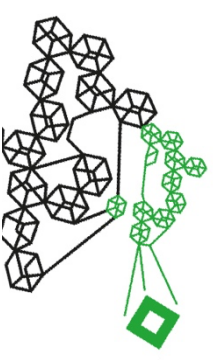
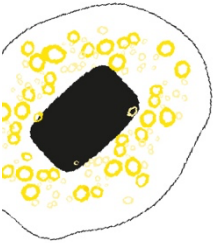


UNIVERSITY OF TWENTE.

MASTER THESIS

How can organizations encourage healthy actions and behaviors post-COVID?
The exploring role of message valence and health authority on promoting
behavior change and mental health awareness.



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ABSTRACT

Purpose – The present study aims to investigate the influence of message valence and health authority in health promotional messages on message persuasiveness, message credibility, organization credibility, and call to action. It was hypothesized that communicating health risk messages by an occupational doctor would result in higher responses in encouragement to perform healthy actions and behaviors. The use of message valence and health authority in this study is intended to investigate whether organizations can encourage employees to stay healthy and vital.

Methods – The research used a two (message valence; health risk versus health benefits) by two (health authority; low/moderate versus high) in between-subject experimental study, which resulted in four different message stimuli. For this research a CEO was labeled as low/moderate health authority and an occupational doctor as a figure of high health authority. The stimuli were exposed to 242 participants through the online platform Qualtrics. All variables were measured using 7-point Likert scales.

Results – This research revealed that the health promotional messages communicated by either a CEO or occupational doctor resulted in no significant effect on message persuasiveness, message credibility, and organization credibility. On the other hand, the present research shows a main effect from message valence and call to action. Exposure to health risk messages resulted in higher responses on call to action. Individuals exposed to the negative consequences of not engaging in physical activity report being inclined to perform the suggested action. Based on the evidence, this research clarifies the benefits when using health risks to acquire a desired outcome.

Discussion – The present research managed to explore the supporting arguments about message valence and health authority for organization's health promotion purposes. Some of the findings are not consistent with prior research which resulted in little or no main and interaction effects between message valence and health authority on the dependent variables. It is suggested for organizations to use health risks in messages to receive beneficial outcomes.

Keywords: Message valence, health authority, organization health promotion, mental health awareness, post-COVID

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1 INTRODUCTION

The world came to a standstill on December 31st, 2019, when the infamous virus known as COVID-19 emerged (Andrews et al., 2020). The virus negatively impacted global economy and employees' mental health at a rapid pace due to government restrictions in efforts to contain the virus (Bufquin et al., 2021). Businesses were forced to find alternative working methods, such as working from home (WFH), which resulted in both disadvantages and benefits for employers and employees (Vyas & Butakhieo, 2021). Challenges manifested in stress causing employees to generate negative attitudes and behaviors towards their employers, which results in organizational problems (Yu et al., 2021). It has been reported that employees suffering from stress show signs of post-traumatic stress disorder (PTSD) (Sahin et al., 2022). The challenges and shift due to COVID remains difficult on employees' physical and mental well-being (Saxena & Gautam, 2021). The success of an organization depends on their employees' attitude and behavior (Imamoglu et al., 2018). Some organizations improve their employees' health by creating health promotion programs (Nkangu et al., 2021). Now in the post-COVID era, how can organizations move forward to keep their employees healthy and vital? This makes an interesting topic to investigate especially since the pandemic emphasized the importance mental health awareness.

However, creating health communication messages remain a challenge for health professionals when effective strategies are vaguely available (Stolow et al., 2020). A strategy called fear appeals, are commonly used in health campaigns to motivate behavior change. It uses graphic images and exaggerates language to create fear and to focus on the negative consequences if behavior is not adopted (Thompson et al., 2009). Examples of fear appeal campaigns include anti-smoking, unprotected sex, drunk driving, and drug use (Newbold, 2017). Organizations can also promote health campaigns by targeting the benefits of adopting the behavior change (Rekhy & McConchie, 2014). Usually, organizations use a health endorser to maximize the impact of information (Kostygina et al., 2020). Previous studies show the positive effects between message valence and health authority where it is believed to create essential characteristics that are used for persuasion, message credibility, organization's credibility, and call to action (Reardon et al., 2006; Salman, 2008; Worthington et al., 2015; Jenskins et al., 2020).

The research from Leung et al. (2001) highlighted the positive responses from employees towards authority figures who demonstrate understanding and compassion. Complementary to this, Nielsen and Jacobsen's (2018) research describe employees' positive response toward respected leaders of the organization who show interest in them. This study aims to investigate whether exposing individuals with health risk or benefit combined with low/moderate or high health authority influences message persuasion, message credibility, organization's credibility, and call to action. Message valence is moderated by health literacy which is an individual's ability to find, comprehend, and use information to make health related decisions and actions (Zarcadoolas et al., 2005; Berkman et al., 2010). Health authority is moderated by locus of control, one's perception of the underlying causes of events in their lives (Sterbin & Rakow, 1996, p.3). The covariates physical activity and self-efficacy are added to avoid disruption of other variables that might affect the dependent variables.

The perceived risks and benefits are extensively explored among scholars; examples include perceived risk and benefits towards street food (Choi et al., 2013) or risk and benefit towards vaccines (Rey et al., 2018). Subsequently, the same is said for studies investigating health authorities regarding health promotion (Fletcher et al., 2018). In contrast, studies that include message valence (health risks vs. health benefits) and health authority (low/moderate vs. high) remain limited. This research has one main research question, which is:

“To what extent does message valence (health risks vs. health benefits) and health authority (low/moderate - CEO vs. high authority - occupational doctor) influence individuals for behavior change and awareness of mental health?”

In order to provide evidence for the formulated research question, this report includes five chapters. The next chapter includes the theoretical framework with literature used to formulate hypotheses and sub-research questions for this research. Chapter three explains the method used for this research and includes the variables measurements. Chapter four presents the results from the collected data. Finally, Chapter five discusses the main findings, study limitations, implication, future research, and conclusion.

2 THEORETICAL FRAMEWORK

In the following chapter key concepts of this research are discussed, which formulate the hypotheses and sub-research questions.

2.1 EMPLOYEES' PHYSICAL ACTIVITY AND MENTAL HEALTH

Due to the COVID-19 pandemic, many individuals were forced to undergo quarantine to contain the virus (Pfefferbaum, 2020). The virus outbreak led to an increase in physical inactivity, which resulted in individuals' exposure to premature aging, obesity, cardiovascular vulnerability, and a decrease in aerobic quantity (Maugeri et al., 2020). Physical activity involves any body movement that contracts the muscles to create energy above the average metabolic rate and is characterized by its method, frequency, duration, and circumstance of practice (Thivel et al., 2018). In comparison, mental exercise includes the structured use of cognitive exercises or techniques for the brain that benefit individuals' brains and emotional shape. The exercises should include ways to slow down, decompress, and boost memories from the human brain (Mikkelsen et al., 2017). In general, the World Health Organization recommends 150 minutes of moderate physical activity or 75 minutes of vigorous physical activity per week to stay healthy and vital (Polero et al., 2021). In contrast, little to no physical activity relates to health problems (e.g., obesity and stress) that decreases overall work performance and social interactions with coworkers (Pronk et al., 2004).

Being physically active has proven to positively impact the well-being of individuals who suffer from mental disorders such as anxiety and depression (Saxena et al., 2005). The lack of physical activity causes millions of deaths worldwide, which in most cases are preventable. Staying physically active and exercising mental activities are crucial because these are associated with positive effects on mental health. Physical activity and mental exercises also protect individuals from anxiety and other disorders (Jacob et al., 2020).

One in five working individuals faces mental health problems during their work life (Bubonya et al., 2017). Employees spend most of their life working and a level of performance is expected, such as being self-supportive and productive to benefit the organization (Jansson & Gunnarsson, 2017). With managers and organizations always looking for ways to better the

company's position, the employees' role determines that (Grawitch et al., 2009). Physically active employees show improved mental well-being (Ráthonyi et al., 2021).

2.2 EMPLOYEES' MENTAL HEALTH AND STRESS

Many organizations had to close down their business and employees were forced to work from home (WFH) due to COVID-19 restriction implemented by governments (Karácsony, 2021). Working from home proved to be difficult for some individuals because drawing a line between work and personal life was impossible (Dockery & Bawa, 2020). Negative consequences emerge that result in increased work stress, decreased mental health, and negative attitude towards the organization (Yu et al., 2021). Brooks and Ling (2020) research discussed their dedication of ten years to better understanding employers and employees' mental health. They have uncovered that an employee's performance depends on their mental health. Whenever employees feel their mental health spiraling, it not only hurts themselves but the employers as well with increased costs and loss of productivity (Brooks & Ling, 2020). Organizations had difficulties keeping their business open for profit as well as keeping their employees healthy and vital (Karatepe et al., 2021).

It is important for organizations to provide necessary health management programs to prevent negative employee attitude and behavior towards the organization (Porter et al., 2019; Yu et al., 2021). Furthermore, long-term strategies are needed to ensure employees stay healthy and vital for the sake of their mental health needs to be developed (Brooks & Ling, 2020). According to Deforche et al. (2018), effective long-term strategies remain limited in the field of organization and employees' mental health.

Stress is seen as an 'external events or conditions that affect the organism' (Breznitz & Goldberger, 1993, p.3). Shalev et al. (2013) defines stress as a normal psychological response to circumstances where the feeling results in intimidation, misery, anxiety, and imbalance in individuals. In psychological sciences, stress suggests having positive – and negative forms. When stress is positively presented it can help enhance biopsychosocial health and aid performance (Shahsavarani, 2015). Positive stress is essential to aiding the development of motivation, transformation, feedback to the exposed environment, rapid cardiovascular recovery, immune system benefits, and resilience to growth (Cavanagh & Larkin, 2018; Jessop, 2019).

On the contrary, high-levels of stress are considered dangerous because it negatively influences physical – and mental properties of an individual. The physical problems that arise from stress are heart diseases, pneumonia, and influenza (Baum & Grunberg, 1991). Physical problems could arise from stress, such as heart disease, pneumonia, and influenza (Baum & Grunberg, 1991). The consequences that emerge cause anxiety and other forms of negative emotions (e.g., pain, sadness, or anger), which develops into severe psychological disorders such as post-traumatic stress disorder, also known as PTSD (Shahsavarani et al., 2015). Stress is an inevitable part of an individual's life, but exposure to long-term stress damages an individual's health and mental state (Meyer et al., 2022).

It is concluded that low levels of stress are acceptable; however, high levels of stress are considered dangerous because they are associated with physical and mental problems such as heart disease, depression, and anxiety (Kusuma, 2018). Moreover, for individuals emerging in adulthood, the transition with changes such as living arrangements, relationships, and employment creates stress and psychological stress during that period (Matud et al., 2020). The exposure to high levels of stress is low for older adults compared to young adolescents or middle-aged adults. However, older adults experiencing high levels of stress are exposed to consequences such as memory decline (e.g., dementia) and genetic vulnerability (Rönnlund et al., 2018).

2.2.1 WORK STRESS

Work stress is a harmful reaction that people experience due to the pressure and demands presented to them during their working hours. There are reports showing employees' main complaints are work-related stress, depression, or anxiety that makes them sick. High levels of stress due to work has led to the global and national recession, job insecurity, and work intensity which keeps causing greater workloads and interpersonal conflicts. Most companies provide their employees with physical health insurance but fail to acknowledge the equal importance of mental health. Employees play a significant role in the company's performance hence why it is crucial to provide the necessary incentive and tools for employees' welfare (Elmunyah et al., 2019).

2.3 COMMUNICATION TO PROMOTE MENTAL HEALTH

Organizations must keep their employees healthy and vital because mental health affects the quality of the job (Janssen et al., 2018; Wang et al., 2022). Therefore, the current study focuses on communication methods that organizations can effectively use to communicate health-related issues to their employees. Based on previous studies, the effects between message valence (risks vs. benefits) and health authority (low/moderate vs. high) are used because it is believed they have essential characteristics that can be used for persuasion, message credibility, organization's credibility, and call to action (Reardon et al., 2006; Salman, 2008; Worthington et al., 2015; Jenskins et al., 2020).

2.3.1 MESSAGE PERSUASIVENESS

Marketing communication has used persuasive characteristics of advertising for many years (Kenechukwa et al., 2013). Persuasion is the ability to convince an individual to change their attitude or behaviors regarding a topic of interest through various communication tools (e.g., verbal and non-verbal messages) (Perloff, 2016). Message valence is used in persuading individuals towards specific behavioral outcomes (Wang et al., 2015). Positive framed messages have more significant effects on an individual's persuasion, but only when the individual has low motivation for the message (e.g., someone thinking about smoking or drinking alcohol) (Maheswaran & Meyers-Levy, 1990). It has been concluded that positive messages are perceived to be more persuasive than negative messages (Wang et al., 2015, p.152). On the contrary, Robberson and Rogers (1988) argued that message valence with risks has better persuasion results than messages with benefits.

2.3.2 MESSAGE CREDIBILITY

How vital is message credibility nowadays? Individuals have become more critical in evaluating message credibility due to ongoing occurrences such as fake news and unrealistic messages to generate revenues (Visentin et al., 2019). The term message credibility is the recipient's acceptance of a message constructed by the sender or endorser, which is attractive, knowledgeable, and trustworthy (Yilmazdođan, 2021). Attractiveness indicates the focus on the endorser's physical appearance and knowledge, which tests their expertise in a particular area. The level of trust lies within the endorser's likeability and the recipient's confidence and acceptance of

the endorser's message (Muda & Hamzah, 2021). Most individuals seek trusted sources before adopting a message (von Hohenberg & Guess, 2022).

The study by Geiger (2022) discussed that experts on a particular topic of interest are typically assumed to be more believable than non-experts. Hocevar et al. (2017) argue that source credibility is vital to the recipient's message acceptance and that source credibility influences the perception of trustworthiness and expertise. Credibility is linked to the endorser's credentials and truth in delivering information (Thon and Jucks, 2017).

2.3.3 ORGANIZATION'S CREDIBILITY

An organization's credibility is essential as more organizations are communicating health messages to prevent adverse health issues (Hammond, 1987). The author also argues that individuals react differently when organizations advertise health messages for their benefit, as compared to health messages for nonprofit. Organization's credibility is a trustworthy and reliable source of message based on the products and services provided (Jamal & Abu Bakar, 2017). An organization's advertising credibility is based on the message quality, the message's effectiveness, and the perceived credibility of the source (Worthington et al., 2015). However, health campaigns communicated by a health expert have more substantial influence than those communicated by non-experts (Hocevar et al., 2017). It is important for organizations to support their employees' safety, health, and well-being (Schult et al., 2018).

2.3.4 CALL TO ACTION

Health promotional messages are created to call out individuals for behavior change (Rekhy & McConchie, 2014). The term call to action (CTA) is an act that inspires individuals to carry out the desired outcome (Romano & Hage, 2000). Marketing – and health campaigns often use endorsers as communication tools for a call to action (Muda & Hamzah, 2020). Emotions have an essential role in advertising, and the most used emotion is a fear appeal, as it attracts attention due to the fear created around the topic of interest (Poels & Dewitte, 2019). Manyiwa and Brennan (2012) discussed examples where a fear appeal is used as a call to action (e.g., smoking, drunk driving, unprotected sex, drug and alcohol abuse).

The desired call to action (CTA) will be for individuals to initiate behavior change to the risks of not engaging in physical activity communicated by a high leveled health authority.

2.4 MESSAGE VALENCE; RISKS VERSUS BENEFITS

Message valence evokes specific emotions such as anger, fear, sadness, and joy, which tailors to explicitly designed content. The objective is to captivate people's attention, create entertainment, and generate persuasion (Bolls, 2001). According to White et al. (2003), messages that include negative consequences are better perceived and trusted than messages without negative consequences. Subsequently, message valence assists in understanding the risks and benefits of health problems and generally framing a message as a gain versus a loss (Han & Zhang, 2015). Siegenthaler et al. (2021) suggest that researchers have dedicated extensive time and research to investigate the effects of different appeals, such as fear, disgust, humor, hope, and guilt. In health communication, a fear appeal has consistently received more attention, mainly because it provides effective results for attitude and behavior change (Leshner & Bolls, 2009). Additionally, message valence proves to be effective when concerning its use as a communication tool for health promotions and disease prevention (Siegenthaler et al., 2021). On the contrary, other forms of message valence are rarely given attention for further investigation, such as risk-benefit health communication (Berg et al., 2021).

One tool used for understanding and predicting health/illness behaviors is the Health Belief Model (HBM), which mainly consists of six constructs: perceived severity, perceived susceptibility, perceived benefits, perceived barriers, call to action, and self-efficacy (Wong et al., 2020). According to Cummings et al. (1978), health decisions are made by individuals whenever the individual feels psychologically ready to take those action(s) related to the specific health threat or condition. This means the constructs of perceived risks and perceived benefits matches the objective of this study because the effectiveness of attitude and behavior change depends on individuals' thought and feelings towards the health subject (Peters et al., 2006). For example, if being exposed to certain health risks or health benefits generate sufficient change in attitude and behavior change.

This study aims to investigate whether the role of communicating health risks or benefits by a low/moderate or high health authority. Not engaging in physical activity will result in serious health consequences such as heart failure or burnout. While on the contrary, engaging in physical

activity will result in individuals staying healthy and vital (Penedo & Dahn, 2005). Message valence communicating negative information will lead to increase in message acceptance, increased trust in the organization, and behavioral changes. Based on these arguments, it can be hypothesized that:

Hypothesis 1: Messages communicating the negative consequences of not engaging in physical exercises (perceived risks) will result in higher responses on a) message persuasiveness, b) message credibility, c) organization's credibility, and d) call to action, as compared to messages communicating the positive consequences of engaging in physical exercises (perceived benefits)

2.5 HEALTH AUTHORITY; CEO VERSUS DOCTOR

Authority grew from the Romans where individuals understood it as a way of handling public affairs with persuasion, force, and violence by Greek political philosophy. Moreover, it was Plato and Aristotle (Philosophers in ancient Greece) who introduced authority to the public. It was believed that authority was needed to gain obedience in private, public, and controlling warfare (Arendt, 1954). The term relates to power and obedience, where one has the right to engage for control (Scott et al., 1967; Campbell, 2007). Endorsers for health also possess similar power to control an individual's perception surrounding a topic of interest (McCabe et al., 2013). Marketing – and health campaigns often use endorsers as main spokesperson to advocate for a brand or topic of interest in hopes to persuade individuals (Koring, 2015).

Source expertise influences the messaging process and persuasiveness, but it depends on source credibility (e.g., expertise, objectivity, and trustworthiness) (Homer and Kahle, 1990). Additionally, Yuan et al. (2019) describes source expertise as an important role in the expectancy violation theory (EVT) and politeness theory, as these influence the relationship between the endorser and recipient.

The current study focuses on the authority of an CEO or occupational doctor regarding mental health issues and it is expected that individuals perceive the occupational doctor to be superior to the CEO. A CEO (Chief executive officer) has a crucial and influential role within an organization because they have power over the route of the organization, its employees, markets,

and in some instances power over countries or regions around the world (Glick, 2011). The CEO represents the organization in the public's eye and has influence over employees' trust, attitude, and performance (Men, 2012). However, the role of CEO is scrutinized due to corporate value for wealth, selfishness, and greed over the importance of work, sacrifice, and responsibility by individuals (Sajko & Buyl, 2021). Whereas a doctor has an expert's role in providing trustworthy and knowledgeable information regarding numerous health conditions (Kim & Kim, 2009). Health expertise is known as "knowledge gained from professional training and practice" (Hartzler & Pratt, 2011, p.2).

According to Porter et al. (2019), organizations still have little knowledge of mental health problems among their employees. Most organizations promote physical health and offer insurance for this field but do not offer enough support regarding employees' mental health (Levecque et al., 2017). Employees are highly affected by the influence they receive from their managers and organization, if the influence is positive than they perceive the organization to be trustworthy (Andersen et al., 2022). Nielsen and Jacobsen (2018) evidence show that employees respond positively to respected leaders of the organization who show interest in their value and work. Furthermore, specialized health experts are representatives of willpower, knowledge, and morality, allowing them to perform successfully throughout their career (Hutson, 2013). Thus, the following hypothesis formulated is:

Hypothesis 2: Messages communicated by an occupational doctor (high health authority) will result in higher responses a) message persuasiveness, b) message credibility, c) organization's credibility, and d) call to action, as compared to messages communicated by a CEO as the health authority (low/moderate health authority)

2.6 COMBINED EFFECT OF MESSAGE VALENCE AND HEALTH AUTHORITY

The two independent variables used in this study are: message valence (perceived health risks vs. health benefits) and health authority (low/moderate vs. high). The study aims to generate behavior change and mental well-being awareness to stay healthy and vital. An effective manner to influence attitude change is through the combination of health endorser and transfer of message (Koring, 2015). Hence, the following formulated sub-research question:

Sub-research question 1: Does the combined effect of message valence and health authority have an effect on a) message persuasiveness, b) message credibility, c) organization's credibility, and d) call to action?

2.7 MODERATING EFFECTS OF HEALTH LITERACY AND LOCUS OF CONTROL

2.7.1 HEALTH LITERACY

Health literacy is an individual's ability to gather, process, and comprehend basic health information to produce appropriate action or intervention to reduce health risks and increase the quality of life (Zarcadoolas et al., 2005; Berkman et al., 2010). Furthermore, Meppelink et al. (2015) study revealed that individuals with low health literacy show positive feedback when the health message is clear (e.g., not difficult to read). Also, low health literacy individuals make better decisions after being exposed to certain health advertisements. Despite being associated with poor health and unfavorable health behaviors. For example, smokers with low health literacy have difficulty processing and retaining information regarding the risks of smoking. Whereas individuals with high health literacy can process and retain more factual information regarding the risks of smoking (Hoover et al., 2018). Based on these arguments, the following sub-research question is formulated:

Sub-research question 2: Does health literacy moderate the effect of message valence on a) message persuasiveness, b) message credibility, c) organization's credibility, and d) call to action?

2.7.2 LOCUS OF CONTROL

Locus of control is 'a person's belief in the amount of control a person has on specific events in life' (Sterbin & Rakow, 1996, p.3). According to Lin and Ensel (1989) the concepts of sense of mastery, feelings of personal competence, self-esteem, and locus of control can be seen as personality traits that affect how individuals react to certain life events and stressors. The authors also argue that the concepts may be used as a buffer or an approach to reduce stress effects on the individual's physical – and mental well-being. Locus of control has two concepts: (1) internal locus of control and (2) external locus of control (Sterbin & Rakow, 1996). The authors mentioned in their study, that when individuals believe it is up to them to display change, they take that opportunity to do so instead of depending on a health authority. The study of April et al. (2012)

discussed the difference between internal – and external locus of control. Individuals with an internal locus of control believe that their abilities directly result from certain outcomes. In contrast, individuals with an external locus of control believe that their actions depend on factors outside their control. AbuSabha and Achterberg (1997) argue that individuals with an internal locus of control score higher on behavior changes than individuals with external locus of control. Thus, the following sub-research question formulated is:

Sub-research question 3: Does health locus of control moderate the effect of health authority on a) message persuasiveness, b) message credibility, c) organization's credibility, and d) call to action?

2.8 COVARIATE EFFECTS OF SELF-EFFICACY AND PHYSICAL ACTIVITY

2.8.1 SELF-EFFICACY

The term self-efficacy refers to an individual's capacity to complete a task or achieve a goal (Flammer, 2001). Self-efficacy influences how people feel, think, behave, and motivate themselves. Individuals with low self-efficacy often have low self-esteem and negatively view their accomplishments and personal development (Zulkosky, 2009). These individuals are associated with feelings of stress, depression, and anxiety (Heslin & Klehe, 2006). On the contrary, individuals with high self-efficacy often have high self-esteem and face difficult obstacles instead of avoiding them (Zulkosky, 2009). These individuals are associated with better health, depression, health distress, and physical incapability (Yoo et al., 2011).

To conclude, individuals with low self-efficacy do not feel confident to perform a task and resorts to avoiding challenges. Whereas individuals with high self-efficacy believe and do the opposite.

2.8.2 PHYSICAL ACTIVITY

Physical activity involves any body movement that contracts the muscles to create energy above the average metabolic rate and is characterized by its method, frequency, duration, and circumstance of practice (Thivel et al., 2018). It is associated with low levels of risk to premature health problems (Corbin et al., 2000). Individuals that are physically active have less difficulties in engaging in daily and sport activities (Blair et al., 1992).

Some health campaigns stimulate physical activity by promoting positive messages while others use negative messages (Notthoff et al., 2016). According to Li et al. (2012), messages with benefits from physical activity are expected to be more effective regarding low-risk behaviors (e.g., healthy diet or moderate physical activity, whereas risk messages are expected to be more effective with high-risk behaviors (e.g., depression or obesity). Based on the arguments, it can be concluded that physically active individuals will positively react to messages with benefits while individuals with an inactive lifestyle react to messages with health risks.

2.9 CONCEPTUAL MODEL

The conceptual framework shown in Figure 1 is based on the hypotheses formulated in the theoretical framework. The independent variables are manipulated in the message valence (perceived health risks vs. health benefits) and health authority (low/moderate vs. high) regarding mental health. Next, the dependent variables which demonstrates the desired outcome for this study are message persuasion, message credibility, organization’s credibility, and call to action. Hereby, an experimental study is conducted to determine the effectiveness of the beforementioned variables.

Figure 1
Conceptual Framework of the research

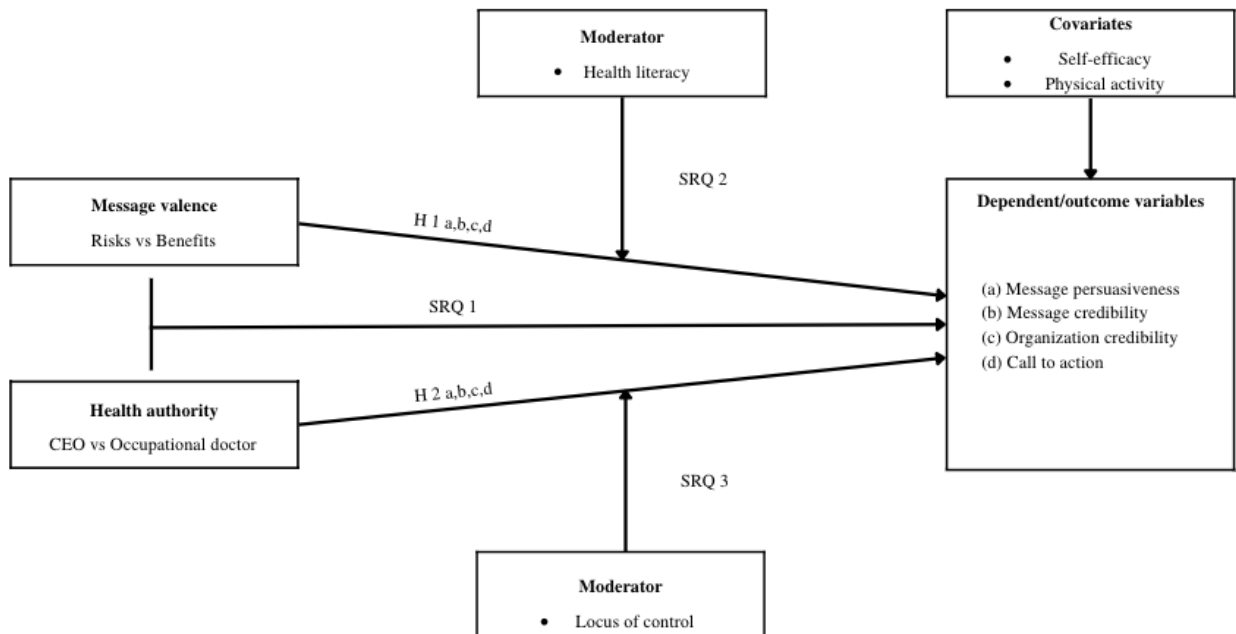


Table 1 *Research hypotheses and sub-research questions*

Hypotheses	
Message valence; risks versus benefits	
H1	Messages communicating the negative consequences of not engaging in physical exercises (risks) will result in higher responses on (a) message persuasiveness, (b) message credibility, (c) organization's credibility, and (d) call to action, as compared to messages communicating the positive consequences of engaging in physical exercises (benefits)
Health authority; CEO versus Occupational doctor	
H2	Messages communicated by an occupational doctor (high health authority) will result in higher responses (a) message persuasiveness, (b) message credibility, (c) organization's credibility, and (d) call to action, as compared to messages communicated by a CEO as the health authority (low/moderate health authority)
Sub-research questions	
SRQ1	Does the combined effect of message valence and health authority have an effect on (a) message persuasiveness, (b) message credibility, (c) organization's credibility, and (d) call to action?
Health literacy	
SRQ2	Does health literacy moderate the effect of message valence on (a) message persuasiveness, (b) message credibility, (c) organization's credibility, and (d) call to action?
Locus of control	
SRQ 3	Does locus of control moderate the effect of health authority on (a) message persuasiveness, (b) message credibility, (c) organization's credibility, and (d) call to action?

3 METHOD

The methods used for this research are discussed in this chapter. Firstly, the research design for the study is discussed. Secondly, the design stimuli created is discussed. This chapter also discusses the pretest results. The variables measures are also discussed. The experimental design procedure is also explained in this chapter. Lastly, to close the chapter, participants’ demographic information from the data are discussed.

3.1 RESEARCH DESIGN

Participants viewed one of the four conditions: (1) CEO communicating perceived health risks, (2) Occupational doctor communicating perceived health risks, (3) CEO communicating perceived health benefits, and (4) Occupational doctor communicating perceived health benefits. The experiment took place online via Qualtrics.

The study used a 2 (message valence; perceived health risks vs. health benefits) by 2 (health authority; low/moderate - CEO vs. high - occupational doctor) in between-subject experimental design. This resulted in four experimental conditions based on the experimental design, as seen in Figure 2.

Table 2
Experimental conditions of the study

	<i>Health authority</i>	
	<i>CEO (Low/moderate)</i>	<i>Occupational doctor (High)</i>
<i>Perceived health risks</i>	Condition 1	Condition2
<i>Perceived health benefits</i>	Condition 3	Condition 4

3.2 DESIGN OF STIMULI

A fictional organization called Crioyo Dutch Citizen was created for this study to eliminate participants from participating with preconceived opinions (Xie, 2021). The fictional organization presented itself as a government organization with five hundred employees. The storyline took

place after the COVID-19 lockdown was lifted. When the organization discovered many stressed employees during a lockdown mental health check by managers, the organization strived to create ways of reducing stress among their employees by starting a health campaign. The communication team stumbled upon stress management techniques, including physical exercise and psychological well-being (Scully et al., 1998). A combination of helpful tips was designed and integrated into a message, distributed by e-mail. The ultimate goal of the communicated message is the prevention of health issues and promotion of physical/mental activity. Additionally, creating awareness mental health.

First, an online graphic design tool named Canva was used to create the message design. Message valence was framed as either exercises to maintain health benefits (perceived health benefits) or to prevent health risks (perceived health risks). The CEO of the fictitious organization represented a low/moderate health authority and the occupational doctor represented a high health authority. Their role as endorser was to communicate the essence of creating a balanced work environment in post-COVID condition. Three exercises were presented, which read: (1) Take small instead of long breaks, (2) Limit your sedentary time by standing up for 15-30 minutes every 2 hours, and (3) Practice 150 minutes of physical or mental exercise per week. The formulated exercises were derived from Yook’s (2020) research and adapted to this current research. The variables message valence and health authority were manipulated through e-mail marketing because this method is a modern form of communication with high quality and accuracy (Sabbagh, 2018). Furthermore, every employee has a work e-mail, thus making distribution much easier.

Participants were exposed to one of the two message valences and one of the two health authorities. The manipulations are shown in Table 3 and Figure 3.

Table 3
Message valence manipulation in design condition

Perceived health risks	Perceived health benefits
To remain stress-free during work you must do the below referred to exercises to prevent serious health effects, such as heart failure, gastrointestinal problems, burnout, or depression.	To remain stress-free during work you can do the below referred to exercises to stay healthy and vital

Figure 3
Health authority manipulation in design condition



MANIPULATION MESSAGE VALENCE

The contents for message valence were formulated based on the Health Belief Model (HBM). HBM is a model used in promoting health and preventing disease campaigns is widely used to influence individuals' actions and behaviors regarding their health (Alagili & Bamashmous, 2021). The perceived risk sentence highlights the risks of not engaging in physical/mental activities. The perceived benefit sentence highlights the benefits of engaging in physical/mental activities. The manipulation for perceived risks and the manipulation for perceived benefits are shown in Table 3.

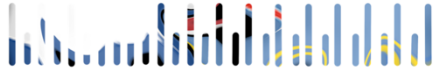
MANIPULATION OF HEALTH AUTHORITY

First, the health endorser was tested on whether participants found them to be well informed -, familiar -, and insightful in health care. The manipulation for health authority is shown in Figure 3, and an example of a full stimuli condition can be found in Figure 4. Gender stereotype was also tested to observe whether participants favored one gender over another. According to LeBeau et al. (2020), female endorsers are seen as being more informative and concerned with health, whereas males are seen as less concerned about health.

Figure 4

Stimuli condition of CEO endorsing perceived health risks of not engaging in physical activity

CRIOVO DUTCH CITIZEN



Dear colleagues,


As things are slowly starting to become normal again without COVID-19 restriction set by the government. We look forward to building a balanced work life whether this is working from home or at the headquarters office.

Perceived risks


To remain stress-free during work you must do the below referred to exercises to prevent serious health effects, such as heart failure, gastrointestinal problems, burnout, or depression.

1. Take small breaks instead of long breaks
2. Limit your sedentary time by standing up for 15-30 minutes every 2 hours
3. Practice 150 minutes of physical or mental exercise per week

For additional support please contact your supervisor or the health department.


Tomas Win
Chief Executive Officer

Low/moderate health authority



3.3 PRETEST OF STIMULI

A pretest was performed to ensure the stimulus materials worked as intended for this study. A total of 18 participants (Male = 5 and female = 13) were recruited for this pretest by the use of convenient sampling. The age of the sample ranged from 25 to 52 years.

PRETEST OF MESSAGE VALENCE

The pretest survey included two questions on the manipulation check. Each participant received the risk – and benefit message condition in random order. Participants were asked to respond with two statements to measure risk and benefit perception. The statements read: 'The general tone of the message was ___' and 'The message is mainly concerned with ___'. Participants had to rate the first item on a 7-point bipolar scale from negative to positive. Participants had to rate the second item on a 7-point bipolar scale from health risk - health benefit.

An independent t-test and one sample t-test were conducted via SPSS to determine the significant differences in variables and if the manipulation met the intended criterion. The

independent t-test revealed no significant differences between the message valence (perceived health risks vs. health benefits) manipulation ($t(34), p > 0.05$). Participants saw the first item for perceived risk as positive rather than negative. For the second item, participants saw the text as neither concerned with health risks nor health benefits. Next, participants exposed to the perceived benefit message had an overall mean score of 5.50 for the first item. The second item scored a mean of 5, which meant that the participants viewed the text as optimistic and concerned about health benefits. The results are depicted in Table 4.

To conclude, participants viewed the health benefit condition as positive and containing with health benefits. However, participants also rated the health risk condition to have a positive tone. The participants did not know whether the message was mainly concerned with health risks or health benefits, this can be seen through the score.

Table 4

Mean and standard deviation of perceived health risk versus perceived health benefit

Item	Perceived health risks		Perceived health benefits		t ^(c)	p ^(d)
	M ^(a)	SD ^(b)	M ^(a)	SD ^(b)		
The general tone of the message was Negative - Positive	5	1.97	5.50	1.7	3.77	.002
The message is mainly concerned with Health risks - Health benefits	4	2.2	5	1.85	2.9	.035

PRETEST OF HEALTH AUTHORITY

To test the health authority conditions, it was first looked at gender stereotype. The participants reviewed four conditions: one female CEO, one male CEO, one female occupational doctor, and one male occupational doctor. There were three items to test the health authority manipulations: 'The person is well informed about health care', 'The person is familiar about health care', and 'The person is insightful about health care'. A 7-point Likert scale was used, starting from highly disagree - highly agree. The pretest results for gender stereotyping on health authority are shown in Table 5, where responses from female versus male respondents are shown in the column.

Table 5*Mean and standard deviation for type of health authority by gender*

		Female participants		Male participants		t ^(c)	p ^(d)
		M ^(a)	SD ^(b)	M ^(a)	SD ^(b)		
Female CEO	Well informed	4	1.41	3	1.87	-1.23	.24
	Familiar	4.15	1.28	3.6	1.82	-.73	.47
	Insightful	3.92	1.55	3.6	1.82	-.38	.71
Male CEO	Well informed	5.58	1.62	4.33	2.25	-1.36	.19
	Familiar	5.83	1.59	4.33	2.25	-1.65	.12
	Insightful	5.91	1.56	4.5	2.07	-1.63	.12
Female occupational doctor	Well informed	5.15	1.52	3.75	3.2	-1.24	.23
	Familiar	5.15	1.58	3.75	3.2	-1.22	.24
	Insightful	5.46	1.2	3.75	3.2	-1.67	.12
Male occupational doctor	Well informed	5.5	.91	4.6	2.07	-1.28	.22
	Familiar	5.75	.87	4.6	2.19	-1.6	.13
	Insightful	5.67	.88	6	0	.82	.42

a) M = mean from 7-point scale | b) SD = standard deviation | c) t = statistics | d) p = p-value

Firstly, the female CEO versus the male CEO is discussed. The results show that male respondents did not find the female CEO to be well informed -, familiar, and insightful in health care. On the contrary, the male respondents found the male CEO and - occupational doctor to be well informed -, familiar, and insightful in health care. As for the results of female respondents, they found the female CEO to be well informed – and familiar with health care but not that insightful. Furthermore, the female participants found the male CEO to be well informed -, familiar, and insightful in health care because the mean scores were above the midpoint (= 4) of the 7-point scale.

Secondly, the female occupational doctor and male occupational doctor are discussed. The male participants did not find the female occupational doctor well-informed, familiar, or insightful in health care. On the contrary, female participants found both the female and the male occupational doctor to be well informed, familiar, and insightful in health care. However, male participants did find the male occupational doctor to portray all three characteristics.

To conclude, no severe signs of gender stereotype were detected based on the independent t-test results in SPSS. Male respondents did favor the male CEO and male occupational doctor, but the female respondents favored both gender endorsers almost equally. Ultimately, the decision to use males as health authority was made by comparing the results from female endorsers versus

male endorsers. The results are shown in Table 6, where female and male participants favored the male endorser much more than the female endorser. The final stimuli conditions are depicted in Appendix A.

Table 6
Mean and standard deviation for health authority items based on type of health endorser

	Male CEO		Male Occupational doctor		t ^(c)	p ^(d)
	M ^(a)	SD ^(b)	M ^(a)	SD ^(b)		
Well informed	5.17	1.89	5.24	1.35	-.12	.9
Familiar	5.33	1.91	5.41	1.42	-.14	.89
Insightful	5.44	1.82	5.76	.75	-.67	.51

	Female CEO		Female occupational doctor		t ^(c)	p ^(d)
	M ^(a)	SD ^(b)	M ^(a)	SD ^(b)		
Well informed	3.72	1.57	4.82	2.01	-1.82	.08
Familiar	4	1.41	4.82	2.04	-1.4	.17
Insightful	3.83	1.58	5.06	1.89	-2.09	.05

a) M = mean from 7-point scale | b) SD = standard deviation | c) t = statistics | d) p = p-value

3.4 MEASURES

3.4.1 DEPENDENT VARIABLES

MESSAGE PERSUASIVENESS

The variable message persuasiveness was measured with three items adapted from Zhang et al. (2014). The participants rated the three items on a 7-point extremely unlikely - extremely likely Likert scale. An example of one statement read: ‘The communicated message is convincing’.

MESSAGE CREDIBILITY

Message credibility is measured with five items adapted from the research of Appelman and Sundar (2016). One example of the statement read: ‘The communicated message can be seen as believable’. The items were rated based on a 7-point strongly disagree - strongly agree Likert scale.

ORGANIZATION’S CREDIBILITY

The organization’s credibility variable was measured with three items from LaBarbara (1982) and McCroskey and Tevens (2013) research. Participants answered the statement: ‘Based on the communicated message, I think the company is concerned with me’. The items could be answered by a 7-point strongly disagree - strongly agree Likert scale.

CALL TO ACTION

The variable for call to action was measured with four items adapted from Meadows (2020) research. An example of the statements is as follows: ‘After reading this message, how likely is it that you will practice small breaks during the day?’. All four items could be answered with a 7-point extremely unlikely - extremely likely Likert scale.

VALIDITY AND RELIABILITY OF DEPENDENT MEASURES

A principal component analysis with varimax rotation was performed to establish the relationship between the dependent measures of this study. The IBM SPSS Statistics 28 software was used to analyze the acquired dataset. The analysis shows that the four factors accounted for 74% of the variances. Cronbach alpha was used to test the scale reliability, which resulted in almost all scales scoring $\alpha > .80$. The results indicate that the dependent variables are related to one another and that the scales used are valid. The complete summary of results is displayed in Table 7.

Table 7

Factor analysis (rotated component matrix) and reliability analysis for dependent variables

Items	Factor			
	1	2	3	4
Message credibility				
The message can be seen as believable	.83			
The message can be seen as accurate	.80			
The message can be seen as trustworthy	.80			
The message can be seen as authentic	.72			
Organization's credibility				
I think the company cares about me		.86		
I think the company has my best interest at heart		.80		
I think the company is concerned with me		.78		
Call to action				
How likely are you to limit your sedentary time during work?			.84	
How likely is it that you will practice small breaks during work?			.80	
How likely is it that you will practice the referred exercises for stress reduction during work?			.76	
Message persuasiveness				
The message is persuasive				.90
The message is convincing				.64
Explained Variance:				
	26%	21%	19%	12%
Eigenvalue:				
	6.12	1.44	.89	.82
Cronbach alpha:				
	.89	.89	.79	.73

Minimum factor loading .50

3.4.2 MODERATING VARIABLES HEALTH LITERACY

The variable health literacy is measured with four items adapted from Sorensen et al. (2013) and tailored to this study’s research objective. The statements formulated are as follows: ‘My ability to access information on risk factors for stress is __’, My ability to understand information

and derive meaning on risk factors for stress is __’, ‘My ability to interpret and evaluate information on risk factors for stress is ___’, ‘My ability to make informed decisions on risk factors for stress is ___’. The items are answered by a 7-point strongly disagree - strongly agree Likert scale.

LOCUS OF CONTROL

Locus of control was measured with four items derived from Thomson et al. (1987) research regarding children’s beliefs about sources of health. The items consisted of these following statements: ‘The main thing that affects my health is what I do myself’ and ‘I am in control of my own health’. Each item is answered with 7-point strongly disagree - strongly agree Likert scale.

VALIDITY AND RELIABILITY OF MODERATING MEASURES

The use of the principal component analysis with varimax rotation are performed for the items measuring health literacy and locus of control. Items that scored lower than .50 were eliminated because they lower the validity and reliability of the measures. The complete summary of the results is displayed in Table 8.

Table 8
Factor analysis – (rotated component matrix) for moderating variables

Items	Factor	
	1 ^{a)}	2 ^{b)}
Health literacy		
My ability to interpret and evaluate information on risk factors for stress is __.	.87	
My ability to make informed decisions on risk factors for stress is __.	.83	
My ability to understand information and derive meaning on risk factors for stress is __.	.82	
My ability to access information on risk factors for stress is __.	.81	
Locus of control		
I am in control of my own health		.83
The main thing that affects my health is what I do myself		.81
Explained variance:	48%	22%
Eigenvalue:	2.88	1.29
Cronbach alpha:	.86	.53

Minimum factor loading = .50 | a) Health literacy | b) Locus of control

3.4.3 COVARIATE VARIABLES

SELF-EFFICACY

The variable self-efficacy was measured with five items derived from (Imam, 2007). One example of the items is: ‘When I set important goals for myself, I rarely achieve them’. Each item used a 7-point Likert scale ranging from strongly disagree to strongly agree.

PHYSICAL ACTIVITY

The variable physical activity was measured with five items derived from (Moore et al., 2009). The items consisted of a 7-point bipolar scale, where participants had to answer based on the following statement: ‘My perception about being engaged in physical activity is’. An example of an item read: I hate it – I enjoy it.

VALIDITY AND RELIABILITY OF COVARIATE VARIABLES

A factor analysis was conducted to determine the validity of each item. The results indicated a factor of .56 for the first item of the self-efficacy variable. When the first item and fourth item were removed the remaining covariate items improved. The Cronbach alpha also improved upon removing the two items measuring self-efficacy variable. The complete summary of the factor analysis and reliability test is shown in Table 9.

Table 9

Factor analysis (rotated component matrix) for covariate variables

Item	Factor		
	1 ^{a)}	2 ^{b)}	
Physical activity			
I find it not stimulating - I find it stimulating	.91		
I hate it - I enjoy it	.90		
I find it unpleasant - I find it pleasant	.89		
I find it not refreshing - I find it refreshing	.86		
I find it tiring - I find it energizing	.83		
Self-efficacy			
When something looks complicated, I will not even bother to try it		.85	
I avoid facing difficulties		.84	
When unexpected problems occur, I don't handle them well		.81	
	Explained variance:	49%	26%
	Eigenvalue:	3.90	2.06
	Cronbach alpha:	.93	.78

a) Physical activity | b) Self-efficacy

3.5 PROCEDURE

A convenient sampling technique was used to recruit participants for this study. The web-based software Qualtrics provided a survey link to distribute quickly. Next, the URL link was distributed via WhatsApp, Facebook, and test subject pool BMS where students from the University of Twente could participate in the experiment in return for credits. Before starting the

data collection, a request from the ethics committee BMS was approved. Data collection ran from April 20th, 2022, through June 20th, 2022.

Participants were firstly presented with a brief introduction, which detailed the researcher's name, study, e-mail address, survey length, and informed consent. When participants agreed to give consent, they first encountered questions about the moderator variables health literacy and locus of control. Next, participants answered questions regarding the covariates of self-efficacy and physical activity.

Later, participants were exposed to information about the organization Crioyo Dutch Citizen for example, what the organization does, where it is situated, and how many employees it employs. Also described are the post-COVID situation for employees' mental health. The participants were asked to envision themselves in the following scenario: "Now imagine you have been working at Crioyo Dutch Citizen as a senior communication advisor for over three years. You have just received a message (shown next) from the organization; please carefully read it". Afterward, one of the four conditions was presented to the participant. In order to confirm if participants read the condition, a timer for each condition was added to the condition. After reviewing one of the four conditions, participants answered questions regarding the dependent variables message persuasiveness, message credibility, organization's credibility, and call to action. Upon completing the questions regarding the dependent variables, participants were again shown the same conditions they viewed before as a refresher. This decision was instinctively made to create a real-life scenario. In a real-life scenario, participants can read and re-read the message countless times because the manner of distribution is through e-mail. Then, the manipulation check questions regarding the message valence and health authority are depicted. Lastly, demographic information about each participant was collected (e.g., gender, age, current occupation, and work sector). Participants were thanked for their participation and informed of the fictitious organization created for this research at the end. The complete survey is depicted in Appendix B.

3.6 PARTICIPANTS

A total of 316 participants participated in the survey. After filtering out participants who had not completed the survey, 242 (91 male, 147 female, one non-binary, and three prefer not to say)

were left in the study. Furthermore, no inclusion criteria were set for this research. A more detailed explanation will take place in the discussion chapter.

The ages of the participants ranged from 17 to 69 for all four conditions. Overall, the conditions were equally divided between the total of 242 participants. Ninety-one participants were males, and one hundred fifty-one were females. Most participants who participated had a bachelor's degree (34.7%). A more detailed distribution of the participants' characteristics is depicted in Table 10.

Table 10
Distribution of sample characteristics

	CEO (low/moderate health authority)	Occupational doctor (high health authority)
Perceived health risks	a) N = 60	a) N = 60
Age ^{b)}	M = 27.23 SD = 5.87	Age ^{b)} M = 29.18 SD = 10.5
Gender ^{c)}	Male = 22 (37%) Female = 37 (62%) Prefer not to say = 1 (2%)	Gender ^{c)} Male = 25 (42%) Female = 33 (55%) Prefer not to say = 2 (3%)
Educational ^{d)} level	1) 28% 2) 23% 3) 35% 4) 13%	Educational ^{d)} level 1) 22% 2) 20% 3) 35% 4) 23%
Occupation ^{e)}	1) 43% 2) 15% 3) 0% 4) 42% 5) 0%	Occupation ^{e)} 1) 42% 2) 23% 3) 0% 4) 33% 5) 2%

Table 10 Continued

	CEO (Low/moderate health authority)	Occupational doctor (High health authority)
Perceived health benefits	a) N = 65	a) N = 57
	Age ^{b)} M = 27.43 SD = 7.34	Age ^{b)} M = 28.23 SD = 9.97
	Gender ^{c)} Male = 21 (32%) Female = 44 (68%)	Gender ^{c)} Male = 23 (40%) Female = 33 (58%)
	Educational ^{d)} level	Educational ^{d)} level
	1) 25%	1) 33%
	2) 19%	2) 18%
	3) 34%	3) 35%
	4) 22	4) 14%
	5) 2%	
	Occupation ^{e)}	Occupation ^{e)}
	1) 40%	1) 40%
	2) 15%	2) 30%
	3) 6%	3) 0%
	4) 37%	4) 30%
	5) 2%	5) 0%

a) N = total participants | b) M = Mean / SD = standard deviation of self-reported age | c) Percentage division between genders | d) Percentage: 1) High school 2) College 3) Bachelors 4) Masters 5) PhD | e) Percentage : 1) Employed (40+ hours per week) 2) employed (1-39 hours per week) 3) unemployed 4) student 5) retired

4 RESULTS

In this chapter, the results of the online experiment are discussed. Firstly, the manipulation checks used for the confirmation of stimulus validity are presented. Secondly, the analyses of the main and interaction effects which are supporting the hypotheses and sub-research questions formulated in this study are discussed. Lastly, the role of the moderating variables are explained.

4.1 MANIPULATION CHECK

A set of four manipulation check questions were formulated for the independent variables: message valence (perceived health risks vs. health benefits) and health authority (low/moderate - CEO vs. high - occupational doctor).

MESSAGE VALENCE; PERCEIVED RISKS VERSUS PERCEIVED BENEFITS

Message valence had two items for manipulation check. Participants were asked to rate the type of valence presented to them with a 7-point bipolar scale. One example of the item read: ‘The message I read mentioned more ___’.

A total of hundred 122 participants received the perceived risk conditions, for which 57 account for the perceived risks communicated by the CEO and 65 communicated by the occupational doctor. A total of 120 participants reviewed the perceived benefit condition, for which 60 account for the perceived benefits being communicated by the CEO and 60 communicated by the occupational doctor. An independent t-test and one sample t-test were performed to determine if the manipulation worked. The results are shown in Table 11. First, an independent t-test indicated a significant difference in the manipulation of message valence ($p=.001$). The perceived risk condition scores are lower than the scores from the perceived benefit condition. A one-sample t-test indicated that the first item did not meet the criterion for perceived risk, but the second item scored above the midpoint of the 7-point scale. As for the perceived benefit, both items met the criterion for manipulation check, which implied that the manipulation worked as intended.

Tabel 11*Manipulation check for message valence variable (perceived health risk versus perceived health benefit)*

Items	Perceived health risks		Perceived health benefits			
	M ^{a)}	SD ^{b)}	M ^{a)}	SD ^{b)}	t ^{c)}	p ^{d)}
The message I read mentioned more ____ . - health risks:health benefits	3.92	1.9	4.48	1.57	-4.12	<.001
The message I read contained more ____ . - negative consequences:positive consequences	4.48	1.69	5.12	1.38	-3.19	.002

a) M = mean from 7-point scale | b) SD = standard deviation | c) t = statistic | d) p = p-value

HEALTH AUTHORITY; CEO VERSUS OCCUPATIONAL DOCTOR

Health Authority had two questions for the manipulation check. In a randomized order, the participants were asked to rate which endorser communicated the message on a 7-point bipolar scale; health specialist/occupational doctor - CEO . The question read the following: 'The message I read was communicated by ____'. The next question had three items where participants were asked to determine if the endorser was trustworthy, competent and an expert in health care. They would rate the endorser on a 7-point Likert strongly disagree – strongly agree scale. The manipulation check questions are depicted in Appendix B.

The independent t-test indicated a significant difference in the manipulation for message valence (perceived health risk vs. health benefit). Scores from the low/moderate health authority condition differ from the high health authority condition scores. A one-sample t-test indicated that the first item met the criterion for health endorser. Participants had to rate the endorsers based on trustworthiness, competence, and expertise in health care. The scores from the CEO condition are lower than the occupational doctor’s condition for trustworthiness, competence, and expertise. Lastly, the one sample t-test indicated that the three items worked as intended because the CEO condition shows a score below the midpoint of a 7-point scale and the occupational doctor scored above the midpoint. Full results are shown in Table 12.

Table 12

Manipulation check for health authority variable (low/moderate health authority – CEO versus high health authority – Occupational doctor)

Items	CEO (Low/moderate HA [*])		Occupational doctor (High HA [*])		T ^{c)}	P ^{d)}
	M ^{a)}	SD ^{b)}	M ^{a)}	SD ^{b)}		
The message I read was communicated by a ____ - health specialist/occupational doctor:CEO	5.26	1.74	2.98	1.88	9.77	<.001
The person acting in the message is ____ - trustworthy in the area of health care	3.69	1.53	4.76	1.22	-6.02	<.001
The person acting in the message is ____ - competent in the area of health care	3.71	1.65	4.90	1.24	-6.37	<.001
The person acting in the message is ____ - expert in health care	3.26	1.63	4.62	1.36	-7.06	<.001

HA* = Health authority | a) M = mean from 7-point scale | b) SD = standard deviation | c) t = statistics | d) p = p-value

4.2 CORRELATION ANALYSIS

A correlation analysis was executed with SPSS to observe if any meaningful relationships exist between the dependent -, moderating, and covariate variables. The results with descriptive statistics and correlation outcomes are displayed in Table 13.

Table 13

Descriptive statistics and correlation analysis of the dependent -, moderating -, and covariate variables (MP = Message persuasiveness, MC = Message credibility, OC = Organization's credibility, C2A = Call to action, HL = Health literacy, LOC = Locus of control, SF = Self-efficacy, and PA = Physical activity)

	M (SD) ^{a)}	MP	MC	OC	C2A	HL	LOC	SF	PA
Message persuasiveness	3.27(.85)	1							
Message credibility	4.70(1.10)	.59**	1						
Organization's credibility	4.55(1.21)	.55**	.68**	1					
Call to action	4.33(1.26)	.47**	.43**	.46**	1				
Health literacy	4.73(1.09)	-.02	.12	.06	.14*	1			
Locus of control	5.47(1.09)	.10	.21**	.19**	.09	.16*	1		
Self-efficacy	3.14(1.24)	.08	-.03	-.05	-.03	-.22**	-.09	1	
Physical activity	5.24(1.50)	.09	.08	.09	.16**	.08	.15*	-.09	1

a) M = mean from 7-point scale (SD = Standard deviation) | **Correlation is significant at 0.01 level (2-tailed) | *Correlation is significant at 0.05 level (2-tailed)

The results in Table 13 display that the four dependent variables strongly correlate with one another, which means a MANOVA (= Multivariate analysis of variances) can be used to assess the primary - and interaction effects of the independent – and dependent variables. Moreover, the

variables health literacy, self-efficacy, and physical activity do not/weakly correlate with the dependent variables. Thus, health literacy will not be considered a moderator, and self-efficacy and physical activity are not covariates. Lastly, the variable locus of control strongly correlates with message credibility, organization’s credibility, and health literacy hence the reason that it will be considered a moderator.

4.3 HYPOTHESIS TESTING

Table 14 represents the mean and total scores of the dependent variables of this research (N = 242).

Table 14
Descriptive statistics - dependent variables

		CEO (Low/moderate HA*)		Occupational doctor (High HA*)		Total	
		M ^{c)}	SD ^{d)}	M ^{c)}	SD ^{d)}	M ^{c)}	SD ^{d)}
Perceived health risks	Message persuasiveness ^{a)}	3.27	.89	3.26	.87	3.27	.87
	Message credibility ^{a)}	4.75	1.02	4.65	1.24	4.70	1.13
	Organization's credibility ^{a)}	4.73	1.17	4.49	1.22	4.60	1.21
	Call to action ^{b)}	4.50	1.32	4.59	1.09	4.55	1.12
Perceived health benefits	Message persuasiveness ^{a)}	3.04	1	3.13	.96	3.09	.97
	Message credibility ^{a)}	4.49	1.17	4.68	1.08	4.59	1.12
	Organization's credibility ^{a)}	4.44	1.29	4.58	1.17	4.51	1.23
	Call to action ^{b)}	4.15	1.40	4.31	1.41	4.23	1.40
Total	Message persuasiveness ^{a)}	3.15	.95	3.20	.91		
	Message credibility ^{a)}	4.62	1.09	4.66	1.16		
	Organization's credibility ^{a)}	4.58	1.24	4.53	1.19		
	Call to action ^{b)}	4.32	1.30	4.46	1.26		

HA* = Health authority | a) 7-point likert scale (1=strongly disagree/7=strongly agree) | b) 7-point likert scale (1=extremely unlikely/7=extremely likely) | C) M = mean from 7-point scale | d) Standard deviation

Participants alluded that the perceived health risk message is slightly better in message persuasiveness, message credibility, organization's credibility, and motivates call to action than the perceived health benefits message. For the health authorities, the occupational doctor proved slightly better persuasiveness, message credibility, and call to action than the CEO. However, the CEO scored higher on the organization's credibility than the occupational doctor by looking at the mean score based on a 7-point scale. Additionally, the participants alluded that the perceived health risk and perceived benefit were not persuasive enough because the scores were below the average of a 7-point scale (midpoint = 4). The same can be said for the CEO and occupational doctor.

In summary, it was expected that the perceived health risk message would score higher for all four dependent variables than perceived health benefits. When looking at the CEO vs. occupational doctor's scores, it can be concluded that the scores closely to one another for each dependent variable. It can only be said that one condition is slightly better than the other (e.g., perceived health risk – message credibility > perceived health benefits – message credibility).

MAIN AND INTERACTION EFFECT OF INDEPENDENT VARIABLES

A MANOVA (Wilk's Lambda) was executed to discover if signs of significant effects for the independent variables emerge on the dependent variables. First, the direct and interaction effects of message valence (perceived health risks vs. health benefits) and health authority (low/moderate - CEO vs. high - occupational doctor) on message persuasiveness, message credibility, organization's credibility, and call to action were examined. The results in Table 15 indicate that no significant main effect or interaction effect between message valence and health authority was discovered. Evidence shows whether the combined effect of message valence and health authority affects the four dependent variables from sub-research question one, which is not supported.

Table 15
Multivariate test (Wilks' Lambda) results of independent variables and moderator on the dependent variables

Effect	F	Sig.
Wilks' Lambda		
Message valence	1.22	.30
Health authority	.37	.83
Message valence * Health authority	.42	.79
Health authority * Locus of control	.15	.96

Finally, the test of between-subjects design effects (ANOVA) is displayed in Table 16. The result only indicates that message valence has a significant effect on call to action ($p < 0.05$). The variables message valence -, health authority -, and interaction effect have no significant effect on the dependent variables.

Table 16*ANOVA effects of message valence and health authority on the dependent variables*

Effect		F^{c)}	Sig.^{d)}
Message valence	Message persuasiveness ^{a)}	2.44	.12
	Message credibility ^{a)}	.98	.32
	Organization's credibility ^{a)}	.65	.42
	Call to action ^{b)}	4.25	.04
Health authority	Message persuasiveness ^{a)}	.23	.63
	Message credibility ^{a)}	.21	.65
	Organization's credibility ^{a)}	.01	.92
	Call to action ^{b)}	.85	.36
Message valence * Health authority	Message persuasiveness ^{a)}	.16	.69
	Message credibility ^{a)}	1.01	.32
	Organization's credibility ^{a)}	1.30	.26
	Call to action ^{b)}	.03	.87
Health authority * Locus of control	Message persuasiveness ^{a)}	.41	.52
	Message credibility ^{a)}	.19	.66
	Organization's credibility ^{a)}	.46	.50
	Call to action ^{b)}	.23	.63

a) 7-point Likert scale (1= strongly disagree/7= strongly agree) | 7-point Likert scale (1= extremely unlikely/7= extremely likely) | c) F = F-value | d) Sig. = p-value

INTERACTION EFFECT OF MODERATING VARIABLE

The moderator locus of control is used in the MANOVA, because it showed a strong correlation with message credibility, organization's credibility, and health literacy (see Table 13). However, based on the MANOVA results shown in Table 15, it can be concluded that SPSS detected no significant main effect or interaction effect. This means that locus of control does not affect all the four combined dependent variables. The interaction effect results between health authority and locus of control on the dependent variables show no signs of significant values as well (see Table 16). This means that sub-research question four is not supported.

A summary of the supported and unsupported hypotheses and sub-research question is shown in Table 17. These are based from the MANOVA and ANOVA results shown in Tables 14 – 16. The first hypothesis is partly supported as it was expected that the perceived health risk message would result in higher scores than the perceived health benefits message. It is revealed that no other hypothesis or sub-research question is supported. The reason behind this will be further elaborated in the last chapter.

Table 17*Summary of supported/unsupported hypotheses and sub-research questions*

Hypothesis and sub-research questions	Supported
H1 Messages communicating the negative consequences of not engaging in physical exercises (perceived risks) will result in higher responses on a) message persuasiveness, b) message credibility, c) organization's credibility, and d) call to action, as compared to messages communicating the positive consequences of engaging in physical exercises (perceived benefits)	Partly
H2 Messages communicated by an occupational doctor (high health authority) will result in higher responses a) message persuasiveness, b) message credibility, c) organization's credibility, and d) call to action, as compared to messages communicated by a CEO as the health authority (low/moderate health authority)	No
SRQ1 Does the combined effect of message valence and health authority have an effect on a) message persuasiveness, b) message credibility, c) organization's credibility, and d) call to action?	No
SRQ2 Does health literacy moderate the effect of message valence on a) message persuasiveness, b) message credibility, c) organization's credibility, and d) call to action?	No
SRQ3 Does locus of control moderate the effect of health authority on a) message persuasiveness, b) message credibility, c) organization's credibility, and d) call to action?	No

5 DISCUSSION

This last chapter presents the overview of the findings found from the experimental study, the limitations, and future research suggestions. First, the main findings are discussed, which includes the main effects for message valence, - health authority, and interaction effect. Second, the study limitations of the experimental study are discussed. Next, the practical – and academic implications are mentioned. As per the last subparagraph, the conclusion is discussed, which highlights the main findings and provides an answer to the study’s main research question.

5.1 MAIN FINDINGS

EFFECTS OF MESSAGE VALENCE

Based on the evidence, a significant effect was found for message valence regarding call to action. Individuals exposed to the perceived health risk condition were more inclined to engage in the suggested call to action. This means that a useful relationship exists between perceived health risk and call to action. This evidence is not surprising as it has been established from Manyiwa and Brennan (2012) and Poels and Dewitte (2019) research. These authors concluded that using fear appeal produces more attention, leading to a significant increase in call to action.

The variables of message persuasiveness, message credibility, and organization's credibility were not affected by the perceived risk or – benefit of the message. According to Keusch (2015), three factors influence the responses of participants in an online survey. These factors are societal-level factors, including survey fatigue, a person's characteristics (e.g., gender, ethnicity, or personal interests), and survey design. Another explanation could be a person's interest in a specific topic. Participants were informed in the survey regarding the topics stress, health, and physical activity. This led participants to have preconceived opinions regarding those topics, which ultimately influenced the responses. Lastly, a 7-point Likert scale was mainly used in the survey design. Westland (2022) suggests that using Likert responses has resulted in response bias and information loss due to the nature of online surveys being highly automated. Based on these arguments, they can be one of the reasonings for ineffectiveness of the perceived risk/benefit conditions. Another argument could be that respondents did not find the message to be attractive or knowledgeable, which resulted in no significant effects between message persuasiveness, message credibility, and organization's credibility. No references were added to the message to enhance the persuasion and credibility of message. These are aspects to consider for future research.

EFFECTS OF HEALTH AUTHORITY ENDORSER

The variable health authority slightly steered into the correct direction by indicating a slight difference in mean between the CEO and occupational doctor. However, no significant effects on persuasiveness, message credibility, organization credibility, and call to action could be found. Reasonings for this insight might be individuals experiencing untruthfulness and inconsistencies from authorities during the COVID-19 pandemic (Oxman et al., 2022). This has led to decreased

persuasion when health authorities communicate health. The distrust and inconsistencies experienced by individuals during the pandemic might have influenced the respondents' responses. Greškovičová et al. (2022) suggest that when individuals determine a message to be untrustworthy, it automatically becomes a less credible source for them. Organization can also not be seen as credible when trust has not been gained (Kington et al., 2021). The survey results might have been affected by the distrust or unfamiliarity participants faces from the fictitious organization. It was also expected that occupational doctor communicating a health message would initiate call to action, however, this claim was not supported by the results. A reason might be that call to action depends on whether individuals trust the figure of authority, - information, and - provided programs (Kim & Kim, 2020). For the participants maybe none of these boxes were ticked, which resulted in them not engaging in the desired outcome.

INTERACTION EFFECT

It was expected that the combined effect between message valence (perceived health risks vs. health benefits) and health authority (low/moderate - CEO vs. high - occupational doctor) would produce significant effects on (a) message persuasiveness, (b) message credibility, (c) organization's credibility, and (d) call to action. However, no significant effects were produced based on the data analysis. The reason for no significant effect of the independent variables on the dependent variables might have been a lack of interest in the presented topic or survey design (Keusch, 2015). Berg et al. (2021) suggest that the manner of message communication impacts the topic of interest.

5.2 STUDY LIMITATION

According to Engelhard et al. (2009), expectancy bias could produce resistance towards acceptance of a topic. By exposing participants to the topic of stress, it might have created expectancy bias. Another aspect worth mentioning is the inequality between the amount of male and female participants in this study. Equal amount of male and female participants means having a representation of how one group reacts than the other group. It also improves the quality of the conducted research and increases the social relevance (Madariaga, 2013). Next, in this study, most respondents reported being students, which might have influenced the results from this study. Some students do not have experience in working, which makes it difficult to envision themselves

in an organizational environment. For this study, it would have been better to have participants with working experience by setting an exclusion criteria. These participants would be more familiar with working from home during COVID-19, negative health habits created in lockdown, and post-COVID struggles between personal and work life.

5.3 IMPLICATION AND FUTURE RESEARCH

PRACTICAL IMPLICATIONS

Based on this study, organizations can gain insights into the communication of health messages to employees. It has been shown that individuals exposed to health risk messages tend to engage in the suggested action more than when exposed to health benefit messages. Thus, the focus should be on health risks whenever organizations, HR, or marketers want to promote healthy behaviors.

ACADEMIC IMPLICATIONS

Scholars can gain insights into this study's research method, measures, and main findings. Insights that show the relationship between message valence and health authority. Also, the relationship between message valence and health authority with message persuasiveness, message credibility, organization's credibility, call to action, health literacy, and locus of control. It can also be seen how the covariates self-efficacy and physical activity do not influence the dependent variables of this research. However, further research is needed to better understand health authority and how it can effectively be used to influence message persuasiveness, message credibility, organization's credibility, and call to action.

5.4 CONCLUSION

This study concluded that the world of health communication and behavior change remains complex. The present study explored the assumptions for message valence and health authority. Based on the quantitative data analysis, it can be concluded that the use of health risks is to be considered when designing and targeting health promotional campaigns. The results indicated that individuals are more receptive to the exposure of health risks and engage in the suggested behavioral outcome. On the other hand, there are contradicting results when it comes to message valence and health authority. Uncredible messages are not seen as trustworthy and persuasive thus

do not lead to behavior change. It was also reported that health experts are viewed as powerful and knowledgeable, which increases their influence over individuals' health. The results collected proved otherwise because participants judged the CEO and occupational doctor almost the same way.

In this present study, it becomes clear that more attention is needed for employees' mental health. Organizations that do not show interest in their employees' well-being tend to have higher health care cost and loss in productivity. Employees that are not healthy and vital develop stress which is associated with anxiety, depression, heart diseases, pneumonia, and influenza. Having unstable employees results in negative consequences for the organization such as decreased productivity, job satisfaction, and increased absenteeism. An organization's success depends on their employees' attitude and behavior. Based on these arguments, it can be concluded that keeping employees' healthy and vital is crucial because mental health affects the delivered job quality. This conclusion summarizes that message valence should include the negative consequences of a behavior to encourage behavior change.

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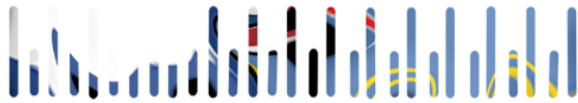
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APPENDIX A; DESIGN STIMULI

Figure 5

Low/moderate health authority - CEO versus high health authority – Occupational doctor communicating the risks of not engaging in physical/mental activity

CRIOYO DUTCH CITIZEN



Dear colleagues,

As things are slowly starting to become normal again without COVID-19 restriction set by the government. We look forward to building a balanced work life whether this is working from home or at the headquarters office.

To remain stress-free during work you must do the below referred to exercises to prevent serious health effects, such as heart failure, gastrointestinal problems, burnout, or depression.

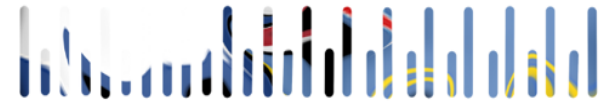
1. Take small breaks instead of long breaks
2. Limit your sedentary time by standing up for 15-30 minutes every 2 hours
3. Practice 150 minutes of physical or mental exercise per week

For additional support please contact your supervisor or the health department.

*Tomas Win
Chief Executive Officer*



CRIOYO DUTCH CITIZEN



Dear Staff of Crioyo Dutch Citizen,

As things are slowly starting to become normal again without COVID-19 restriction set by the government. We look forward to building a balanced work life whether this is working from home or at the headquarters office.

To remain stress-free during work you must do the below referred to exercises to prevent serious health effects, such as heart failure, gastrointestinal problems, burnout, or depression.

1. Take small breaks instead of long breaks
2. Limit your sedentary time by standing up for 15-30 minutes every 2 hours
3. Practice 150 minutes of physical or mental exercise per week

For additional support please contact your supervisor or the health department.

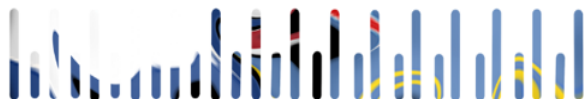
*Dr. Tomas Win,
Health Specialist/Occupational physician*



Figure 6

Low/moderate health authority – CEO versus high health authority – Occupational doctor communicating the benefits of engaging in physical/mental activity

CRIOYO DUTCH CITIZEN



Dear colleagues,

As things are slowly starting to become normal again without COVID-19 restriction set by the government. We look forward to building a balanced work life whether this is working from home or at the headquarters office.

To remain stress-free during work you can do the below referred to exercises to stay healthy and vital:

1. Take small breaks instead of long breaks
2. Limit your sedentary time by standing up for 15-30 minutes every 2 hours
3. Practice 150 minutes of physical or mental exercise per week

For additional support please contact your supervisor or the health department.

Sincerely,

*Tomas Win,
Chief Executive Officer*



CRIOYO DUTCH CITIZEN



Dear Staff of Crioyo Dutch Citizen,

As things are slowly starting to become normal again without COVID-19 restriction set by the government. Everyone is looking forward to building a balanced work life whether this is working from home or at the headquarters office.

To remain stress-free during work you can do the below referred to exercises to stay healthy and vital:

1. Take small breaks instead of long breaks
2. Limit your sedentary time by standing up for 15-30 minutes every 2 hours
3. Practice 150 minutes of physical or mental exercise per week

For additional support please contact your supervisor or the health department.

Sincerely,

*Dr. Tomas Win,
Health Specialist/Occupational physician*



APPENDIX B; SURVEY QUESTSTIONS

INTRODUCTION

Hi there!

My name is Chayenne, and I'm a communication science student at the University of Twente, where I'm currently working on my master's thesis. You can contribute to my research by helping me fill in this survey.

The survey will take approximately 5-8 minutes and will not require any personal details about you. Your responses are completely anonymous and will only be used for this research. Do you have any doubts or questions? You can reach me via my e-mail, c.g.twongsokario@student.utwente.nl, where I'd be happy to answer them.

I appreciate you taking time out of your day to help me; therefore, I'd like to thank you for your participation in my research.

By selecting 'I agree', you are giving consent to participate in this study. You may withdraw from this study at any time.

I agree

MODERATORS AND COVARIATES

	Extremely difficult	Moderately difficult	Slightly difficult	Neither easy nor difficult	Slightly easy	Moderately easy	Extremely easy
My ability to access information on risk factors for stress is ____.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My ability to understand information and derive meaning on risk factors for stress is ____.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My ability to interpret and evaluate information on risk factor for stress is ____.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My ability to make informed decisions on risk factors for stress is ____.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please answer the following statements below.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The main thing that affects my health is what I do myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am in control of my own health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rely on help from my family and friends when it comes to my health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I only do what my doctor tells me to do about my health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please answer the following statements below.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When I set important goals for myself, I rarely achieve them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I avoid facing difficulties.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When unexpected problems occur, I don't handle them well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a self-reliant person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When something looks complicated, I will not even bother to try it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

My perception about being engaged in physical activity is the following:

I hate it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	I enjoy it
I find it unpleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	I find it pleasant
I find it tiring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	I find it energizing
I find it not stimulating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	I find it stimulating
I find it not refreshing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	I find it refreshing

CONTEXT

Please carefully read the following:

The organization named 'Crioyo Dutch Citizen' was created in 2015 by the ministry of Arubahuis and is responsible for all internal and external communication for Arubans in The Netherlands. Their responsibilities are to effectively communicate recent developments in The Netherlands, provide political information, fascinating historical events, and highlight upcoming events for Aruban and Dutch Arubans. There are a lot of Arubans who often don't receive information regarding essential developments in The Netherlands. Hence, the creation of the organization Crioyo Dutch Citizen to help them integrate into the new environment. Besides that, the organization creates special events to bring the Aruban and Dutch cultures together.

However, due to the pandemic, many employees had to result to working from home. Crioyo Dutch Citizen created an employee well-being check to monitor the organization's employees' mental health. Many employees reported experiencing high levels of stress from working at home. Now that things are slowly becoming normal, one of the essential tasks of Crioyo Dutch Citizen is to provide helpful resources to ensure all employees remain stress-free, whether working at home or in the office.

Now imagine you have been working at Crioyo Dutch Citizen as a senior communication advisor for over three years. You have just received a message (shown next) from the organization; please carefully read it.

DEPENDENT VARIABLES

Please answer the following statements below.

	Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
After reading the message, how likely is it that you will practice small breaks during work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How likely are you to limit your sedentary time during work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reading the message, how likely is it that you will practice the referred exercises for stress reduction during work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After reading the message, how likely is it that you will practice 150 minutes of physical/mental activity per week?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The communicated message is ____.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
convincing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
persuasive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
trustworthy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The communicated message can be seen as ____.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
accurate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
authentic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
believable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
concerned with employees' well-being	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
trustworthy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Based on the communicated message, I think ____.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
the company cares about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
the company has my best interest at heart	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
the company is concerned with me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

MANIPULATION CHECKS

The message I read mentioned more ____.

health risks | | health benefits

The message I read contained more ____.

negative consequences | | positive consequences

The message I read was communicated by a ____.

health specialist/occupational doctor | | CEO

The person acting in the message is ____.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
trustworthy in the area of health care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
competent in the area of health care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
expert in health care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

DEMOGRAPHIC QUESTIONS

What is your gender?

- Male
- Female
- Non-binary / third gender
- Prefer not to say

What is your age?

What is your highest achieved level of education?

- High school (e.g., havo, vmbo)
- College (e.g., mbo)
- Bachelors
- Masters
- PhD
- No education

What is your current occupation?

- employed, working 40 or more hours per week
- employed, working 1-39 hours per week
- unemployed
- student
- retired

In which sector do you work?

- Financial services
- Wholesale & retail
- Manufacturing
- IT & telecom
- Energy & utilities
- Healthcare
- Public sector / education
- * Other