



BI Norwegian Business School - campus Oslo

GRA 19703

Master Thesis

Thesis Master of Science

Covid-19 and Climate change: An Application of Protection Motivation Theory on how Competing Threats are Evaluated

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Start: 15.01.2021 09.00

Finish: 01.07.2021 12.00

Covid-19 and Climate change:
An Application of Protection
Motivation Theory on how Competing
Threats are Evaluated

Study program:

MSc in Strategic Marketing Management

Supervisor:

Erik Olson

“This thesis is a part of the MSc program at BI Norwegian Business School, the school takes no responsibility for the method used, results found, and conclusion drawn.”

Acknowledgements

This thesis was written as a part of the MSc in Strategic Marketing Management at BI Norwegian Business School. We are grateful for everyone who participated in helping us to finalize our thesis.

We give special thanks to our supervisor Erik Olson for guiding us and providing supportive feedback. We appreciate the corporation and the many useful discussions that challenged us to think critically. Despite the ongoing pandemic, he was always available for answering our questions in a timely manner.

Furthermore, we also want to give thanks to friends and family who helped us through this process, their support has contributed to our academic career. A special thanks to Bodil Kvamme Erlandsen for the valuable comments and her time spent in reading the thesis. Finally, we would like to thank each other for a good teamwork and valuable discussions.

Thank you!

Ali Mahdi Saleh Al-Jboori and Maria Kvamme Erlandsen

Executive summary

Research within the field of threat evaluation has investigated several aspects of how individuals evaluate and choose to cope with a threat, resulting in useful findings for the field of research. However, there is limited research about how individuals evaluate two competing threats. This thesis attempts to investigate the literature gap by applying the framework of the Protection Motivation Theory (PMT) to address how individuals deal with Covid-19 and Climate change as competing threats. Furthermore, we will also investigate whether conflicting information might impact the evaluation of the threats. Through a survey-based experiment, (N = 93) participants were divided into three groups, where two groups were exposed to a manipulation of conflicting information. Findings shows that most individuals evaluated Covid-19 as the bigger threat. Results also indicated that the use of PMT framework on how a single threat is evaluated, is applicable for evaluating two competing threats. Furthermore, we found that most individuals perceive that there is a conflict of the perceived effectiveness for the preventive measures, depending on which threat the measure is supposed to prevent. However, findings for self-efficacy revealed that individuals do not see a conflict of whether a preventive measure is easy or difficult to perform depending on which threat it is supposed to prevent, which goes against expected results. Similarly, were we not able to conclude whether conflicting information might impact the evaluation as our manipulation had no effect on individuals threat valuation. Nevertheless, the findings might be useful as inspiration for future research.

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1.0 Introduction

In March 2020, the coronavirus that originated in China, was declared a worldwide pandemic disease (NHI, n.d.). By March 7th 2021, numbers indicate that more than 2.5 million human lives have been claimed by the virus, and more than 115 million people have been infected (WHO, 2021). Infection is mainly caused by close human contact through droplet infection, and because the virus is highly contagious and can rapidly spread and infect people, the adverse outcomes of the disease might be severe, in which the outcomes are often associated with respiratory problems and death (NHI, n.d.).

Governments worldwide have implemented guidelines and rules to prevent people from being infected and to reduce the likelihood of more deaths. These guidelines often include social distancing, use of face masks, less use of public transportation, and working from home (CDC, 2020; regjeringen.no, 2021; GOV.UK, n.d.). Although these measures are implemented to protect individuals from Covid-19, they may conflict with Climate change threats. Climate change have resulted in environmental disasters that possess a threat to life on earth, such as the increase in the average temperature on the planet and an increase in extreme weather and natural disasters (FN, n.d.). To decrease emissions, individuals are recommended to engage in various pro-environmental behaviors, such as purchasing environmentally friendly products, using public transportation and recycling (Hunecke et al., 2001; Mannetti et al., 2004; Paladino, 2005). Subsequently, several activities related to combat Climate change might conflict with behaviors to avoid Covid-19 infection. Thus, a further investigation on the link between Covid-19 and Climate change threats can contribute to understand how individuals evaluate and cope with two conflicting threats.

In a survey-based experiment utilizing the application of the PMT framework, we found that individuals evaluate competing threats in accordance with how a single threat is evaluated. Furthermore, most results showed that a majority of the participants perceived Covid-19 as the superior threat. Additionally, our results did not support our expectations for conflicting information mainly because the manipulation did not work as anticipated. Possible reasons for these results are discussed in later sections.

1.1 Gap in the literature and research question

The Covid-19 pandemic and the Climate change represent two major threats. Until now, research has investigated how Covid-19 affects pro-environmental behavior. Thus, researchers have investigated how Protection Motivation Theory (PMT) can be applied to predict protective health behavior. Although research has utilized PMT to investigate individuals threat perceptions, there is to the best of our knowledge, no research that has used PMT to investigate how individuals evaluate and cope with two competing threats. This leads to the objective of this thesis, which poses the following research question:

How do individuals evaluate competing threats?

Moreover, previous research has provided evidence on the impact conflicting information may have on individuals' threat evaluation (Lee et al., 2018; Carpenter et al., 2016; Nazione et al., 2020). However, there is a lack of research on how conflicting information might affect the evaluation of two competing threats. Hence, the following sub-question should be addressed:

To what extent does conflicting information provided by authorities, influence individuals' threat evaluation?

Findings from this paper will contribute to research within PMT and conflicting information. It will provide an understanding of how individuals evaluate conflicting threats, and whether their perceptions of the conflicting preventive behaviors might affect their decisions to participate in taking preventive actions, aimed at reducing the possibility of being affected by the threats. We are also interested in exploring whether the manipulation of conflicting information might affect individuals' threat evaluation. This will provide additional insight to whether exposure to conflicting information affects the evaluation of the conflicting threats.

1.2 Objective of the study

The main objective of this study is to understand how individuals evaluate two competing threats. We use the framework to investigate how individuals evaluate Covid-19 and Climate change as two competing threats. Previous research has utilized PMT to investigate perceptions of various threats; however, there is, to

the best of our knowledge, no research that has used PMT to investigate how individuals evaluate two competing threats. Furthermore, previous research has provided evidence on the effect that conflicting information may have on individuals' evaluation of threats. This thesis, however, will investigate to what extent conflicting information influences threat and coping appraisal.

1.3 Structure

The thesis is organized as follows: First, we provide an overview of previous literature within PMT and conflicting health information, together with our hypotheses. We then explain our method, including the research procedure and a description of our measurements. Finally, we present the results, followed by a discussion, an overview of possible limitations to the study, as well as reflections on possible directions for future research.

2.0 Literature review

2.1 Protection Motivation Theory

Protection Motivation Theory (PMT) examines how individuals cognitively assess a particular threat and whether they decide to engage in protective behaviors (Floyd et al., 2000). This assessment is based on two components, "threat appraisal" and "coping appraisal". As a threat might pose a risk or danger to an individual's health, their cognitive assessment, based on "threat appraisal", includes an evaluation of the severe negative consequences the threat poses (Kim et al., 2013). The second cognitive assessment, based on "coping appraisal", involves individuals' assessment of the protective measures, in terms of how effective the measures are; and the individual's ability to engage in those measures (Kim et al., 2013).

The full PMT framework consists of perceived severity, perceived vulnerability, response efficacy, self-efficacy, response rewards and response costs (Floyd et al., 2000). Response rewards and costs are external factors that will give information on what individuals expect to gain by not participating in a protective behavior, and the cost to the individual (e.g., monetary, time) if they do decide to engage in protective behavior (Floyd et al., 2000). However, we intend to investigate how individuals evaluates two competing threats, and how conflicting information

might affect the evaluation. Thus, we focus on the individual's own cognitive perception of threats, regardless of external factors such as rewards and costs. Therefore, rewards and cost have not been measured, as they will not provide information that is relevant to the objective of this thesis. Based on this, then, we have measured the four constructs of perceived severity, perceived vulnerability, response efficacy and self-efficacy.

PMT has received substantial empirical support (Floyd et al., 2000; Milne et al., 2000). The theory has been used in a wide range of literature investigating individuals' behaviors towards health threats such as preventing cancer (Rahaei et al., 2015), disease prevention (Eppright et al., 1994) and pro-environmental behavior (Kim et al., 2013). More recent literature has applied PMT to explain individuals' cognitive assessment towards Covid-19 and Climate change threats, in terms of how they perceive the threats and their intentions to engage in protective behaviors (Kim et al., 2013; Bockarjova & Steg, 2014; Kowalski & Black, 2021). However, research within PMT has investigated Covid-19 and Climate change threats separately, indicating a gap in the literature pertaining to investigating them as competing threats. The threat and coping appraisal process attempt to match the cognitive processes individuals might rely on when evaluating a threat (Floyd et al., 2000). Therefore, both appraisals will be key in determining how individuals might evaluate Covid-19 and Climate change as competing threats (Rogers, 1983).

2.1.1 Threat Appraisal

The threat appraisal process is the component in which an individual assesses the extent of the potential harm the threat poses, and how likely they are to be affected (Clubb & Hinkle, 2015). This process is composed of two underlying components, perceived severity and perceived vulnerability (Kim et al., 2013). Previous research within PMT on how individuals evaluate a single threat (Rahaei et al., 2015; Zheng et al., 2021), might indicate how the cognitive processes can be initiated to evaluate the competing threats.

Past research shows that people might initiate a cognitive assessment when being exposed to information about a health threat (Kim et al., 2013). Individuals who

interact with the provided information are likely to assess the extent to which they perceive the threat to have severe negative consequences (e.g., perceived severity). Information about Covid-19 and its consequences to the public has been provided, including dramatic loss of lives, and the negative impact on peoples' mental health (Chriscaden, 2020). Similarly, the consequences of Climate change have been explained to the public, including factors such as severe weather, flood, drought, and how harmful it is to life on earth. Based on the information provided, individuals might evaluate the competing threats based on their perception on which of the threats are more likely to cause severe negative consequences.

Previous research suggests that exposure to conflicting health information might impact individuals' threat perceptions (Carpenter et al., 2016). Thus, conflicting health information can be defined as two or more health-related statements that are inconsistent with one another (Carpenter et al., 2016). Individuals who come across both statements, might react in a certain way that influences how they perceive Covid-19 and Climate change. A study on public support for e-cigarette regulations by Tan et al., (2015) about exposure to conflicting health information related to e-cigarettes, found that U.S. adults exposed to conflicting information showed lower support for regulations towards e-cigarettes. The reason for the low support was that conflicting information caused confusion, which reduced harm perceptions (Tan et al., 2015). The same effect may be found in Covid-19 and Climate change threats. As conflicting information is prevalent in the media, there is reason to believe that the public have noticed conflicting information surrounding Covid-19 and Climate change. In fact, as much of the information provided might be perceived as conflicting, it might contribute to potential confusion about the effectiveness of the preventive behaviors, influencing individuals' threat perceptions. However, Lee et al., (2018) argues that the impact conflicting information has on individuals threat evaluation may also depend on which source the information is provided from.

The uncertainty related to the preventive measures may cause individuals to perceive the threats as less serious, thus reducing the likelihood of individuals following recommended behavior. Findings from Marshall and Comello (2019) on how contradictory information within breast and prostate cancer affect

individuals, found that the uncertainty related to screening tests reduced men's threat perceptions and women's self-efficacy. This might indicate that individuals' perceptions towards the threat may be influenced if they find the preventive measures pertaining to Covid-19 and Climate change as somewhat uncertain. However, empirical evidence suggests that conflicting information may also increase risk perception due to uncertainty (Han et al., 2006).

Previous research has manipulated conflicting information. Erkinen et al., (2018) exposed participants to e-cigarette boxes with manipulated warning statements and to boxes with or without a modified risk statement. They found that when exposed to modified statements, ambiguity arose among participants, which may have led to reduced effectiveness of the warning text and therefore reduced intentions for non-smokers to avoid e-cigarettes. These findings show that exposure to conflicting information might affect individuals. Thus, it could be interesting to investigate whether the manipulation of conflicting information caused by exposing individuals to contradicting stories about Covid-19 and Climate change, will influence their threat evaluation.

Despite the impact conflicting information have on individuals threat evaluation, previous research also argues that individual experiences, beliefs, and demographics may also have an impact (Clubb & Hinkle, 2015; Kim et al., 2013; Floyd et al., 2000). For instance, individuals' political views may affect which of the competing threats they perceive as more severe. It is argued that, in most countries, those who sympathize with the political left tend to be more worried about Climate change and Covid-19, than those who sympathize with the political right (Poushter & Huang, 2020; Calvillo et al., 2020). However, it is also argued that whether individuals perceive a threat as an immediate or long-term threat, may affect the evaluation. Schwaller et al. (2020) argues that the dangers of Climate change are often discussed as a future issue, which might often lead to an underestimation of its risk. As Climate change itself is not directly observable compared to Covid-19, many individuals may assume that Climate change is a remote threat (Lorenzoni et al., 2007). Therefore, we hypothesize that Covid-19 will be perceived as a more severe threat, and that individuals who characterize

themselves as belonging to the political left will evaluate Climate change as more severe.

H1a: Individuals are more likely to perceive Covid-19 as a more severe threat compared to Climate change.

H1b: Individuals on the political left are expected to evaluate Climate change as a more severe threat.

Additionally, the threat appraisal process also considers how vulnerable an individual feels towards a threat and how likely they are to be affected (Milne et al., 2000). When evaluating a single threat, vulnerability is often measured in terms of whether individuals perceive a threat to have a direct negative consequence on them. During the pandemic, the authorities have informed the public in what ways the virus might affect them, such as long-term side-effects, personal death or death to a family member. On the other hand, Climate change is often presented as something that will affect humankind, in plural. Thus, there is less information that portrays the negative effects of Climate change to people on a personal level. However, Rainear and Christensen (2017) has investigated whether individuals believe that they are vulnerable to Climate changes and how likely the threat would affect them negatively on a personal level. Results show that people tend to feel vulnerable to Climate change. It is therefore reasonable to believe that individuals will evaluate the threats of Covid-19 and Climate changes based on their perception of which threat is most likely to have a negative impact for them. Consequently, considering the personal aspect, we hypothesize that individuals will perceive themselves as more vulnerable towards Covid-19:

H2: Individuals are expected to feel more vulnerable towards Covid-19 than Climate change.

2.1.2 Coping Appraisal

The cognitive processes within coping appraisal allows the individual to evaluate potential responses that could protect them from the threat (Clubb & Hinkle, 2015). The process consists of response-efficacy and self-efficacy. The former relates to individuals' evaluation of the perceived effectiveness of engaging in the

recommended behavior in general (Kim et al., 2013). The latter refers to individuals' beliefs about their own ability to engage in the recommended preventive behavior (Kim et al., 2013).

Previous research argues that individuals are likely to initiate an evaluation based on response efficacy and self-efficacy when dealing with a threat (Floyd et al., 2000). In terms of response efficacy, individuals evaluate whether they perceive that recommended behavior is effective to prevent a threat (Bandura, 1977). Response efficacy measures to which extent an individual believes that the prescribed behavior will work (Moriarty, 2009). The assumptions are that individuals are less likely to engage in a certain behavior if they do not believe it is effective to prevent a threat. In contrast, they are more likely to engage in recommended behavior if they perceive that certain behaviors will reduce the threat (Zhao & Cai, 2009). Thus, individuals' perceptions of the effectiveness of the preventive measures for Covid-19 and Climate change might affect how they evaluate the threats. Past research shows that individuals tend to perceive preventive measures provided by authorities as effective towards the threat they are supposed to prevent (Al-Rasheed, 2020; Zheng et al., 2021; Kim et al., 2013). However, research has also demonstrated that people might view Climate change as a distant threat (Lorenzoni et al., 2007; Raineart & Christensen, 2017), which might make it difficult for them to appreciate the value of the protective measures, whereas Covid-19 measures are expected to be effective within a few weeks and can easily be assessed and understood. In this study, we hypothesize that there is a conflict between how individuals perceive the effectiveness of a preventive measure, depending on which threat the measure is supposed to prevent:

H3: There will be a conflict between individuals' perceived effectiveness of the preventive measures pertaining to Covid-19 and Climate change, respectively.

In terms of self-efficacy, individuals are likely to evaluate the recommended behaviors based on their beliefs that they have the required capabilities to engage in those behaviors (Zheng et al., 2021). As individuals tend to form beliefs about their abilities and skills (e.g., motivation, amount of energy and time), these

beliefs may shape their evaluation and subsequent behavior (Mills et al., 2007). For instance, if individuals rank a behavior more favorable compared to another, they are more likely to believe that they have the required skills and capabilities to follow that behavior (Bandura, 1977). Hence, individuals' beliefs about their ability to engage in a recommended behavior for Covid-19 and Climate change might affect how they evaluate the threats.

Despite limited research on how competing threats are evaluated, a similar approach might be initiated when evaluating Covid-19 and Climate change, based on a comparison of which of the measures related to the threats that individuals perceive as the easiest and most difficult to follow. Covid-19 preventive measures are often based on what people are not allowed to do. This might affect their ability to participate in the preventive measures. In terms of Climate change preventive measures, few activities dictate actual prohibitions for the general public. Thus, many of those recommended preventive measures might not be considered as intrusive as some of the measures pertaining to Covid-19. Therefore, we hypothesize that there is a conflict between individuals' perceived self-efficacy of a preventive measure, depending on which threat the measure is supposed to prevent:

H4: There will be a conflict between individuals' perceived self-efficacy of the preventive measures pertaining to Covid-19 and Climate change, respectively.

3.0 Research Methodology

For the purpose of this thesis, we chose to test our hypotheses and answer our research questions by applying a quantitative research approach, through a survey-based experiment. The following section will describe our data collection process and the design of our study.

3.1 Participants

Before we launched the final survey, we created a pretest and asked respondents to provide feedback. A pretest is beneficial as it might reveal faults or ambiguities. Based on the feedback, we adjusted some of the questions, by

clarifying some of the issues and using a more general, less scientific vocabulary. After these revisions, we launched the final survey.

During the data collection period, 154 responses were collected through Qualtrics Survey Software. The sample data was collected by utilizing a non-probability convenience sampling. We chose to target the general population living in Norway and imposed an age limitation, requiring respondents to be adults, e.g., 18 years or older, to ensure the necessary level of seriousness in the evaluation of the threats. The survey was distributed on the online platforms Facebook and LinkedIn, where participants were encouraged to share the survey in their own networks, to create a snowball effect. Our private Facebook networks consist of a mix of people with different characteristics, who are likely to share similar mindsets in relation to health, environment, and politics. We also approached several Facebook groups where members share similar opinions regarding politics, Covid-19 and Climate change. As members across the groups are likely to share similar mindsets on Covid-19 and Climate Change, their responses are suitable to ensure a wide representation in our data set. Consequently, we were able to collect a variety of respondents, who are either worried or less worried about Covid-19 and Climate changes.

From the 154 collected responses, 61 were deleted because of incomplete answers. The final sample of ($N = 93$) consisted of participants being randomly allocated to either one of the two experimental groups or the control group, with 32, 31, and 30 participants in each group, respectively. There is an approximately even distribution of gender, consisting of 48 females and 45 males, with a preponderance of respondents in the age group of 18-25, which we expected, given our non-probability convenience sampling. A majority of the respondents have a bachelor's as well as a master's degree. The political views of the respondents were also recorded. 28 respondents reported political left-wing sympathies, whereas 31 respondents reported political right-wing sympathies. A summary of the demographics can be found in Table 1.

Table 1: *Summary of the demographics*

Variable	Item	N	%
Age	18-25	44	47.3 %
	26-35	19	20.4 %
	36-45	10	10.8 %
	46-55	13	14.0 %
	56-75	7	7.5 %
	Total	93	100 %
Gender	Female	48	51.6 %
	Male	45	48.4 %
	Total	93	100 %
Education	High school degree or equivalent	18	19.4 %
	Bachelor's degree or equivalent	37	39.8 %
	Master's degree or equivalent	30	32.3 %
	Doctorate	1	1.1 %
	Other	7	7.5 %
	Total	93	100 %
Sample group	Experimental group 1	32	34.4 %
	Experimental group 2	31	33.3 %
	Control group	30	32.3 %
	Total	93	100 %
Political groups	Political left	28	30.1 %
	Political right	31	33.3 %
	Centrists	8	8.6 %
	Other	26	28.0 %
	Total	93	100 %

3.2 Procedure

Participants completed an online survey using Qualtrics Survey Software (Appendix 1). With the use of the randomization feature in Qualtrics, participants were randomly assigned into three groups, allowing us to measure the affect that conflicting information has on individuals' threat evaluation. We used the randomizer feature to ensure an approximate equal number of participants in each group. All groups started the survey with an introduction that described the purpose of the study, before the randomizer feature separated the participants into three groups. The first group was exposed to a story highlighting Climate change threats, which included conflicts with Covid-19. After being exposed to this story, participants were asked to evaluate the competing threats based on PMT constructs, before they completed the survey by filling in their demographics. Participants in the second group were exposed to a story highlighting Covid-19 threats, which included conflicts with Climate change. After being exposed to this story, the participants were presented with the same PMT constructs as the first group before they completed the survey by filling in their demographics.

Participants in the control group were not exposed to conflicting information. They were only presented with questions regarding the PMT constructs and demographics.

The authors were aware that participants might be resistant to be truthful about their Covid-19 or Climate change fears, or their opinions on threat-preventing behaviors. Thus, a projective technique was applied. Participants were asked to express the feelings or attitudes of a third person when answering the questions related to conflicting information and the PMT constructs.

3.3 Description of measurements

In the following section, the measurements used in the thesis are presented. The complete questionnaire can be found in Appendix 1.

Conflicting information

To measure the effect conflicting information might have on individuals' threat evaluation, two stories that highlight the contradiction in the threats were created (Appendix 1). The purpose of these stories is to illustrate conflicting information given by the authorities regarding the two threats and investigate how it influences participants' threat perception. Participants were randomly assigned to one of the conditions. One group received the Climate change story, and the second group received the Covid-19 story, whereas the control group was not exposed to conflicting information at all.

A few changes to the stories were made before collecting data, due to the perception that the Covid-19 threat might be declining, as more vaccines are available. Thus, the term "Covid-19 threat", which was originally used in the stories, was changed to the more general term of "pandemic threats such as Covid-19". Participants who were exposed to either the Covid-19 story or the Climate change story, were asked to evaluate which of the competing threats they perceive as the more serious threat, using a projective technique; "For the average person, is a viral pandemic such as Covid-19 or Climate change a more serious overall threat?" The response options ranged from (1= Covid-19 is much more

threatening) to (5 = Climate change is much more threatening), with a neutral point (equally threatening).

Perceived severity

Participants were asked to evaluate which of the threats they perceive as most severe based on three items using a projective technique (e.g., “For the average person, which is the bigger threat to their health?”). The response options ranged from (1 = Covid-19 is much more threatening) to (5 = Climate change is much more threatening), with a neutral point (equally threatening).

Perceived vulnerability

To measure perceived vulnerability, participants were asked to evaluate which of the two threats are likely to cause damages based on three items, using a projective technique (e.g., “For the average person, which of the following are most likely to cause anxiety?”). A five-point response option was used to indicate participants' evaluation (1 = Covid-19 is much more likely; 5 = Climate change is much more likely), with a neutral point (equally likely).

Response efficacy

Response efficacy measured participants' perceptions of the effectiveness of the recommended behaviors in avoiding dangers from Climate change and Covid-19, using a projective technique. For both threats, participants were provided with four preventive measures and were asked to rank the four measures from (1 = most effective) to (4 = least effective), for the average person to avoid the dangers from the threats.

Self-efficacy

Self-efficacy measured participants' perceptions of their own ability and willingness to engage in the recommended behaviors to avoid dangers from Climate change and Covid-19, using a projective technique. For both threats, participants were provided with four preventive measures. Participants were asked to rank the four behaviors from (1 = easiest) to (4 = most difficult), for the average person to avoid the dangers from the threats.

3.4 Data preparation and cleaning

The data preparation process by Malhotra (2010) was utilized to ensure the quality of the collected data and prepare the data for hypothesis testing.

To prepare the data for hypothesis testing, the three items measuring perceived severity on a 5-point Likert scale were computed with the use of the “compute function” in SPSS to represent a single variable of perceived severity. The three items for perceived vulnerability were computed the same way. For the new variables, the distance between each answer on the scale was determined by calculating the range of the 5-point scale to represent the interval for each answer. The range was calculated by determining the minimum and the maximum length of the 5-point Likert scale.

The variable measuring respondents’ political views were transformed into a new variable and grouped based on their political affiliation. This variable was coded into four categories (1 = political right, 2 = political left, 3 = centrists, and 4 = other, representing those who did not wish to answer). A new variable to differentiate the respondents based on which of the two experimental groups and control group they were assigned to, was also created and coded with the values (1 = experimental group 1, 2 = experimental group 2, and 3 = control group). Remaining questions related to demographics were automatically coded in SPSS (e.g., gender with values 1 = male, 2 = female).

4.0 Results

In this section, we present our hypotheses and the results of the survey. The scales that were utilized to measure the various constructs can be found in Appendix 1.

4.1 Hypothesis 1a

H1a: Individuals are more likely to perceive Covid-19 as a more severe threat compared to Climate change.

A One-way ANOVA was performed to test if individuals perceive Covid-19 as a more severe threat (see Appendix 2a for group statistics). The first experimental

group (N = 32) evaluated Covid-19 as a more severe threat (M = 2.19, (SD = .965) compared to the second experimental group (N = 31) and control group (N = 30), with (M = 2.26, (SD = .815) and (M = 2.57, (SD = .626), respectively. The assumption of Homogeneity of variances was tested with a Levene's test and not supported. Therefore, the Welch test was used instead of the ANOVA-table. This test shows a non-significant difference among the means between the groups $F(2.0, 58.795) = 2.278, p = .111$.

The results provide support for H1a, suggesting that individuals evaluate Covid-19 as a more severe threat, meaning there are no differences in how the two experimental groups and the control group evaluate the two threats.

4.2 Hypothesis 1b

H1b: Individuals on the political left are expected to evaluate Climate change as a more severe threat.

An Independent Samples t-test was performed to test whether individuals on the political left evaluate Climate change as a more severe threat (see Appendix 2b for group statistics). Individuals on the political right (N = 31) perceived Covid-19 as somewhat more threatening (M = 2.45, (SD = .850), individuals on the political left also perceived Covid-19 as somewhat more threatening (M = 2.39, (SD = .786). The assumption for equal variances was tested and satisfied with a Levene's test. The independent Samples t-test shows a non-significant result, $t(57) = .275, p = .785$.

The results do not support H1b, as our findings suggest that individuals on the political left do not consider Climate change as a more severe threat. Based on these results, individuals on the political left as well as individuals on the political right evaluate Covid-19 as a somewhat more severe threat.

4.3 Hypothesis 2

H2: Individuals are expected to feel more vulnerable towards Covid-19 than Climate change.

A One-way ANOVA was performed to test if individuals feel more vulnerable towards Covid-19 (see Appendix 2c for group statistics) The second experimental group (N = 31) feels more vulnerable towards Covid-19 (M = 1.48, (SD = .724) compared to the control group (N = 30) and the first experimental group (N = 32), with (M = 1.67, (SD = .711) and (M = 1.69, (SD = .780), respectively. The assumption of Homogeneity of variances was tested and satisfied with a Levene's test F. However, the One-way ANOVA shows that there are no significant differences between the means $F(2) = .713$ $p = .493$.

The results provide support for H2. Individuals feel more vulnerable towards Covid-19 than Climate change, meaning there are no differences in how the two experimental groups and the control group evaluate the two threats.

4.4 Hypothesis 3

H3: There will be a conflict between individuals' perceived effectiveness of the preventive measures pertaining to Covid-19 and Climate change, respectively.

A Z-test for proportions was performed to investigate how individuals within each group rank the different preventive measures pertaining to Covid-19 and Climate change (Appendix 3). The Z-score was calculated utilizing a Z-score calculator for proportions (Social Science Statistics, 2021). Results for experimental group 1 will be presented first:

53.1 % within experimental group 1 (N = 32) perceived avoiding air travel as most effective to avoid dangers from Climate changes, whereas 25 % perceived it as most effective to avoid dangers from Covid-19. The Z-score was calculated, results show a significant difference between the proportions within group 1 that perceived avoiding air travel as most effective to both Covid-19 and Climate change, $Z = 2.3058$, $p = .02088$. Within group 1, 3.1 % perceived avoiding air travel as least effective to avoid dangers from Climate change, whereas 6.3 % perceived it as least effective to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportions within group 1 that perceived this measure as least effective to both Covid-19 and Climate change, $Z = -.5914$, $p = .5552$.

31.3 % within experimental group 1 (N = 32) perceived using public transportation as most effective to avoid dangers from Climate change, whereas 21.9 % perceived it as most effective to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportions within group 1 that perceived using public transportation as most effective pertaining to Covid-19 and Climate change, $Z = .8491$, $p = .39532$. Within group 1, 3.1 % perceived using public transportation as least effective to avoid dangers from Climate change, whereas 34.4 % perceived it as least effective to avoid dangers from Covid-19. The Z-score was calculated, results show a significant difference between the proportions within group 1 that perceived using public transportation as least effective pertaining to Covid-19 and Climate change, $Z = -3.2026$, $p = .00138$.

15.6 % within experimental group 1 (N = 32) perceived using disposable plates and cutlery as most effective to avoid dangers from Climate changes, whereas 9.4 % perceived it as most effective to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportions within group 1 that perceived using disposable plates and cutlery as most effective to both Covid-19 and Climate change, $Z = .7559$, $p = .44726$. Within group 1, 15.6 % perceived using disposable plates and cutlery as least effective to avoid dangers from Climate change, whereas 56.3 % perceived it as least effective to avoid dangers from Covid-19. The Z-score was calculated, results show a significant difference between the proportions within group 1 that perceived using disposable plates and cutlery as least effective to both Covid-19 and Climate change, $Z = -3.3867$, $p = .0007$.

0 % within experimental group 1 (N = 32) perceived avoiding stores and shopping in public as most effective to avoid dangers from Climate changes, whereas 43.8 % perceived it as most effective to avoid dangers from Covid-19. The Z-score was calculated, results show a significant difference between the proportions within group 1 that perceived avoiding stores and shopping in public as most effective to both Covid-19 and Climate change, $Z = -4.2332$, $p = .00001$. Within group 1, 78.1 % perceived avoiding stores and shopping in public as least effective to avoid dangers from Climate change, whereas 3.1 % perceived it as least effective to

avoid dangers from Covid-19. The Z-score was calculated, results show a significant difference between the proportions within group 1 that perceived avoiding stores and shopping in public as least effective to both Covid-19 and Climate change, $Z= 6.1083$, $p = .00001$.

58.1 % within experimental group 2 ($N = 31$) perceived avoiding air travel as most effective to avoid dangers from Climate changes, whereas 29 % perceived it as most effective to avoid dangers from Covid-19. The Z-score was calculated, results show a significant difference between the proportions within group 2 that perceived this measure as most effective to both Covid-19 and Climate change, $Z= 2.3053$, $p = .02088$. Within group 2, 6.5 % perceived avoiding air travel as least effective to avoid dangers from Climate change, whereas 9.7 % perceived it as least effective to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportions within group 2 that perceived avoiding air travel as least effective to both Covid-19 and Climate change, $Z= -.4664$, $p = .63836$.

29 % within experimental group 2 ($N = 31$) perceived using public transportation as most effective to avoid dangers from Climate changes, whereas 25.8 % perceived it as most effective to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportions within group 2 that perceived using public transportation as most effective to both Covid-19 and Climate change, $Z= .2847$, $p = .77948$. Within group 2, 3.2 % perceived using public transportation as least effective to avoid dangers from Climate change, whereas 35.5 % perceived it as least effective to avoid dangers from Covid-19. The Z-score was calculated, results show a significant difference between the proportions within group 2 that perceived using public transportation as least effective to both Covid-19 and Climate change, $Z= -3.2146$, $p = .00132$.

9.7 % within experimental group 2 ($N = 31$) perceived using disposable plates and cutlery as most effective to avoid dangers from Climate changes, whereas 3.2 % perceived it as most effective to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportions within group 2 that perceived using disposable plates and cutlery as most effective

to both Covid-19 and Climate change, $Z= 1.0339$, $p = .30302$. 35.5% within group 2 perceived using disposable plates and cutlery as least effective to avoid dangers from Climate change, whereas 54.8 % perceived it as least effective to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportions within group 2 that perceived using disposable plates and cutlery as least effective to both Covid-19 and Climate change, $Z= -1.5312$, $p = .12602$.

3.2 % within experimental group 2 ($N = 31$) perceived avoiding stores and shopping in public as most effective to avoid dangers from Climate changes, whereas 41.9 % perceived it as most effective to avoid dangers from Covid-19. The Z-score was calculated, results show a significant difference between the proportions within group 2 that perceived avoiding stores and shopping in public as most effective to both Covid-19 and Climate change, $Z= -3.645$, $p = .00028$. Within group 2, 54.8 % perceived avoiding stores and shopping in public as least effective to avoid the dangers from Climate change, whereas 0 % perceived it as least effective to avoid dangers from Covid-19. The Z-score was calculated, results show a significant difference between the proportions within group 2 that perceived this preventive measure as least effective to both Covid-19 and Climate change, $Z= 4.8397$, $p = .00001$.

50 % within the control group ($N = 30$) perceived avoiding air travel as most effective to avoid dangers from Climate changes, whereas 23.3 % perceived it as most effective to avoid dangers from Covid-19. The Z-score was calculated, results show a significant difference between the proportions within the control group that perceived avoiding air travel as most effective to both Covid-19 and Climate change, $Z= 2.1432$, $p = .03236$. Within the control group, 0 % perceived avoiding air travel as least effective to avoid dangers from Climate change, whereas 10 % perceived it as least effective to avoid dangers from Covid-19. Results from the Z-score show a non-significant difference between the proportions within the control group that perceived this measure as least effective to both Covid-19 and Climate change, $Z= -1.777$, $p = .07508$.

33.3 % within the control group (N = 30) perceived using public transportation as most effective to avoid dangers from Climate changes, whereas 23.3 % perceived it as most effective to avoid dangers from Covid-19. Results from the Z-score show a non-significant difference between the proportions within the control group that perceived using public transportation as most effective to both Covid-19 and Climate change, $Z = .8595$, $p = .38978$. Within the control group, 0 % perceived using public transportation as least effective to avoid dangers from Climate change, whereas 30 % perceived it as least effective to avoid dangers from Covid-19. Results from the Z-score show a significant difference between the proportions within the control group that perceived using public transportation as least effective to both Covid-19 and Climate change, $Z = -3.254$, $p = .00116$.

13.3 % within the control group (N = 30) perceived using disposable plates and cutlery as most effective to avoid dangers from Climate changes, whereas 10 % perceived it as most effective to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportions within the control group that perceived using disposable plates and cutlery as most effective to both Covid-19 and Climate change, $Z = .4022$, $p = .68916$. 30 % within the control group perceived using disposable plates and cutlery as least effective to avoid dangers from Climate change, whereas 50 % perceived it as least effective to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportions within the control group that perceived using disposable plates and cutlery as least effective to both Covid-19 and Climate change, $Z = -1.5811$, $p = .1141$.

3.3 % within the control group (N = 30) perceived avoiding stores and shopping in public as most effective to avoid dangers from Climate changes, whereas 43.3 % perceived it as most effective to avoid dangers from Covid-19. The Z-score was calculated, results show a significant difference between the proportions within the control group that perceived avoiding stores and shopping in public as most effective to both Covid-19 and Climate change, $Z = -3.6628$, $p = .00026$. 70 % within the control group perceived avoiding stores and shopping in public as least effective to avoid dangers from Climate change, whereas 10 % perceived it as least effective to avoid dangers from Covid-19. The Z-score was calculated,

results show a significant difference between the proportions within the control group that perceived this measure as least effective to both Covid-19 and Climate change, $Z= 4.7434$, $p = .00001$.

The results indicate a partial support for H3, as a majority of the results shows significant differences between individuals' perception of the effectiveness of the preventive measures pertaining to Covid-19 and Climate change respectively

4.5 Hypothesis 4

H4: There will be a conflict between individuals' perceived self-efficacy of the preventive measures pertaining to Covid-19 and Climate change, respectively.

A Z-test for proportions was utilized to investigate individuals' self-efficacy within each group to the preventive measures pertaining to Covid-19 and Climate change (Appendix 4). The Z-score was calculated utilizing a Z-score calculator for proportions (Social Science Statistics, 2021). Results for experimental group 1 will be presented first:

34.4 % within experimental group 1 ($N = 32$) perceived avoiding air travel as the easiest measure to avoid dangers from Climate change, whereas 25 % perceived it as the easiest measure to avoid dangers from Covid-19. Results from the Z-score show a non-significant difference between the proportion within group 1 that perceived avoiding air travel as the easiest measure pertaining to both Covid-19 and Climate change, $Z = 0.8208$, $p = .41222$. Within group 1, 25 % perceived avoiding air travel as most difficult to avoid dangers from Climate change, whereas 12.5 % perceived it as most difficult to avoid dangers from Covid-19. Results from the Z-score show a non-significant difference between the proportion within group 1 that perceived air travel as most difficult to both Covid-19 and Climate change, $Z = 1.281$, $p = .20054$.

18.8 % within experimental group 1 ($N= 32$) perceived using public transport as the easiest measure to avoid dangers from Climate change, whereas 25 % perceived it as the easiest measure to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportion

within group 1 that perceived using public transportation as the easiest to both Covid-19 and Climate change, $Z = -0.6047$, $p = .5485$. Within group 1, 18.8 % perceived using public transportation as the most difficult measure to avoid dangers from Climate change, whereas 34.4 % perceived it as the most difficult measure to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportion within group 1 that perceived this measure as most difficult to both Covid-19 and Climate change, $Z = -1.4151$, $p = .1556$.

43.8 % within experimental group 1 ($N = 32$) perceived using disposable plates and cutlery as the easiest measure to avoid dangers from Climate change, whereas 21.9 % perceived it as the easiest measure to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportions within group 1 that perceived this measure as the easiest to both Covid-19 and Climate change, $Z = 1.8636$, $p = .06288$. 9.4 % within group 1 perceived using disposable plates and cutlery as the most difficult measure to avoid dangers from Climate change, whereas 21.9 % perceived it as the most difficult measure to avoid dangers from Covid-19. The Z-score was calculated, results show a non-significant difference between the proportion within this group that perceived this measure as most difficult to both Covid-19 and Climate change, $Z = -1.3771$, $p = .16758$.

3.1 % within experimental group 1 ($N = 32$) perceived avoiding stores and shopping in public as the easiest measure to avoid dangers from Climate change, whereas 28.1 % perceived it as the easiest measure to avoid dangers from Covid-19. Results from the Z-score show a significant difference between the proportions within group 1 that perceived this measure as the easiest to both Covid-19 and Climate change, $Z = -2.7541$, $p = .00596$. Within group 1, 46.9 % perceived avoiding stores and shopping in public as the most difficult measure to avoid dangers from Climate change, whereas 31.3 % perceived it as the most difficult measure to avoid dangers from Covid-19. Results from the Z-score show a non-significant difference between the proportions within group 1 that perceived this measure as most difficult to both Covid-19 and Climate change, $Z = 1.281$, $p = .20054$.

For individuals within experimental group 2 (N = 31), 41.9 % perceived avoiding air travel as the easiest measure to avoid dangers from Climate change, whereas 48.4 % perceived it as the easiest measure to avoid dangers from Covid-19.

Results from the Z-score show a non-significant difference between the proportion within group 2 that perceived this measure as the easiest to both Covid-19 and Climate change, $Z = -0.5104$, $p = .61006$. Within group 2, 19.4 % perceived avoiding air travel as the most difficult measure to avoid dangers from Climate change, whereas 12.9 % perceived it as the most difficult measure to avoid dangers from Covid-19. Results from the Z-score show a non-significant difference between the proportion within group 2 that perceived this measure as most difficult to both Covid-19 and Climate change, $Z = 0.6906$, $p = .4902$

19.4 % within experimental group 2 (N = 31) perceived using public transportation as the easiest measure to avoid dangers from Climate change, whereas 6.5 % perceived it as the easiest measure to avoid dangers from Covid-19. Results from the Z-score show a non-significant difference between the proportion within group 2 that perceived this measure as the easiest to both Covid-19 and Climate change, $Z = 1.5154$, $p = .12852$. Within group 2, 9.7 % perceived using public transport as the most difficult measure to avoid dangers from Climate change, whereas 35.5 % perceived it as most difficult measure to avoid dangers from Covid-19. Results from the Z-score show a significant difference between the proportion within group 2 that perceived this measure as most difficult to both Covid-19 and Climate change, $Z = -2.43$, $p = .0151$.

32.3 % within experimental group 2 (N = 31) perceived using disposable plates and cutlery as the easiest measure to avoid dangers from Climate change, whereas 25.8 % perceived it as the easiest measure to avoid dangers from Covid-19.

Results from the Z-score show a non-significant difference between the proportion within group 2 that perceived this measure as easiest to both Covid-19 and Climate change, $Z = 0.5596$, $p = .57548$. Within group 2, 25.8 % perceived using disposable plates and cutlery as the most difficult measure to avoid dangers from Climate change, whereas 29 % perceived it as the most difficult measure to avoid dangers from Covid-19. Results from the Z-score show a non-significant

difference between the proportion within group 2 that perceived this measure as most difficult to both Covid-19 and Climate change, $Z = 0.2847$, $p = .77948$.

6.5 % within experimental group 2 ($N = 31$) perceived avoiding stores and shopping in public as the easiest measure to avoid dangers from Climate change, whereas 19.4 % perceived it as the easiest measure to avoid dangers from Covid-19. Results from the Z-score show a non-significant difference between the proportion within group 2 that perceived this measure as the easiest to both Covid-19 and Climate change, $Z = -1.5154$, $p = .12852$. Within group 2, 45.2 % perceived avoiding stores and shopping in public as the most difficult measure to avoid dangers from Climate change, whereas 22.6 % perceived it as the most difficult measure to avoid dangers from Covid-19. Results from the Z-score show a non-significant difference between the proportion within group 2 that perceived this measure as most difficult to both Covid-19 and Climate change, $Z = -1.8784$, $p = .0601$.

For individuals within the control group ($N = 30$), 33.3 % perceived avoiding air travel as the easiest measure to avoid dangers from Climate change, and 33.3 % perceived it as the easiest measure to avoid dangers from Covid-19. A Z-score was calculated, results show a non-significant difference between the proportion within the control group that perceived this measure as the easiest to both Covid-19 and Climate change, $Z = 0$, $p = 1$. Within the control group, 13.3 % perceived avoiding air travel as the most difficult measure to avoid dangers from Climate change, whereas 13.3 % perceived it as the most difficult measure to avoid dangers from Covid-19. A Z-score was calculated, results show a non-significant difference between the proportion within the control group that perceived this measure as most difficult to both Covid-19 and Climate change, $Z = 0$, $p = 1$.

36.7 % within the control group ($N = 30$) perceived using public transportation as the easiest measure to avoid dangers from Climate change, and 36.7 % perceived it as the easiest measure to avoid dangers from Covid-19. A Z-score was calculated, the results show a non-significant difference between the proportion within the control group that perceived this measure as the easiest to both Covid-19 and Climate change, $Z = 0$, $p = 1$. Within the control group, 20 % perceived

using public transportation as the most difficult measure to avoid dangers from Climate change, whereas 23.3 % perceived it as the most difficult measure to avoid dangers from Covid-19. A Z-score was calculated, results show a non-significant difference between the proportion within the control group that perceived this measure as most difficult pertaining to Covid-19 and Climate change, $Z = -0.3134$, $p = .75656$.

23.3 % within the control group ($N = 30$) perceived using disposable plates and cutlery as the easiest measure to avoid dangers from Climate change, and 23.3 % perceived it as the easiest measure to avoid dangers from Covid-19. Results from the Z-score show a non-significant difference between the proportion within the control group that perceived this measure as the easiest to both Covid-19 and Climate change, $Z = 0$, $p = 1$. Within the control group, 13.3 % perceived using disposable plates and cutlery as the most difficult measure to avoid dangers from Climate change, whereas 26.7 % perceived it as the most difficult measure to avoid dangers from Covid-19. Results from the Z-score show a non-significant difference between the proportion within the control group that perceived this measure as most difficult pertaining to Covid-19 and Climate change, $Z = 1.291$, $p = .19706$.

6.7 % within the control group ($N = 30$) perceived avoiding stores and shopping in public as the easiest measure to avoid dangers from Climate change, and 6.7 % perceived it as the easiest measure to avoid dangers from Covid-19. A Z-score was calculated, results show a non-significant difference between the proportion within the control group that perceived this measure as the easiest measure to both Covid-19 and Climate change, $Z = 0$, $p = 1$. Within the control group, 53.3 % perceived avoiding stores and shopping in public as the most difficult measure to avoid dangers from Climate change, whereas 36.7 % perceived it as the most difficult measure to avoid dangers from Covid-19. A Z-score was calculated, results show a non-significant difference between the proportion within the control group that perceived this measure as most difficult pertaining to Covid-19 and Climate change, $Z = -1.2975$, $p = .1936$.

The results do not support H4. There is not enough evidence to conclude that individuals' perceptions of self-efficacy of the preventive measures pertaining to Covid-19 and Climate change are in conflict with each other.

5.0 Discussion

5.1 Severity of the threats and political views

Hypotheses H1a and H1b measured perceived severity and whether political affiliation might affect the evaluation of severity. According to previous literature, people are expected to assess the severe negative consequences of threats (Kim et al., 2013). Several aspects might affect the assessment of which threat is considered to be more severe. Some possible factors were identified and measured: the level of seriousness, time frame, and political affiliation. We hypothesized that individuals on the political left would consider Climate change as a more severe threat. The results for H1a and H1b showed that all three groups perceived Covid-19 as a more severe threat, regardless of political affiliation. According to theory, individuals on the political left tend to be more worried about threats in general (Poushter & Huang, 2020; Calvillo et al., 2020). There is, however, little research on political viewpoints regarding Covid-19, which may indicate that more research is required to find the appropriate factors to consider. Nevertheless, results show that both individuals on political left and political right evaluated Covid-19 as the more severe threat. This is in accordance with the PMT theory. Covid-19 is perceived as an immediate threat with severe negative consequences, which affects human lives and has led to millions of deaths worldwide (WHO, 2021), whereas Climate change tends to be considered as a more remote threat (Lorenzoni et al., 2007). The analyses did not indicate that the two experimental groups and the control group differ in their evaluation of the threats. This can be a result of the manipulation of conflicting information, sampling technique, sample characteristics and other aspects that will be discussed later in section 5.5.

5.2 Vulnerability of the threats

For H2 we investigated whether individuals feel more vulnerable to Covid-19 than to Climate change. Results show that the three groups feel more vulnerable

to Covid-19. This result indicates that individuals who evaluate their vulnerability to competing threats, follows previous literature that has investigated the evaluation of single threats. The fact that individuals feel more vulnerable to Covid-19 is not surprising. People have been exposed to information about the dangers of the virus and how everyone is affected by the situation. Climate change on the other hand is often presented as something that affects humankind in plural, and rarely influences specific individuals.

5.3 Effectiveness of the measures

For H3 we expected that there would be a conflict between how individuals perceive the effectiveness of the preventive measures for Covid-19 and Climate change, related to their ranking of the measures on a scale from most effective to least effective. The ranking of the preventive measures supports the literature within response efficacy, suggesting that individuals are likely to evaluate the preventive measures based on how effective they perceive them to be in preventing a threat (Bandura, 1977). A majority of the results showed that there is indeed a conflict between individuals within a group, and the perceived effectiveness pertaining to the two threats. Thus, we find partial support for the hypothesis. When comparing the results for each group, we see quite similar outcomes. For instance, when investigating avoiding air travel as the most effective measure for both Covid-19 and Climate change, the results were significant for all three groups. Similarly, they were also significant when investigating avoiding air travel as the least effective measure. In fact, the only measure that differed between the three groups is using disposable plates and cutlery as the least effective measure, where group 2 and 3 showed a non-significant conflict, while group 1 showed a significant conflict. This indicates that there is a conflict between individuals', within a group, perception of effectiveness, but across the three groups, there is little difference. In fact, it is not surprising that individuals' degree of perceived effectiveness of a measure conflicts, depending on which threat the measure is supposed to prevent. The fact that there is a conflict supports previous literature. Threats are expected to be perceived differently, as Covid-19 measures are expected to be effective in a shorter amount of time compared to Climate change measures. Thus, there should be a conflict between individuals in how they perceive the effectiveness of the

measures. This further supports the PMT theory, which shows that individuals' previous evaluation of which threat is more severe, can impact their evaluation of the effectiveness of the measures.

5.4 Individuals ability to perform the measures

With H4, we investigated the proportion of individuals within each group that perceived each measure pertaining to Covid-19 and Climate change as easiest and most difficult to avoid dangers from the threats. Their evaluation supports the literature within self-efficacy, suggesting that individuals evaluate the preventive measures to avoid dangers from the two threats based on their belief that they are capable to perform those measures (Zheng et al., 2021). However, the hypothesis was not supported, as results show that within a group, there was no conflict between individuals' perception of self-efficacy pertaining to Covid-19 and Climate change respectively. The only preventive measures pertaining to both Covid-19 and Climate change that showed conflicting results was avoiding stores and shopping in public within experimental group 1, who perceived it as the easiest measure, and using public transportation within experimental group 2, who perceived it as most difficult. The reason for few conflicting results across both threats may be that individuals, regardless of Covid-19 and Climate change threats, might have evaluated the measures based on whether they believe that they have the necessary capabilities to perform the measures. Although their evaluation supports literature within PMT, the severity of the threats might not have had a significant impact on whether they believe they are able to participate in the preventive measures.

5.5 Overall discussion

The analyses show different results, and although some of the hypotheses were partially supported, there were hardly any differences between the three groups. Possible reasons for this will be discussed further. One potential factor could be the sample characteristics. Research has found that respondents' age can affect how they perceive questions, which might influence their answers (Andrews & Herzog, 1986). This thesis has an overrepresentation of respondents between the age of 18-25, which may have influenced the results, as they might have answered

the questions quite similarly. This could indicate that we should have collected data with a more even age distribution to secure a better generalizability of results. Information was manipulated to investigate whether conflicting information regarding two threats may affect individuals' perception of the threats. We believed that individuals who were exposed to conflicting information would evaluate the threats differently than individuals who were not exposed to such information. However, the stories did not have the anticipated effect. This might be a consequence of the length of the stories, thus, as a result, participants may have been confused and lost sight of the actual question. Research indicates that presenting individuals with conflicting information might cause confusion (Carpenter et al., 2016), and that the source of the conflicting information can affect the outcome (Lee et al., 2018). This could indicate that shorter and more precise questions should have been used, in addition to adding more questions to be able to better capture respondents' attitudes regarding conflicting information. In addition, using stories might have been more suitable in an interview. However, with interviews there is a higher risk for interviewer bias, which in our context of threat evaluation could affect participant evaluation. Furthermore, because both Covid-19 and Climate change are widely known and perceived as significant threats by many people, one could assume that respondents had preconceived opinions of the threats, which would make it difficult to manipulate the conflicting information between the threats. According to attitude change theories, there are several persuasion mechanisms that must be applied in order to change an individual's attitude (Cialdini et al., 1981). Within conflicting information literature, this could be a topic for further investigation.

An important aspect to consider is respondent truthfulness. Respondents might not answer truthfully to questions because of aspects such as social pressure or preconceived ideas on a certain topic. In this study, we used a projective technique, and asked respondents to answer what they thought an average person would have answered. Thus, we did not measure exact feelings, but used a more indirect approach. This could affect our results, as respondents might find it confusing to set personal opinions aside. An alternative method could have been to take a more direct approach when measuring threat-related attitudes and

behaviors. Regardless of approach, one still has to consider and account for biased answers from participants.

6.0 Implications, limitations and future research

6.1 Implications

The results in this study imply that individuals perceive Covid-19 as the more severe threat, and that they are more likely to be affected by Covid-19 than Climate change. This might be due to the fact that Covid-19 is directly observable, and affects people negatively, whereas Climate change might be perceived as a distant threat that does not affect people on a personal level, to the same extent as Covid-19. In addition, both threats can be perceived as urgent and remote, respectively, which might affect the evaluation of them as competing threats. Using the PMT framework to investigate the constructs within threat appraisal proved to be beneficial, as the pre-defined constructs made it easy to investigate threat evaluation in a meaningful way. Our results support the theory, as it indicates that individuals evaluate competing threats based on the level of perceived severity and vulnerability that the threat possesses. Consequently, researchers will be able to use this research as an inspiration to further investigate how to use PMT to evaluate competing threats. However, a more significant assessment on how to group individuals should be applied. Results within political affiliation indicate that both left- and right-wing sympathizers perceive Covid-19 as the more severe threat. Although the results do not support previous research that the political left tends to be more concerned about Climate changes, it may indicate that more research is needed for the aspect of competing threats, to which our thesis could be an inspiration.

While the conflict of effectiveness was significantly supported, the conflict of self-efficacy was not. Regarding perceived effectiveness, the results showed that a majority of respondents experienced a conflict between the evaluation of the perceived effectiveness of a measure, depending on which threat it is supposed to prevent. The investigation for self-efficacy revealed that most individuals do not see a conflict between how easy or how difficult it is to perform a measure; depending on the threat it is supposed to prevent. This might indicate that individuals perceive the measures equally easy or equally difficult to perform,

regardless of the related threat. The difference between these two results should be noted. The reason for the difference could be attributed to the chosen measures, or to confusion about the questions that were presented. Nevertheless, our results do support previous literature to some degree. Further research of the topic may find inspiration in how to perform a comparison of the coping appraisal evaluation, and how it might apply to competing threats. The use of a ranking system proved useful, although the specific measures should be subject to further discussion, to secure the use of measures that are applicable to both threats.

The evidence of no effect on the impact that conflicting information had on individuals' evaluation of the threats in this study should be noted, as the findings might shed some light on whether conflicting information might influence individuals' decisions or not. Findings from our study implies that conflicting information given by the authorities has no effect on how individuals evaluate the threats. This confirms the existing literature that the type of source that provides conflicting information might have an impact on whether individuals' evaluation of the threats will be influenced (Lee et al., 2018). In this case, individuals might have found the information that the authorities provide confusing and could therefore be assumed to use common knowledge and past experience when evaluating Covid-19 and Climate change threats. However, the effect that conflicting information has on individuals' evaluation might depend on the type of exposure, and from whom the conflicting information is provided. Although the manipulation did not work as anticipated, it is still interesting to see how conflicting information might affect threat evaluation in a context of competing threats. This research can therefore provide inspiration to researchers as to how the aspect of conflicting information should be presented to participants, and to what degree the aspects of contradicting stories might work if modified.

6.2 Limitations

Findings from our research should be taken with caution as this study is subject to some limitations. The possible limitations identified for this research are related to our sample characteristics and the preventive measures pertaining to response efficacy and self-efficacy. This study was conducted to investigate and gain a deeper understanding on how individuals evaluate two competing threats, and

how the manipulation of conflicting information might influence participants evaluation. Given our two experimental groups and the control group that consisted of a somewhat equal number of participants in each group, the study assumes that respondents in the three groups are comparable. However, the group characteristics are unlikely to ensure generalizability as the distribution of age was not optimal, thus making inferences about the population harder to produce. The majority of participants in our study were between the ages of 18-25, accounting for 47.3 % of the total sample (N = 93). This has most likely occurred as participants were collected through Facebook and LinkedIn, and as participants were encouraged to share the survey with their own network. Future research should consider having a somewhat equal age distribution to ensure that certain age groups are neither overrepresented nor underrepresented.

In addition, the sample size should have been larger. Initially, our sample consisted of 154 respondents, where (N = 61) was deleted due to incomplete responses. This might have had an impact on the distribution of the characteristics of the participants, resulting in the younger segment being overrepresented. During the data collection period, we tried to recruit new participants to ensure for a larger sample. In this case, we could have tried to ensure an even distribution of participants' age by recruiting more participants from the older segment. However, given the time frame and our chosen sampling technique, the possibility of collecting a larger sample that consists of a wide representation of participants, was limited. There might have been clear differences between the groups if the sample size were larger.

For response efficacy and self-efficacy, the difference between one preventive measure compared to another (e.g, avoiding air travel vs. using disposable plates and cutlery), could have had an impact on how they were ranked. In this case, individuals could perhaps easily see that one measure is much more effective compared to another. To ensure that the differences between the measures is reduced, other measures could be used instead. For instance, the measure using disposable plates and cutlery to avoid dangers from Covid-19 could be replaced with other measures, such as, using facemasks.

In addition, a more beneficial format for the ranking questions that measured response efficacy and self-efficacy could have been utilized to minimize question order bias, and the possibility of participants ranking the preventive measures based on their need to save time. In Qualtrics Survey Software, a ranking method of drag and drop was utilized, meaning that the preventive measures were already presented in the same order for all the ranking questions (Appendix 1), and participants could then move and rank the measures based on an order of their preferences. A randomization that presents the four behaviors in a random order for participants, or using another format of rank order question, could have been applied before collecting the data.

6.3 Directions for future research

Our study raises the opportunity for future research to use our thesis as a basis for further investigation on how individuals evaluate competing threats. Future research should consider another approach to manipulating conflicting information to investigate whether exposure influences individuals' evaluation. One interesting aspect could be to expose participants with another form of stimuli instead of a paragraph. In addition, future research should utilize other preventive measures for response efficacy and self-efficacy or incorporate some of the measures presented in this thesis and see how individuals evaluate them. This is because the evaluation might depend significantly on the measures, and differences can be harder to account for when one measure can easily be seen as effective or less effective when compared to another (e.g., avoiding air travel vs. using disposable plates and cutlery to avoid dangers from Covid-19). One could perhaps utilize another scaling technique to compare the effectiveness of various measures, and to analyze whether a measure is easy or difficult to perform.

Correcting for the sample size and sample characteristics, and ensuring fewer limitations, we hope that researchers have the opportunity to use our thesis as a basis for future research. It could be interesting to investigate geographical areas that are affected by Climate change. For instance, one could investigate how Eastern countries evaluate pandemic threats and Climate change threats compared to Western countries. In addition, it is essential to investigate which of the two threats they would rather protect themselves from, and whether they would

sacrifice preventing one threat and risk dangers from the other. Future research could also investigate how the social influence from friends or family affects individuals' evaluation and their intentions to protect themselves from the threats.

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8.0 Appendices

8.1 Appendix 1: Questionnaire

Start of Block 1

Hi! Thank you for taking the time to participate in this study for our master thesis in Strategic Marketing Management at BI Norwegian Business School. With this study, we are interested in understanding individuals' opinions about two issues currently in the news: Covid-19 and Climate Change. This survey will take approximately 6 minutes to complete. Please read the questions carefully, your honest opinion will be valuable for our thesis. The survey is completely anonymous, and all answers will be treated with confidentiality. It will not be possible to identify you as an individual based on the information you provide in the survey, as all information will be analyzed at group level. We appreciate you taking time and effort to help us finalize our thesis.

For any questions regarding the survey, please do not hesitate to contact us at: mariaerlandsen@gmail.com or alijboo97@gmail.com

End of Block 1

Start of Block 2

In this survey, we want you to answer how you think an **AVERAGE PERSON** would have answered. By average person we mean a typical person.

In other words, **we do not** want you to answer the questions according to your own opinions, instead we would like you to answer how you think an average person would have answered the questions you are presented with.

End of Block 2

Start of Block 3

In the following part, you will be presented with questions regarding Covid-19 and Climate change:

End of Block 3

Start of Block 4 - Climate change story (Presented only for experimental group 1)

Q1: Please read the example below carefully and answer the following question:

Several politicians and scientists have pointed out that climate change caused by global warming is the biggest threat to life on earth, as it causes harm to habitats and human life (e.g., reduced food source, severe weather events, melting glaciers, and rising sea level). It has been predicted that climate change will cause more harm in the future if the current trend of greenhouse gas emission continues. To prevent climate change threats, global warming requires more people to use public transportation. In fact, politicians have urged people to use public transportation to reduce global warming, but because of pandemic threats such as Covid-19, they have also informed people to use less public transportation, as the risk of becoming infected with Covid-

For the average person, is a viral pandemic such as Covid-19 or Climate change a more serious overall threat?

- Covid-19 is much more threatening (1)
- Covid-19 is somewhat more threatening (2)
- Equally threatening (3)
- Climate change is somewhat more threatening (4)
- Climate change is much more threatening (5)

End of Block 4 - Climate change story

Start of Block 5 - Covid-19 story (presented only for experimental group 2)

Q2: Please read the example below carefully and answer the following question:

Several health authorities and politicians have pointed out that pandemic threats such as Covid-19 is a dangerous and continuing threat. It has been predicted that such viruses will remain an on-going danger to a large portion of the population and cause a large number of deaths. In fact, preventive measures have been put in place in order to reduce the risk of a high number of people becoming infected by such viruses. To prevent infection and transmission of the virus, pandemic threats

such as Covid-19 require people not to engage in activities that entail a large number of people gathering in crowded places. In fact, politicians have urged people to reduce their use of public transportation because of the risk of Covid-19 infection. However, the use of less public transportation is also likely to increase the threats from climate change due to emissions, as people will increase the use of personal cars to cover for their travel needs.

For the average person, is a viral pandemic such as Covid-19 or Climate change a more serious overall threat?

- Covid-19 is much more threatening (1)
- Covid-19 is somewhat more threatening (2)
- Equally threatening (3)
- Climate change is somewhat more threatening (4)
- Climate change is much more threatening (5)

End of Block 5 - Covid-19 Story

Start of Block 6 - Threat appraisal: Perceived severity

Q3: In considering the threats of Covid-19 and Climate change, please evaluate the following:

	Covid-19 is much more threatening (1)	Covid-19 is somewhat more threatening (2)	Equally threatening (3)	Climate change is somewhat more threatening (4)	Climate change is much more threatening (5)
For the average person, which is the bigger threat to their health? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For the average person, which is the bigger threat to financial stability? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For the average person, which of the two threats will be more threatening in five years? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block 6 - Threat appraisal: Perceived severity

Start of Block 7 - Threat appraisal: Perceived vulnerability

Q4: In considering the threats of Covid-19 and Climate change, please evaluate the following:

	Covid-19 is much more likely (1)	Covid-19 is somewhat more likely (2)	Equal chance (3)	Climate change is somewhat more likely (4)	Climate change is much more likely (5)
For the average person, which of the following are most likely to cause anxiety? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For the average person, which of the following are most likely to damage their health? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For the average person, which of the following are most likely to cause financial damages? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block 7 - Threat appraisal: Perceived severity

Start of Block 8 - Coping appraisal: Response efficacy

Q5: Please move and rank the following measures from most effective to least effective for the average person to **avoid the dangers of Climate change**, with 1 indicating the most effective and 4 indicating the least effective measure:

- _____ Using public transportation (trains, buses, metro) as much as possible.
- _____ Using disposable plates and cutlery as much as possible.
- _____ Avoiding air travel as much as possible.
- _____ Avoiding stores and shopping in public as much as possible.

Q6: Please move and rank the following measures from most effective to least effective for the average person to **avoid the dangers of Climate change**, with 1 indicating the most effective and 4 indicating the least effective measure:

- _____ Using public transportation (trains, buses, metro) as much as possible.
- _____ Using disposable plates and cutlery as much as possible.
- _____ Avoiding air travel as much as possible.
- _____ Avoiding stores and shopping in public as much as possible.

End of Block 8 - Coping appraisal: Response efficacy

Start of Block 9 - Coping appraisal: Self-efficacy

Q7: Please move and rank the following measures from easiest to most difficult for the average person in order to **avoid the dangers of Climate change**, with 1 indicating the easiest measure and 4 indicating the least easy measure:

- _____ Using public transportation (trains, buses, metro) as much as possible.
- _____ Using disposable plates and cutlery as much as possible.
- _____ Avoiding air travel as much as possible.
- _____ Avoiding stores and shopping in public as much as possible.

Q8: Please move and rank the following measures from easiest to most difficult for the average person in order to **avoid the dangers of Covid-19**, with 1 indicating the easiest measure and 4 indicating the least easy measure:

- _____ Using public transportation (trains, buses, metro) as much as possible.
- _____ Using disposable plates and cutlery as much as possible.
- _____ Avoiding air travel as much as possible.
- _____ Avoiding stores and shopping in public as much as possible.

End of Block 9 - Coping appraisal: Self-efficacy

Start of Block 10 - Demographics

Q9: To what extent do you agree with the following statements?

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I engage in activities considered to be good for the environment (e.g., using public transportation, recycling, using environmentally friendly products)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I engage in activities considered to be good for preventing the spread of Covid-19 (e.g., social distancing, washing hands, using face mask).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10: Age

- 18-25
- 26-35
- 36-45
- 46-55
- 56-75
- Over 75

Q11: Gender

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

Q12: Educational background

- High school degree or equivalent
- Bachelor's degree or equivalent
- Master's degree or equivalent
- Doctorate
- Other

Q13: How would you describe yourself related to the political system in Norway?

- Fremskrittspartiet (FRP)
- Høyre
- Venstre
- Kristelig Folkeparti (KrF)
- Miljøpartiet De Grønne (MDG)
- Senterpartiet
- Arbeiderpartiet
- Sosialistisk Venstreparti (SV)

- Rødt
- Don't wish to answer

End of Block 10 - Demographics

8.2 Appendix 2: Threat appraisal

8.2.1 Appendix 2a: One Way ANOVA - Perceived severity

Group statistics

Variable	Group	Mean	SD	N
Perceived severity	Experimental group 1	2.19	0.965	32
	Experimental group 2	2.26	0.815	31
	Control group	2.57	0.626	30
	Total	2.33	0.825	93

Tests of Homogeneity of Variances

		Levene	df1	df2	Sig.
		Statistic			
Perceived severity	Based on Mean	3.904	2.0	90	.024

ANOVA

		Sum of	df	Mean	F	Sig.
		Squares		Square		
Perceived severity	Between Groups	2.490	2	1.245	1.862	.161
	Within Groups	60.177	90	.669		
	Total	62.667	92			

Robust Tests of Equality of Means

		Statistica	df1	df2	Sig.
Perceived severity	Welch	2.278	2	58.795	.111

a Asymptotically F distributed.

8.2.2 Appendix 2b: Independent Samples T-test - Perceived severity

Group statistics

Variable	Political Group	Mean	SD	N
Perceived severity	Political right	2.45	0.850	31
	Political left	2.39	0.786	28

Independent Samples Test

Variable		Levene's Test		Independent t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Perceived severity	Equal variances assumed	.253	.617	.275	57	.785
	Equal variances not assumed			.276	56.964	.784

8.2.3 Appendix 2c: One Way ANOVA - Perceived vulnerability

Group statistics

Variable	Group	Mean	SD	N
Perceived vulnerability	Experimental group 1	1.69	0.780	32
	Experimental group 2	1.48	0.724	31
	Control group	1.67	0.711	30
	Total	1.61	0.738	93

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Perceived vulnerability	Based on Mean	0.372	2.0	90	.690

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Perceived vulnerability	Between Groups	.781	2	.390	.713	.493
	Within Groups	49.284	90	.584		
	Total	50.065	92			

8.3 Appendix 3: Coping appraisal, response efficacy - Z test for proportion

Appendix 3a: Response efficacy - Avoiding air travel, Climate change x Covid-19

		Crosstab - Avoiding air travel - Climate change				
		Experimental group 1	Experimental group 2	Control group	Total	
Avoiding air travel	Most effective	Count	17a	18a	15a	50
		% within				
		Groups	53.1%	58.1%	50.0%	53.8%
	2nd choice	Count	8a	6a	9a	23
		% within				
		Groups	25.0%	19.4%	30.0%	24.7%
	3rd choice	Count	6a	5a	6a	17
		% within				
		Groups	18.8%	16.1%	20.0%	18.3%
	Least effective	Count	1a	2a	0a	3
		% within				
		Groups	3.1%	6.5%	0.0%	3.2%
Total		Count	32	31	30	93
		% within				
		Groups	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

		Crosstab - Avoiding air travel Covid-19				
		Experimental group 1	Experimental group 2	Control group	Total	
Avoiding air travel	Most effective	Count	8a	9a	7a	24
		% within				
		Groups	25.0%	29.0%	23.3%	25.8%
	2nd choice	Count	9a	10a	11a	30
		% within				
		Groups	28.1%	32.3%	36.7%	32.3%
	3rd choice	Count	13a	9a	9a	31
		% within				
		Groups	40.6%	29.0%	30.0%	33.3%
	Least effective	Count	2a	3a	3a	8
		% within				
		Groups	6.3%	9.7%	10.0%	8.6%
Total		Count	32	31	30	93
		% within				
		Groups	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

Appendix 3b: Response efficacy - Using public transportation (trains, buses, metro), Climate change x Covid-19

		Crosstab - Using public transportation Climate change				
		Experimental group 1	Experimental group 2	Control group	Total	
Using public transportation (trains, buses, metro)	Most effective	Count	10a	9a	10a	29
		% within Groups	31.3%	29.0%	33.3%	31.2%
	2nd choice	Count	15a	16a	17a	48
		% within Groups	46.9%	51.6%	56.7%	51.6%
	3rd choice	Count	6a	5a	3a	14
		% within Groups	18.8%	16.1%	10.0%	15.1%
	Least effective	Count	1a	1a	0a	2
		% within Groups	3.1%	3.2%	0.0%	2.2%
	Total	Count	32	31	30	93
		% within Groups	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

		Crosstab - Using public transportation Covid-19				
		Experimental group 1	Experimental group 2	Control group	Total	
Using public transportation (trains, buses, metro)	Most effective	Count	7a	8a	7a	22
		% within Groups	21.9%	25.8%	23.3%	23.7%
	2nd choice	Count	10a	7a	7a	24
		% within Groups	31.3%	22.6%	23.3%	25.8%
	3rd choice	Count	4a	5a	7a	16
		% within Groups	12.5%	16.1%	23.3%	17.2%
	Least effective	Count	11a	11a	9a	31
		% within Groups	34.4%	35.5%	30.0%	33.3%
	Total	Count	32	31	30	93
		% within Groups	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

Appendix 3c: Response efficacy - Using disposable plates and cutlery, Climate change x Covid-19

Crosstab - Using disposable plates and cutlery Climate change

		Experimental group 1	Experimental group 2	Control group	Total		
Using disposable plates and cutlery	Most effective	Count	5a	3a	4a	12	
		% within Groups	15.6%	9.7%	13.3%	12.9%	
		2nd choice	Count	4a	7a	4a	15
	3rd choice	% within Groups	12.5%	22.6%	13.3%	16.1%	
		Count	18a	10a	13a	41	
		% within Groups	56.3%	32.3%	43.3%	44.1%	
	Least effective	Count	5a	11a	9a	25	
		% within Groups	15.16%	35.5%	30.0%	26.9%	
		Total	Count	32	31	30	93
			% within Groups	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

Crosstab - Using disposable plates and cutlery Covid-19

		Experimental group 1	Experimental group 2	Control group	Total		
Using disposable plates and cutlery	Most effective	Count	3a	1a	3a	7	
		% within Groups	9.4%	3.2%	10.0%	7.5%	
		2nd choice	Count	1a	2a	3a	6
	3rd choice	% within Groups	3.1%	6.5%	10.0%	6.5%	
		Count	10a	11a	9a	30	
		% within Groups	31.3%	35.5%	30.0%	32.3%	
	Least effective	Count	18a	17a	15a	50	
		% within Groups	56.3%	54.8%	50.0%	53.8%	
		Total	Count	32	31	30	93
			% within Groups	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

Appendix 3d: Response efficacy - Avoiding stores and shopping in public,
Climate change x Covid-19

Crosstab - Avoiding stores and shopping in public Climate change

		Experimental group 1	Experimental group 2	Control group	Total	
Avoiding stores and shopping in public	Most effective	Count	0a	1a	1a	2
		% within Groups	0.0%	3.2%	3.3%	2.2%
	2nd choice	Count	5a	2a	0a	7
		% within Groups	15.6%	6.5%	0.0%	7.5%
	3rd choice	Count	2a	11b	8a, b	21
		% within Groups	6.3%	35.5%	26.7%	22.6%
	Least effective	Count	25a	17a	21a	63
		% within Groups	78.1%	54.8%	70.0%	67.7%
Total	Count	32	31	30	93	
	% within Groups	100.0%	100.0%	100.0%	100.0%	

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

Crosstab - Avoiding stores and shopping in public Covid-19

		Experimental group 1	Experimental group 2	Control group	Total	
Avoiding stores and shopping in public	Most effective	Count	14a	13a	13a	40
		% within Groups	43.8%	41.9%	43.3%	43.0%
	2nd choice	Count	12a	12a	9a	33
		% within Groups	37.5%	38.7%	30.0%	35.5%
	3rd choice	Count	5a	6a	5a	16
		% within Groups	15.6%	19.4%	16.7%	17.2%
	Least effective	Count	1a	0a	3a	4
		% within Groups	3.1%	0.0%	10.0%	4.3%
Total	Count	32	31	30	93	
	% within Groups	100.0%	100.0%	100.0%	100.0%	

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

8.4 Appendix 4: Coping appraisal, self-efficacy - Z test for proportion

Appendix 4a: Self-efficacy - Avoiding air travel, Climate change x Covid-19

Crosstab - Avoiding air travel Climate change						
		Experimental group 1	Experimental group 2	Control group	Total	
Avoiding air travel	Easiest	Count	11a	13a	10a	34
		% within Groups	34.4%	41.9%	33.3%	36.6%
		2nd choice	Count	4a	5a	3a
		% within Groups	12.5%	16.1%	10.0%	12.9%
	3rd choice	Count	9a	7a	13a	29
		% within Groups	28.1%	22.6%	43.3%	31.2%
		Most difficult	Count	8a	6a	4a
	% within Groups		25.0%	19.4%	13.3%	19.4%
	Total		Count	32	31	30
		% within Groups	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

Crosstab - Avoiding air travel Covid-19						
		Experimental group 1	Experimental group 2	Control group	Total	
Avoiding air travel	Easiest	Count	8a	15a	10a	33
		% within Groups	25.0%	48.4%	33.3%	35.5%
		2nd choice	Count	11a	10a	10a
	% within Groups		34.4%	32.3%	33.3%	33.3%
	3rd choice		Count	9a	2a	6a
		% within Groups	28.1%	6.5%	20.0%	18.3%
		Most difficult	Count	4a	4a	4a
	% within Groups		12.5%	12.9%	13.3%	12.9%
	Total		Count	32	31	30
		% within Groups	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

Appendix 4b: Self-efficacy - Using public transportation (trains, buses, metro),
Climate change x Covid-19

Crosstab - Using public transportation Climate change

			Experimental group 1	Experimental group 2	Control group	Total
Using public transportation (trains, buses, metro)	Easiest	Count	6a	6a	11a	23
		% within Groups	18.8%	19.4%	36.7%	24.7%
	2nd choice	Count	12a	15a	7a	34
		% within Groups	37.5%	48.4%	23.3%	36.6%
	3rd choice	Count	8a	7a	6a	21
		% within Groups	25.0%	22.6%	20.0%	22.6%
	Most difficult	Count	6a	3a	6a	15
% within Groups		18.8%	9.7%	20.0%	16.1%	
Total	Count	32	31	30	93	
	% within Groups	100.0%	100.0%	100.0%	100.0%	

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

Crosstab - Using public transportation Covid-19

			Experimental group 1	Experimental group 2	Control group	Total
Using public transportation (trains, buses, metro)	Easiest	Count	8a, b	2b	11a	21
		% within Groups	25.0%	6.5%	36.7%	22.6%
	2nd choice	Count	7a	9a	3a	19
		% within Groups	21.9%	29.0%	10.0%	20.4%
	3rd choice	Count	6a	9a	9a	24
		% within Groups	18.8%	29.0%	30.0%	25.8%
	Most difficult	Count	11a	11a	7a	29
% within Groups		34.4%	35.5%	23.3%	31.2%	
Total	Count	32	31	30	93	
	% within Groups	100.0%	100.0%	100.0%	100.0%	

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

Appendix 4c: Self-efficacy - Using disposable plates and cutlery, Climate change x Covid-19

Crosstab - Using disposable plates and cutlery Climate change

			Experimental group 1	Experimental group 2	Control group	Total
Using disposable plates and cutlery	Easiest	Count	14a	10a	7a	31
		% within Groups	43.8%	32.3%	23.3%	33.3%
		2nd choice	Count	9a, b	7b	16a
	3rd choice	% within Groups	28.1%	22.6%	53.3%	34.4%
		Count	6a	6a	3a	15
	Most difficult	% within Groups	18.8%	19.4%	10.0%	16.1%
		Count	3a	8a	4a	15
		% within Groups	9.4%	25.8%	13.3%	16.1%
	Total	Count	32	31	30	93
		% within Groups	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

Crosstab - Using disposable plates and cutlery Covid-19

			Experimental group 1	Experimental group 2	Control group	Total
Using disposable plates and cutlery	Easiest	Count	7a	8a	7a	22
		% within Groups	21.9%	25.8%	23.3%	23.7%
		2nd choice	Count	6a	5a	10a
	3rd choice	% within Groups	18.8%	16.1%	33.3%	22.6%
		Count	12a	9a	5a	26
	Most difficult	% within Groups	37.5%	29.0%	16.7%	28.0%
		Count	7a	9a	8a	24
		% within Groups	21.9%	29.0%	26.7%	25.8%
	Total	Count	32	31	30	93
		% within Groups	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

Appendix 4d: Self-efficacy - Avoiding stores and shopping in public, Climate change x Covid-19

Crosstab - Avoiding stores and shopping in public Climate change

			Experimental group 1	Experimental group 2	Control group	Total
Avoiding stores and shopping in public	Easiest	Count	1a	2a	2a	5
		% within Groups	3.1%	6.5%	6.7%	5.4%
	2nd choice	Count	7a	4a	4a	15
		% within Groups	21.9%	12.9%	13.3%	16.1%
	3rd choice	Count	9a	11a	8a	28
		% within Groups	28.1%	35.5%	26.7%	30.1%
Most difficult	Count	15a	14a	16a	45	
	% within Groups	46.9%	45.2%	53.3%	48.4%	
Total		Count	32	31	30	93
		% within Groups	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

Crosstab - Avoiding stores and shopping in public Covid-19

			Experimental group 1	Experimental group 2	Control group	Total
Avoiding stores and shopping in public	Easiest	Count	9a	6a	2a	17
		% within Groups	28.1%	19.4%	6.7%	18.3%
	2nd choice	Count	8a	7a	7a	22
		% within Groups	25.0%	22.6%	23.3%	23.7%
	3rd choice	Count	5a	11a	10a	26
		% within Groups	15.6%	35.5%	33.3%	28.0%
Most difficult	Count	10a	7a	11a	28	
	% within Groups	31.3%	22.6%	36.7%	30.1%	
Total		Count	32	31	30	93
		% within Groups	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Groups categories whose column proportions do not differ significantly from each other at the .05 level.

8.5 Appendix 5: Figures

Figure 1: Perceived severity of Covid-19 and Climate change

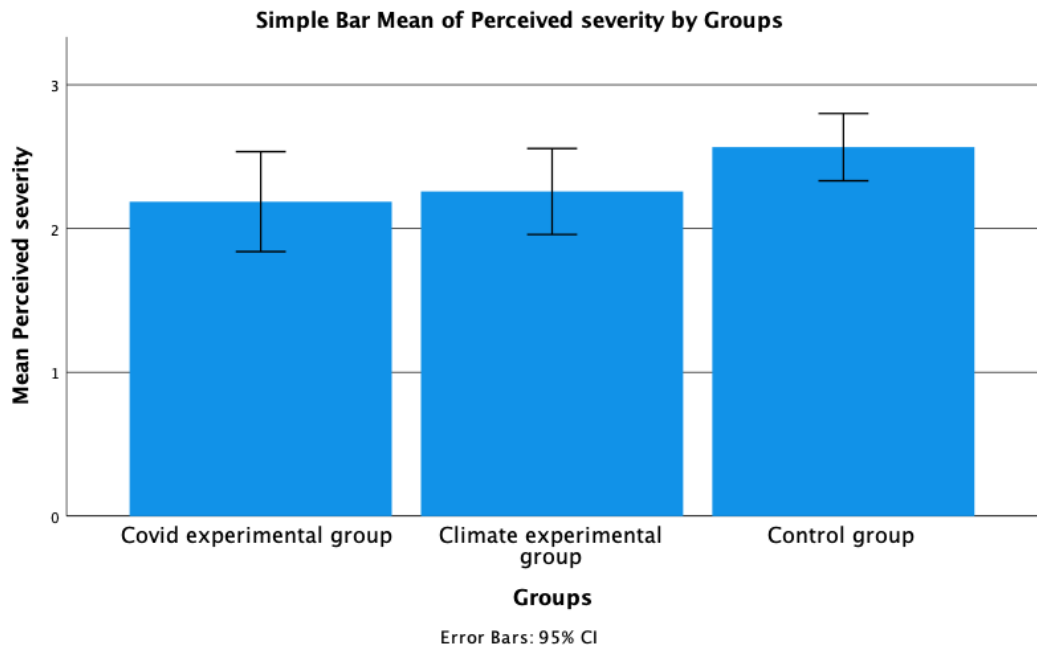


Figure 2: Perceived severity of Political left vs. Political right

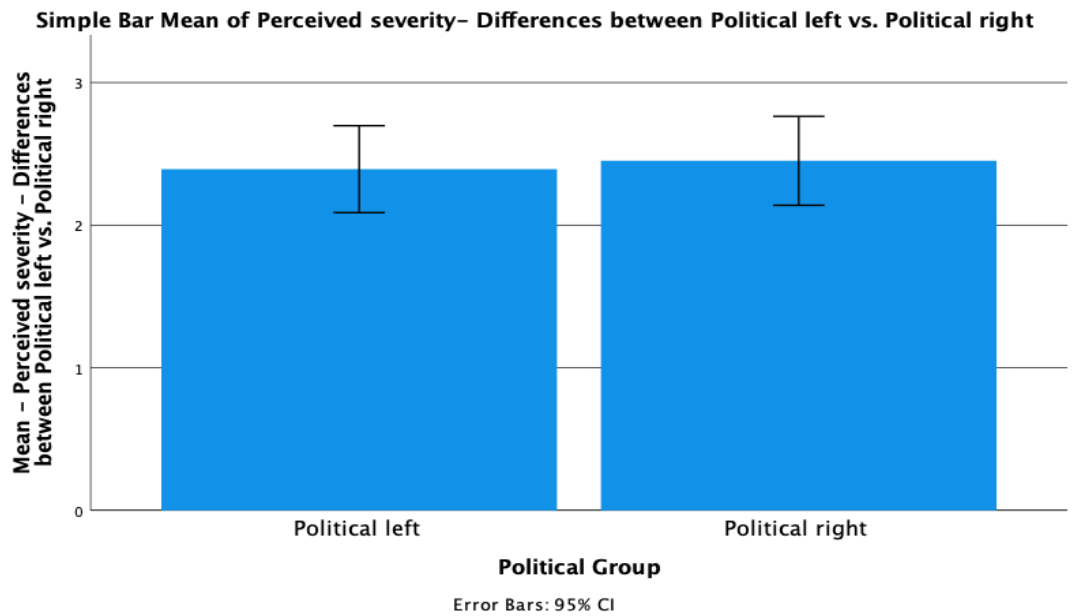


Figure 3: Perceived vulnerability of Covid-19 and Climate change

