. Frequent message exposure has been shown to influence the credibility of messages (Ernst, et al., 2017) and the behaviors of individuals as a result. Repeated exposure

to messages can also contribute to the way individuals process information and act on it, including their behaviors (Bickham & Francis, 2021; Ernst, et al., 2017). Therefore, exposure to organizational messages, as part of all the messages people receive, may arguably play a role in protection motivation during a crisis. This warrants the following hypothesis and research questions:

H3: Controlling for perceived susceptibility, severity, self-efficacy, and response efficacy, message exposure will be positively related to protection motivation behavior.

RQ3a: How does message exposure impact the relationship between perceived susceptibility and protection motivation behavior?

RQ3b: How does message exposure impact the relationship between perceived severity and protection motivation behavior?

RQ3c: How does message exposure impact the relationship between perceived self-efficacy and protection motivation behavior?

RQ3d: How does message exposure impact the relationship between perceived response efficacy and protection motivation behavior?

Organizational Information Satisfaction

Risk communication scholars have long emphasized the importance of providing timely, clear, accurate, and open information during a crisis to help individuals make decisions and engage in desired behaviors (Edgar, et al., 2000). Since there is often high uncertainty during crises (Seeger, 2006), it is even more imperative for organizations to share information with their employees, so they are aware of actions to take or behaviors to protect themselves, the organization, and mitigate harm. Many people rely on information shared by their organization or other organizations to learn how to protect themselves and their families from threats (Bento,

et al., 2020; Garfin, et al., 2020). Although COVID-19 information has been easily obtained from a variety of sources including the internet and social media (Kor, et al., 2021), there is currently a global "infodemic," resulting in a large amount of misinformation surrounding the pandemic (Kor, et al., 2021; Zarocostas, 2020). Since organizations are considered among the top trusted sources of information in 2020 (Edelman, 2021), it can be expected that individuals may be turning to their organizations more than other sources of information due to the true, false, and mixed information circulating related to COVID-19 (Kor, et al., 2021).

During crises like the COVID-19 pandemic, individuals turn to their organizations for information and organizations are sharing communication messages with employees (Seeger, 2006). In the case of the COVID-19 pandemic, employees may have been bombarded with messages on taking protective actions, work from home policies, return to work procedures, safety measures (e.g., masking, social distancing, vaccination), and other updates as the crisis evolves (Zhou, et al., 2021). Understanding the level of satisfaction individuals had with information they received from their organization will provide insight into how messages from one's organization may influence behaviors.

Due to the high uncertainty of crises (Seeger, 2006), it is imperative for organizations to share information with their employees, so they are aware of actions to take or behaviors to protect themselves and the organization. Many people rely on information shared by their organization or other organizations to learn how to protect themselves and their families from threats (Bento, et al., 2020; Garfin, et al., 2020). Prior studies using the PMT have not measured information satisfaction or information satisfaction in relation to information shared from an organization, so the following research questions will be posed in relation to organizational information satisfaction with organizational messages and protective motivation:

RQ4: Controlling for perceived susceptibility, severity, self-efficacy, and response efficacy, how is organizational information satisfaction related to protection motivation behavior?

RQ5a: How does organizational information satisfaction impact the relationship between perceived susceptibility and protection motivation behavior?

RQ5b: How does organizational information satisfaction impact the relationship between perceived severity and protection motivation behavior?

RQ5c: How does organizational information satisfaction impact the relationship between perceived self-efficacy and protection motivation behavior?

RQ5d: How does organizational information satisfaction impact the relationship between perceived response efficacy and protection motivation behavior?

During health crises like the COVID-19 pandemic, organizations shared information, including instructions around healthy behaviors (Reynolds & Seeger, 2005; Stephens, et al., 2020) to invoke positive behaviors and encourage protective actions (Liu, et al., 2020; Stephens, et al., 2020). Organizations and their dissemination of information played a critical role in risk information and crisis response because knowledge and behavior can be influenced by information (Hwang & Jeong, 2020; Kelly, et al., 2010; Lambert & Loiselle, 2007; Shim, et al., 2016). In that vein, this study will also ask the following question:

RQ6: How do organizational information satisfaction, organizational norms, organizational identification, and message exposure affect protective motivation behavior?

Table 1, below, provides a summary of all relevant constructs in the PMT framework and their definitions and conceptualizations within this study.

Table 1. Definitions of key concepts from the PMT used in this study and proposed organizational variables. **Organizational variables in bold text.**

Construct from the PMT	**Definition**
Severity of the threat	Perceived severity of the COVID-19 crisis.
Susceptibility/Vulnerability to the threat	Perceived probability of being affected by COVID-19.
Self-efficacy	Self-confidence or belief in one's ability to perform the recommended protective behavior.
Response efficacy	Efficacy of the recommended preventative behavior.
Organizational identification	**Identification and sense of belong with employer/employing organization**
Organizational norms	**Organizational norms surrounding protective behaviors during COVID-19 (i.e. the extent to which those who are part of their organization expect them to engage in protective behaviors)**
Message Exposure	**How often individuals learned about COVID-19 from their organization and other sources of information**
Organizational information satisfaction	**The level of satisfaction individuals within organizations have with the information they received from their organization on COVID-19**

Prior studies using the PMT have tested the effects of threat and coping appraisal variables on the protection motivation behavior through linear regression analysis (Bockarjova & Steg, 2014; Bubeck, et al., 2013; Keshavarz & Karami, 2016). This study will employ the same

technique to address these relationships in relation to organizational variables. Table 2, below, provides a summary of all research questions and hypotheses guided by the PMT in this study.

Table 2. Summary of Hypotheses and Research Questions

H1:	Controlling for perceived susceptibility, severity, self-efficacy, response efficacy, organizational identification will be positively related to protection motivation behavior.
H2:	Controlling for perceived susceptibility, severity, self-efficacy, and response efficacy, organizational norms will be positively related to protection motivation behavior.
H3:	Controlling for perceived susceptibility, severity, self-efficacy, and response efficacy, message exposure will be positively related to protection motivation behavior.
RQ1a:	How does organizational identification impact the relationship between perceived susceptibility and protection motivation behavior?
RQ1b:	How does organizational identification impact the relationship between perceived severity and protection motivation behavior?
RQ1c:	How does organizational identification impact the relationship between perceived self-efficacy and protection motivation behavior?
RQ1d:	How does organizational identification impact the relationship between perceived response efficacy and protection motivation behavior?
RQ2a:	How do organizational norms impact the relationship between perceived susceptibility and protection motivation behavior?
RQ2b:	How do organizational norms impact the relationship between perceived severity and protection motivation behavior?
RQ2c:	How do organizational norms impact the relationship between perceived self-efficacy and protection motivation behavior?
RQ2d:	How do organizational norms impact the relationship between perceived response efficacy and protection motivation behavior?

RQ3a:	How does message exposure impact the relationship between perceived susceptibility and protection motivation behavior?
RQ3b:	How does message exposure impact the relationship between perceived severity and protection motivation behavior?
RQ3c:	How does message exposure impact the relationship between perceived self-efficacy and protection motivation behavior?
RQ3d:	How does message exposure impact the relationship between perceived response efficacy and protection motivation behavior?
RQ4:	Controlling for perceived susceptibility, severity, self-efficacy, and response efficacy, how is organizational information satisfaction related to protection motivation behavior?
RQ5a:	How does organizational information satisfaction impact the relationship between perceived susceptibility and protection motivation behavior?
RQ5b:	How does organizational information satisfaction impact the relationship between perceived severity and protection motivation behavior?
RQ5c:	How does organizational information satisfaction impact the relationship between perceived self-efficacy and protection motivation behavior?
RQ5d:	How does organizational information satisfaction impact the relationship between perceived response efficacy and protection motivation behavior?
RQ6:	How do organizational information satisfaction, organizational norms, organizational identification, and message exposure affect protective motivation behavior?

Chapter Summary

This study seeks to understand the role of organizations in encouraging employee protective behaviors during a health crisis. Having employees take protective actions are crucial to the organization's safety measures (Zhang, et al., 2021), which become increasingly important within the context of a crisis. During crises and disasters, individuals look to organizations for

information and response (Kim, et al., 2018; Liu, et al., 2020). Guided by the Protection Motivation Theory (PMT), the preceding section highlighted the importance of effective risk communication, the potential role organizations play, and the proposed hypotheses and research questions that guide this study's inquiry into the role of organizations in encouraging protective behaviors and risk communication. The following section will provide an overview of the methods used to address the hypotheses and research questions posted in this study.

Chapter 3: Methods

The following chapter provides an overview of the methodology used to address the hypotheses and research questions in this study. This chapter describes the research context, participants, data collection, and measures, as well as demographic information.

Study Overview and Context

In the winter months of 2019, several pneumonia-like cases caused by an unknown pathogen were reported across China, originating in the Wuhan province of the country. Similar cases were eventually reported across the country, and not long after, across the world. The pathogen would be later identified as a novel coronavirus, named COVID-19 by the World Health Organization (WHO) in February 2020. The naming of the virus was only the beginning, however, as the disease would spread rapidly across the world, earning its characterization as a global health crisis and a worldwide pandemic that still continues three years after its discovery.

As of early 2023, the U.S. Centers for Disease Control and Prevention (CDC) estimates a reported 102,998,014 cases in the U.S. alone (CDC, 2023). In addition to the numerous cases, lingering health conditions, and uncertainty of the spread and long-term effects of the disease, the pandemic disrupted the social fabric of the world and country, putting individuals, organizations, and institutions into disarray – while also providing an opportunity to assess risk preparedness and crisis response. Information ran rampant in relation to pandemic information, and communication scholars and practitioners emphasized the importance of finding and providing timely and accurate information to guide protective behavior (Kim, et al., 2020).

Participants

Following the general rule of thumb in regression analysis of 10 respondents per variable (Hayes, 2017), this study needed a sample size of at least 230 participants to account for all variables. In total, 458 responses were collected through voluntary sampling using Centiment, but only 376 completed the survey and passed the attention check. Participation in the study was voluntary, and no identifying information was collected, so participants remained anonymous. I worked directly with study coordinators at the University of Texas at Austin IRB to assure data collection was ethical and within reviewed and approved policies and guidelines. I received IRB approval before data collection began. At the start of the survey, participants were provided a formal consent document which required them to consent "yes" to taking the survey before they were able to access the content. A copy of the consent form is located in Appendix A. All participants had to be proficient in English, as that was the target audience used for survey distribution.

Data Collection Procedures

There were two parts to data collection for this study: a first, unsuccessful attempt to collect data through a healthcare communications organization, and a successful second attempt at collecting data through a survey panel platform. Initially, the survey was sent to employees at a 1,000+ employee multinational healthcare communications organization. Access was negotiated through a personal and professional relationship between myself and the organization, including an agreement to provide findings from the survey in the form of an executive summary and presentation following data analysis. The survey was offered in English, given the nature of the business as a communications agency operating primarily across the U.S. This initial data

collection took place in November 2021, during which there was contact with the agency to share the survey information via internal channels and respond to participant questions. The agency agreed to share the survey through internal professional and social channels, which I posted and monitored for participant questions. The original data collection resulted in a mere 52 responses, which was not nearly enough to run analyses or make any meaningful statistical contributions. Unfortunately, this data was only used to produce descriptive information for the agency and my next step was to contact survey panel platforms to share the survey with a participant panel.

The successful data collection for this study took place at the end of 2021. Participants learned about this study through the Centiment survey panel platform, a paid platform for researchers to target audiences and recruit individuals to respond to surveys (Centiment, 2022). Following the initial unsuccessful data collection, in November 2021, I began working with a project manager at Centiment to discuss the project in more detail, request a quote, and identify if my target audience could be reached through the Centiment platform. The criteria for participation included being actively employed by a healthcare (or tangentially related field) organization, living in the United States, and 18 years or older. Participants needed to be knowledge workers in the professional healthcare field. After learning this sample was feasible, I developed the survey in Qualtrics, added an attention check for participants, and launched the survey to the targeted Centiment panel. Centiment uses an attention check process that asks respondents, "to show that you are paying attention, please select 'none of the above,'" from five different answer choice options, four of which disqualify the participant if they do not select the one correct choice, "none of the above." The panel of participants included those broadly in the healthcare field (pharmaceutical, biotech, etc.). The rationale for targeting this group was to

identify participants who are aware of the protective behaviors associated with COVID-19 in order to single out the organizational variables that are the focus of this study. Following the contractual commitment with Centiment, I received Institutional Review Board (IRB) approval from the University of Texas at Austin to carry out this study using this panel. A soft launch of the survey, as is policy with Centiment services, began on December 10, 2021. The launch was successful, and formal data collection followed shortly thereafter, beginning on December 13, 2021 and concluding on December 18, 2021, when the necessary number of responses were collected.

The survey took between 8 and 15 minutes to complete, with most participants completing the survey in 10 minutes. The survey consisted of 43 Likert-type items, 13 demographic questions (e.g., age, gender, race/ethnicity, education), two questions with a selection of answer choices including number of emails received from their organization and work type, and one attention check question, for a total of 59 items. 376 people completed the survey, passed the attention check, and met criteria for inclusion in the sample, which is well above the acceptable 230 participants needed to run regression analyses.

Following consent, the survey began by prompting respondents to "think about the emails you've received from the leadership team at your organization about managing COVID-19 during the last three months," and provided an example of the type of message to think about while answering the survey questions. This primer is included as Appendix C at the end of this document. Respondents were then asked questions related to organizational factors incorporated in the PMT framework (organizational identification, organizational information satisfaction, and organizational norms) as well as variables from PMT (severity, vulnerability, self-efficacy,

response efficacy, and protection motivation behavior). All variables being used in this analysis are detailed below.

Measures

Survey respondents were asked multiple questions related to their willingness to engage in protective behaviors during a health crisis and their attitudes toward their organization. All variables were measured with existing scales adopted from past PMT research and existing scales used to measure the added organizational variables. All variables were measured on a scale from 1-7 unless stated otherwise. Demographic questions were also asked, including age, gender identity, marital status, income, and education. Table 3 below provides a summary of all variable measures, also included in the Appendix.

Table 3. Survey Items

Construct and Item Wording *(Note: All scales are 7-point Likert like ranging from strongly disagree to strongly agree unless noted.*	***Reliability***	***Mean***	***SD***
Exposure to information/messages *Measured on a 7-point Likert like scale ranging from never to very frequently* 1. Talking with friends or family 2. Social networking sites 3. Governmental health agencies 4. Talking with a personal or family doctor 5. Print or online news outlets 6. Television 7. Organization where I work	.84	5.05	1.37
Organizational Information Satisfaction	.93	5.08	1.45

1. Current spread of COVID-19
2. Symptoms of COVID-19
3. Individual measures to protect against COVID-19
4. Hygiene guidance and regulations
5. Current situation assessments and recommendations
6. Restrictions (e.g., travel restrictions)
7. Economic and social consequences of COVID-19
8. Dealing with psychological stress caused by COVID-19

Organizational Identification	.81	4.98	1.39

1. I feel I have a lot in common with others in my organization
2. I find it easy to identify with this organization
3. I find that my values of those in this organization are not very similar (reverse-coded and omitted in analysis*)
4. I view my organization's problems as my problems

Organizational Norms	.93	5.65	1.29

1. My organization expects me to engage in behaviors that protect others and myself from COVID-19
2. Most people in my organization who are important to me think I should engage in behaviors that protect others and myself from COVID-19
3. Others in my organization expect me to engage in behaviors that protect others and myself from COVID-19
4. People in my organization whose opinions I value engage in behaviors that protect them and others from COVID-19

Threat Appraisal – Perceived Severity	.92	5.38	1.63

1. I believe that COVID-19 is a severe problem
2. I believe that COVID-19 has detrimental impacts on health
3. I believe that COVID-19 is a serious threat to my health
4. I believe that COVID-19 is a serious threat to society

Threat Appraisal – Perceived Susceptibility 1. I am at risk for severe illness from COVID-19 2. I believe that I have a high possibility of severe illness from the COVID-19 infection 3. I am likely to be negatively affected by COVID-19	.83	4.34	1.86
Coping Appraisal – Self-Efficacy 1. It is easy to engage in behaviors that protect me from COVID-19 2. I am not afraid to engage in behaviors that protect me from COVID-19 3. I am able to engage in behaviors that protect me from COVID-19	.84	5.75	1.25
Coping Appraisal – Response Efficacy 1. Engaging in protective behaviors ensures that I am protected from COVID-19 2. Engaging in protective behaviors is effective in preventing severe illness from COVID-19 3. Engaging in protective behaviors reassures me that I am safe from severe illness from COVID-19	.92	5.30	1.48
Protection Motivation Behavior 1. Hand hygiene (e.g., washing hands) 2. Social (physical) distancing measures 3. Avoiding touching eyes, nose, mouth 4. Respiratory etiquette (i.e., covering mouth when coughing or sneezing) 5. Self-isolation/quarantine 6. Wearing a mask or face covering 7. Vaccination	.88	6.08	1.39

Note: All the reliability scores were calculated using Cronbach's α in SPSS (v.28)

Relevant PMT Measures

Control Variables: Threat and Coping Appraisals

PMT contains two variables that assess individuals' appraisal of their threat: severity and susceptibility. It also contains two variables that assess individuals' appraisal of their coping abilities: self-efficacy and response efficacy.

Severity

Severity was measured on a four-item scale adapted from Jang & Park (2018), whose study had a reliability of α = .96, and asked respondents to indicate the degree to which they agree with the following four statements: (1) I believe that COVID-19 is a severe problem, (2) I believe that COVID-19 has detrimental impacts on health, (3) I believe that COVID-19 is a serious threat to my health, and (4) I believe that COVID-19 is a serious threat to society. In this study, these four items were combined to create a composite measure with $\alpha = 0.92$, and this measure had $M = 5.38$, and $SD = 1.63$.

Susceptibility

Susceptibility was measured on a three-item scale adapted from Jang & Park (2018) whose study had an α = .91, and it was assessed using the following statements: (1) I am at risk for severe COVID-19 infection, (2) I believe that I have a high possibility of severe illness from the COVID-19 infection, and (3) I am likely to be negatively affected by COVID-19. In this study, the composite measure had an $\alpha = 0.83$. and this measure had $M = 4.34$, and $SD = 1.86$.

Self-Efficacy

Self-efficacy was measured using a three-item scale adapted from Lwin, et al. (2010) fix this again (α = .87). Questions asked respondents to indicate the extent to which they agree with the following statements: (1) It is easy to engage in behaviors that protect me from COVID-19, (2) I am not afraid to engage in behaviors that protect me from COVID-19, and (3) I am able to engage in behaviors that protect me from COVID-19. The reliability of the items in this study was $\alpha = 0.84$. and this measure had $M = 5.75$, and $SD = 1.25$.

Response Efficacy

Response efficacy was also measured on a three-item scale adapted from Lwin, et al. (2010) fix (α = .88), and respondents were asked to indicate their agreement with the following statements: (1) Engaging in protective behaviors ensures that I am protected from COVID-19, (2) engaging in protective behaviors is effective in preventing severe illness from COVID-19, and (3) engaging in protective behaviors reassures me that I am safe from severe illness from COVID-19. In this study, the composite measure had a reliability of $\alpha = 0.92$. and this measure had $M = 5.30$, and $SD = 1.48$.

Dependent Variable: Protective Behaviors

Protection motivation behaviors

Protection motivation behaviors (i.e., behavioral intentions) was measured using a scale adapted from prior PMT research (Kim, et al., 2012) and asked participants to indicate their willingness to engage in seven types of COVID-19 protection measures (adapted from pro-environmental behaviors, α = .83). The COVID-19 risk reduction behaviors were extracted from

current literature on protective measures and COVID-19. These behaviors included (1) hand hygiene, (2) social distancing measures, (3) avoiding touching eyes, nose, mouth (4) respiratory etiquette, (5) self-isolation/quarantine, (6) wearing a mask or face covering, and (7) vaccination (Kowalski & Black, 2021; Machida, et al., 2020). In this study, the composite measure had a reliability of α = 0.88. and this measure had M = 6.08, and SD = 1.39.

Independent Variables: Organizational Measures

Organizational Identification

Organization identification was measured with a four-item scale used to assess identification with one's employer, i.e., organization. These items were adapted from Cheney (1987)'s Organizational Identification Questionnaire and have been used in prior identification research (Scott & Stephens, 2009; Scott, 1997) resulting in scale reliabilities ranging from .75 to .96. An example of this measure is: "I feel I have a lot in common with others in my organization." In this study, organizational identification included a reverse coded item as an additional attention check. A factor analysis revealed that inclusion of the reverse coded item results in α = 0.44, therefore resulting in dropping the reverse coded item (Item 3: "I find that my values and the values of those in this organization are not very similar") leading to a composite scale of three items with an acceptable reliability of α = 0.81. and this measure had M = 4.98, and SD = 1.39.

Organizational Norms (Protective Behaviors)

Measuring organizational norms related to protective behavior was adapted from Yang & Kahlor (2013)'s measurement of subjective norms (α = .88), applied to norms within one's

organization related to protective behavior. Four items were used to ask participants their perception of others' expectations within their organization related to protective behavior and COVID-19. An example of this measure is: "Most people in my organization think that I should take action to protect myself from COVID-19." In this study, the four items included in this scale result in a composite reliability of $\alpha = 0.93$. and this measure had $M = 5.65$, and $SD = 1.29$.

Exposure to protective action messages

Participants were asked how often they learned about COVID-19 from varying sources of information using a seven-item scale adapted from Rains' (2007) scale on exposure to information from sources ($\alpha = .95$). This item asked, "how often did you learn about COVID-19 from each of the following sources of information?" with a list of seven unique sources of information for the respondent to select frequency. The sources of information included talking with friends or family, social networking sites, governmental health agencies, talking with personal or family doctors, print or online news outlets, television, and the organization where one works. In this study, the reliability was $\alpha = 0.84$ and this measure had $M = 5.05$, and $SD = 1.37$. Because these items were from different sources of information, Table 4 provides the means of all sources of information exposure measured in the scale that reflect the frequency of people receiving their information from these different sources. Since the means are fairly consistent across sources of information, throughout the analysis, these will be treated as one scale for message exposure from all sources. It can be noted, however, that the highest mean within this scale is for message exposure from the "organization where I work." Table 4 below shows the means for frequency of message exposure across all sources, which are fairly consistent, but are shown in descending numerical order by mean.

Table 4. Table of means for frequency of message exposure across sources.

Source of information exposure	*M*	*SD*
1. Organization where I work	5.3	1.6
2. Television	5.1	1.6
3. Governmental health agencies	5.1	1.6
4. Talking with friends or family	5.0	1.5
5. Social networking sites	4.8	1.8
6. Talking with a personal or family doctor	4.6	1.7
7. Print or online news outlets	4.6	1.7

Organizational Information Satisfaction

Organizational information satisfaction related to COVID-19 (i.e., the extent to which one is satisfied with the information provided to them by their organization) was measured using a nine-item information satisfaction scale adapted from a social media information scale on COVID-19 information (Kor, et al., 2021) with an acceptable reliability of $\alpha = .79$. The scale provides topics shared from the organization related to COVID-19 and measures how satisfied or dissatisfied the individual was with the information on each topic related to COVID-19. Participants were asked to rate their level of satisfaction with information their organizations sent them about the pandemic and protective behaviors. Consistent with Kor, et al. (2021), those with high information satisfaction are those who rated the information as satisfied or very satisfied, and the rest are regarded as a low level of information satisfaction. Examples of items in this scale include "current spread of the coronavirus" and "economic and social consequences of the coronavirus." In this study, information satisfaction reliability was $\alpha = 0.93$ and this measure had $M = 5.08$, and $SD = 1.45$.

Demographics

At the end of the survey, I collected information on demographic variables used in analysis for this study. Respondents had an average age of 39 years (*SD* = 12.1) and a range of 18 years to 52 years. The majority of respondents were from the Southeast region of the U.S. (*n* = 102 , *N* = 376, % = 27.1), and a small majority identified as female (*n* = 199, *N* = 376, *%* = 52.9). Most respondents were not culturally or ethnically Hispanic (*n* = 307, *N* = 376, *%* = 81.6) and identified their race as White (*n* = 266, *N* = 376, *%* = 70.7), followed by Black or African-American (*n* = 71, *N* = 376, *%* = 18.9). Most participants had attended a 4-year college (BA, BS) (*n* = 108, *N* = 376, *%* = 28.7), or some college (*n* = 102, *N* = 376, *%* = 27.1). Most participants were married (*n* = 182, *N* = 376, *%* = 48.4) or single (*n* = 143, *N* = 376, *%* = 38) and did have children (*n* = 243, *N* = 376, *%* = 64.6). The majority of participants had a household income in the income range between $=30,000 and $49,999 (*n* = 86, *N* = 376, *%* = 22.9).

Table 5. Demographic characteristics for all participants in this study.

	N	***Frequency (%)***	***Mean***	***SD***
Age in years	376		39	12.1
Region				
Midwest		88 (23.4%)		
Northeast		77 (20.5%)		
Southeast		102 (27.1%)		
Southwest		56 (14.9%)		
West		52 (13.8%)		
Outside U.S.		1 (.3%)		
Gender				
Male		172 (45.7%)		
Female		199 (52.9%)		
Non-binary / third gender		3 (.8%)		
Prefer not to say		2 (.5%)		

Race			
	Black or African American	71	(18.9%)
	American Indian/Alaskan Native	2	(.5%)
	Asian	23	(6.1%)
	Native Hawaiian/Pacific Islander	2	(.5%)
	White (including Hispanic White)	266	(70.7%)
	Other	12	(3.2%)
Ethnicity (Culturally or Ethnically Hispanic)			
	No	307	(81.6%)
	Yes	69	(18.4%)
Education Level			
	< High school	3	(.8%)
	High school	46	(12.2%)
	Community college	42	(11.2%)
	Some college	102	(27.1%)
	4-year college	108	(28.7%)
	Graduate or professional degree	75	(19.9%)
Marital Status			
	Single	143	(38%)
	Married	182	(48.4%)
	Divorced	41	(10.9%)
	Widowed	10	(2.7%)
Children			
	No	133	(35.4%)
	Yes	243	(64.6%)
Children under 12 years	243		
	No	102	(27.1%)
	Yes	141	(37.5%)
COVID diagnosis	368		
	No	279	(74.2%)
	Yes	89	(23.7%)
Years at Organization			
	< 1 year	45	(12%)
	1 to 3 years	94	(25%)
	3 to 5 years	87	(23.1%)
	5 to 7 years	48	(12.8%)
	> 7 years	102	(27.1%)

Job title		
Associate	230	(61.2%)
Manager	101	(26.9%)
Director and above	45	(12%)
Work type		
Working from home, continued working from home	73	(19.4%)
Returned to office	195	(51.9%)
Planning to return	52	(13.8%)
Working from home due to closures, continued working from home	56	(14.9%)
Income		
< $29,999	44	(11.7%)
$30,000 to $49,999	86	(22.9%)
$50,000 to $69,999	72	(19.1%)
$70,000 to $89,999	47	(12.5%)
$90,000 to $109,999	30	(8%)
$110,000 to $129,999	24	(6.4%)
$130,000 to $149,999	30	(8%)
$150,000 or more	43	(11.4%)

Chapter Summary

In this chapter, I detailed the method for carrying out this study on employee protective behaviors in organizations during a health crisis. In particular, I described the study context, provided an overview, explained the data collection timeline and process, and described the participants. Additionally, I addressed the operationalization of each variable and the reliability of measures used in this study. The subsequent chapter offers a complete review of the data analysis process as well as results.

Chapter 4: Results

Study Overview

This chapter details the data analysis procedures from initial data analysis including regression assumptions through running the final linear and hierarchical linear regressions. The following section provides an overview of assessments done to inspect the quality of the data prior to analysis. Unless otherwise cited, regression assumption standards are consistent with Darlington & Hayes (2016).

Statistical Assumptions prior to Data Analysis

Prior to data analysis, the data were inspected to address any violations of regression assumptions including linearity, homoscedasticity, multicollinearity, independence, normality, and outliers (Hayes, 2017). The following sections detail the statistical assumptions addressed, the method used to inspect each assumption, and how the data met assumptions for regression analysis.

Linearity

The assumption of linearity is that the relationship between the independent variables (IVs) and the dependent variables (DVs) can be characterized as linear, or by a straight line. This assumption can most easily be checked by performing scatterplots of the relationship between each of the IVs and DVs. To fully test the assumption of linearity, I produced scatterplots in SPSS to assess the relationship between each IV (Y-axis) and DV (X-axis). Upon inspection of each scatterplot, I concluded that the relationships were modeled by straight lines, suggesting

that the relationship between variables is linear. Therefore, I concluded that there was not a violation of linearity, or in other words, the linearity assumption was met within the data.

Homoscedasticity

Further inspection of the plots allowed the testing of the assumption of homoscedasticity, which is the assumption that the variation in the residuals (i.e., error) is similar across the points in the data. Upon inspection of the original scatter plots as well as a graph that included the entire model of data, it was found that as the predicted values increase along the X-axis, the variation remained similar, appearing as random dots rather than a particular pattern. Therefore, this assumption was also met.

Multicollinearity

The next assumption I tested was multicollinearity, which assures that the predictors (IVs) are not too highly correlated. I performed two tests to check this assumption. I began by looking at the correlation tables for the dataset, assessing whether any correlations surpassed the suggested threshold of $r > 0.8$. There were no variables that were problematic in the dataset. Additionally, I looked at the coefficients table to double check for any instances of multicollinearity in the data and assure that none of the higher r scores were problematic. Upon inspection of the VIF and Tolerance statistics, the assumption of multicollinearity was met, as the VIF values were below 10 and the tolerance statistics were above 0.2 across the data.

Independence

The independence assumption was not an issue in this data because it was survey data collected by individuals separately. Therefore, it can be concluded that this assumption was met.

Normality

The normality assumption states that the values of the residuals are normally distributed. This assumption was tested by inspecting the Normal Predicted Probability (P-P) Plot. In the P-P plot for this dataset, the residuals (which appear as dots in the plot) are very closely conformed to the diagonal normality line, which rules out any violation of normality.

Outliers

The last assumption I checked prior to data analysis was looking for outliers to assure there are no influential cases that would bias the results of the regressions. This was done by examining the Cook's Distance statistic for each participant. There were no values over 1 in the dataset, so there are no instances of significant outliers that needed to be removed before proceeding with analysis.

The following section provides an overview of the study's hypotheses and research questions. Table 6 below shows a summary of the hypotheses and research questions that guided the study and it previews the results of those tests.

Table 6. Summary of Hypotheses and Research Questions, including Results Preview

H1:	Controlling for perceived susceptibility, severity, self-efficacy, response efficacy, organizational identification will be positively related to protection motivation behavior.	Not supported
RQ1a:	How does organizational identification impact the relationship between perceived susceptibility and protection motivation behavior?	No Moderation

RQ1b:	How does organizational identification impact the relationship between perceived severity and protection motivation behavior?	No Moderation
RQ1c:	How does organizational identification impact the relationship between perceived self-efficacy and protection motivation behavior?	No Moderation
RQ1d:	How does organizational identification impact the relationship between perceived response efficacy and protection motivation behavior?	No Moderation
H2:	Controlling for perceived susceptibility, severity, self-efficacy, and response efficacy, organizational norms will be positively related to protection motivation behavior.	Not supported
RQ2a:	How do organizational norms impact the relationship between perceived susceptibility and protection motivation behavior?	No Moderation
RQ2b:	How do organizational norms impact the relationship between perceived severity and protection motivation behavior?	No Moderation
RQ2c:	How do organizational norms impact the relationship between perceived self-efficacy and protection motivation behavior?	No Moderation
RQ2d:	How do organizational norms impact the relationship between perceived response efficacy and protection motivation behavior?	No Moderation
H3:	Controlling for perceived susceptibility, severity, self-efficacy, and response efficacy, message exposure will be positively related to protection motivation behavior.	Supported, Significant positive relationship
RQ3a:	How does message exposure impact the relationship between perceived susceptibility and protection motivation behavior?	No Moderation

RQ3b:	How does message exposure impact the relationship between perceived severity and protection motivation behavior?	Significant Negative Moderation
RQ3c:	How does message exposure impact the relationship between perceived self-efficacy and protection motivation behavior?	Significant Negative Moderation
RQ3d:	How does message exposure impact the relationship between perceived response efficacy and protection motivation behavior?	Significant Negative Moderation
RQ4:	Controlling for perceived susceptibility, severity, self-efficacy, and response efficacy, how is organizational information satisfaction related to protection motivation behavior?	Significant Positive Relationship
RQ5a:	How does organizational information satisfaction impact the relationship between perceived susceptibility and protection motivation behavior?	No Moderation
RQ5b:	How does organizational information satisfaction impact the relationship between perceived severity and protection motivation behavior?	Significant Negative Moderation
RQ5c:	How does organizational information satisfaction impact the relationship between perceived self-efficacy and protection motivation behavior?	No Moderation
RQ5d:	How does organizational information satisfaction impact the relationship between perceived response efficacy and protection motivation behavior?	No Moderation
RQ6:	How do organizational information satisfaction, organizational norms, organizational identification, and message exposure affect protective motivation behavior?	Organizational information satisfaction, organizational norms, and message exposure were significant predictors. Organizational identification was not a significant predictor.

To begin the analyses, I examined the correlations of all the variables in this study. Table 7 presents the bivariate correlations for all variables used in analysis. Many of the variables had significant positive correlations with each other at the .01 levels. As a reminder, in several of the following analyses, this study controls for PMT variables because while the PMT addresses cognitive evaluations of the outcomes of health-related choices (Kowalski & Black, 2021), and is one of the most comprehensive models used to address protective health behavior (Floyd, et al., 2000), there has been limited research that attempts to understand the possible influences of external factors related to one's organization. By controlling for the tested and supported relationships between current PMT variables and protection motivation, these analyses will look at the possible impact that organizational variables have on protective behavior taken during a health crisis. Additionally, the demographic variable that significantly affected some models was age. Therefore, age was included as an additional control variable in the hierarchical linear regressions where it was found to be significant in predicting protection motivation behavior. In models where age was non-significant, it was omitted from the analyses.

Table 7. Bivariate Correlations for Key Study Variables

Variable	1	2	3	4	5	6	7	8	9
1 Organizational Identification	1								
2 Organizational Norms	.54**	1							
3 Organizational Information Satisfaction	.49**	.57**	1						
4 Message Exposure	.36**	.28**	.29**	1					
5 Severity	.27**	.29**	.26**	.30**	1				
6 Susceptibility	.22*	.19**	.20**	.30**	.57**	1			
7 Self-Efficacy	.38**	.48**	.41**	.26**	.46**	.24**	1		
8 Response Efficacy	.39**	.42**	.43**	.34**	.62**	.42**	.59**	1	
9 Protection Motivation	.24**	.33**	.35**	.32**	.57**	.26**	.51**	.54**	1

Note. N =376, * $p \leq .05$, ** $p \leq .01$

Hypothesis 1: Organizational identification and protection motivation behavior

The first hypothesis in this study addressed the role of organizational identification, controlling for PMT variables (perceived susceptibility, severity, self-efficacy, response efficacy) on intention to engage in protective behavior (protection motivation). Hypothesis 1 predicted that organizational identification would be positively related to an individual's protection motivation. To examine the relationship between organizational identification and protection motivation, controlling for the PMT variables, a hierarchical linear regression model was performed. The control variable of age was entered into block 1 of the regression model, followed by the controls of perceived susceptibility, severity, self-efficacy, and response efficacy into block 2 of the regression model, followed by entering organizational identification into block 3 of the model with the outcome variable of protection motivation.

The hierarchical regression indicated that block 1 was significant, with age contributing significantly to protection motivation behavior ($\beta = .17$, $p < .01$). Block 2 was also significant with the PMT variables contributing significantly to protection motivation behavior. Age ($\beta = .11$, $p < .01$), perceived severity ($\beta = .40$, $p < .01$), perceived susceptibility ($\beta = -.11$, $p < .05$), perceived self-efficacy ($\beta = .23$, $p < .01$) and perceived response efficacy ($\beta = .20$, $p < .01$) were significant predictors of protection motivation behavior and the model was significant $F(4, 371) = 67.76$, $R^2_{adj.} = .42$, $p < .01$. In block 3, age ($\beta = .17$, $p < .01$), perceived severity ($\beta = .40$, $p < .01$), perceived susceptibility ($\beta = -.11$, $p < .05$), perceived self-efficacy ($\beta = .23$, $p < .01$) and perceived response efficacy ($\beta = .20$, $p < .01$) were still significant predictors, but organizational identification did not contribute significant variance to the model ($\beta = -.01$, $p > .05$). The overall model was not significant with an $F(6, 369) = 42.59$, $R^2_{adj.} = .43$, $p > .05$, and no significant R^2

change = .00, $p > .05$. The resulting model shows that organizational identification did not significantly contribute to the variance in predicting protection motivation behavior.

Table 8. The Impact of Organizational Identification and PMT Variables on Protection Motivation Behavior

	Variable	B	SE B	β
Step 1	*Controls*			
	Age	.02	.01	.17**
Step 2				
	Age	.01	.00	.11**
	Perceived Severity	.30	.04	.40**
	Perceived Susceptibility	-.08	.03	-.11*
	Perceived Self Efficacy	.23	.05	.23**
	Perceived Response Efficacy	.17	.05	.20**
Step 3				
	Age	.01	.00	.11**
	Perceived Severity	.31	.04	.40**
	Perceived Susceptibility	-.08	.03	-.11*
	Perceived Self Efficacy	.21	.05	.23**
	Perceived Response Efficacy	.16	.05	.20**
	Organizational Identification	-.01	.04	-.01

*$p \leq .05$, **$p \leq .01$
$R^2_{adj.} = .43$, $\Delta R^2 = .00$

Research Question 1a: Organizational identification impact on perceived susceptibility and protection motivation behavior

Research Question 1A asks about the impact of organizational identification on the relationship between perceived susceptibility and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that organizational identification does not significantly moderate the relationship between perceived susceptibility and protection motivation behavior F (1, 372) = .317, p = .574.

Table 9. The Impact of Organizational Identification on Susceptibility and Protection Motivation

					95% CI	
Variable	β	SE B	t	p	Lower	Upper
Constant	4.33**	.51	8.45	.00	3.32	5.34
Perceived Susceptibility	.20	.11	1.78	.08	-.03	.43
Information Identification	.23*	.10	2.27	.02	.03	.42
Int_Susceptibility x Organizational Identification	-.01	.02	-.56	.57	-.05	.03

*$p \leq .05$, **$p \leq .01$

Research Question 1b: Organizational identification impact on perceived severity and protection motivation behavior

Research Question 1B asks about the impact of organizational identification on the relationship between perceived severity and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that organizational identification does not significantly moderate

the relationship between perceived severity and protection motivation behavior F (1, 372) = .043, p = .836.

Table 10. The Impact of Organizational Identification on Severity and Protection Motivation

					95% CI	
Variable	β	SE B	t	p	Lower	Upper
Constant	3.31**	.56	5.93	.00	2.21	4.41
Perceived Severity	.43**	.10	4.19	.00	-.12	.34
Organizational Identification	.12	.12	.95	.34	-.12	.34
Int_Severity x Organizational Identification	-.00	.02	-.21	.84	-.04	.04

*$p \leq .05$, **$p \leq .01$

Research Question 1c: Organizational identification impact on perceived self-efficacy and protection motivation behavior

Research Question 1C asks about the impact of organizational identification on the relationship between perceived self-efficacy and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that organizational identification does not significantly moderate the relationship between perceived self-efficacy and protection motivation behavior F (1, 372) = .350, p = .555.

Table 11. The Impact of Organizational Identification on Self Efficacy and Protection Motivation

					95% CI	

Variable	β	SE B	t	p	95% CI Lower	95% CI Upper
Constant	3.42**	.71	4.79	.00	2.01	4.82
Self-Efficacy	.42**	.13	3.3	.00	.17	.66
Organizational Identification	-.04	.16	-.23	.81	-.35	.28
Int_Self Efficacy x Organizational Identification	.02	.03	.59	.55	-.04	.07

*$p \leq .05$, **$p \leq .01$

Research Question 1d: Organizational identification impact on perceived response efficacy and protection motivation behavior

Research Question 1D asks about the impact of organizational identification on the relationship between perceived response efficacy and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that organizational identification does not significantly moderate the relationship between perceived response efficacy and protection motivation behavior F (1, 372) = 2.88, p = .091.

Table 12. The Impact of Organizational Identification on Response Efficacy and Protection Motivation

Variable	β	SE B	t	p	95% CI Lower	95% CI Upper
Constant	4.53**	.62	7.32	.00	3.31	5.75
Response Efficacy	.26*	.12	2.17	.03	.02	.49
Organizational Identification	-.18	.13	-1.35	.18	-.44	.08
Int_Response Efficacy x Organizational Identification	.04	.02	1.7	.09	-.01	.09

*$p \leq .05$, **$p \leq .01$

Hypothesis 2: Organizational norms and protection motivation behavior

The second hypothesis in this study addresses the role of organizational norms, controlling for PMT variables (perceived susceptibility, severity, self-efficacy, response efficacy) on intention to engage in protective behavior (protection motivation). Hypothesis 2 predicted that organizational norms would be positively related to an individual's protection motivation. To examine the relationship between organizational norms and protection motivation, controlling for the PMT variables, a hierarchical linear regression model was performed. The control variables of perceived susceptibility, severity, self-efficacy, and response efficacy were entered into block 1 of the regression model, followed by entering organizational norms into block 2 of the model with the outcome variable of protection motivation. The hierarchical linear regression model was carried out to assess the relationship between organizational norms and protection motivation when controlling for PMT variables.

The hierarchical regression indicated that block 1 was significant, with the PMT variables contributing significantly to protection motivation behavior. Perceived severity ($\beta = .40$, $p < .01$), perceived susceptibility ($\beta = -.11$, $p < .05$), perceived self-efficacy ($\beta = .23$, $p < .01$) and perceived response efficacy ($\beta = .20$, $p < .01$) were significant predictors of protection motivation behavior and the model was significant $F(4, 371) = 67.76$, $R^2_{adj.} = .42$, $p < .01$. In block 2, perceived severity ($\beta = .40$, $p < .01$), perceived susceptibility ($\beta = -.11$, $p < .05$), perceived self-efficacy ($\beta = .21$, $p < .01$) and perceived response efficacy ($\beta = .19$, $p < .01$) were still significant predictors, but organizational norms did not contribute significant variance to the model ($\beta = .05$, $p > .05$). The overall model was not significant with an $F(5, 370) = 54.43$, $R^2_{adj.}$

= .42, $p > .05$, and no significant R^2 change = .00, $p > .05$. The resulting model shows that organizational norms did not significantly contribute to the variance in predicting protection motivation behavior.

Table 13. The Impact of Organizational Norms and PMT Variables on Protection Motivation Behavior

	Variable	B	SE B	β
Step 1	*Controls*			
	Perceived Severity	.31	.04	.40**
	Perceived Susceptibility	-.08	.03	-.11*
	Perceived Self Efficacy	.23	.05	.23**
	Perceived Response Efficacy	.17	.05	.20**
Step 2				
	Perceived Severity	.31	.04	.40**
	Perceived Susceptibility	-.08	.03	-.11*
	Perceived Self Efficacy	.21	.05	.21**
	Perceived Response Efficacy	.16	.05	.19**
	Organizational Norms	.05	.05	.05

*$p \leq .05$, **$p \leq .01$
$R^2_{adj.} = .42$, $\Delta R^2 = .00$

Research Question 2a: Organizational norms impact on perceived susceptibility and protection motivation behavior

Research Question 2A asks about the impact of organizational norms on the relationship between perceived susceptibility and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis

indicated that organizational norms does not significantly moderate the relationship between perceived susceptibility and protection motivation behavior F (1, 372) = .056, p = .813.

Table 14. The Impact of Organizational Norms on Susceptibility and Protection Motivation

					95% CI	
Variable	β	SE B	t	p	Lower	Upper
Constant	4.03**	.58	7.09	.00	2.91	5.14
Perceived Susceptibility	.10	.13	.78	.44	-.16	.36
Organizational Norms	.26**	.09	2.63	.01	.07	.46
Int_Susceptibility x Organizational Norms	.005	.02	.24	.81	-.04	.05

*$p \leq .05$, **$p \leq .01$

Research Question 2b: Organizational norms impact on perceived severity and protection motivation behavior

Research Question 2B asks about the impact of organizational norms on the relationship between perceived severity and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that organizational norms does not significantly moderate the relationship between perceived severity and protection motivation behavior F (1, 372) = .124, p = .725.

Table 15. The Impact of Organizational Norms on Severity and Protection Motivation

					95% CI	
Variable	β	SE B	t	p	Lower	Upper
Constant	2.78**	.67	4.14	.00	1.46	4.1

Perceived Severity	.44**	.13	3.42	.00	.19	.69
Organizational Norms	.21	.12	1.72	.09	-.03	.45
Int_Severity x Organizational Norms	-.01	.022	-.35	.73	-.05	.04

*$p \leq .05$, **$p \leq .01$

Research Question 2c: Organizational norms impact on perceived self-efficacy and protection motivation behavior

Research Question 2C asks about the impact of organizational norms on the relationship between perceived self-efficacy and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that organizational norms does not significantly moderate the relationship between perceived self-efficacy and protection motivation behavior F (1, 372) = .003, p = .954.

Table 16. The Impact of Organizational Norms on Perceived Self Efficacy and Protection Motivation

					95% CI	
Variable	*β*	SE B	*t*	*p*	Lower	Upper
Constant	2.81**	.92	3.04	.00	.99	4.63
Perceived Self Efficacy	.46**	.16	2.81	.01	-.23	.47
Organizational Norms	.12	.18	.66	.51	-.23	.47
Int_Self Efficacy x Organizational Norms	-.00	.03	-.06	.95	-.06	.06

*$p \leq .05$, **$p \leq .01$

Research Question 2d: Organizational norms impact on perceived response efficacy and protection motivation behavior

Research Question 2D asks about the impact of organizational norms on the relationship between perceived response efficacy and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that organizational norms does not significantly moderate the relationship between perceived response efficacy and protection motivation behavior F (1, 372) = .207, p = .649.

Table 17. The Impact of Organizational Norms on Perceived Response Efficacy and Protection Motivation

					95% CI	
Variable	β	SE B	t	p	Lower	Upper
Constant	3.53**	.72	4.91	.00	2.12	4.94
Perceived Response Efficacy	.35**	.14	2.51	.01	.08	.63
Organizational Norms	.06	.13	.45	.65	-.20	.32
Int_Response Efficacy x Organizational Norms	.01	.02	.46	.65	-.04	.06

*$p \leq .05$, **$p \leq .01$

Hypothesis 3: Message exposure and protection motivation behavior

The third hypothesis in this study addresses the role of message exposure, controlling for PMT variables (perceived susceptibility, severity, self-efficacy, response efficacy) on intention to engage in protective behavior (protection motivation). Hypothesis 3 predicted that message exposure would be positively related to an individual's protection motivation. To examine the

relationship between message exposure and protection motivation, controlling for the PMT variables, a hierarchical linear regression model was performed. The control variable of age was entered into block 1, and the control variables of perceived susceptibility, severity, self-efficacy, and response efficacy were entered into block 2 of the regression model, followed by entering message exposure into block 3 of the model with the outcome variable of protection motivation. The hierarchical linear regression model was carried out to assess the relationship between message exposure and protection motivation when controlling for PMT variables.

The hierarchical regression indicated that block 1 was significant, with age contributing significantly to protection motivation behavior ($\beta = .17$, $p < .01$). Block 2 was also significant with age and the PMT variables contributing significantly to protection motivation behavior. Age ($\beta = .11$, $p < .01$), perceived severity ($\beta = .40$, $p < .01$), perceived susceptibility ($\beta = -.11$, $p < .05$), perceived self-efficacy ($\beta = .23$, $p < .01$) and perceived response efficacy ($\beta = .20$, $p < .01$) were significant predictors of protection motivation behavior and the model was significant $F(4, 371) = 67.76$, $R^2_{adj.} = .42$, $p < .01$. In block 3, age ($\beta = .12$, $p < .01$), perceived severity ($\beta = .40$, $p < .01$), perceived susceptibility ($\beta = -.14$, $p < .01$), perceived self-efficacy ($\beta = .22$, $p < .01$) and perceived response efficacy ($\beta = .18$, $p < .01$) were still significant predictors, and message exposure contributed significant, unique variance to the model ($\beta = .12$, $p < .01$). This overall model was significant with an $F(6, 369) = 47.00$, $R^2_{adj.} = .43$, $p < .01$, with a significant R^2 change = .01, $p < .01$. The resulting model contributed 43 percent of the variance in predicting protection motivation behaviors. Participants with a higher level of message exposure across all sources of information, including their organization, reported a higher level of protection motivation behavior.

Table 18. The Impact of Message Exposure and PMT Variables on Protection Motivation Behavior

	Variable	B	SE B	β
Step 1	*Controls*			
	Age	.02	.01	.17**
Step 2				
	Age	.01	.00	.11**
	Perceived Severity	.31	.04	.40**
	Perceived Susceptibility	-.08	.03	-.11*
	Perceived Self Efficacy	.23	.05	.23**
	Perceived Response Efficacy	.17	.05	.20**
Step 3				
	Age	.01	.00	.12**
	Perceived Severity	.30	.04	.40**
	Perceived Susceptibility	-.09	.03	-.14**
	Perceived Self Efficacy	.22	.05	.22**
	Perceived Response Efficacy	.15	.05	.18**
	Message Exposure	.11	.04	.12**

*$p \leq .05$, **$p \leq .01$
$R^2_{adj.} = .43$, $\Delta R^2 = .01$**

Research Question 3a: Message exposure impact on perceived susceptibility and protection motivation behavior

Research Question 3A asks about the impact of message exposure on the relationship between perceived susceptibility and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis

indicated that message exposure, including message exposure, does not significantly moderate the relationship between perceived susceptibility and protection motivation behavior F (1, 372) = 2.91, p = .089.

Table 19. The Impact of Message Exposure on Susceptibility and Protection Motivation

					95% CI	
Variable	*β*	SE B	*t*	*p*	Lower	Upper
Constant	3.64**	.48	7.55	.00	2.69	4.58
Perceived Susceptibility	.31**	.12	2.63	.01	.08	.54
Message Exposure	.39**	.09	4.04	.00	.19	.58
Int_Susceptibility x Message Exposure	-.04	.02	-1.71	.09	-.08	.01

*$p \leq .05$, **$p \leq .01$

Research Question 3b: Message exposure impact on perceived severity and protection motivation behavior

Research Question 3B asks about the impact of message exposure on the relationship between perceived severity and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that message exposure significantly and negatively moderates the relationship between perceived severity and protection motivation behavior F (1, 372) = 11.99, p = .001. It was found that as message exposure increases, the effect of perceived severity on protection motivation decreases. The more people are exposed to organizational messages, the less of an impact perceived severity has on one's protective behavior. From these results, it can be concluded that

the effect of perceived severity on protection motivation is partially moderated by message exposure.

Table 20. The Impact of Message Exposure on Perceived Severity and Protection Motivation

					95% CI	
Variable	*β*	SE B	*t*	*p*	Lower	Upper
Constant	1.64**	.50	3.26	.00	.65	2.63
Perceived Severity	.72**	.09	7.28	.00	.52	.91
Message Exposure	.48**	.10	4.65	.00	.28	.69
Int_Severity x Message Exposure	-.07**	.02	-3.5	.00	-.10	-.03

*$p \leq .05$, **$p \leq .01$

Research Question 3c: Message exposure impact on perceived self-efficacy and protection motivation behavior

Research Question 3C asks about the impact of message exposure on the relationship between perceived self-efficacy and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that message exposure, including message exposure, significantly and negatively moderates the relationship between perceived self-efficacy and protection motivation behavior $F(1, 372) = 7.19$, $p = .008$. It was found that as message exposure increases, the effect of perceived self-efficacy on protection motivation decreases. The more exposure people have to messages, the less of an impact perceived self-efficacy has on one's protective behavior. From these results, it can be concluded that the effect of perceived self-efficacy on protection motivation is partially moderated by message exposure.

Table 21. The Impact of Message Exposure on Self Efficacy and Protection Motivation

					95% CI	
Variable	*β*	SE B	*t*	*P*	Lower	Upper
Constant	.57	.79	.71	.48	-.99	2.13
Self-Efficacy	.80**	.14	5.85	.00	.53	1.1
Message Exposure	.61**	.16	3.72	.00	.29	.93
Int_Self Efficacy x Message Exposure	-.07**	.03	-2.68	.01	-.13	-.02

*$p \leq .05$, **$p \leq .01$

Research Question 3d: Message exposure impact on perceived response efficacy and protection motivation behavior

Research Question 3D asks about the impact of message exposure on the relationship between perceived response efficacy and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that message exposure significantly and negatively moderates the relationship between perceived response efficacy and protection motivation behavior F (1, 372) = 6.90, p = .009. It was found that as message exposure increases, the effect of response efficacy on protection motivation decreases. The more people are exposed to messages across all sources including their organization, the less of an impact response efficacy has on one's protective behavior. From these results, it can be concluded that the effect of perceived response efficacy on protection motivation is partially moderated by message exposure.

Table 22. The Impact of Message Exposure on Response Efficacy and Protection Motivation

					95% CI	
Variable	*β*	SE B	*t*	*p*	Lower	Upper
Constant	1.73**	.61	2.85	.01	.54	2.92
Response Efficacy	.71**	.12	5.97	.00	.47	.94
Message Exposure	.45**	.12	3.6	.00	.20	.69
Int_Response Efficacy x Message Exposure	-.06**	.02	-2.63	.01	-.12	-.02

*$p \leq .05$, **$p \leq .01$

Research Question 4: Organizational information satisfaction and protection motivation behavior

Research Question 4 asks about the role of organizational information satisfaction, controlling for PMT variables (perceived susceptibility, severity, self-efficacy, response efficacy) on intention to engage in protective behavior (protection motivation). To examine the relationship between organizational information satisfaction and protection motivation, controlling for the PMT variables, a hierarchical linear regression model was performed. The control variables of perceived susceptibility, severity, self-efficacy, and response efficacy were entered into block 1 of the regression model, followed by entering organizational information satisfaction into block 2 of the model with the outcome variable of protection motivation. The hierarchical linear regression model was carried out to assess the relationship between organizational information satisfaction and protection motivation when controlling for PMT variables.

The hierarchical regression indicated that block 1 was significant, with the PMT variables contributing significantly to protection motivation behavior. Perceived severity ($\beta = .40$, $p <$

.01), perceived susceptibility (β = -.11, p < .05), perceived self-efficacy (β = .23, p < .01) and perceived response efficacy (β = .20, p < .01) were significant predictors of protection motivation behavior and the model was significant $F(4, 371) = 67.76$, $R^2_{adj.} = .42$, p <.01. In block 2, perceived severity (β = .41, p < .01), perceived susceptibility (β = -.12, p < .05), perceived self-efficacy (β = .20, p < .01) and perceived response efficacy (β = .17, p < .05) were still significant predictors, and organizational information satisfaction contributed significant, unique variance to the model (β = .12, p < .05). This overall model was significant with an $F(5, 370) = 56.44$, $R^2_{adj.} = .43$, p < .01, with a significant R^2 change = .01, p < .01. The resulting model contributed 43 percent of the variance in predicting protection motivation behaviors. Participants with a higher level of organizational information satisfaction reported a higher level of protection motivation behavior.

Table 23. The Impact of Organizational Information Satisfaction and PMT Variables on Protection Motivation Behavior

	Variable	B	SE B	β
Step 1	*Controls*			
	Perceived Severity	.31	.04	.40**
	Perceived Susceptibility	-.08	.03	-.11*
	Perceived Self Efficacy	.23	.05	.23**
	Perceived Response Efficacy	.17	.05	.20**
Step 2				
	Perceived Severity	.32	.04	.41**
	Perceived Susceptibility	-.08	.03	-.12*
	Perceived Self Efficacy	.20	.05	.20**
	Perceived Response Efficacy	.14	.05	.17**

Organizational Information Satisfaction	.10	.04	.12**

*$p \leq .05$, **$p \leq .01$
$R^2_{adj.} = .43$, $\Delta R^2 = .01$*

Research Question 5a: Organizational information satisfaction impact on perceived susceptibility and protection motivation behavior

Research Question 5A asks about the impact of organizational information satisfaction on the relationship between perceived susceptibility and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that organizational information satisfaction does not significantly moderate the relationship between perceived susceptibility and protection motivation behavior F (1, 372) = 2.61, p = .107.

Table 24. The Impact of Organizational Information Satisfaction on Susceptibility and Protection Motivation

					95% CI	
Variable	*β*	SE B	*t*	*p*	Lower	Upper
Constant	3.45**	.49	6.95	.00	2.48	4.43
Perceived Susceptibility	.30*	.11	2.70	.01	.08	.52
Information Satisfaction	.40**	.09	4.27	.00	.22	.59
Int_Susceptibility x Information Satisfaction	-.03	.02	-1.62	.11	-.07	.01

*$p \leq .05$, **$p \leq .01$

Research Question 5b: Organizational information satisfaction impact on perceived severity and protection motivation behavior

Research Question 5B asks about the impact of organizational information satisfaction on the relationship between perceived severity and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that organizational information satisfaction significantly and negatively moderates the relationship between perceived severity and protection motivation behavior F (1, 372) = 17.22, p = .000. It was found that as organizational information satisfaction increases, the effect of perceived severity on protection motivation decreases. The more satisfied people are with the information their organization shares, the less of an impact perceived severity has on one's protective behavior. From these results, it can be concluded that the effect of perceived severity on protection motivation is partially moderated by organizational information satisfaction.

Table 25. The Impact of Organizational Information Satisfaction on Severity and Protection Motivation

					95% CI	
Variable	*β*	SE B	*t*	*p*	Lower	Upper
Constant	.67	.61	1.09	.27	-.53	1.86
Perceived Severity	.83**	.11	7.51	.00	.61	1.05
Information Satisfaction	.66**	.12	5.53	.00	.43	.90
Int_Severity x Information Satisfaction	-.09**	.02	-4.15	.00	-.13	-.05

*$p \leq .05$, **$p \leq .01$

Research Question 5c: Organizational information satisfaction impact on perceived self-efficacy and protection motivation behavior

Research Question 5C asks about the impact of organizational information satisfaction on the relationship between perceived self-efficacy and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017). The moderation analysis indicated that organizational information satisfaction does not significantly moderate the relationship between perceived self-efficacy and protection motivation behavior F (1, 372) = 3.39, p = .066.

Table 26. The Impact of Organizational Information Satisfaction on Self Efficacy and Protection Motivation

					95% CI	
Variable	*β*	SE B	*t*	*p*	Lower	Upper
Constant	1.42	.81	1.74	.08	-.18	3.01
Perceived Self Efficacy	.69**	.14	4.77	.00	.40	.97
Information Satisfaction	.45**	.17	2.66	.01	.12	.78
Int_Self Efficacy x Information Satisfaction	-.05	.03	-1.84	.07	-.11	.00

*$p \leq .05$, **$p \leq .01$

Research Question 5d: Organizational information satisfaction impact on perceived response efficacy and protection motivation behavior

Research Question 5D asks about the impact of organizational information satisfaction on the relationship between perceived response efficacy and protection motivation behavior. A moderation analysis was conducted using the PROCESS macro v4.1 for SPSS (Hayes, 2017).

The moderation analysis indicated that organizational information satisfaction does not significantly moderate the relationship between perceived response efficacy and protection motivation behavior F (1, 372) = 3.61, p = .058.

Table 27. The Impact of Organizational Information Satisfaction on Response Efficacy and Protection Motivation

					95% CI	
Variable	β	SE B	t	p	Lower	Upper
Constant	2.16**	.64	3.35	.00	.89	3.42
Response Efficacy	.63**	.12	2.76	.00	.38	.87
Information Satisfaction	.37**	.13	2.76	.01	.10	.63
Int_Response Efficacy x Information Satisfaction	-.05	.02	-1.9	.06	-.09	.00

*$p \leq .05$, **$p \leq .01$

Research Question 6: Organizational variables and protection motivation behavior

Research question 6 asked how organizational variables (organizational information satisfaction, organizational norms, organizational identification, and message exposure) affect protective motivation behavior. Linear regression was used to test each of the organizational variables' relationships with protection motivation.

A multiple linear regression was performed to assess the relationship between the organizational variables of message exposure, organizational information satisfaction, organizational norms, and organizational identification, and the outcome of protection motivation. The regression indicated a significant, positive relationship between message exposure and protection motivation behavior (β = .22, p < .001). As message exposure increases,

protection motivation behavior increases. It also indicated a significant, positive relationship between organizational information satisfaction and protection motivation behavior ($\beta = .20$, $p < .001$). As organizational information satisfaction increases, protection motivation behavior increases. There was a significant, positive relationship between organizational norms and protection motivation behavior ($\beta = .16$, $p = .01$). As organizational norms increase, protection motivation behavior increases. Lastly, the regression indicated that there is not a significant relationship between organizational identification and protection motivation behavior ($\beta = -.02$, $p > .05$). Organizational identification does not significantly impact protection motivation behavior.

The overall model which included the significant organizational variables (organizational information satisfaction, message exposure, and organizational norms; non-significant organizational identification) regressed on protection motivation behavior, was significant in predicting protection motivation behaviors with an F (3, 372) = 29.1, $R^2_{adj.} = .18$, $p < .001$. The resulting model contributed 18 percent of the variance in predicting protection motivation behaviors. Participants with higher levels of message exposure, higher levels of organizational information satisfaction, and higher levels of organizational norms reported a higher level of protection motivation behavior.

Table 28. The Impact of Organizational Variables on Protection Motivation

Variable	*B*	SE B	*β*	*p*
Constant	3.37**	.31		<.001
Message Exposure	.21**	.05	.22	<.001
Organizational Information Satisfaction	.18**	.05	.20	<.001

Organizational Norms	.16**	.06	.16	.01
Organizational Identification	-.02	.05	-.02	.68

*$p \leq .05$, **$p \leq .01$

Table 29. Summary of Results

H1:	Controlling for perceived susceptibility, severity, self-efficacy, response efficacy, organizational identification will be positively related to protection motivation behavior.	Not supported
RQ1a:	How does organizational identification impact the relationship between perceived susceptibility and protection motivation behavior?	No Moderation
RQ1b:	How does organizational identification impact the relationship between perceived severity and protection motivation behavior?	No Moderation
RQ1c:	How does organizational identification impact the relationship between perceived self-efficacy and protection motivation behavior?	No Moderation
RQ1d:	How does organizational identification impact the relationship between perceived response efficacy and protection motivation behavior?	No Moderation
H2:	Controlling for perceived susceptibility, severity, self-efficacy, and response efficacy, organizational norms will be positively related to protection motivation behavior.	Not supported
RQ2a:	How do organizational norms impact the relationship between perceived susceptibility and protection motivation behavior?	No Moderation
RQ2b:	How do organizational norms impact the relationship between perceived severity and protection motivation behavior?	No Moderation
RQ2c:	How do organizational norms impact the relationship between perceived self-efficacy and protection motivation behavior?	No Moderation

RQ2d:	How do organizational norms impact the relationship between perceived response efficacy and protection motivation behavior?	No Moderation
H3:	Controlling for perceived susceptibility, severity, self-efficacy, and response efficacy, message exposure will be positively related to protection motivation behavior.	Supported, Significant Positive Relationship
RQ3a:	How does message exposure impact the relationship between perceived susceptibility and protection motivation behavior?	No Moderation
RQ3b:	How does message exposure impact the relationship between perceived severity and protection motivation behavior?	Significant Negative Moderation
RQ3c:	How does message exposure impact the relationship between perceived self-efficacy and protection motivation behavior?	Significant Negative Moderation
RQ3d:	How does message exposure impact the relationship between perceived response efficacy and protection motivation behavior?	Significant Negative Moderation
RQ4:	Controlling for perceived susceptibility, severity, self-efficacy, and response efficacy, how is organizational information satisfaction related to protection motivation behavior?	Significant Positive Relationship
RQ5a:	How does organizational information satisfaction impact the relationship between perceived susceptibility and protection motivation behavior?	No Moderation
RQ5b:	How does organizational information satisfaction impact the relationship between perceived severity and protection motivation behavior?	Significant Negative Moderation
RQ5c:	How does organizational information satisfaction impact the relationship between perceived self-efficacy and protection motivation behavior?	No Moderation
RQ5d:	How does organizational information satisfaction impact the relationship between perceived response efficacy and protection motivation behavior?	No Moderation

RQ6:	How do organizational information satisfaction, organizational norms, organizational identification, and message exposure affect protective motivation behavior?	Organizational information satisfaction, organizational norms, and message exposure were significant predictors. Organizational identification was not a significant predictor.

Chapter Summary

The purpose of this study was to understand the potential impact of organizational variables on engagement in protective behaviors, above and beyond the role that PMT variables play, during a health crisis. The results build upon our understanding of the role organizations can play in the crisis context, summarized below, and expanded upon in the following discussion section.

Organizational Identification

There were no significant findings related to organizational identification, which will be expanded upon in the discussion section.

Organizational Norms

There were no significant findings related to organizational norms alongside PMT variables in predicting protection motivation. There was a significant positive correlation between organizational norms and protection motivation.

Message Exposure, including Organizational Message Exposure

Exposure to messages from one's organization did not significantly change likelihood to engage in protective behaviors by itself, however, the combination of exposure to messages from

all sources of information did. While the frequency respondents were getting information from the organization and other sources was similar, it is noteworthy that the mean for the frequency people were receiving protective action messages from organizational sources was the highest among all the information sources.

With all the sources of information included in the composite variable, respondents in this study who reported a higher level of message exposure reported higher intentions to engage in protection motivation behavior. Additionally, the effect of perceived severity on protection motivation is partially moderated by message exposure. It was also found that the effect of perceived self-efficacy on protection motivation is partially moderated by organizational message exposure and the effect of perceived response efficacy on protection motivation is partially moderated by organizational message exposure. In both cases, the more exposure respondents had to organizational messages, the less of an impact the PMT variables of perceived severity and perceived response efficacy had on protection motivation behaviors. The final linear regression indicated a significant, positive relationship between organizational message exposure and protection motivation behavior, such that as organizational message exposure increases, protection motivation behavior increases.

Organizational Information Satisfaction

Participants with a higher level of satisfaction with the messages their organization sent, reported a higher intent to engage in protection motivation behavior. Additionally, it was found that as organizational information satisfaction increases, the effect of perceived severity on protection motivation decreases. The effect of perceived severity on protection motivation is partially moderated by organizational information satisfaction. Lastly, the final regression

indicated that as organizational information satisfaction increases, protection motivation behavior increases.

In the final chapter, the findings will be discussed relative to protection motivation theory and organizational implications in the context of a health crisis. These findings contribute to our understanding of risk, crisis, and health communication, and provide a starting point for future research to explore the role organizational variables play in individual behaviors during a crisis. Following the discussion of results from this study, future directions will be discussed, including practical implications for this research and limitations of the current study to be considered in future research.

Chapter 5: Discussion

This study sought to understand the role of organizations' crisis communication in encouraging employee protective behaviors during a health crisis. Protective behaviors of employees within an organization are crucial to the organization's safety measures (Zhang, et al., 2021), which become increasingly important within the context of a crisis. Ensuring that employees and organizations are taking protective measures to stay safe and healthy has moved to the forefront of both practice and research (Lee, 2022). This study integrated theoretical perspectives from organizational communication, crisis communication, risk communication, and health communication. The application of the Protection Motivation Theory (PMT) alongside organizational variables, led to a deeper understanding of motivation to take protective actions during a crisis. The findings reveal that although organizational relationship variables are important in understanding protection motivation behaviors, it is the exposure of employees to messages about protective action and how satisfied they are with those messages that tells the story of an organization's role in influencing employee behavior. The connectedness one feels to their organization (i.e., identification) and the behaviors of those around them (i.e., norms) did not significantly influence protective behaviors above and beyond the PMT variables. This study provides significant theoretical and practical implications for organizational and risk communication and the practice of communication during a crisis.

During crises and disasters, individuals turn to organizations for information (Seeger, 2006), look to organizations for information and response (Kim, et al., 2018; Liu, et al., 2020), and turn to organizations for information to make sense of the ongoing crisis (Stephens, et al., 2020; Weick, 1988). Given the crucial role organizations play in disseminating information, providing directives to stakeholders and the public, and encouraging or discouraging particular

behaviors during a crisis, this study sought to understand the role organizations played in crisis response during the COVID-19 pandemic, a public health crisis that happened around 2020. The following section provides an overview of key findings and contributions of this study, expands and builds upon understandings of PMT during crises and disasters, and contributes to understanding the role of organizations in risk communication.

Key Organizational Findings and Contributions

First, this study advances our understanding of the role of organizations in motivating protective behaviors during a health crisis. The motivation to take protective action is most highly influenced by exposure to and satisfaction with the organizational message. The findings from this study show that the highest contributing variables to protective motivation behaviors were message exposure, including exposure to messages from one's organization, and organizational information satisfaction, while organizational identification and organizational norms do not rise to the level of significance above and beyond the attitude variables in PMT in motivating protective behavior. While organizational relationship variables—specifically norms for social behaviors and communication—are important in understanding protection motivation behaviors, it is the exposure to the communication itself and the level of satisfaction one has with the messages that tell the story of protective behaviors during a crisis, rather than the connectedness one feels to their organization (i.e., identification) and the behaviors of those around them (i.e., norms).

Message Exposure and Protection Motivation Behavior

We know from previous research that many people rely on information shared by their organization or other organizations to learn how to protect themselves and their families from

threats, risk, and crises (Bento, et al., 2020; Garfin, et al., 2020). The results of this study found that exposure to messages about the crisis and protective action during it is a significant factor in protection motivation behavior. The message exposure variable used throughout analysis in this study includes exposure to messages from one's organization, and although that item alone does not contribute unique variance to protective action taking above and beyond PMT variables, it is the highest source of information for respondents. Therefore, exposure to messages about protective behaviors, including exposure to messages from one's organization is a significant factor in protection motivation, as participants with a higher level of message exposure reported a higher level of protection motivation behavior. This means that as exposure to messages surrounding COVID-19 increased, so too did protective action (i.e., those who were exposed to more messages about the pandemic, including messages from their organization, took more protective behaviors).

Additionally, when message exposure was included in models that also contained PMT variables, it was found to be the largest contributor to protective behaviors. This means that when message exposure is greater, the impact of perceived susceptibility to the crisis, severity of the crisis, self-efficacy and response efficacy, on protection motivation behavior is less. This suggests that message exposure played an increasingly important role in protective behaviors, meaning that people may have relied on messages they received from across all sources of information, including from their organization, more, causing their self-efficacy to matter less than it would if their information sources were not communicating as much.

Message exposure serves an important role in influencing employees' intent to take protective behaviors, and that is above and beyond the impact perceived crisis severity, susceptibility, self-efficacy and response efficacy have on this outcome. This is a particularly

interesting finding in light of past research that addresses message exposure in the context of message fatigue, or an inundation with messages so much so that it can lead to nonadherence to message information (Ball & Wozniak, 2022). A possible explanation is that sources of information were not sending too much information to have the respondents feel overloaded. While the data do not reveal responses to the content of the messages, the frequency of exposure to messages about the health crisis was an important consideration in encouraging protective behaviors among employees. Findings around the importance of message exposure in encouraging protective action taking (e.g., Ball & Wozniak, 2022; So, et al., 2017) could raise two competing perspectives. On the one hand, it is important to communicate effectively, comprehensively, and quickly during a crisis. On the other hand, however, too much message exposure can lead to message fatigue and nonadherence to the message and its contents (So, et al., 2017). Therefore, it may be important to consider the balance in message exposure and potential message fatigue when aligning on frequency of messaging during a crisis.

We know that during crises, communication that is transparent within an organization can help employees build strong relationships with their organizations (Li, et al., 2021), and that communication can have positive impacts on employee behavior during a crisis (Lee, et al., 2020). Thus, exposure to organizational messages that communicate information to employees about the crisis become an important step in motivating protective behavior. Exposing employees to communication from the organization about the crisis and recommended protective behaviors is a crucial step in encouraging protective behavior among organizational employees. Additionally, satisfaction with those messages also played a role in encouraging protection motivation behavior.

Organizational Information Satisfaction and Protection Motivation Behavior

While exposure was a significant predictor, above and beyond the PMT variables, of an employee's intent to take protection actions, so was satisfaction with organizational messages. When included with the PMT variables, organizational information satisfaction, or one's satisfaction with the information they were exposed to from their organization about the health crisis, contributed 43 percent of the variance in predicting protection motivation behaviors. Additionally, the moderation analyses suggest that an increase in satisfaction with organizational information decreased the impact PMT variables had on employees' protective actions. This means that as satisfaction with organizational messages increased, the PMT attitude variables mattered less in influencing protective behaviors. Due to the high uncertainty of crises (Seeger, 2006), particularly health crises, organizations must communicate with their employees about actions to take, and many employees rely on the information shared by their organization or other organizations to learn how to protect themselves (Bento, et al., 2020). As such, satisfaction with this information should lead to a greater motivation to engage in protective behaviors, as this study's findings suggest.

This finding suggests that organizations' communication with their employees may be more important during times of crisis than the connectedness the employees feel with their organization (organizational identification) and the organizational norms for social behavior and communication, when it comes to motivation for engaging in protective behaviors.

Organizational Identification and Protection Motivation Behavior

Prior research has shown that organizational identification contributes to positive responses to health-related messages (Stephens, et al., 2014) and positive behavior as a result of

responding to those messages (Cheney, 1987; Stephens, et al., 2014), therefore this study predicted that organizational identification would play a role in encouraging employees to engage in protective behaviors. It was predicted that those people who identify with their organization would respond more to behaviors that their organization wanted them to perform. When organizational identification was placed with PMT variables, it did not contribute a significant amount of additional variance beyond what the PMT variables predicted. This finding can be explained because relationships people have with their organizations are only one part of the compliance story. While organizational identification was still shown to matter in this context, it perhaps does not impact protective behaviors as much as other variables during a crisis. Additionally, organizational identification develops over time, but a crisis situation develops quickly and requires urgent response. Because of this, organizational identification may not be as salient during a crisis situation.

Another possible explanation for this surprising finding around organizational identification may be due to the nature of the COVID-19 pandemic as a unique crisis. This was the first crisis of this type within modern history, which may have presented a unique set of conditions related to the impact of organizational variables on protective behaviors. COVID-19 was a devastating crisis that impacted all parts of society – not just one or multiple organizations – as well as every single city, state, and country across the world. It was a global crisis with national and international policies that were unique in terms of speed, size, and scope, leading to characterize the pandemic as a truly unprecedented event. This may have led organizational members to consider the relationship with their organization less in terms of prioritizing response and behaviors. While organizational identification may matter a lot during an organizational crisis because of the relationship between the organization and crisis itself, in the case of the

pandemic, the crisis affected every single person, place, and organization across the world. The global scope of this crisis may have contributed to the fact that identification was less salient, and thus did not contribute unique variance above the PMT variables.

The messages people receive about the crisis likely matter a lot during a crisis. The motivation for taking protective behaviors is in the message(s), including messages from one's organization, specifically exposure to those messages and satisfaction with those messages. This may be reflective of the context of a crisis situation. It is not that organization identification does not matter, but during a crisis time, it does not contribute anything additional beyond an employees' perceived severity, susceptibility, self-efficacy, and response efficacy. Although people turn to their organizations during crises, it is generally explained as turning to them for information and messages on how to stay safe during the crisis. The connectedness one feels toward their organization could be less overtly salient during a crisis because people need information, assume their organization will communicate, and look for those messages to know how to respond.

Organizational Norms and Protection Motivation Behavior

Organizations generally promote their norms for how employees should behave, causing norms to develop around organizational activities in order to maintain relationships within the organization and manage organizational tasks (Feldman, 1984; Ford & Stephens, 2018). In that same vein, organizations have norms around communication and the way they share information and act upon it. The findings from this study show that organizational norms did not significantly contribute to protection motivation above and beyond the contribution of PMT variables. This is consistent with the larger findings in this study that reflect the more overtly significant contribution of message exposure and information satisfaction. Additionally, the COVID-19

pandemic caused employees to operate differently within their organizations. Many became remote employees, meaning they worked away from others in the organization, often only communicating over phone, email, or chat. Organizational norms are central in organizations when those within the organization are able to establish and observe the norms occurring around them. With employees working differently, often spread out across the country and in many cases not co-located within the same physical space together, norms may not have been as apparent. If norms are not as relevant, or if they cannot be as well established, observed, or followed, they likely would not play as large a role in shaping behavior.

Given that organizational norms are central in organizations, health information that works its way through an organization will ultimately have an impact on its members (Stephens, et al., 2004). This is consistent with the study's findings that organizational norms do not play as large of a role as other factors (e.g., message exposure) that people are considering during a crisis, particularly the PMT variables which contributed a large portion of the variance in this study, when deciding whether or not to engage in protective behaviors.

The organizational findings in this study contribute to our understanding of organizations and motivation to engage in protective behaviors during a crisis. The findings from this study tell us that the motivation to engage in protective behaviors lies in the attitudes employees have about the crisis (PMT variables), along with their level of exposure and satisfaction with messages from their employer. The following section will look at the theoretical contributions these findings make to risk and crisis communication, and our understanding of organizations and their employees during a health crisis.

Contributions to PMT and Implications for Theory

This study shows that PMT can be a valuable tool to understand the employee attitudes that can influence protective behaviors during a crisis. While the PMT variables explain 42% of the variance in employees' intent to take protective action, perceived severity of the crisis contributes the most, followed by perceived self-efficacy and perceived response efficacy. Perceived susceptibility is also a significant predictor, but it functions differently: as perceived susceptibility increases, people intend to take fewer protective actions. This may be a result of the unique nature of a health crisis, which may affect people differently depending on their underlying health, financial, and social situations. Additionally, healthcare workers were the population studied here, which may have a role in their perceived susceptibility in relation to taking protective action. These findings are essential during crises, as organizations attempt to influence the behavior of their employees, encouraging them to respond in particular ways that keep them and their organization safe. This study shows that the way an organization communicates, the message exposure that employees have to those communications, and the level of satisfaction an employee has, can help employees better respond to crises by taking the appropriate protective action in response. Exploring the role of organizations and their communication during a crisis has shown how organizations can increase employee protection motivation, enhancing our theoretical understanding of the role of organizations in Protection Motivation Theory in the risk, crisis, and organizational context.

This study contributes to our understanding of PMT in light of a health crisis, and the variables or triggers of protection motivation behavior, which include those in the coping and threat appraisals (McCullock & Perrault, 2020). The PMT is a strong model in predicting protection motivation behavior in the health context, and the findings from this study highlight

the importance of PMT variables alongside message exposure, including organizational message exposure, and organizational information satisfaction in capturing a full understanding of protective behaviors. Consistent with prior research highlighting the predictive strength of the PMT, all PMT variables in this study demonstrate significance in predicting protection motivation behaviors. Therefore, the findings contribute to the theory as useful in the context of health crises, including pandemics. Prior research has shown that individuals' preventative behaviors (e.g., hand washing and maintaining distance from people) were highly influenced by their efficacy (Teasdale et al., 2012) in a study of the swine flu pandemic. Additionally, in the context of COVID-19, research found that perceived severity and self-efficacy can enhance intentions to self-isolate (Farooq, et al., 2020), another protective behavior included in this study. Therefore, PMT is an effective theoretical framework in understanding motivations of protective behavior (Lee, 2022), and in line with previous studies, this study found that PMT variables continue to play a significant role in predicting protective behaviors during a health crisis. The following will address each of the PMT variables measured in this study and the significant roles they played in encouraging protective behaviors during a health crisis.

Threat Appraisal: Severity & Susceptibility

Consistent with prior research, the findings of this study suggest that the more severe the threat, the more likely one is to take protective action. Respondents who found that the threat of COVID-19 was more severe, reported higher levels of protection motivation behaviors. A surprising finding, which is not as consistent with past research, was that the more susceptible to the threat of COVID-19 that respondents felt, the less likely they were to take protective action. There could be several explanations for this. First, respondents in this study were members of healthcare (or related) organizations, so their awareness of susceptibility and the actions one can

or should take may have been different. Additionally, depending upon their health status (i.e., overall health, comorbidities, etc.), this could have impacted the way they viewed their own susceptibility and intent to engage in protective behavior. Many people who were working in healthcare during the pandemic were more aware of the individual health factors that put people more or less at risk for serious illness. Also, since respondents were part of healthcare organizations, their attitude toward susceptibility may have been kept separate from the actions they could take related to protection.

Finally, there may be an element of information seeking and avoidance at play here when it comes to engaging in messages and taking protective action. Those who felt more susceptible may have been overwhelmed by the pandemic. As was seen within the healthcare field throughout the crisis, healthcare professionals were often overwhelmed and inundated both with actions and information. All of the communication may have actually led to avoidance, thus causing them to avoid communication and take less protective actions. This is consistent with prior research on information seeking and avoidance, which has found that when people feel negatively about information or messages, they may not seek it or may even avoid it (Yang & Kahlor, 2012). In sum, the findings suggest that the response one has to communication during a crisis plays a key role in whether or not they will engage in protective behaviors, and that communication and behavior is impacted by their perceived susceptibility to the threat or crisis.

Coping Appraisal: Self-Efficacy and Response Efficacy

Both self-efficacy and response efficacy were found to be significant in predicting protective motivation behavior in this study. Self-efficacy is positively significant with protective behaviors, meaning that the more respondents felt they had the ability to take protective action, the more they took action (i.e., engaged in protective behavior). This is consistent with past

research, which has shown that protection motivation increases as self-efficacy increases. An interesting finding in relation to this, however, is that with the addition of exposure to organizational messages, self-efficacy is no longer as impactful of a predictor of protection motivation behavior. This may suggest that when individuals are exposed to more messages from their organization, they rely on the organization more for encouragement or directives on protective action, and their self-efficacy matters less. This again reflects the importance of exposure to organizational messages, because the findings may show that organizational messages have the power to compensate for self-efficacy when employees don't feel they have the capacity to act on their own (i.e., without the communicative support of the organization).

Likewise, protection motivation has been found to increase as response efficacy increases. This study's findings are consistent with that notion, as response efficacy was found to increase protection motivation behavior, meaning that when respondents believe they are capable of taking actions to reduce the threat of the crisis, they are more likely to take those actions. When examined alongside organizational relationship variables, message exposure was also at play here. When the communication with employees suggests that there is a severe threat from the crisis and employees feel they can do something about it (response efficacy), they take protective action. This suggests that individuals' protection motivation is affected by the response to messages across all sources of information, including from their organization. Protective behaviors may not only be dictated by how individuals feel about a crisis, but also how the organization communicates about the crisis, the messages they receive that are provided by their organization, and the satisfaction they have with those messages.

This study allowed for the examination of organizational variables in the process of protective action-taking during a crisis, advancing our understanding of the role organizations

play in communication and behavior during a health crisis. In this study, communication is absolutely the key when it comes to ways organizations can communicate and help their employees protect themselves during a health crisis. While prior research suggested that organizational identification and organizational norms would affect the intention to engage in protective behaviors, these variables were not found to play a significant role above and beyond the PMT attitude variables. Additional research would be useful to build upon this and understand how organizations should address the way they craft their messages, the content of those messages, and the response of their employees (i.e., the level of satisfaction their employees have with the messages they share) during a crisis. The following section will discuss implications for practice in organizations in more detail.

Demographic Contributions to Protective Behaviors

While prior research in PMT in the context of disaster and crises does not generally focus on demographics, there were some significant findings in relation to demographic variables and the outcome of protective behaviors in this context that are worth considering. While there were both regional differences in the data and differences by age, the variable that consistently affected the data was age. Therefore, age was tested as a control variable throughout analyses. Age impacted protection motivation behaviors such that as age increased, protection motivation behaviors increased. This means that the older people were, the more likely they were to engage in protective behaviors. This finding is consistent both with prior literature on older adults and disaster response, in that older adults are generally more likely to engage in behaviors to protect themselves and others, as well as the current narrative around age and protective behaviors during COVID-19. During this particular health crisis, older adults were more likely to be

negatively impacted by the health concerns of the virus. Alongside organizational identification and PMT variables, age contributed significantly to protection motivation behaviors. Additionally, alongside message exposure and PMT variables, age was also a significant contributor to protective behaviors. These finding speak to the significant contributing role that age plays alongside other factors in protective behaviors, showing that even alongside PMT variables and organizational variables, age played a significant role in predicting behavior.

Gender, ethnicity, race, education, marital status, children status, income, and work type contributed no significant variables to the models tested in this study. This is worth further explanation because prior research in the disaster context, in general, would argue that some of these variables are important in understanding behavior. This may be explained by the unique nature of the crisis in the way it affected everyone, globally, across many aspects of life. Regardless of any demographic status, all individuals across the world were affected by the pandemic at varying levels, and the collective mentality of taking protective action as well as requirements at particularly times throughout the pandemic, could have contributed to the lack of significance across demographic characteristics and protective behavior. Additionally, this sample consisted of individuals who work in the healthcare industry, which could have impacted engagement in protective behaviors as a whole. Therefore, individual demographic characteristics may not have played as large of a role as other variables in the likelihood to engage in protective behaviors.

Implications for Practice

This study provides helpful practical implications for organizations, their leaders, their communication practices, and their employees. This study contributes to the ongoing discussion

on organizational messages and communication during crises by suggesting that the way organizations communicate, including exposing their employees to organizational messages (i.e., the extent to which they communicate information) and the satisfaction employees have with that information and communication, are crucial in the protection of employees' health and protective behaviors to support their wellbeing during a health crisis. These findings have many practical implications, particularly as organizations are increasingly focused on ensuring health and safety at work (Lee, 2022), which includes taking protective actions related to pandemics. Understanding protection motivation behaviors in the context of organizations during a crisis can provide useful insights for organizations related to actions they can take to protect their employees and their organization and encourage particular behaviors during a crisis. The findings from this study suggest that PMT is applicable in the organizational and crisis setting, an important finding for organizations themselves.

When individuals feel there is a severe threat like a crisis, they act accordingly. This is an important consistent finding as it relates to the organization's role in communicating the severity of a crisis in order to guide behavior. While not studied directly here, the findings suggest that organizations might want to clearly communicate the level of severity of a crisis with their employees in order to encourage protective behaviors. On the other hand, perceived susceptibility was more nuanced than what prior literature predicted because the higher the perceived susceptibility, the lower the intention to engage in protective behavior. There were several possible explanations offered previously for this finding, all of which tie back to the need for organizations to control the information they share and be mindful of the messages they share with their employees. If employees feel overwhelmed by information, they may choose to avoid it, and thus not look at what actions they are recommended to take. These are important findings

as well, because there is likely a need to better understand the organizational audience and adjust messaging and content of the messages in order to encourage the intended response to the communication.

The coping appraisal findings also suggest some communication directions for organizations. Self-efficacy and response efficacy were both found to contribute significantly to protective behavior. As message exposure increased in this study, self-efficacy had a lower impact on protective behavior. This suggests that message exposure played an increasingly important role in protective behaviors, meaning that people may have relied on messages more causing their self-efficacy to matter less than it would if places where they receive information, such as their organization, was not communicating as much. From an organizational standpoint, this is important because organizations have the opportunity to encourage protective behaviors through their organizational messages and exposing their organization to those messages, which in turn motivate protective behaviors. It is arguably easier for organizations to craft and send messages during a crisis than completely attempt to alter employees' self-efficacy, so knowing that they can still impact protective behavior and close this gap through message exposure is a critical finding. Organizations should pay careful attention to the messages they send and expose their employees to, and the level of satisfaction their employees have with those messages, during a crisis.

The relationship between response efficacy and protection motivation behavior also provides important practical contributions. When employees believe that a crisis is severe as a result of organizational messages, and believe they have response efficacy and can do something about the crisis, they will take protective action. This is an additional important finding for organizations because they should clearly communicate to their employees the actions that they

want them to take and the details for how they can go about taking those actions. When people feel they are able to do something about taking protective behaviors, they are more likely to engage in those behaviors.

Finally, this study contributes to the intersection between organizational communication, risk communication, and health communication. PMT is widely used in health communication, in relation to health-related behaviors (Lee, 2022). Organizations are made up of individuals engaging in particular behaviors, which become increasingly important to understand during a crisis like a pandemic. The way organizations communicate with their employees, the amount of exposure employees have to organizational information related to the crisis, and the level of satisfaction the employees have with the information about the crisis, is vital information to help employees and organizations handle future health crises and the protection motivation process.

This study shows that mechanisms of communication are an important way to effectively increase employee and organization protective behaviors during a health crisis. Both employees and leaders of organizations should keep these findings in mind, as during a crisis, it is crucial to find a way to improve the response of the organization and more effectively impact the response of its employees. Organizations should attempt to understand employee response as the crisis is happening in order to adapt communication strategy to better satisfy the needs of their employees and those with whom they are communicating. Thus, this study provides practical implications for organizational leaders and their communication teams, particularly those responsible for communicating during a crisis.

During a crisis situation, organizations often work quickly to disseminate information in the fastest way possible, sharing as much information as possible as quickly as possible with their employees and stakeholders. While it is important to communicate quickly and efficiently

during a crisis, it is equally important to understand what receivers of those communication messages need in order to encourage the desired behaviors. Since communication messages were the key to encouraging protective behaviors in this study, understanding message exposure and satisfaction with the information shared will help organizations deliver better crisis response. Including regular meetings or check-ins with employees in risk and crisis planning as well as during a crisis event, is crucial for creating a dialogue between organizational leaders and employees in order to create a better communication pathway across the organization.

Overall, organizations should consider the messages they are sharing with their employees, the level of satisfaction their employees have with the communication, and the individual relevant PMT variables (severity, susceptibility, self-efficacy, response efficacy) of their employees to craft messages that better meet the needs of their employees and encourage protective behaviors.

Limitations

By investigating protection motivation behavior during a health crisis, this study has meaningful implications for understanding the individual and organizational impacts of protection motivation behavior during health crises. Despite these sound findings, this study is not without limitations. The following section describes how the sample, survey and data collection, and data and analysis decisions limit some of the findings in this study.

First, the study was conducted during an "unprecedented" public health crisis, and while we have seen an increase in the number of related crises, it is important to understand the findings in the context of this health crisis' unique impacts on society. Additionally, this crisis lasted for several years, beginning in 2020 with its effects still felt three years later. Throughout

that time, the pandemic experienced waves, with certain times being higher risk and in need of greater protective action-taking, and others feeling more like pre-crisis or post-crisis eras.

Second, this study strategically sampled healthcare (and related industries) professionals, and due to the nature of their job, they could have been responding to the crisis in ways different from the general populations. Healthcare workers were on the frontlines of the crisis and the nature of their roles exposed them to higher risk but also to more information, and likely more accurate information. Understanding the type of information they received could impact how some of this study's findings were interpreted. Additionally, this survey was administered after the height of the pandemic, and thus, organizations had already been communicating with employees for quite some time. Since this particular type of health crisis was entirely unprecedented, it was impossible to know how the pandemic would evolve and change over time. However, it would have been valuable to understand communication at various points throughout the crisis journey, to help organizations adapt throughout an entire crisis cycle.

There may have also existed a social desirability bias when respondents took the survey. Given they were employees in healthcare-related industries, they may have been inclined to overstate the protective behaviors they took during the pandemic. This can occur with any measure of behavioral intention (Miniard & Cohen, 1983) and can impact the way people answer questions related to intentions and behavior variables. This same bias, however, could have occurred even with a sample of the general population. Throughout the pandemic, people were inundated with information, much of which communicated the importance of taking protective action to protect oneself and others and to keep society safe and operational. There may be respondents who felt it was important to show that they were taking the required or

recommended protected behaviors not only of their profession in the case of this study, but also actions that were communicated as being important for the greater good and safety of society.

Finally, the way the data were collected and analyzed presented some limitations. PMT is generally measured with regressions, but there are recent studies that have begun to expand to the use of SEM. With the addition of organizational relationship and message variables, this study might have benefitted from additional data collection and statistical analysis that addressed how the variables predict each other at various levels, leading to the final impact on protection motivation behaviors.

Future Research Agenda

As the world continues to experience crisis after crisis, like the COVID-19 pandemic, practitioners and scholars continue to look for ways to prepare people to take action during crises, understand their risk, and effectively respond to crises. Future research should continue to better understand risk perceptions and how and why individuals take or do not take certain advice or guidance during crises. During health disasters like the COVID-19 pandemic, instruction and safety information was shared by health professionals and organizations (Stephens, et al., 2020), in many cases to invoke positive behaviors like protective action (Liu, et al., 2020). Continuing to understand antecedents for adhering to safety information will be critical for organizations to more effectively communicate.

First, this study applies a new perspective to our understanding of risk communication and protective action-taking, incorporating the role of organizations in risk communication and protective action in the context of PMT. Additional studies should look beyond the individual level of understanding, and address the organizational level of these organizational variables to

better understand the role the organization itself plays in the dissemination and acceptance of risk information and communication. This study's findings provide a space for organizational communication to contribute to the growing body of literature in risk and crisis communication through the lens of health communication and health behaviors. Future research can expand upon this to facilitate dialogue across fields in order to encourage a more robust understanding of communicative improvements that can be made to encourage a more prepared workforce.

Second, future research should include additional measurement of demographic variables that may also play a role in employees' intent to take protective action. Much of the PMT research does not focus on demographic variables. Using these to better understand how demographics may be at play in the context of an organization within a crisis situation would help organizations shape messaging and communication during a crisis and adapt it to fit with the unique characteristics of their employees. In particular, future research could explore some of the nonsignificant demographic findings.

Third, this study found that the motivation is in the message as it relates to message exposure and organizational information satisfaction. In terms of organizational message exposure, more research is needed to understand what exposure entails and to hone in on messages from one's organization as its own unique source of information. In this study, message exposure was measured by asking participants how often they learned about COVID-19 not only from their organization, but also other sources of information including talking with friends or family, social networking sites, governmental health agencies, talking with personal or family doctors, print or online news outlets, television, and the organization where one works. Future research should look to develop a scale to measure organizational message exposure as its own unique exposure to messages related to protective behaviors, because organizations may

have different motivations for their communication and messages with employees than other sources of information. Future research should consider additional nuances of exposure including response to exposure and the way information and communication is sought or avoided. Additionally, the context of a crisis could change both the communication itself as well as the exposure of both the individuals within the organization and the organization itself. Considering the level of information that employees are exposed to while also understanding the information that the organization has access to, it would be important to understand this in the larger context of what is communicated within an organization.

Next, exposure and satisfaction should be considered in regards to their relationship to one another. Both variables significantly impacted protection motivation behaviors, but were addressed separately alongside PMT variables. Understanding exposure and satisfaction as inherently intertwined in the way they influence protection motivation behavior may be important in understanding the role organizational variables play in protective behavior. Future research should consider how message exposure across sources of information, particularly information from one's organization, impacts organizational information satisfaction, in turn potentially influencing protection motivation behaviors. This may be a several step process, and variables may best be understood within the context of that process. There may also be an opportunity to build upon this relationship and address other message factors that may impact information satisfaction, such as message fatigue.

Future research should also consider the measurement of employee satisfaction with information and messages. Organizational information satisfaction related to COVID-19 (i.e., the extent to which one is satisfied with the information provided) was measured using a nine-item information satisfaction scale adapted from a social media information scale on COVID-19

information (Kor, et al., 2021). The scale provides topics shared from the organization related to COVID-19 and measures how satisfied or dissatisfied the individual was with the information on each topic related to COVID-19. Although a reliable scale, future research could expand upon this existing scale to better account for the organization and its communication. Organizations communicate differently during crises and have different priorities than individuals. These different levels of priorities, needs, and desired outcomes should be studied.

During crises, individuals look to organizations for information and timely communication so they know how to respond to the crisis and take action to protect themselves and others. This puts a great deal of responsibility on organizations in both the form of their communication as well as the content. Much of the crisis literature presents the importance of timely and transparent communication, emphasizing the need to communicate quickly. This has been true in practice as well, as during many crises, we see organizations acknowledging the crisis immediately and responding as soon as possible. In this study, the organizational variables that showed an impact related to protective motivation behaviors were message exposure (which included organizational message exposure) *and* organizational message satisfaction. This shows that not only does exposure to messages around protective action influence behavior, but also satisfaction with those messages, which would arguably stem from what is included in those messages. Future research should attempt to understand what it is about messages that cause people to be satisfied or dissatisfied with the information that is being shared with them, in order to better understand how that may influence their response.

Lastly, there is an opportunity for organizations to open a dialogue between communicators (organizational leaders) and employees during a crisis. Future research should explore the concept of dialogue and two-way communication between organizations and their

employees during crises. Two-way communication, i.e., dialogue, can help employees have a communal relationship with their organization (Lee, 2022), which may in turn help the relationship between the organization and its employees. It additionally helps the organization learn what type of information is well received, or not so well received, by its employees. Much of the literature and practice tells us that during a crisis, individuals (including employees), turn to organizations for information and communication. In this situation, as is often the case with studies in risk and crisis communication in the organizational space, the organization is the sender of the communication and information, and the employees, stakeholders, or public are the receivers of that information.

Future research should attempt to look at the full communication cycle and address communication between organizations and their employees during crisis events. This will help scholars and practitioners to better understand how organizations communicate, how those messages are crafted and received, how they influence the response of employees, *and* what employees can and do with that information based on their feelings toward the information. Considering not only the behavioral response to the communication but also the attitudes (including satisfaction) of those who receive the information, can help organizations in theory and practice to better craft their messages and adapt them to their employees and crisis situations in order to better influence desired behaviors. While studying the crafting of those messages, looking at the content of the messages and identifying the specific types of messages that have the biggest or least impact on employees' protective action-taking may also be useful in understanding employee behavior during a crisis.

Conclusion

By addressing both the predictive ability of PMT in a health crisis setting, as well as identifying the important role organizational message-related variables play in impacting protective motivation behavior, this study serves as a starting point for future research and discussion on the use of health models in risk communication. Additionally, it contributes to our understanding of organizational variables in relation to individual health and risk variables, and the importance of considering PMT attitude variables along with message variables in our understanding of protective behaviors during a health crisis. The findings in this study offer both theoretical and practical contributions to our understanding of protective behaviors during crises and how understanding these behaviors can help organizations make communicative improvements to better prepare their employees so that future health crises that are unprecedented become prepared for, and thus, precedented.

Appendices

APPENDIX A: CONSENT FORM

Consent to Participate in Research

Basic Study Information

Title of the Project: Exploring the role of organizations in protective health behaviors
Principal Investigator: Kendall Tich, Doctoral Student, The University of Texas at Austin
Faculty Advisor: Dr. Keri Stephens, Professor, The University of Texas at Austin

Invitation to be Part of a Research Study

You are invited to be part of a research study. This consent form will help you choose whether or not to participate in the study. Feel free to ask if anything is not clear in this consent form.

What is the study about and why are we doing it?

The purpose of the study is to better understand organizational factors in health protective behaviors during a crisis.

What will happen if you take part in this study?

If you agree to take part in this study, you will be asked to complete an online survey that will ask you a series of questions about how you relate to your organization and engage in protective health behaviors during COVID-19.

How long will you be in this study and how many people will be in the study?

Participation in this study should take no longer than 20 minutes. We anticipate there will be 350 participants taking the survey.

What risks and discomforts might you experience from being in this study?

The risks associated with the study are no greater than those experienced in everyday life. We will not ask for your name or collect any identifying information about you. We do not anticipate any breach of confidentiality. The researcher will let you know about any significant new findings that might make you change your mind about participating in this study.

How could you benefit from this study?

Your responses will contribute to our understanding of protective behaviors taken during a public health crisis.

What will happen to the data we collect from you?

For this study, we will use your anonymous responses to the survey questions to understand how employees in your organization engage in protective behaviors during a health crisis. The data will be used for findings that will contribute to future publications and presentations. No

identifying information will be collected and your survey responses will not be shared outside of the research team.

How will we protect your information?

We will protect your information by not asking for your name or any other information that may identify you. You may reserve the right to not answer any questions or to stop the survey at any time without penalty.

Anonymized data will be stored using UT Box, which is a university-approved cloud storage and sharing system that is IRB compliant. Only the research team will be allowed access to survey data. The data that we will collect about you will not be shared with anyone outside of the research team.

We may publish the results of this study in the future and findings from the study may be used in future presentations. To protect your privacy, we will not include any information that could directly identify you, as no identifying information will be collected.

What will happen to the information we collect about you after the study is over?

Your responses to the questions will not be shared beyond the researcher. The data will be analyzed and used in publications and presentations. The data will be stored on UT Box and will be destroyed when it is no longer needed. We will not ask you to provide any identifying information, but if any information appears that can directly identify you, it will be deleted from the research data collected as part of the project.

How will we compensate you for being part of the study?

You will not receive compensation for your participation in this study. Your participation is completely voluntary. Your responses will contribute to our understanding of protective behaviors taken during a public health crisis.

Your Participation in this Study is Voluntary

It is totally up to you to decide to be in this research study. Participating in this study is voluntary. Your decision to participate will not affect your relationship with The University of Texas at Austin or your employer. You will not lose any benefits or rights you already had if you decide not to participate. Even if you decide to be part of the study now, you may change your mind and stop at any time. You do not have to answer any questions you do not want to answer.

Contact Information for the Study Team

If you have any questions about this research, you may contact:

Kendall Tich, (813)951-5171, ktich@austin.utexas.edu

Contact Information for Questions about Your Rights as a Research Participant

If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the following:

The University of Texas at Austin Institutional Review Board
Phone: 512-232-1543
Email: irb@austin.utexas.edu

Please reference the protocol number found at the top of this document.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of the document for your records. If you have any questions about the study later, you can contact the study team using the information provided above.

Processing personal data of EU/EEA persons: What you should know

This consent form provides information for potential research participants to understand how the processing of their personal data will be conducted for the purpose of this research project, which is subject to the General Data Protection Regulation (GDPR). Please click "I agree" at the bottom before proceeding to the survey, to indicate that you have read and understood how your personal data will be processed, your related rights, and that you consent to this processing as described below.

You can find information related to the purpose of the research project, how it will be conducted and by whom from the information provided in other sections of this consent form. We are conducting the processing of personal data related to this research project on the basis of your consent.

We will only use your personal data for the purposes of this research project.

PERSONAL DATA USED

These are the categories of personal data we will use as part of this research project:

- Behavioral data (in particular message exposure, organizational identification, organizational norms, satisfaction with information, protective health behaviors)
- Occupational data (in particular years at your organization, job role, household income, education)
- Demographic information (in particular gender, age, marital status, children)
- Race/ethnicity information

RECIPIENTS OF YOUR PERSONAL DATA

We will not share your personal data with any third party. We will only disclose the personal data to authorities for those situations where we will receive a lawful order to do so.

YOUR RIGHTS

Under the GDPR and its implementing laws at national level, you have the following rights, with the conditions and limitations set out in Chapter III of the GDPR:

- To obtain confirmation that your data is being processed, as well as access to and a copy of your personal data;
- To obtain correction of your personal data;
- To obtain erasure of your data, if you submit a reasoned request;
- To obtain portability of your data;
- To obtain restriction of your data (which means we limit the access to your dataset) if you submit a reasoned request;
- To withdraw your consent at any time.

When you withdraw your consent, we will not collect additional information related to you. We may also erase the personal data we already collected. This will happen only if its erasure does not render impossible or seriously impair the achievement of the objectives of the research project.

To exercise your rights, please use the contact information below to submit a request. When you submit a request, please indicate your name, the name of this project, your reasons for making the request, if necessary, and other details you think will be useful for us to comply with your request.

ADDITIONAL INFORMATION

The period of time for which we retain your personal data will be no more than 10 years. The raw data will be stored on UT-encrypted devices and will be destroyed when it is no longer needed, and at least within 10 years. If there is any information that can directly identify you, it will be kept secure and stored separately from the research data collected as part of the project.

Your personal data is transferred to the United States, which has not sought nor obtained an adequacy decision from the European Commission. This means that there may be risks to your personal data under this jurisdiction. However, we adopt and implement sufficient safeguards

to protect your personal data, as described in this form. We transfer your data on the basis of your explicit consent.

If you have any concerns about how your personal data is being handled, use the address below to contact us. If needed, you can also contact the data protection authority in your home country or in another relevant jurisdiction for this processing activity.

CONTACT INFORMATION IF YOU HAVE QUESTIONS OR CONCERNS REGARDING GDPR

Institutional Review Board
Office of Research Support & Compliance
University of Texas at Austin
PO Box 7426
Austin, Texas 78713
Phone: 512-232-1543
Email: irb@austin.utexas.edu

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of the document for your records. If you have any questions about the study later, you can contact the study team using the information provided above. Please click "I agree" to consent to participate in the study before proceeding to the survey.

APPENDIX B: SURVEY ITEMS

Construct and Item Wording *(Note: All scales are 7-point Likert like ranging from strongly disagree to strongly agree unless noted.*	***Reliability***	***Mean***	***SD***
Exposure to organizational information/messages *Measured on a 7-point Likert like scale ranging from never to very frequently*	.84	5.05	1.37
1. Talking with friends or family 2. Social networking sites 3. Governmental health agencies 4. Talking with a personal or family doctor 5. Print or online news outlets 6. Television 7. Organization where I work			
Organizational Information Satisfaction	.93	5.08	1.45
1. Current spread of COVID-19 2. Symptoms of COVID-19 3. Individual measures to protect against COVID-19 4. Hygiene guidance and regulations 5. Current situation assessments and recommendations 6. Restrictions (e.g., travel restrictions) 7. Economic and social consequences of COVID-19 8. Dealing with psychological stress caused by COVID-19			
Organizational Identification	.81	4.98	1.39
1. I feel I have a lot in common with others in my organization 2. I find it easy to identify with this organization 3. I find that my values of those in this organization are not very similar (reverse-coded and omitted in analysis*) 4. I view my organization's problems as my problems			

Organizational Norms	.93	5.65	1.29
1. My organization expects me to engage in behaviors that protect others and myself from COVID-19 2. Most people in my organization who are important to me think I should engage in behaviors that protect others and myself from COVID-19 3. Others in my organization expect me to engage in behaviors that protect others and myself from COVID-19 4. People in my organization whose opinions I value engage in behaviors that protect them and others from COVID-19			
Threat Appraisal – Perceived Severity	.92	5.38	1.63
1. I believe that COVID-19 is a severe problem 2. I believe that COVID-19 has detrimental impacts on health 3. I believe that COVID-19 is a serious threat to my health 4. I believe that COVID-19 is a serious threat to society			
Threat Appraisal – Perceived Susceptibility	.83	4.34	1.86
1. I am at risk for severe illness from COVID-19 2. I believe that I have a high possibility of severe illness from the COVID-19 infection 3. I am likely to be negatively affected by COVID-19			
Coping Appraisal – Self Efficacy	.84	5.75	1.25
1. It is easy to engage in behaviors that protect me from COVID-19 2. I am not afraid to engage in behaviors that protect me from COVID-19 3. I am able to engage in behaviors that protect me from COVID-19			

Coping Appraisal – Response Efficacy	.92	5.30	1.48
1. Engaging in protective behaviors ensures that I am protected from COVID-19 2. Engaging in protective behaviors is effective in preventing severe illness from COVID-19 3. Engaging in protective behaviors reassures me that I am safe from severe illness from COVID-19			
Protection Motivation Behavior	.88	6.08	1.39
1. Hand hygiene (e.g., washing hands) 2. Social (physical) distancing measures 3. Avoiding touching eyes, nose, mouth 4. Respiratory etiquette (i.e., covering mouth when coughing or sneezing) 5. Self-isolation/quarantine 6. Wearing a mask or face covering 7. Vaccination			

Note: All the reliability scores were calculated using Cronbach's α in SPSS (v.28)

APPENDIX C: SURVEY INTRODUCTION

Think about the emails you've received from the leadership team at your organization about managing COVID-19 during the last three months.

Below is an example of the type of email we would like you to think about as you answer the questions in this survey.

"SUBJECT: Checking in during challenging times

Dear team,

We've seen very challenging times over the past year. While we adjust to a new normal, we want to share updates on keeping yourself and loved ones safe to cross the pandemic finish line!

As we continue through this pandemic, please remember to engage in recommended safety measures, including:
- Stay home if you are sick
- Wash your hands regularly and avoid touching your hands to your face
- Wear a mask or face covering when recommended by health officials
- Getting vaccinated (you can find a vaccination site here [link]).

If you have any questions about how we can support you during COVID-19, please reach out to covidsupport@yourorganization.com. In the meantime, stay safe and healthy, and we will see each other soon!

Thank you,
Your Leadership Team"

Approximately how many emails have you received from your organization resembling the example provided above over the past 3 months?

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Vita

Kendall Paige Tich earned a B.A. in Communication Studies and Sociology (2015) at University of San Diego and an M.A. in Mass Communication (2017) from University of Minnesota - Twin Cities. She pursued her doctoral work at The University of Texas at Austin, where she taught public speaking courses and served as a teaching assistant to several communication courses. She will earn her Ph.D. in Organizational Communication and Technology expected May 2023 and has begun a position as a Public Relations Manager at Genentech, a member of the Roche Group, in South San Francisco, CA.