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A wildfire or a path: The influence of metaphors on perceived COVID-19 control

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A wildfire or a path: The influence of metaphors on perceived COVID-19 control

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ResMa Thesis

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Acknowledgements

With the COVID-19 pandemic coming to a (temporary?) end, I was one of those people who wished to forget the misery of the restrictive measures and lockdowns as soon as possible. Therefore, it can at least be called surprising that I chose this topic as my full-semester occupation to finish my Research Master Linguistics. I have never regretted this choice since it made me shift the negative to the positive: I enjoyed reading about metaphors and applying the acquired knowledge to the pandemic by carrying out my research, and I was hardly ever unwilling to work on my thesis. I would like to thank some people for their help. Firstly, Felix Ameka for teaching the thesis seminars during which I could share my thoughts, feelings, and problems. Secondly, my friends and family for making the snowball effect work so that I ended up with a broad sample of participants. Finally, my thesis supervisor Maaike van Naerssen for the effort she brought into providing and discussing her extensive feedback and for the nice cups of coffee during our first few meetings.

Abstract

Metaphors effectively explain a complex (scientific) topic in terms familiar to the non-expert audience. However, metaphors also affect attitude. This thesis investigated the effects that the path metaphor and the wildfire metaphor have on the personal control people experience over the further course of the COVID-19 pandemic. For this purpose, participants received a text about the ongoing yet hidden threat of COVID-19, in which a new outbreak was either described as a wrongly taken path, as a wildfire flaring up, or without a metaphor. To measure the experienced amount of personal control, the participants were asked about their feelings of fear and control of the virus and the measures, and how they would bring these feelings into practice by reacting to multiple scenarios involving the risk of COVID-19 transmission. Statistical testing revealed no significant effect of the metaphors on the participants' responses, potentially due to (amongst others) the time frame of the research. It is necessary to research in which circumstances a metaphor does and does not affect attitude. Then, it can be determined how and when a metaphor can best be employed in daily life to influence the hearer's perception of a message, for example in the contexts of climate change, disease, and politics.

Keywords: METAPHOR, ATTITUDE, COVID-19, PERSONAL CONTROL, WILDFIRE, PATH

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1. Introduction

After a two-year-long COVID-19 pandemic caused by a new virus commonly called the coronavirus (Whitworth 2020: 227), the threat of the virus started to decrease in Europe in the spring of 2022 (Reijman 2022; RTL Nieuws 2022). Whether the pandemic is truly over or not is a question that is still left unanswered at the time of writing. As from the beginning of the pandemic (Rijksoverheid 2020a), the individual responsibility of the Dutch population was considered critical in determining the further course of the pandemic (Isitman 2022). Therefore, it is interesting to investigate if the use of specific metaphors can emphasize this individual responsibility (in this thesis called 'personal control'). This thesis investigates the effect of two metaphors, the wildfire and the path metaphor, on the amount of personal control one thinks one has over the further course of the pandemic.

A metaphor explains one phenomenon in terms of another, involving clear correspondences between these two (Lakoff and Johnson 1980: 208; Semino 2021: 50). A metaphor always consists of a relatively abstract and complex target domain that is explained in terms of a simpler and more concrete source domain (Lakoff and Johnson 1980: 266; Semino 2021: 51). In this thesis, the reader will regularly encounter the terms 'wildfire metaphor,' 'path metaphor,' and similar terms like 'war metaphor.' In these terms, the word in front of 'metaphor' always represents the source domain. The target domain differs per context. So, a wildfire metaphor is a metaphor in which a wildfire is used to explain a complex and abstract phenomenon.

Metaphor use has been omnipresent in Dutch communication about the virus and the restrictive measures taken to reduce the spread of the virus. For example, the Dutch prime minister Mark Rutte and the minister of public health Hugo de Jonge regularly talked in metaphors during the national press conferences on television updating the Dutch citizens about the recent developments of the pandemic (Jansen 2020). Metaphors are effective within the context of the COVID-19 pandemic since they can explain a complex scientific topic (such as contagiousness, immunity, and reinfection) with the help of terminology familiar to a non-expert audience (Kampourakis 2016: 947). As such, metaphors are essential to science communication (Rakedzon et al. 2017: 2). Science communication and accompanying metaphor use are crucial during the COVID-19 pandemic since restrictive measures are easier to comply with when communication about the virus is done in an accessible way (e.g., when people understand the effectiveness of these measures for virus control) (Thanh and Le Thanh 2022).

The function of metaphors, however, goes beyond increasing the comprehensibility of a message: metaphors also increase persuasiveness (Brugman et al. 2017: 192). Metaphors put reality in a frame that never covers all aspects of the target domain. Thus, metaphors never represent reality neutrally (Lakoff and Johnson 1980: 11). Because of that, metaphors can be strategically selected to influence the hearer's attitude towards a phenomenon. The literature provides ample research about the effect of metaphor on attitude. An extensive review of the literature about metaphors is found in Chapter 2. There is, however, ample room for further research. For example, the exact effect of a metaphor on attitude can be hard to establish. Flusberg et al. (2017) found that war as a metaphor for climate change increases feelings of urgency, whereas Atanasova and Koteyko (2015) found it decreases the perceived urgency of climate change. In terms of conflicting results, personal control, of which the crucial role within the Dutch COVID-19 policy was mentioned above, also forms an interesting perspective. In the context of COVID-19, Semino (2021: 51) mentions that war metaphors create a feeling of the responsibility of the individual, whereas Schnepf and Christmann (2022) demonstrated that the war metaphor shifts citizens' feelings of responsibility to the government. Thus, the amount of personal control they ascribe to the war metaphor differs. By determining if such conflicting results also exist for other metaphors than the war metaphor, further research can show which, how, and when metaphors can be most effectively employed to increase their persuasive effect. In the literature, it is described that the wildfire metaphor and the path metaphor imply a low and a high amount of personal control, respectively (e.g., Benyon 1998: 33; Semino 2021: 55; Smith-Ruig 2008: 21), but it has not yet been investigated if these effects also exist within the context of the COVID-19 pandemic. A pandemic requires language use different from other contexts (e.g., cancer) (Schnepf and

Christmann 2022: 109), so the effect of metaphors on attitude might differ within the pandemic. Since metaphors have different connotations per language (Wernecke et al. 2017: 191), carrying out metaphor research in languages different from English is necessary. This research focused on metaphors in Dutch.

It is necessary to research the effect of metaphors on attitude within the context of the COVID-19 pandemic since "a well-informed and context-sensitive approach to metaphor selection can be an important part of public health messaging" (Semino 2021: 56). This research can show how metaphorical frames potentially influence citizens' understanding of and attitude towards, amongst others, contagiousness and the dangers of the virus (Van Gorp 2007: 13-14). Research within the context of the pandemic should be kept ongoing as new developments (e.g., new variants or measures, or an absence of a direct threat of the virus) change the context within which the role of metaphors is investigated, potentially leading to different results. The present research keeps metaphor research within the COVID-19 pandemic ongoing.

The research question of this study is as follows:

> RQ: What effect do the path metaphor and the wildfire metaphor have on the personal control people experience over the further course of the COVID-19 pandemic?

Following the methodology of the alternative source strategy approach (common in research investigating the effect of metaphor on attitude), participants are randomly provided with one of three conditions presented as three different versions of a text about the ongoing yet hidden threat of COVID-19. The versions differ only concerning the metaphor used, in which a new virus outbreak is either described 1) as a wildfire faring up, 2) as a wrong path, or 3) without a metaphor. The perceived amount of personal control over the further course of the pandemic is measured with the help of so-called scenario and mediator questions that the participants receive after reading the text. By making the participants react to several potentially dangerous situations COVID-wise, the scenario questions measure to what extent the participant has become aware of their personal contribution to outbreak prevention after exposure to the condition. The mediator questions measure if the metaphors affect the participant's feelings about the virus and the measures.

The hypothesis is that the path metaphor will imply a high amount of personal control over the further course of the pandemic, and the wildfire metaphor will imply a low amount. These different amounts of personal control will become clear from the fact that the participants exposed to the path metaphor report more cautious reactions to the scenario questions than those exposed to the wildfire metaphor. Furthermore, they will express more perceived control and less fear of the virus/measures than those exposed to the wildfire metaphor.

This thesis is built up as follows. In Chapter 2, I provide a literature review about science communication, metaphors, and their persuasive effect. Chapter 3 explains the methodology of the research. In Chapter 4, the results are reported. The thesis ends with a conclusion and discussion in Chapter 5.

2. Literature review

This section provides a review of the literature about science communication and metaphors. Section 2.1 explains science communication, its significance for science and society, and how science communication relates to the COVID-19 pandemic. Section 2.2 provides some information on what a metaphor is, the support and criticism of metaphor use, and the effect of metaphors on attitude.

2.1. Science communication

Scientists conceptualize, analyze, and investigate the world around them. Nevertheless, sharing their discoveries with the world they are investigating is also essential (Hui and Gerber 2015: 33), which is where science communication comes in. The aims of science communication can be captured within the vowel analogy AEIOU (Burns et al. 2003: 190), standing for the five personal responses to science that should be raised within the broader audience: "Awareness of science; Enjoyment or other affective responses to science; Interest in science; the forming, reforming or confirming of science-related Opinions (or attitudes); and Understanding of science" (Burns et al. 2003: 190, 198). To effectively communicate a scientific topic to an audience of non-experts, it is necessary to, for example, adopt terminology the audience is familiar with and incorporate narratives (Rakedzon et al. 2017: 2). Science communication is still a young field compared to research fields such as mathematics. There is a great need for more research and engagement within science communication (Burns et al. 2003: 183, 199). Since metaphors are essential to science communication (Section 2.1), the present study contributes to this great need.

Science communication is meaningful for both science and society. According to Trachet and Roelens (2019: 18), clear communication about a complex topic raises society's interest and appreciation for this topic. Importantly, these topics are more than just fun facts: science communication helps convey essential knowledge relevant to people's daily lives. For example, good patient-doctor communication is necessary for the patient's adherence to treatment (Ong et al. 1995: 903). Science communication is meaningful for science since scientists often need to explain phenomena self-evident within the field of study but unknown outside the field. As a result, science communicators are forced to think outside the box, improving the quality of science (Trachet and Roelens 2019: 18). Unfortunately, science communication still has a negative connotation. It is thought to be practiced by researchers not competent enough for a career in academia (Survey 2006: 11). Jensen et al. (2008) and Bentley and Kyvik (2010) prove this idea wrong by showing that scientists practicing science communication achieve better results (e.g., more publications and citations) than scientists who do not. However, up till now they have not been rewarded for this. The amount of transferred knowledge, an important criterion for scientific acknowledgment, is mainly measured based on the complexity of the provided information, which is generally lower within science communication than within academia. According to Dijkgraaf (2006), it would be useful to also reason from the size of the audience that the knowledge is transferred to, which is significantly higher within science communication than within academia.

Although the complexity of the provided information might be lower within science communication than within academia, the importance of science communication cannot be denied within the context of the COVID-19 pandemic. Just like doctors' advice has to be communicated clearly to follow it, the restrictive measures can more easily be complied with if the communication about the virus is sufficient (e.g., if the people understand why and how these measures should be taken) (Thanh and Le Thanh 2022). Crucially, the restrictive measures have been taken for the safety of us and the people around us. According to health psychologist Andrea Evers, a lack of communication about the measures reduces the support base (Groenewoud 2022). In the Netherlands, where the present study was carried out, the correlation between the communication about a measure, on the one hand, and the support base and perceived effectiveness of the measures, on the other hand, is clear. The Dutch government incorporated two measures, wearing face masks and taking self-tests, into the COVID policy without clearly explaining of their effectiveness for virus control. Before the incorporation of

face masks, the usefulness of this measure was heavily debated and denied by the official authorities (Boef 2020). Self-testing was incorporated even though research by Smits et al. (2021) revealed they were not accurate enough, and Schuit et al. (2021) found the reliability of using self-tests without COVID symptoms was only 23-26%. A clear statement by the government of the effectiveness of self-testing for virus control was lacking upon its introduction. In contrast, when the measure of keeping 1.5 meters distance from others was introduced, the Dutch Prime Minister Mark Rutte communicated its effect clearly and explicitly during a national press conference (Rijksoverheid 2020b)[1]. RIVM (2022a; 2022b; 2022c) reports the following statistics about the support base and perceived effectiveness of the three measures I discussed (Table 1). The left column shows the measure (wearing face masks, self-testing, or keeping 1.5 meters distance), the middle column shows the support base upon the introduction of the measure, and the right column shows how many people thought the measure was (very) effective in March 2022.

Table 1: Support base and perceived effectiveness of wearing face masks, self-testing, and keeping 1.5 meters distance.

Statistic / Measure	Support base upon introduction	Perceived effectiveness for virus control in March 2022 (RIVM 2022b)
Face masks	69.9% (RIVM 2022c)	56.2%
Self-testing	No data Support base March 2022: 47% (RIVM 2022a)	50.8%
1.5 meters distance	94.3% (RIVM 2022c)	69.9%

As can be deduced from this table, the support base and perceived effectiveness are clearly lower for the measures that lacked an explanation of their usefulness for virus control (face masks and self-testing) than for the measure for which this explanation was provided (1.5 meters distance). To augment the support base and perceived effectiveness, the importance of clear communication about the restrictive measures should, thus, not be denied. Compliance with these measures will then be facilitated (Thanh and Le Thanh 2022).

Science communication is not only useful within the COVID-19 pandemic concerning measure compliance. With science communication, scientists can help people with critical thinking, such as establishing the author's intention and the source of a statement (Trachet and Roelens 2019: 17). During the COVID-19 pandemic, misinformation about the virus has spread rapidly because of social media (Gemenis 2021: 230). With a clear view of the author's intentions and sources, resistance against this misinformation can increase.

2.2. Metaphors

Within science communication, metaphors play a significant role (Roberts and Kreuz 1994: 161-162). This section provides some background knowledge on metaphors. First, in Section 2.2.1, I will define the concept of metaphor. After that, I will summarize the advantages and disadvantages of metaphors use (Section 2.2.2). In Sections 2.2.3 until 2.2.7, I explain how metaphors can influence attitude, including previous research investigating this topic and their relevance to the present research.

2.2.1. What is a metaphor?

Metaphors are ubiquitous in language use: it is estimated that an average English speaker uses one metaphor per 25 words (Graesser et al. 1989, cited in Fetterman et al. 2016). Since metaphors are a central theme of this thesis, it might be good to define the concept of metaphor first. However, that is

[1] The rationale of this measure was that the (possible) virus particles in the droplets from the mouth (e.g., when speaking) or nose (e.g., when sneezing) evaporated before having traversed over 1.5 meters. That prevented other people in the same area from getting in touch with these droplets and virus particles (Blocken et al. 2020: 1).

not straightforward. According to Charteris-Black (2018: 207), "there may be variation in what counts as a metaphor, depending on what cognitive frames are activated by a word for a particular individual." Veit and Ney (2021: 44) mention that it is difficult to draw a boundary between metaphor and further sorts of non-literal language. One definition of metaphor in the literature is a word or phrase that is used in a way deviant from its ordinary meaning (Lakoff and Johnson 1980: 14; Schmitt 2005: 371; Charteris-Black 2018: 204). In the classical definition provided by Aristotle, this word or phrase should also be a "poetic linguistic expression"(Lakoff 1993: 202).

Following Lakoff and Johnson (1980: 2018) and Semino (2021: 50), I describe a metaphor as understanding one phenomenon in terms of another, whereby there are clear correspondences between these two phenomena. This definition also includes analogies, "comparisons that share primarily relational information" (Gentner et al. 2001: 200) that the reader will occasionally encounter in this chapter (e.g., 'life is a journey'). Also crucial for defining a metaphor is the division between a target domain and a source domain (Lakoff and Johnson 1980: 266). The target domain is relatively abstract and complex (e.g., death and life), while the source domain is often simpler and more concrete (e.g., animals and battles) (Wernecke et al. 2017: 180; Semino 2021: 51). Death and life are hard to conceptualize and do not have concrete referents, whereas animals and humans are easier to conceptualize and do have concrete referents (e.g., the word 'battle' will provoke an image of a battlefield in the brain, whereas this is harder for 'life'). With the help of a concept that the general audience is familiar with (the source domain), the complex and unknown information in the target domain becomes more accessible (Edelman 1971: 257, cited in Van Uden 2021: 5). Metaphors are based on mappings (or systematic correspondences) from the source domain to the target domain (Charteris-Black 2018: 204; Lakoff and Johnson 1980: 246-247). In biology, for example, the structure of DNA can be a relatively abstract and complex science. An explanation of the structure of DNA to a non-expert audience benefits from the metaphor of building bricks (Martins and Ogborn 1997: 52, 54, 58). Building bricks are easier to conceptualize, for example when thinking of houses. As a result, the notion of DNA consisting of small pieces becomes more transparent. The correspondences between both phenomena are, for example, their consistency of small pieces and the combining of these pieces. We map the building bricks (the source domain) onto the structure of DNA (the source domain).

A metaphor often has multiple linguistic realizations: expressions, phrases, or sentences through which the mappings are expressed in everyday life. For example, the mapping of 'journey' onto 'life' in the metaphor 'life is a journey' has a linguistic realization "I need some direction in my life" (Semino 2021: 51). As will be explained in the methodology (Chapter 3), different linguistic realizations have been integrated into the present research.

Metaphors are helpful in COVID-19 communication since the target domains are often abstract and complex (e.g., contagiousness, immunity by vaccination, and reinfection), but when the broader audience understands these target domains, their measure compliance is facilitated (Section 2.1). Therefore, an accessible explanation is needed with the help of a phenomenon familiar to non-experts.

2.2.2. Advantages and drawbacks of metaphor use

Scientists and science communicators frequently use metaphors to present complex topics to a non-expert audience (Roberts and Kreuz 1994: 161-162). The primary reason is that metaphors make the audience think in terms of phenomena that they are familiar with, contrary to the scientific topic in question (Kampourakis 2016: 947). As explained in Section 2.1, the use of familiar terminology is one of the criteria for science communication. Because of the use of familiar terms, metaphors increase understandability (Arroliga et al. 2002; Casarett et al. 2010; Jansen et al. 2009; Kendall-Taylor et al. 2013) and help avoid jargon (Bucchi 1998: 26). With the help of metaphors, scientists can also increase the memorability of their statements (Veit and Ney 2021: 5). Within the COVID-19 pandemic, that could be a helpful advantage because that way, the non-expert audience more easily remembers the provided virological information that facilitates their measure compliance (Thanh and Le Thanh 2022).

Despite these demonstrable advantages, using metaphors for science communication and education also has drawbacks. A major point of criticism is called pathetic fallacy: when using metaphors, people quickly tend to attribute human characteristics to entities that do not have human

consciousness. For example, biologist Richard Dawkins metaphorically described genes as being 'selfish.' Once that metaphor is widespread enough, the false perception can arise among non-biologists that genes can think and behave selfishly as humans can. For that reason, metaphors can be misleading (Ball 2011: 2). Ball (2011: 2) thus wants to prevent science communicators from being too focused on explaining phenomena through metaphors.

Another drawback of metaphors concerns the so-called framing effect. A source domain can never cover all aspects of the target domain. Instead, it puts reality in a frame, emphasizing some elements of the target domain (Entman 1993: 52) and hiding others (Kampourakis 2016: 947). The framing effect can cause inadequate mapping of the source domain onto the target domain, resulting in scientifically incorrect conceptions. Describing plant nutrition metaphorically as eating, for example, gives rise to the inadequate notion that plants receive their 'food' directly rather than by photosynthesis (Leach et al. 1996). Moreover, some researchers argue that viewing energy as a substance is appropriate for understanding the concept of energy (e.g., Brewe 2011; Dreyfus et al. 2015; Scherr et al. 2012), while others argue this metaphor is inappropriate since it leads to misconceptions (Tracy 2014, cited in Wernecke et al. 2017: 184; Chi 2005). Nevertheless, that does not mean metaphors should be avoided. According to Semino (2021: 52), "[t]he issue is not whether or not they should be used, but how they should be used." Moreover, it is not the metaphor itself that is appropriate or inappropriate, but it mostly depends on the context, purpose, and audience (Semino et al. 2018: 641).

2.2.3. Metaphors can affect attitude

Metaphors not only increase the comprehensibility of a message: they also affect the hearer's attitude towards a message (Brugman et al. 2017: 192). The primary reason for this is the framing effect (Section 2.2.2). Since each source domain emphasizes certain aspects of the target domain and hides others, metaphors never represent reality neutrally (Lakoff and Johnson 1980: 11). For example, describing a sickness metaphorically as a battle highlights the necessity to fight against it and hides the possibility of just learning to live with it (Semino et al. 2017: 63). As a result, metaphors can be strategically selected to influence the hearer's perception of a phenomenon. Thus, metaphors fulfill not one but two functions of science communication (Section 2.1): increasing understanding of science and attitude formation. According to Flusberg et al. (2018: 4) and Semino (2021: 54), a metaphor effectively influences attitude if the source domain is image-rich and well-known to the audience. Furthermore, the source domain should be mapped to the target domain in a clear, precise, and culturally appropriate way. Flusberg et al. (2018: 4) further speak of the need for a "salient knowledge structure," and Semino (2021: 54) mentions that the target domain should be abstract and complex and should not involve solid preexisting beliefs of the audience.

It is beneficial to research the effect of metaphors on attitude within the context of the COVID-19 pandemic. Research within this field can show how metaphorical frames potentially influence citizens' understanding of and attitude towards, amongst others, contagiousness and the dangers of the virus (Van Gorp 2007: 13-14). According to Semino (2021: 56), "a well-informed and context-sensitive approach to metaphor selection can be an important part of public health messaging." Given the novelty of the COVID-19 pandemic, ample research has already been done (some pointed out below). Nevertheless, it is essential to keep research within the context of the pandemic ongoing as new developments (e.g., new variants or measures, or an absence of a direct threat of the virus) change the context within which the role of metaphors is investigated, which hypothetically leads to different results. The present research is one of those attempts to keep metaphor research within the COVID-19 pandemic ongoing.

2.2.4. The alternative source strategy approach: Common in the literature

The present research adopts a method commonly used within research investigating the effect of metaphor on attitude in domains inside and outside the pandemic. According to Scherer et al. (2015: 38), this method is called the alternative source strategy approach, although this terminology does not seem to be widespread in the literature. I will still stick to this name in the present thesis to

facilitate readability. The exact details of the method differ per study. A critical analysis of the existing studies points to some interesting angles within the alternative source strategy approach that will also be adopted in the present study to contribute to our knowledge of the effect of metaphor on attitude. To increase understandability, I will first roughly summarize the alternative source strategy approach. Firstly, participants are randomly exposed to one of the independent variables. These independent variables are the metaphors. The metaphors are shown in a running text that is always similar except for the used metaphor. Based on this text, every participant receives the same questions that measure the dependent variables. Finally, it is statistically measured whether the answers of the participants in condition A differed significantly from those given by participants in condition B. If yes, there is a metaphor effect on the dependent variable. If not, this metaphor effect cannot (yet) be established.

The first adopted angle taken from the literature is the use of so-called mediator questions (briefly 'mediators'). Mediators verify if the metaphor affects people's perceptions and emotions that underlie their responses to questions further asked in the study (Scherer et al. 2015: 38). Scherer et al. (2015) incorporated mediator questions to investigate if the metaphor used for the flu influenced people's willingness to get vaccinated against the flu. After exposure to the condition texts, participants had to indicate both their vaccination intention and their attitude toward the flu by mediators such as comparative risk (their estimated chance of getting the flu compared to an average person) and severity (the estimated degree to which a flu infection would impact their lives) (Scherer et al. 2015: 39). Using such mediators turned out to be relevant as Scherer et al. (2015: 44) found an effect of the metaphor on vaccination intention but not on the mediators. So, it was not entirely clear why the metaphor increased people's willingness to vaccinate. Scherer et al. (2015: 44) thus proposed to select the metaphors more accurately by using metaphors aimed at specific mediators. With an eye on their recommendation, it has been decided for the present research to mainly focus on one of their adopted mediators, namely personal control (Section 2.2.5).

Another angle incorporated in the present study based on the literature is determining whether the metaphor has an overt (i.e., recognized as influential) or a covert (i.e., not recognized as influential) effect. For example, Thibodeau and Boroditsky (2011) investigated the influence of the metaphor used for crime on attitudes towards crime. After exposure to the condition, participants had to indicate their attitude towards crime and underline the part decisive for their answer. Thibodeau and Boroditsky (2011: 3-9) found that attitudes towards crime depended on metaphor use and that the metaphor effect was covert: almost all participants underlined not the metaphor but the statistics and facts, which were the same for both versions. The fact that metaphors shape attitude unbeknownst to us reinforces the power of metaphors (Thibodeau and Boroditsky 2011: 3). In the context of COVID-19, such a result can be helpful: with strategic metaphor selection, people can be directed towards better measure compliance without realizing it is the metaphor that shapes their compliance. Therefore, it is worth exploring whether the (potential) metaphor effect is overt or covert in the present research. Thibodeau and Boroditsky (2011) have shown that, for this purpose, determining the motivations of the participants' answers has an added value, which has been processed in the present research in the form of open questions asking the participants to report what brought them to their provided answers: the metaphor used in the text or the (equal) factual information (see Section 3.1.2).

Thirdly, the existing studies adopting the alternative source strategy approach differ significantly concerning their perspectives: it is either possible to investigate the effect of several different metaphors on attitude (e.g., Thibodeau and Boroditsky 2011), to investigate the effect of a metaphor on attitude compared to the absence of a metaphor (e.g., Hauser and Schwarz 2020, Schnepf and Christmann 2022) or to combine these (e.g., Scherer et al. 2015, Flusberg et al. 2017). Interestingly, the results differ. Whereas Scherer et al. (2015: 42-43) found no difference in influence between the metaphors among themselves, Thibodeau and Boroditsky (2011), Hauser and Schwarz (2020), Flusberg et al. (2017), and Schnepf and Christmann (2022) revealed that different metaphors bring about different attitudes (e.g., a stronger effect of the war metaphor than the race metaphor). Of course, it has to be considered that this could be due to the difference between the adopted source

and target domains, but it shows it is necessary to adopt two angles within the present research: firstly, whether the use vs absence of metaphors brings about different attitudes; and secondly, whether there is a difference in attitude between the investigated metaphors. These angles have been adopted in the present study by comparing three conditions: a wildfire metaphor, a path metaphor, and a control condition without a metaphor (Section 3.1.1).

2.2.5. Personal control

As explained in Section 2.2.4, Scherer et al. (2015) adopted mediators in their research to determine if the metaphor affects people's perceptions and emotions underlying the responses to questions further asked in the study. One of their adopted mediators was personal control, which previous studies have shown to be an interesting mediator to investigate. Personal control received focus once by Hauser and Schwarz (2020). They researched if using a battle metaphor for cancer influenced patients' perceived amount of control over this disease. In summary, Hauser and Schwarz (2020: 1702) found that using a battle metaphor for cancer negatively affects people's feelings of control over the situation compared to a journey metaphor or a text without a metaphor. Thus, this research shows that metaphors can affect feelings of perceived personal control. The present study aims to compare these results to the use of a wildfire metaphor instead of a war metaphor and in the context of COVID-19 instead of cancer.

Schnepf and Christmann (2022) investigated if the use of a war metaphor more effectively conveys a message during the COVID-19 pandemic than the absence of metaphors. One of their most important findings was that people confronted with no metaphor were more scared of the spread of the virus and supported the restrictive measures more than those confronted with the war metaphor. Interestingly, at first sight, the concept of war raises more feelings of fear than the concept of struggle, which the results thus contradict. A problem with the war metaphor, as they suggested, might be that it makes people shift the responsibility of solving this problem to the government (Schnepf and Christmann 2022: 122). This shift of responsibility relates to perceived individual responsibility and personal control of the pandemic, which thus appears to be a very interesting research perspective for the present study. Since both these studies already incorporated a battle/war metaphor, different metaphors were chosen in the present study.

2.2.6. The debate about the war metaphor

War metaphors, that came across in Section 2.2.5, are omnipresent in our language use. Karlberg and Buell (2005: 27) showed that a war metaphor occurred in about 17% of Time magazine articles between 1981 and 2000. However, the question is what exact effect the war metaphor brings about. On the one hand, Flusberg et al. (2017) demonstrated that describing climate change with a war metaphor increases people's awareness of the urgency of this problem compared to a race metaphor. On the other hand, Atanasova and Koteyko (2015) emphasize that using a war metaphor for climate change can reduce the feeling of urgency amongst people.

Using the war metaphor as a source domain for diseases has been criticized by researchers. It is said to be stigmatizing, increasing patient suffering, and unnecessarily creating fear amongst non-patients (Sontag 1989). Research by Hendricks et al. (2018) demonstrated that the use of war metaphors for cancer (as opposed to journey metaphors) could augment the feelings of guilt by patients when they do not recover. After all, other than a journey, they can lose a battle. As described in Section 2.2.5, results from Hauser and Schwarz (2020) support this: framing cancer as a battle (as opposed to a journey) reduced feelings of personal control amongst cancer patients.

Semino (2021) addresses the war metaphor in the context of the COVID-19 pandemic. According to her, the frequent use of war metaphors within this context is easy to explain. War metaphors are commonly used within the general context of difficulties since invaders and military powers are extreme opponents, and war is an extreme way of beating them. War metaphors increase the feeling amongst people that the problem in question is severe and urgent, and with that, increase their preparedness to change their behavior to solve the problem. For that reason, war metaphors were in

place at the beginning of the pandemic: they communicated the dangers of COVID-19 and justified why we had to change our way of living so radically (Semino 2021: 51). Schnepf and Christmann (2022: 109) also point to an essential difference between war metaphors within the context of the COVID-19 pandemic and other diseases. According to them, the goal of language use during the pandemic is different from, for example, cancer: whereas cancer patients mostly need to be comforted, increasing fear among citizens might be a good way to convince them to change their behavior during the pandemic. Although these researchers thus support each other in this respect, Semino (2021: 51) mentions that war metaphors were helpful tools to create a feeling of collective sacrifice and responsibility, whereas research by Schnepf and Christmann (2022) demonstrated that the war metaphor shifts citizens' feelings of responsibility to the government. So, they differ in the amount of individual responsibility they ascribe to the war metaphor.

These diverging results show that the results of research about the effect of metaphors on attitude do not always have to coincide. Therefore, it is necessary to investigate whether contradictory results can be found for metaphors other than the war metaphor. Furthermore, since Schnepf and Christmann (2022: 109) mention that a pandemic requires language use different from other contexts, the effect of metaphor on attitude might also differ within the pandemic. By carrying out such research, it can further be investigated which, how, and when metaphors can be most effectively employed to increase their persuasive effect. The present research contributes to this by investigating the wildfire and path metaphor.

2.2.7. Metaphors of the current research: Wildfire and path

To investigate the effect of metaphor on perceived personal control of the further course of the pandemic, the two metaphors in the present study are the wildfire and path metaphor. In doing so, I follow Schnepf and Christmann (2022), who proposed to compare these specific metaphors in a COVID-19 context, and Semino (2021: 53-54), who states that a fire metaphor is particularly effective in communicating about the pandemic. The wildfire metaphor is hypothesized to imply a low amount of personal control within the context of the pandemic. Describing the course of the pandemic as the life cycle of fire explains that a low number of infections does not mean an absence of danger: a fire can always flare up (Semino 2021: 55). A fire flaring up is usually out of the individual's control. Semino (2021: 55) further mentions that a wildfire metaphor can explain that contagion sometimes happens unintentionally (e.g., when someone is asymptomatic). For example, by portraying people as trees, you suggest they are consumed by the fire by which it spreads further. To my knowledge, Semino's (2021: 55) theories have not been empirically tested yet, to which the present research will contribute.

The path metaphor is hypothesized to imply a high amount of personal control. In context outside the COVID-19 pandemic, this high amount has been already demonstrated. The path (sometimes also called journey) metaphor has been called effective to emphasize that individuals can choose between different options. For example, regarding career options, Smith-Ruig (2008: 21) reports that "[t]he benefit of using the journey or path metaphor is that it helps to explain and illustrate the various career options open to individuals." In education, the path metaphor is effective and common in describing the different tracks students can choose (Watt and Paterson 2000, cited in Checkland et al. 2020: 406). Furthermore, the path metaphor highly correlates with navigation, which invokes the popular view of being "a conscious, goal directed activity in which someone is trying to reach a destination. Such a view of navigation is essentially individualistic, objectivist and cognitive" (Benyon 1998: 33). In sum, the path metaphor implies a lot of personal control since it emphasizes individuals' responsibility and control. Since it has been called effective in multiple different contexts, it is interesting to explore its effect within the COVID-19 pandemic as well.

3. Method

This chapter describes how the alternative source strategy approach, of which a general idea has already been provided in Section 2.2.4, was adopted in the present research. In Section 3.1, I describe the materials, in Section 3.2, I elaborate on the participants, Section 3.3 summarizes the procedure, and Section 3.4 explains how the data were statistically analyzed.

3.1. Materials

This section describes the materials. Section 3.1.1 explains how the independent variable Metaphor has been processed into three conditions texts. Section 3.1.2 describes the scenario questions (dependent variables), and in Section 3.1.3, the mediators (dependent variables) are illustrated.

3.1.1.The independent variable Metaphor and the condition texts

The independent variable Metaphor consists of three conditions: the wildfire metaphor, the path metaphor, and the control condition without a metaphor. In the present thesis, the people exposed to a wildfire metaphor are called Group Wildfire, the people exposed to the path metaphor are Group Path, and those exposed to no metaphor are Group Control. Participants were randomly assigned to one of these groups. In Group Wildfire, a new outbreak of COVID-19 (the target domain) was described as a wildfire flaring up (the source domain). In Group Path, a new outbreak of COVID-19 (the target domain) was described as a wrongly taken path (the source domain). Incorporating Group Control into the research was necessary for the reason explained in Section 2.2.4: research showed it is necessary to compare the effects of several different metaphors to the use vs absence of a metaphor.

Following the methodology of the alternative source strategy approach, I processed the two metaphors and the control condition into a text. The alternative source strategy approach can be applied using fictional texts (Flusberg et al. 2017; Schnepf and Christmann 2022; Thibodeau and Boroditsky 2011) or existing texts (Scherer et al. 2015; Hauser and Schwarz 2020). To ensure the trustworthiness of the information, I adopted an existing text that included quotes from the Dutch virologist Marion Koopmans (Reijman 2022). The gist of the chosen text was that, regardless of the current low number of hospital admittance rates and the high level of immunity, caution is still required since it is unsure how the pandemic will evolve. Based on the pilot study (Section 3.3), I simplified the text's language use and curtailed it to increase its readability. Three different versions of this text were created by integrating the independent variable (i.e., wildfire metaphor, path metaphor, or no metaphor) into the text. To ensure a solid integration (based on Thibodeau and Boroditsky's (2011: 8) recommendation), I implemented different linguistic realizations of the metaphor in different places (cf. Flusberg et al. 2017: 773-774). When talking about a wildfire, I used words within the lexical field of *bosbrand* 'wildfire' such as *blussen* 'extinguish' or *oplaaien* 'flare up.' When talking about a path, I used words like *afslag* 'exit,' *route aanpassen* 'adjust (a) route,' or *bewandelen* 'walk.' An example of a linguistic realization of the wildfire metaphor, as appeared in the text, is *we moeten onze blusmaterialen bij de hand houden* 'we have to keep our extinguishing materials at hand.' I placed such linguistic realizations in the title, the first and last sentence, and approximately halfway through the text. Furthermore, I occasionally changed citations into indirect speech to avoid illegitimately modifying Marion Koopman's utterances. The three final versions of the texts are found in Appendix A, with an English translation in Appendix B. The survey was carried out in Qualtrics (2022), where each participant was randomly presented with one of the three condition texts. To ensure the participants would read the text attentively (cf. Thibodeau and Boroditsky 2011; Van Uden 2021: 14), I mentioned that they could not return to the text once they navigated to the next page. Each of the three condition texts received a different number. Based on the number, Qualtrics (2022) divided the participants correctly over Group Wildfire, Group Path, and Group Control, allowing for statistical comparison between these groups (Section 4.4).

It is important to bear in mind that the use of the wildfire and path metaphor causes additional linguistic differences. For example, 'wildfire' is the agent of the action' flare up,' whereas 'wrong path'

cannot be an agent. It has, therefore, been made sure the wildfire and the path had the same syntactic position in the title of the text. Both are the subject in the sentences 'A wildfire can always flare up' (original: *een bosbrand kan altijd weer oplaaien*) and 'A wrong path is easily taken' (original: *een verkeerde afslag is snel genomen*). Linguistic differences could not, however, be entirely resolved. For example, the former sentence is written in the active voice, whereas the latter is in the passive voice. The passive voice could downgrade the perceived agency of the reader and, with that, the perceived personal control.

After the participants had read the assigned condition text, they were asked questions about their text comprehension. After all, a poor understanding of the message of the text might lower the hypothesized metaphor effect. The text comprehension was measured with the help of three questions. Firstly, I asked how easy the text was for the participant to read, and secondly, whether the information in the text was clear. These questions could be answered on a 7-point Likert scale. The final question was an open question asking the participant to briefly summarize the gist of the text.

3.1.2. Dependent variables: Scenario questions

This section describes the first set of dependent variables: the scenario questions. The scenario questions are the first set of variables that measure the perceived amount of personal control over the further course of the pandemic. They establish how the participants react to six situations in which there is a risk of COVID-19 transmission. If the hypothesis posed in Chapter 1 is true, and the path metaphor indeed implies a higher amount of personal control of the further course of the pandemic than the wildfire metaphor, it will become clear from the fact that the participants in Group Path report more cautious reactions to the scenarios than those in Group Wildfire. After all, the path metaphor reminds individuals of their contribution to risk transmission and the importance of their cautious behavior, which is not the case for the wildfire metaphor. Since the restrictive measures taken during the pandemic (e.g., wearing a face mask) helped decrease the chance of virus transmission, each scenario question relates to one of four (currently) inactive restrictive measures: avoiding crowded places, getting tested in case of COVID-19-related symptoms, wearing a face mask in public transport, and keeping 1.5 meters distance from others. Apart from a distinction of measures, a distinction has been made between the presence of strangers and friends/family. Strangers are perceived more as a potential COVID-19 vector than acquaintances (Bressan 2020), so the participants might be more cautious in scenarios involving strangers than in those involving acquaintances. Four scenario questions had a multiple-choice design, one was answerable on a Likert scale, and one was an open question. A multiple-choice design was the most appropriate for the majority of the questions since, firstly, too many open questions would be off-putting for the participants (Murray 1999: 150); secondly, multiple-choice options could be statistically compared more efficiently since they did not require prior coding (Payne 1951: 53); and other answer designs, such as a Likert scale, did not fit the character of these questions (Podesva and Sharma 2013: 33).

Each of the six scenario questions received a code name to facilitate the readability of the upcoming chapters. The code names are structured as [abbreviation]_[abbreviation]. The abbreviation preceding the underscore shows the restrictive measure on which the scenario was based. The abbreviation following the underscore shows whether the scenario is set in the presence of acquaintances or strangers. The following abbreviations were used:

- Crowd = avoiding crowded places;
- Dist = keeping 1.5 meters distance;
- Mask = wearing a face mask on public transport;
- Test = taking a test in case of symptoms;
- Acq = acquaintances;
- Str = strangers.

For example, Dist_Acq represents a scenario based on keeping 1.5 meters distance in the presence of acquaintances. Note that the presence of acquaintances and strangers can also be combined. In that case, the abbreviation following the underscore is AcqStr. Table 2 summarizes the scenario questions. The second column of the table indicates the code name of the question. The third column summarizes the scenario presented in the question. In the fourth column, the answer design is indicated (e.g., multiple-choice or open question), and the final column explains what aspect of the scenario the participant has personal control over. The exact questions in the way they appeared in the questionnaire are in Appendix C, with an English translation in Appendix D.

Table 2: Summary of the six scenario questions.

Question	Code name	Scenario	Answer design	Personal control
1	Crowd_AcqStr	A friend asks you for a drink in a crowded pub.	Multiple-choice (6 options)	Choosing what to do with the invitation (e.g., going, not going, proposing an alternative).
2	Crowd_Str	You want to buy a new jacket but encounter a very crowded shopping mall.	Multiple-choice (7 options)	Choosing what to do in the shopping mall (e.g., staying, staying with face mask, coming back later).
3	Dist_Acq	You must pick a chair during the classical part of a course you take with a friend.	Multiple-choice (6 options)	Choosing where to sit (e.g., directly next to your friend or with one chair in between).
4	Mask_Str	You have to travel during rush hour. What to do with your face mask?	Multiple-choice (8 options)	Choosing if you bring your face mask and wear it (e.g., not bringing it, bringing and maybe wearing it, wearing it for sure).
5	Dist_Acq	Family members involve you in an interesting conversation during a party.	Likert scale (1-7)	Choosing how far away to stand from family members.
6	Test_Acq	You wake up with a sore throat but have to go to work later that day.	Open question	Choosing what to do with that observation (e.g., doing nothing, taking a self-test, staying home, informing others).[2]

The scenarios were detailed enough so that they would leave little space for personal interpretations. I also paid attention to representing all thinkable answer options that people might want to choose. However, there was always the answer option 'other, namely…' (with text entry allowed) and 'not applicable' in case a participant could not imagine a situation. Each scenario question was followed by an open question asking what the participant based their answer on to determine whether the metaphor effect was overt or covert (inspired by Thibodeau and Boroditsky (2011: 3), as explained in Section 3.2.4). These open questions were optional to avoid the risk of participants quitting the survey from fatigue.

An important limitation of the present research is that the effect of metaphors on attitude might be low in the context of the restrictive COVID measures (Schnepf and Christmann 2022: 123). However, while the restrictive measures served as behavioral guidelines during Schnepf and Christmann's (2022) research, the present study was carried out in the absence of restrictive measures and, thus, behavioral guidelines. The hypothesis is that the effect of metaphors on attitude is more robust when these clear behavioral frames or guidelines have disappeared.

3.1.3. Dependent variables: Mediator questions

This section describes the second set of dependent variables: the mediator questions. The mediators measure the perceptions and emotions that underlie the participants' reactions to the scenarios (Section 3.1.2). The mediators not only measure people's perceived personal control over the pandemic but also their fear of it. I included fear since a feeling of low personal control drives fear of the COVID-19 pandemic (Usher 2020: 315). Another distinction among the mediators is between people's perceptions of the virus and their perceptions of the measures. Around November and December 2021, societal support for the latest restrictive measures had severely declined (Klapwijk

[2] The questionnaire was set-up when the testing recommendations were changing rapidly. With an eye on further change in the future, implying the obsolescence of certain multiple-choice answers, question 6 was designed as an open question.

2021), which could still be relevant by the time of the present research. Tracking only the threat of the virus would, therefore, lead to an incomplete picture. If the hypothesis posed in Chapter 1 is true, and the path metaphor indeed implies a higher amount of personal control of the further course of the pandemic than the wildfire metaphor, it will become clear from the fact that the participants in Group Path report a stronger feeling of personal control of the virus/measures than those in Group Wildfire since the path metaphor reminds individuals to their own role in and contribution to the further course of the pandemic, which is not the case for the wildfire metaphor. Furthermore, the participants in Group Path will then report less fear of the spread of the virus and tightening of the measures than those in Group Wildfire.

The following mediators were composed. All could be answered on a 7-point Likert scale. The higher the participant's answer on the Likert scale, the more the participant experienced the described emotion:

1) *Fear of virus*: does the participant fear the contagiousness of COVID-19?
2) *Fear of measures*: does the participant fear the measures will be tightened up later?
3) *Perceived control of virus*: does the participant think they can avoid being infected with COVID-19?
4) *Perceived control of measures*: does the participant think our society can influence whether the measures will be tightened up later or not?
5) *Reactions to conditions*: see below.

The fifth mediator, *reactions to conditions* (cf. mediator *affective reactions* from Scherer et al. (2015: 42)), verified if the participants in the current study experienced a high and low amount of personal control with the path and wildfire metaphor outside the COVID-19 context. It also measured how these perceptions could be compared to the perceived personal control over a virus circulating. *Reactions to conditions* was presented to the participant as a question phrased as: 'to what extent do you think you can change something about the following things by yourself?' (original variant: *in hoeverre denk je dat je zelf iets kunt veranderen aan de volgende dingen*?). Similar to the four other mediators, it was answerable on a 7-point Likert scale. The higher the participant's answer on the Likert scale, the more the participant agreed that they could control the situation. Apart from a wildfire flaring up, a wrongly taken path, and a virus circulating, this mediator included seven other situations to distract the participant: a traffic jam; tonight's dinner; the presidential elections in the US; a wall clock indicating the wrong time; global warming; the war in Ukraine; and a clogged toilet.

3.2. Participants

In this section, I elaborate on the participants of the research. The participants were recruited through Facebook, LinkedIn, and personal communication. In addition, I used the snowball sampling technique (Goodman 1961: 148) and SurveyCircle (2022) to include more participants outside my social network.

Participants were excluded from the analysis if they had not entirely completed the survey or disagreed with the consent presented when the questionnaire was opened (Section 4.3). Virologists or virology students were also excluded since the influence of word manipulations (in this case, metaphors) decreases when the participant has prior knowledge of the topic of the text (Klare et al. 1955). Participants denying the existence or severity of COVID-19 were excluded since their perception of COVID-19 and the restrictive measures might differ from the mainstream, resulting in outliers. Providing no or a poor summary of the gist of the condition text (Section 4.1.1) was another exclusion criterion regarding its implication of inattentive reading and, as a result, poor exposure to the metaphor. Finally, when correctly estimating the goal of the research was related to metaphors (asked for at the end of the questionnaire), the participant was left out of the analysis (cf. Van Uden 2021). After all, one might answer the questions differently when knowing the metaphors were relevant.

In total, 171 people participated, of which 132 finished the survey. Of the 132, another twenty have been removed (one for denying the existence of COVID-19, one for correctly guessing the research goal, and eighteen for providing a poor text summary). In total, thus, 57 participants were excluded,

and 112 remained. Their participation was unpaid. Simmons et al. (2011: 1363) state that reliable research should contain minimally twenty participants per condition. Since there were three conditions in the present research, the minimum number of participants was 60. This condition was met. Of the 112 participants, 47.3% identified as male, and 50.9% as female. 1.8% indicated 'other.' The age range spanned 17-78, with a mean age of 43.9 (SD 17.6). HBO education dominated (33.9%). After HBO, University (Master) occurred the most (21.4%), followed by MBO (17.9%). Primary school occurred the least (0.9%), followed by VWO / Gymnasium (1.8%). Since South Holland is my environment and the environment of my acquaintances, the sample of participants is mainly based in South Holland. Other represented provinces are North-Holland (8), Gelderland (5), Utrecht (5), North-Brabant (3), Overijssel (3), and Groningen (1). Strikingly, many of the excluded participants live in provinces different from South Holland, so their exclusion significantly reduced the representability of the research. One participant indicated they had a mother tongue different from Dutch (Slovak). However, they claimed their Dutch proficiency equals their Slovak (10/10 on the Likert scale), so that should not influence their answers (Section 4.3). Almost half of the participants (48.3%) indicated they are certain or think they have already been infected with COVID-19. 28.5% know for sure or think they have not, and 22.3% do not know. Of the 48.3% who reported having been infected with COVID-19, more than half (51.9%) indicated it did not change their behavior. 25.9% indicated they have become a bit or much less cautious, and less (20.3%) indicated they have become a bit or much more cautious. On average, participants evaluated their behavior 7.7/10, in which 1 represents 'extremely incautious' and 10 represents 'extremely cautious.' One participant indicated 1/10, and twelve (10.7%) graded their behavior 10/10. With 36 participants (32.1%), 8/10 occurs the most.

3.3. Procedure

This section describes the procedure of the survey. It was presented to the participant in Qualtrics (2022) in the following order: consent, background questions, condition texts, comprehensibility questions, scenario questions, mediator questions, and closing part. For the complete survey, see Appendix C (English translation in appendix D). Before the publication of the questionnaire, I tested the whole process with the help of some participants in my environment (e.g., family or classmates). They helped me find inconsistencies and complex parts. It must be noted that the participants filled in the questionnaire independently without supervision, so they might have been distracted while going through the questionnaire. Leaving time between reading the condition text and answering the scenario questions, for example, might reduce the metaphor effect.

To justify the ethical aspects of the procedure, I will explain the free, prior, and informed consent and the collected background information. When clicking the link to the questionnaire, the free, prior, and informed consent was first presented to the participant. In the consent, the participant received some information on the survey topic and their task during the questionnaire. The absence of a right or wrong answer was emphasized, and the need for honest answers was explained. Concerning data collection, I indicated that the data only served for the researcher's Master thesis and could not be traced back to the participant as a person. Furthermore, I mentioned that participation was voluntary, and the participants always had the right to quit the survey, after which their data would not be used. My e-mail address was included in case of further questions.

The following background information was collected. Firstly, the survey asked for the participant's gender, age, educational level, and general cautiousness towards COVID-19. The survey further asked if the participant had been through a COVID-19 infection and if their behavior had changed afterwards. These variables were mapped since they could influence COVID-19-related behavior such as measure compliance and, thus, potentially act as cofounding factors in measuring the effect of the metaphor. For example, lower measure compliance has been found amongst males (Nivette et al. 2021: 7; Solomou and Constantinidou 2020: 16), highly educated individuals (Nivette et al. 2021: 7), people under the age of 30 (Solomou and Constantinidou 2020: 16), and those with a low cautionary behavior (Lo Presti et al. 2022: 1). Furthermore, Santana et al. (2022: 12) proposed that "if someone was infected and had only mild symptoms, they could have perceived the disease as posing less risk, subsequently reducing their protective behavior." Age, gender, educational level, general

cautiousness, and prior infection would be included as covariates in the analysis if a significant metaphor effect was found (Field 2005: 784). The assumption, that should be statistically confirmed with the data, was that by randomly ascribing participants to one of the three conditions, the influence of the covariates was minimalized since every group contained roughly the same aggregate of people. Mapping participants' current place of living was also necessary since it is suggested that urban density correlates negatively with compliance with restrictive measures (Carozzi et al. 2020: 4). Another background question concerned the participant's L1 and Dutch L2 proficiency. A poor Dutch L2 proficiency or a native language highly different from Dutch might result in a poor understanding of the metaphors used in the texts, reducing the metaphor effect.

3.4. Analysis

Analyzing the data entails establishing if the independent variable the participant was exposed to significantly influenced the answers the participant gave to the scenario and mediator questions (the dependent variables). This section describes how this analysis was carried out. Section 4.4.1 explains how the effect of the metaphors on the participants' answers to the scenario questions was calculated. Section 4.4.2 explains this procedure for the effect on the mediator questions.

3.4.1. Determining the effect of the metaphor on the scenario questions

The effect of the independent variable Metaphor on the dependent variables (scenario questions) was calculated with SPSS (IBM Corp. 2021). The exact test differed depending on the scenario question. The non-parametric chi-square test was appropriate for the effect of Metaphor on Crowd_AcqStr, Crowd_Str, Dist_AcqStr, Mask_Str, and Test_Acq. This test is designed for datasets with the following characteristics (Franke et al. 2012: 449-450):

- The independent variable is categorical;
- The dependent variable is categorical;
- Two or more groups are being compared.

In the current dataset, the independent categorical variable is the metaphor the participant was exposed to (wildfire, path, or no metaphor). The dependent variables Crowd_AcqStr, Crowd_Str, Dist_AcqStr, Mask_Str, and Test_Acq are categorical: the answer options to these questions are discrete groups. Finally, three groups are being compared: participants in Group Wildfire, Group Path, and Group Control.

Two assumptions should be met for the chi-square test. Firstly, it cannot be applied to a repeated measures design. Because each participant was only exposed to one condition, this assumption was met. Secondly, the sample size in each cell should be at least five. In case the second assumption was not met, Fisher's exact test was used which is an alternative to the chi-square test applicable to smaller sample sizes (Field 2005: 690-692).

The scenario question Test_Acq required codification before its answers could be regarded as discrete groups. I read the provided answers individually and searched for similarities between them. This process resulted in six ways to react to the scenario, displayed in Table 3.

Table 3: The answer options of Test_Acq after codification.

Answer option	
a)	Going to work without (immediately) taking a test, without taking an additional measure to ensure the safety of others (e.g., keeping a face mask on, keeping distance, discussing the situation with colleagues).
b)	Going to work without (immediately) taking a test but taking an additional measure to ensure the safety of others.
c)	Going to work after a negative test result without taking an additional measure to ensure the safety of others.
d)	Going to work after a negative test result, taking an additional measure to ensure the safety of others.
e)	Staying home.
f)	Staying home and taking a test.

If a participant reported several answer options (indicated by *of* 'or'), I treated the answer as two separate ones. In such cases, the participants generally deliberated between staying home (option e)) and a more diverging scope of other options. For example, a participant reported: 'Either going to work but keeping as much distance as possible or calling in sick if possible' (original: *Of wel naar je werk gaan maar zo veel mogelijk afstand houden van mensen of je zelf ziek melden als dat mogelijk is*). The participant distinguishes two options: option b) and e). In a separate dataset, this participant was included once with option b) and once with option e). It should be emphasized that this method was chosen for calculation purposes, and the number of participants (falsely) increased slightly with this method. I also realize that codifying and grouping text-box answers increases the chance of overgeneralizing. Possibly, some participants would do a self-test at home while others would have themselves professionally tested. However, not all provided answers allowed for a distinction between these two (e.g., the simple answer *testen* 'testing' can imply both).

The one-way ANOVA test was appropriate for determining the effect of Metaphor on Dist_Acq. This test is designed for datasets with the following characteristics (McCrum-Gardner 2008: 38-41):

- The independent variable is categorical;
- The dependent variable is continuous;
- More than two groups are being compared.

The difference between Dist_Acq and the other scenarios lies within the second characteristic: since Dist_Acq was measured on a Likert scale, this variable is continuous instead of categorical. The one-way ANOVA test also required a Levene's test for homogeneity of variance (Field 2005: 382) and a Shapiro-Wilk test for normality (Field 2005: 144). A violation of the homogeneity of variance or the assumption of normality would imply that the non-parametric alternative of ANOVA had to be used, which was the Kruskal-Wallis H test (Field 2005: 559).

If any significant differences were revealed, post-hoc tests were needed to specify in which group the difference occurred. A suitable post-hoc test after a one-way ANOVA test was Gabriel's test since the sample sizes of Group Wildfire, Group Path, and Group Control were unequal due to the exclusion of participants (Section 3.2) (Field 2005: 375). No specific post-hoc tests could be performed with the non-parametric Kruskal-Wallis H test, but as a replacement, multiple separate Mann-Whitney U tests could be conducted to compare Group Wildfire with Group Path, Group Wildfire with Group Control, and Group Path with Group Control (Shahabadi and Uplane 2015: 133). After a chi-square/Fisher's exact test, a post-hoc procedure could be performed with the help of adjusted standardized residuals, as described by Beasley and Schumacker (1995).

3.4.2. Determining the effect of the metaphor on the mediator questions

Since the second set of dependent variables, the mediator questions, were scale variables (recall from Section 3.1.3 that they were measured on a Likert scale), a comparison of means could be performed with a one-way ANOVA test (Section 3.4.1). In this case, the independent categorical variable is the metaphor the participant was exposed to (wildfire, path, or no metaphor). The dependent continuous variables are the mediators *fear of virus*, *fear of measures, perceived control of virus* and *perceived control of measures*. Finally, three groups are being compared: participants in Group Wildfire, Group Path, and Group Control.

An exception is the mediator *reactions to conditions*. As described in Section 3.1.3, this mediator tests if people perceive more personal control over a (wrongly taken) path than over a wildfire (flaring up), as compared to people's perceived personal control over a virus (circulating). *Reactions to conditions* was designed in this research to evaluate people's perception in general, so the *reactions to conditions* scores were not calculated per group separately. Instead, a one-way ANOVA tested if there was a significant influence of an independent categorical variable which we can call Situation (either a wildfire flaring up, a wrongly taken path, or a virus circulating) on the dependent continuous variable Control (the mean score on the 7-point Likert scale per situation).

4. Results

This chapter reports the results of the research. Table 4 until Table 8 show the frequencies of the chosen answers to the scenario questions Crowd_AcqStr, Crowd_Str, Dist_AcqStr, Mask_Str, and Test_Acq, divided according to metaphor group. For example, for Crowd_AcqStr, eleven participants in Group Wildfire chose the option 'I propose to search for a less crowded place or moment.' The responses in the categories 'other, namely…' and 'not applicable' were not included in these calculations. Moreover, recall that for Test_Acq, some participants were included twice (Section 3.4.1). Therefore, the sample sizes differ per question and metaphor group. In each table, the bottom row shows the number of included answers per metaphor group. In total, 37 participants were in Group Wildfire, 40 were in Group Path, and 35 were in Group Control. Note that in each table, there are cells with a frequency of less than five. For that reason, as explained in Section 3.4.1, Fisher's exact test had to be conducted to determine the effect of Metaphor on Crowd_AcqStr, Crowd_Str, Dist_AcqStr, Mask_Str, and Test_Acq.

Table 9 shows the mean values that the participants in Group Wildfire, Group Path, and Group Control provided to question Dist_Acq (SD between brackets). Remember, the question was answered on a 7-point Likert scale. The higher the score, the more (estimated) distance was kept.

Table 4: Crosstab Crowd_AcqStr.

Answer option	**Frequency**		
	Group Wildfire	**Group Path**	**Group Control**
Sounds like fun! I tell him I will come, and I am looking forward to it.	12	16	13
I will go, but I would feel a little uncomfortable there because of the crowdedness.	8	12	13
I propose to search for a less crowded place or moment.	11	6	8
I tell him I cannot come at all.	3	4	0
Total	N = 34	N = 38	N = 34

Table 5: Crosstab Crowd_Str.

Answer option	**Frequency**		
	Group Wildfire	**Group Path**	**Group Control**
I just stay in the shopping mall.	11	21	11
I stay in the shopping mall, but I feel uncomfortable. I decide to give it a chance, but I intend to go home if I keep feeling uncomfortable.	11	9	11
I stay in the shopping mall. For these situations, I have my face mask/disinfection gel with me!	6	3	6
I immediately leave the shopping mall. Maybe I can try it again in a more tranquil moment.	8	4	4
I immediately leave the shopping mall and decide to buy the coat online anyway.	1	1	3
Total	N = 37	N = 38	N = 35

Table 6: Crosstab Dist_AcqStr.

Answer option	**Frequency**		
	Group Wildfire	**Group Path**	**Group Control**
I choose the chair directly next to my friend's.	22	27	19
I ask my friend what they would prefer.	5	3	3
I choose to sit close to my friend with one chair between mine and theirs.	5	9	12
I choose the spot in the instruction room where as few people as possible are seated, even if it means that I will be further away from my friend.	4	1	0
Total	N = 36	N = 40	N = 34

Table 7: Crosstab Mask_Str.

Answer option	**Frequency**		
	Group Wildfire	**Group Path**	**Group Control**
I never wore a face mask on public transport.	1	1	0
I do not have my face mask with me.	8	11	5
I have my face mask with me, but I do not know if I will truly wear it.	7	6	8
I have my face mask with me so that I can wear it if I find it too crowded.	9	11	17
I keep my face mask on.	6	4	3
I make sure I avoid rush hour anyway (for example by leaving earlier).	6	3	1
Total	N = 37	N = 36	N = 34

Table 8: Crosstab Test_Acq.

Answer option	**Frequency**		
	Group Wildfire	**Group Path**	**Group Control**
Going to work without (immediately) taking a test, without taking an additional measure to ensure the safety of others (e.g., keeping a face mask on, keeping distance, discussing the situation with colleagues).	1	6	2
Going to work without (immediately) taking a test but taking an additional measure to ensure the safety of others.	4	5	0
Going to work after a negative test result, without taking an additional measure to ensure the safety of others.	19	19	14
Going to work after a negative test result, taking an additional measure to ensure the safety of others.	7	5	8
Staying home.	5	2	6
Staying home and taking a test.	1	4	5
Total	N = 37	N = 41	N = 35

Table 9: Mean and SD values Dist_Acq.

Dist_Acq	Group Wildfire	Group Path	Group Control
	3.43 (1.79) N = 37	3.75 (1.86) N = 40	3.46 (1.87) N = 35

Table 10 shows the mean and SD values of the mediator questions, divided per metaphor group. The first column displays the mediator question. The second, third, and fourth columns show the mean answers to each mediator question of the participants in Group Wildfire, Group Path, and Group Control, respectively (SD between brackets). The higher the mean value, the higher the feeling of the specific emotion. For example, the participants in Group Wildfire experienced more *fear of virus* ($\bar{x}$ = 4.14) than the participants in Group Path ($\bar{x}$ = 3.68).

Table 10: Mean and SD values of the mediator questions per group.

	Wildfire (N = 37)	Path (N = 40)	Control (no metaphor) (N = 35)
Fear of virus	4.14 (1.69)	3.68 (1.98)	4.31 (1.59)
Fear of measures	4.14 (1.64)	3.80 (1.52)	4.63 (1.85)
Perceived control of virus	4.78 (1.96)	4.22 (2.06)	4.54 (1.69)
Perceived control of measures	5.16 (1.54)	4.55 (2.00)	4.71 (1.76)

Before the results shown in the above tables could be statistically compared, it was first determined if the participants in this study indeed perceived a wrongly taken path as a situation involving a high amount of personal control and a wildfire flaring up as a situation involving a low amount of personal control. The following results came forward for the mediator *reactions to conditions*. The higher the mean score (range 1-7), the higher the estimated amount of personal control over the situation.

Table 11: Mean scores of the mediator reactions to conditions.

Situation	You are taking a wrong path	A wildfire is flaring up	There is a virus circulating
Mean score	$\bar{x}$ = 5.98	$\bar{x}$ = 2.13	$\bar{x}$ = 3.14

From Table 11, it can be deduced that, on average, participants experienced most personal control over taking a wrong path, followed by a circulating virus and a wildfire flaring up. As explained in Section 3.4.2, a one-way ANOVA could verify if this difference was significant. However, Levene's test revealed no homogeneity of variance, violating this ANOVA assumption. Therefore, the Kruskal-Wallis H test was performed instead. The Kruskal-Wallis H test revealed that the difference was significant ($H(2) = 165.483$, $p < 0.001$). A follow-up Mann-Whitney U test as a post-hoc test (Section 3.4.1) revealed that the perceived control over a wrongly taken path (Mdn = 7) is significantly higher than the perceived control over a fire flaring up (Mdn = 1), $U = 860.5$, $Z = -11.444$, $p < 0.001$. It also revealed that the perceived control over a virus circulating (Mdn = 3) is significantly higher than the perceived control over a fire flaring up (Mdn = 1), $U = 4020.5$, $Z = -4.802$, $p < 0.001$. Finally, it revealed that the perceived control over a wrongly taken path (Mdn = 7) is significantly higher than the perceived control over a virus circulating (Mdn = 3), $U = 1487$, $Z = -10.056$, $p < 0.001$. So, the participants in this sample significantly experience the most personal control over a wrongly taken path and least personal control over a wildfire flaring up, with a circulating virus in between the two. Thus, it appeared there was one metaphor (path) with more perceived personal control than the target domain (virus) and one (wildfire) with less. If the high and low amount of personal control that both metaphors imply also apply to (the further course of) the COVID-19 pandemic, it will become clear from the following differences between the groups. Firstly, the participants in Group Path will report more cautious

reactions (the closer to the bottom of the list of answer options in Table 4-Table 8, the more cautious the reaction) to the scenarios than those in Group Wildfire. Secondly, the participants in Group Path will report a stronger feeling of personal control (i.e., higher mean scores) of the spread of COVID-19 and the tightening of the measures than those in Group Wildfire. Furthermore, the participants in Group Path will report less fear of the spread of the virus and tightening of the measures (i.e., lower mean scores) than those in Group Wildfire. The scores of Group Control will then lie in between the two.

4.1. Influence of the metaphor

In sum, no effect has been found of the independent variable Metaphor on the scenario questions. Fisher's exact test revealed there was no statistically significant effect of Metaphor on the dependent variables Crowd_AcqStr ($p = 0.304$), Crowd_Str ($p = 0.335$), Dist_AcqStr ($p = 0.163$), Mask_Str ($p = 0.33$), or Test_Acq ($p = 0.103$). A one-way ANOVA showed no significant effect of Metaphor on Dist_Acq ($F(2, 109) = 0.356$, $p = 0.701 > 0.05$). So, the use of a wildfire metaphor, path metaphor, or the absence of a metaphor did not seem to influence participants' self-reported reactions to situations with a risk of virus transmission.

A note regarding scenario question Crowd_AcqStr is in place. Shortly, the question was what the participant would do if a friend invited them for a drink in a new and popular pub. In the follow-up open question asking the participants for the motivation of their answers, some participants indicated not liking crowded pubs in general. Here, participants were not always affected by COVID-19-related reasons (e.g., the chance of being infected) but also by personal preference. It turned out that seven out of ten participants to whom this applied still reported putting effort into the appointment, either by looking for a less crowded place or moment (six participants) or going to the pub, although uncomfortably (one participant).

When measuring the effect of the independent variable Metaphor on the mediators, there were no violations of homogeneity of variance or normality. A one-way ANOVA revealed there was no statistically significant effect of the independent variable Metaphor on the dependent variables *fear of virus* ($F(2, 109) = 1.324$, $p = 0.27 > 0.05$, $\eta p2 = 0.024$), *fear of measures* ($F(2, 109) = 2.318$, $p = 0.103 > 0.05$, $\eta p2 = 0.041$), *perceived control of virus* ($F(2, 109) = 0.826$, $p = 0.441 > 0.05$, $\eta p2 = 0.015$), or *perceived control of measures* ($F(2, 109) = 1.198$, $p = 0.306 > 0.05$, $\eta p2 = 0.022$). So, no effect has been found of Metaphor on the mediators as well. In conclusion, the use of a wildfire metaphor, path metaphor, or the absence of a metaphor did not seem to lead to changes in participants' perceptions and emotions or reactions to the scenarios.

4.2. Influence of other independent variables

Since there were no significant effects of the independent variable Metaphor on the dependent variables (neither the scenarios nor the mediators), the data were further analyzed for other factors (text comprehension and personal variables) potentially influencing the dependent variables.

4.2.1. Influence of text comprehension

Firstly, I tested whether attitudinal changes could arise by other independent variables related to the condition texts. Section 3.1.1 described that the questionnaire measured the participant's text comprehension. Does better text comprehension maybe bring about a more cautious attitude? Text comprehension was measured with two variables: the participants' perceived readability (of the text) and their perceived clarity (of the text). These were used as the independent variables Readability and Clarity. Again, the exact statistical test used to measure the influence of these variables differed per dependent variable. The multinomial logistic regression test was appropriate for measuring the effect of Readability and Clarity on Crowd_AcqStr, Crowd_Str, Dist_AcqStr, Mask_Str, and Test_Acq. A multinomial logistic regression suits datasets that have the following characteristics (Laerd Statistics 2018):

- The independent variable is continuous;
- The dependent variable is categorical;
- The dependent variable consists of more than two groups.

The independent continuous variable is the Likert scale score the participant provided to their perceived readability or clarity of the text. The dependent variables Crowd_AcqStr, Crowd_Str, Dist_AcqStr, Mask_Str, and Test_Acq are categorical: the answer options to these questions are discrete groups. Furthermore, the dependent variables always consist of more than two groups (Section 3.1.2). Reporting the multinomial logistic regression results requires elaborate tables (Field 2005: 294, 312), which are, to promote the readability of this chapter, in Appendix F. The running text only reports the significance values.

The simple linear regression test was appropriate to measure the effect of Readability and Clarity on Dist_Acq and the mediator questions. This test applies to datasets with the following characteristics (Aggarwal and Ranganathan 2017: 101):

- The independent variable is continuous;
- The dependent variable is continuous;

Since the dependent variable Dist_Acq and the mediator questions are continuous instead of categorical (their answers were given on a Likert scale, Section 3.1.2), the simple linear regression test was used instead of the multinomial logistic regression. The simple linear regression test required the assumption of linear relationships between the independent and dependent variables (Casson and Farmer 2014: 592). However, scatterplots revealed that the relationship between Readability/Clarity and Dist_Acq and the mediators was not (see Appendix E). Field (2005: 251) mentions that simple linear regression tests can still be used in case of a violation of an assumption, but the conclusions cannot be generalized outside the sample.

In sum, no evidence was found that the perceived readability and clarity of the text influenced the participant's self-reported reactions to the scenarios or perceptions and emotions asked for in the mediators. A multinomial logistic regression test revealed no significant influence of the independent variable Readability on Crowd_AcqStr ($p = 0.348 > 0.05$), Crowd_Str ($p = 0.431 > 0.05$), Dist_AcqStr ($p = 0.982 > 0.05$), Mask_Str ($p = 0.334 > 0.05$), or Test_Acq ($p = 0.364 > 0.05$) (Appendix F, set 1). A simple linear regression test showed no significant influence of Readability on Dist_Acq ($F(1, 110) = 0.276$, $p = 0.6 > 0.05$), *fear of virus* ($F(1, 110) = 0.613$, $p = 0.435 > 0.05$), *fear of measures* ($F(1, 110) = 1.091$, $p = 0.299 > 0.05$), *perceived control of virus* ($F(1, 110) = 0.039$, $p = 0.843 > 0.05$), or *perceived control of measures* ($F(1, 110) = 0.706$, $p = 0.403 > 0.05$). A multinomial logistic regression revealed no significant influence of Clarity on Crowd_AcqStr ($p = 0.265 > 0.05$), Crowd_Str ($p = 0.737 > 0.05$), Dist_AcqStr ($p = 0.643 > 0.05$), Mask_Str ($p = 0.778 < 0.05$), or Test_Acq ($p = 0.101 > 0.05$) (Appendix F, set 2). A simple linear regression test showed no significant influence of Clarity on Dist_Acq ($F(1, 58) = 0.695$, $p = 0.408 > 0.05$), *fear of virus* ($F(1, 58) = 0.992$, $p = 0.323 > 0.05$), *fear of measures* ($F(1, 58) = 0.014$, $p = 0.906 > 0.05$), *perceived control of virus* ($F(1, 58) = 0.017$, $p = 0.896 > 0.05$), or *perceived control of measures* ($F(1, 58) = 0.415$, $p = 0.522 > 0.05$).

4.2.2. Influence of personal variables

The analysis above showed no influence of the independent variables related to the condition text: neither the metaphors nor text comprehension. In response to these results, I measured if personal variables might have influenced attitude. Five independent variables were tested: the participants' Gender, Age, Education, general behavioral pattern (e.g., very strict or not so strict measure compliance, indicated as Behavior), and whether one had been infected with COVID-19 or not (indicated as Infected). A multinomial logistic regression test was appropriate to measure the effect of the independent variables Age and Behavior on the dependent variables Crowd_AcqStr, Crowd_Str, Dist_AcqStr, Mask_Str, and Test_Acq. As mentioned in Section 4.2.1, this test measured the correlation

of a continuous independent variable on a categorical outcome variable that consists of more than two groups.

Since the dependent variable Dist_Acq and the mediator questions are continuous instead of categorical dependent variables, the simple linear regression test was used instead of the multinomial regression test. However, scatterplots revealed that the relationship between Age and Behavior, on the one hand, and the dependent variables Dist_Acq and the mediators, on the other hand, is not linear (see Appendix E), so this assumption of the simple linear regression was violated (Casson and Farmer 2014: 592). The simple linear regression test was still used, but the conclusions could not be generalized outside the sample (Section 4.2.1).

A chi-square test was appropriate for analyzing the influence of Gender, Education, and Infected on the scenarios Crowd_AcqStr, Crowd_Str, Dist_AcqStr, Mask_Str, and Test_Acq since it tests the effect of a categorical independent variable (e.g., male/female, HBO/University, certainly not infected/maybe infected) on a categorical dependent variable (the discrete answer options to the scenario questions). Because of sample sizes smaller than five within Gender, Education, and Infected (e.g., two participants identified with 'other gender,' four finished VMBO, and one was infected with COVID-19 when filling in the questionnaire), Fisher's exact test had to be adopted instead of the chi-square test (Section 3.4.1).

A one-way ANOVA test was appropriate to test the effect of Gender, Education, and Infected on Dist_Acq and the mediators since the dependent variables are continuous (measured on a Likert scale). However, the Shapiro-Wilk test for normality (Section 3.4.1) indicated the data were abnormally distributed. Therefore, the Kruskal-Wallis H test was performed instead of a one-way ANOVA.

Statistical testing revealed that the participant's answers to the scenario questions correlated with the participant's age and general behavioral pattern. A multinomial logistic regression test revealed a significant correlation of the independent variable Age with Crowd_AcqStr ($p = 0.025$), Dist_AcqStr ($p = 0.002$), and Test_Acq ($p < 0.001$) (Appendix F, set 3). Furthermore, the multinomial logistic regression test showed a highly significant correlation of Behavior with Crowd_AcqStr ($p < 0.001$), Crowd_Str ($p < 0.001$), Dist_AcqStr ($p < 0.001$), and Mask_Str ($p < 0.001$) (Appendix F, set 4). A simple linear regression revealed a correlation between Age and Dist_Acq ($F(1, 108) = 18.914$, $p < 0.001$) and Behavior and Dist_Acq ($F(1, 110) = 15.68$, $p < 0.001$).

Joining the independent variables Behavior and Age in a multinomial logistic regression led to no major differences in the results. Still, a highly significant correlation was found between these variables and Crowd_AcqStr ($p < 0.001$), Crowd_Str ($p < 0.001$), Dist_AcqStr ($p < 0.001$), and Mask_Str ($p < 0.001$) (Appendix F, set 5). Joining Behavior and Age in a multiple linear regression showed a correlation of these variables and Dist_Acq ($F(2, 107) = 14.452$, $p < 0.001$).

The independent variable Infected influenced the participant's answers to the scenario questions as well. Fisher's exact test revealed a significant influence on Crowd_Str ($p = 0.015$), Dist_AcqStr ($p = 0.016$), and Mask_Str ($p = < 0.001$)[3]. A non-parametric Kruskal-Wallis H test showed a significant influence of Infected on Dist_Acq ($H(5) = 14.789$, $p = 0.011$). The Mann-Whitney U test as a post-hoc test revealed that those who know for sure they have already been infected scored lower (Mdn = 2) than those who do not know if they have already been infected (Mdn = 4), $U = 327.5$, $Z = -3.214$, $p = 0.001$. They also scored lower than those who know for sure they have not been infected (Mdn = 4), $U = 120$, $Z = -2.143$, $p = 0.032$. Knowing for sure about a past infection, thus, significantly makes for a less cautious estimated behavior than other parameters.[4] Gender was an influential factor

[3] Performing a post-hoc test with the adjusted standardized residuals (Section 3.1.1) unfortunately turned out troublesome, not in the last place since it exceeds the basic statistical skills for linguists. Since, furthermore, it is beyond the scope of the actual research question, I did not include these post-hoc tests.

[4] Including other personal variables such as Age and Behavior in this analysis unfortunately turned out troublesome since there is no SPSS-friendly test that includes covariates in the non-parametrical Kruskal-Wallis H test (Field 2005: 418). Such an analysis could be beneficial since it verifies whether there is an effect of Infected itself or it has mainly been influenced by other factors. Further research is needed to research effect of Infected.

to a small extent. Fisher's exact test revealed a significant influence of Gender on Test_Acq ($p = 0.022$). Female participants were a lot more inclined to go to their work in case of COVID symptoms than men, who more often reported they would stay home (no exact significance values included, see footnote 3). No other significant influences were found. Note that for the independent variable Education, no significant influence could be found on any of the scenarios.

Overall, the influence of Gender, Age, Education, Behavior, and Infected on the mediators was slightly less than on the scenarios. The independent variable Behavior had the most significant correlation with the mediators. A linear regression test revealed it had a highly significant correlation with the dependent variables *fear of virus* ($F(1, 110) = 70.969$, $p < 0.001$), *perceived control of virus* ($F(1, 110) = 90.824$, $p < 0.001$), and *perceived control of measures* ($F(1, 110) = 10.948$, $p < 0.001$). A linear regression test revealed a significant correlation between the independent variable Age and the dependent variables *fear of virus* ($F(1, 108) = 9.603$, $p = 0.002$) and *perceived control of virus* ($F(1, 108) = 15.054$, $p < 0.001$).

Joining the independent variables Behavior and Age in a multiple linear regression led to no major differences in the results. Still, a highly significant correlation was found of these variables and *fear of virus* ($F(2, 107) = 34.675$, $p < 0.001$), *perceived control of virus* ($F(2, 107) = 46.43$, $p < 0.001$), and *perceived control of measures* ($F(2, 107) = 4.631$, $p = 0.012$). Note that including Behavior as the covariate of Age led to a significant correlation with *perceived control of measures*, whereas Age alone did not have this effect, which indicates that the effect of Behavior is strong.

The variable Infected had an effect on the mediators as well. A non-parametric Kruskal-Wallis H test revealed a significant influence of Infected on *fear of virus* ($H(5) = 11.059$, $p = 0.05$) and *perceived control of virus* ($H(5) = 20.28$, $p = 0.001$). A Mann-Whitney U test as a post-hoc test (Section 3.4.1) revealed that the people who are sure they have been infected with COVID-19 had less *fear of virus* (Mdn = 3.5) than the people who think they have not been infected (Mdn = 5), $U = 357.5$, $Z = -2.424$, $p = 0.015$. They also had less *fear of virus* than those who know for sure they have not been infected (Mdn = 5), $U = 120.5$, $Z = -2.118$, p 0.034. Another Mann-Whitney U test indicated that the people who know for sure they have been infected had a lower *perceived control of virus* (Mdn = 4) than those who do not know if they have been infected (Mdn = 6), $U = 323$, $Z = -3.261$, $p = 0.001$. They also reported a lower *perceived control of virus* than those who think they have not been infected (Mdn = 6), $U = 281$, $Z = -3.372$, $p < 0.001$. Being sure about a past infection, thus, results in significantly less fear and perceived control of the virus than other parameters of Infected. Including Age and Behavior as covariates, unfortunately, turned out troublesome (see footnote 4). Whether there is an effect of the independent variable Infected itself or the covariates Behavior and Age have mainly influenced Infected is a question left for future research.

No significant effect of Education was found. None of the discussed independent variables significantly influenced the mediator *fear of measures*.

5. Conclusion and discussion

In this thesis, I wanted to find the answer to the following research question:

> RQ: What effect do the path metaphor and the wildfire metaphor have on the personal control people experience over the further course of the COVID-19 pandemic?

Metaphors are an effective part of science communication since they help explain a scientific message to a broad non-expert audience using terminology and concepts familiar to them (Kampourakis 2016: 947). An important effect of metaphors is the framing effect, by which metaphors never fully cover reality (Lakoff and Johnson 1980: 11). Because of that, metaphors can be strategically selected to influence the hearer's perception of the phenomenon described by the metaphor. Metaphors are effective in the context of the COVID-19 pandemic since they provide the hearer with more understanding of complex virological topics such as transmission and mutations. However, it is also necessary to realize that metaphors can be employed to influence attitudes towards, for example, the effectiveness of restrictive measures of the danger of COVID-19. Since pandemic control requires a collective effort of the society, everyone's perception of the pandemic is relevant. So, it is scientifically and socially important to increase our understanding of metaphorical framing during the pandemic.

Available research shows that the metaphor used can affect attitudes, both within and outside the context of COVID-19. However, it can be difficult to determine the exact effect that a metaphor has on attitude. For example, in the context of COVID-19, Semino (2021: 51) mentions that war metaphors create a feeling of collective responsibility, whereas Schnepf and Christmann (2022) demonstrated that the war metaphor shifts citizens' feelings of responsibility to the government. As such, they differ in the amount of individual responsibility they ascribe to the war metaphor. By determining if such conflicting results also exist for other metaphors than the war metaphor, further research can show which, how, and when metaphors can be most effectively employed to increase their persuasive effect. The present research contributed to this by exploring the effects of the wildfire and path metaphors. In the literature, they are described as implying a low and a high amount of personal control respectively, but it has not yet been determined if these effects also appear within the context of the COVID-19 pandemic. A pandemic requires language use different from other contexts (e.g., cancer) (Schnepf and Christmann 2022: 109), so the effect of metaphors on attitude might differ within the pandemic. Moreover, since metaphors have different connotations per language (Wernecke et al. 2017: 191), and it is thus necessary to carry out metaphor research in languages different from English, this research focused on metaphors in Dutch.

In the present research, a methodology common within research about the effect of metaphor on attitude was employed: the alternative source strategy approach (Scherer et al. 2015: 38). Participants were randomly provided with one of three conditions: three different versions of a text warning the reader about the uncertainty of the future of the pandemic. The versions differed concerning the metaphor, in which a new virus outbreak was either described 1) as a wildfire faring up, 2) as a wrong path, or 3) without a metaphor. The amount of personal control that the wildfire and path metaphor implied was measured with six so-called scenario questions and five so-called mediator questions that the participants answered after exposure to the condition. The scenario questions measured the participants' (self-reported) reactions to multiple situations involving a risk of COVID-19 transmission, and the mediator questions measured the participants' feelings of fear and control of the virus and the measures. Statistical testing measured if a significant effect of the metaphor (independent variable) could be found on the answers provided to the scenario and mediator questions (dependent variables).

The hypothesis was that the path metaphor implied a high amount of personal control over the further course of the pandemic, whereas the wildfire metaphor implied a low amount. These different amounts of personal control would become clear from the fact that the participants exposed to the path metaphor reported more cautious reactions to the scenario questions than those exposed to the wildfire metaphor.

Furthermore, they would express more perceived control and less fear of the virus/measures than those exposed to the wildfire metaphor.

In sum, facing participants with either the wildfire or the path metaphor did not lead to any significantly different answers to the scenario and mediator questions. Comparing the Control condition to any of the two metaphor conditions also showed no significant differences. Since the scenario and mediator questions were designed to measure the perceived amount of personal control of the further course of the pandemic, it can be concluded that in the present study, no demonstrable effect has been found of the path and wildfire metaphor on the personal control people experience over the further course of the COVID-19 pandemic. It can be called surprising that no metaphor effect was found on the scenario questions or the mediator questions. After all, the perceived personal control on a wrongly taken path was significantly higher than on a wildfire flaring up, and both metaphors differed significantly from the perceived personal control on a virus circulating. However, the scenario and mediator questions aimed towards the COVID-19 context did not further indicate these differences.

Instead of text-related factors, attitude seems to correlate with age, gender, general behavior during the pandemic, and past COVID-19 infection. However, for the latter, no complete post-hoc procedures could always be performed (Section 4.2.2). Whereas it is statistically proven that there is a particular effect of the factor Infected, it is not sure if a past COVID-19 infection or the absence of infection mainly causes an effect. More research is needed in the future. Gender correlated with the tendency to work from home or stay home, with the male participants being seemingly more inclined to stay home than the female participants (not statistically verified). The latter result contradicts Frank et al. (2021: 4), who reported that women were more likely to work from home than men during the COVID-19 pandemic. There is, thus, room for future research to solve this contradiction.

This research came with some limitations. Firstly, it relies heavily on self-report. Because of self-report, it could be that the participants generally tended to give socially desired answers, despite the note in the questionnaire that this should not be the participant's intention. Secondly, the sample of participants was not locationally representative since it was skewed toward South Holland: a relatively densely populated area (StatLine 2022). The snowball sampling technique did not fully prevent this skew. As pointed out in Section 3.3, urban density is suggested to correlate negatively with COVID measure compliance. Assuming that is true, a more representative sample could have resulted in a lower bias towards low measure compliance. For future research, it is, thus, necessary to make sure the participants are spread over all areas of the Netherlands. Thirdly, because the questionnaire was spread online and participants filled it in independently, their completion was out of the researcher's control. A possible result could be distractions halfway, decreasing the reliability of the data. Fourthly, an important limitation of working with scenarios is that it allows participants to reason from how they think they act instead of how they genuinely act (note that this research investigates the influence of metaphor on *attitude* instead of *acting*). The participants' reactions might have differed after real-life exposure to the scenarios of this study. For future research, avoiding working with hypothetical scenarios might be better. Moreover, a critical reflection revealed that the chosen wildfire and path metaphors not only differed concerning the implied personal control but also concerning perceived dangerousness: a wildfire flaring up might be perceived as more dangerous than taking a wrong path. Therefore, the implied amount of personal control could have conflicted with the implied amount of danger. Another limitation, potentially of influence on the current results, could be that the context of this research hindered a metaphor effect. A participant mentioned:

> *"Ik gok dat we verschillende tekstjes kregen en dat er wordt gekeken hoe die beïnvloeden wat mensen denken over de huidige situatie, maar dat is ook wel heel persoonlijk. In mijn geval dacht ik door het lezen van de tekst bijvoorbeeld wel van ja is wel waar het zou weer kunnen oplaaien dus daar ben ik me iets bewuster van geworden maar zulke informatie verandert mijn gedrag eigenlijk niet meer."*

> ‘I guess we were provided with different texts, and it was researched how these influence people’s way of thinking about the current situation, but that is something very personal as well. In my case, by reading the text, I thought: “yes, that is true, COVID-19 can still flare up,” so I did become more aware of that. But such information actually does not change my behavior anymore.’

Even though this participant was in Group Control and, thus, was not provided with the factor supposedly of influence on attitude, it could well be that people have become too familiar with their COVID habits, and a linguistic factor has no influence. Sheth (2020: 283) predicted that some existing habits will permanently shift due to the rigorous demand for behavioral change during the pandemic. The hypothesis that linguistic modifications can more easily affect attitude when there is a lack of clear behavioral guidelines (Section 3.1.2) cannot be confirmed here.

A final limitation, and possible reason why no effect of metaphor on attitude was found, could have to do with the contents of the condition text. The text suggested that a new COVID-19 outbreak can be due to a new mutation of the virus instead of personal behavior. In that case, the emphasis on personal control is much lower, regardless of the metaphor in the text. The comprehensibility questions provided a clue for this. The question asking the participants to summarize the gist of the text indicated that many participants, regardless of the metaphor they were exposed to, consider the emergence of a new COVID variant the cause of a new outbreak. Examples of such answers are:

1) *“Hoewel het momenteel meevalt met de ernst van de pandemie, is er nog steeds het risico dat een volgende variant weer hard kan toeslaan.”* (Group Wildfire)

> ‘Even though the severity of the pandemic momentarily exceeds expectations, there is still the risk that a new variant will strike again.’

2) *“We moeten voorzichtig blijven omdat er nieuwe varianten van het covid virus kunnen ontstaan die ons weer meer ziek kunnen maken.”* (Group Path)

> ‘We must remain cautious because new variants of COVID-19 can cause more severe illness.’

3) *“Voorlopig is de pandemie afgewend maar Corona is mogelijk blijvend en voorzichtigheid blijft geboden oa ivm mogelijke varianten.”* (Group Control)

> ‘For the time being, the pandemic is over. Nevertheless, COVID-19 is potentially permanent, and cautiousness is required regarding, amongst others, possible variants.’

The emergence of new virus variants is, in principle, a result of frequent virus transmission (Wei-Haas 2021), which is, thus, due to personal behavior. Based on their answers, however, few participants seemed to realize this. The connection between personal behavior and the emergence of new variants should have been made more explicit. For future research, it is crucial to evaluate the side effects of the condition text more critically.

The results of the present study can be related to the previous research described in Chapter 2. In Section 2.2.4, I described several interesting angles within the alternative source strategy approach that came forward from previous research. These would be investigated further in the present study to contribute to our knowledge of the effect of metaphor on attitude. Unfortunately, for two of them, this contribution turned out lower than I had hoped. Firstly, I described the added value of determining whether the metaphor effect is overt (i.e., recognized as influential) or covert (i.e., not recognized as influential) with the help of open questions asking for the participants’ motivations of their answers. Unfortunately, this study did not determine whether the metaphor effect was overt or covert since no metaphor effect was found in the first place. Furthermore, I described the

importance of both investigating whether the use vs absence of metaphors brings about different attitudes; and whether there is a difference in attitude between the investigated metaphors. After all, the results of these approaches differ in the literature. However, the wildfire metaphor, the path metaphor, and the no-metaphor condition all had no demonstrable effect on attitude, so the results of both approaches did not differ in the present study.

I also explained that personal control, earlier adopted as a mediator by Scherer et al. (2015), is an interesting research perspective (Section 2.2.5). Firstly, Hauser and Schwarz (2020: 1702) found that the war metaphor and the journey (or path) metaphor have different effects on the perceived feelings of personal control of cancer. Secondly, Schnepf and Christmann (2022: 122) suggested that the war metaphor might shift the responsibility of the COVID-19 pandemic from the individual to the government. The present study aimed to compare these results to the use of a wildfire metaphor instead of a war metaphor. Unfortunately, I did not find an effect of the wildfire and path metaphor on the perceived personal control of the further course of the pandemic. Nevertheless, that does not mean this effect is absent. Furthermore, from the participants' answers, no clues could be found for a shift of responsibility to the government. That means it was either not reported or not present in this study. Again, however, that does not imply complete absence.

Finally, Section 2.2.6 explained that it is not sure what exact effect the war metaphor brings about in which context. I described the necessity of discovering if this also applies to other metaphors to further research which, how, and when metaphors can be most effectively employed to increase their persuasive effect. The present study showed that even though the literature described the wildfire and path metaphor as low and high personal control metaphors, respectively (e.g., Benyon 1998: 33; Semino 2021: 55; Smith-Ruig 2008: 21), these effects have not yet been demonstrated within the COVID-19 context.

Researching the literature for the influence of metaphor on attitude provokes the notion that a metaphor effect is always present since the only available research has succeeded. This research forms a rare deviation from the available literature. Note that the absence of a metaphor effect does not mean that this thesis concludes that metaphor does not affect attitude. Instead, it has not been found in the present research. Thus, in certain circumstances, the influence of metaphor on attitude can more easily be detected than in other circumstances, which clears the pathway for another step in metaphor research: under which circumstances does metaphor research not succeed? That way, it can better be determined how and when metaphors can be applied when practicing science communication in real life.

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Appendix A: Condition texts

This appendix contains the three condition texts and the original text they were based on. The colors indicate the parts that differ between the three texts. The parts that differ from the original text have been placed between brackets.

ORIGINAL TEXT (Reijman 2022)

Einde coronapandemie ook volgens viroloog Marion Koopmans in zicht, 'maar blijf rekening houden met verrassingen'

Is het einde van de coronapandemie in aantocht? Berichten hierover van de WHO verspreidden een golf van positiviteit door Europa. Viroloog Marion Koopmans ziet dat einde ook, maar: "Het accent ligt echt nog op voorzichtig."

Volgens directeur Hans Kluge van het Europese deel van de Wereldgezondheidsorganisatie (WHO) is het mogelijk dat Europa 'zich in de richting van een pandemisch eindspel beweegt'. Door massale besmettingen met de relatief milde omikron-variant zal er volgens hem 'voor heel wat weken en maanden een periode van wijdverbreide immuniteit zijn'.

Wintergriep
Viroloog Marion Koopmans ziet deze ontwikkeling ook, maar tempert ook de verwachtingen. "Ik zeg het zelf iets voorzichtiger. Het begin van het einde van de pandemie is in zicht. Dat is nog een behoorlijk rekbaar begrip." Volgens haar zitten we nu echt nog in een pandemie. "Maar we gaan op weg naar de situatie daarna."

"Waar iedereen van uitgaat is dat we toegaan naar een situatie dat corona een wintergriep wordt. Maar hoe lang de weg daar naartoe is, is nog de vraag."

Omikron
Veel is er te doen geweest over het milde verloop van de omikron-variant van het virus. Is dat de sleutel tot het einde? Volgens Koopmans speelt het mee, maar is er meer. "Er is veel meer immuniteit, door vaccinaties en besmettingen. Dat maakt de impact van omikron en andere varianten veel minder, maar het is nog niet weg."

Bekend werd dat het kabinet op de komende persconferentie meer versoepelingen aankondigt. Koopmans begrijpt dat. "Je ziet de getallen met de dag toenemen, maar dat veel minder mensen naar het ziekenhuis gaan en nog minder ic. Ee wordt gekozen voor voorzichtig stappen zetten, maar wat mij betreft ligt het accent echt nog wel op voorzichtig."

Verrassingen op de loer
"Ik hou rekening met nog wat golven, waarbij je af en toe steeds weer wat maatregelen zal moeten nemen." In de afgelopen jaren werden we steeds overvallen door nieuwe varianten van het virus. Volgens Koopmans moeten we daarvoor blijven waken. "Overal waar het virus hard blijft circuleren is er kans dat varianten ontsnappen aan immuniteit."

"Daarom moeten we voor de lange termijn rekening blijven houden met verrassingen", zegt Koopmans. Nieuwe varianten ziet ze ook niet snel uit de omikron-hoek komen. "Het meest waarschijnlijk is het dat er een variant opduikt uit de deltahoek. Die virussen blijven ook circuleren."

Vaccin voor meerdere varianten
Zo'n variant zou dus ook weer een heftiger ziekteverloop kunnen laten zien dan omikron. Koopmans vindt dat er met de ontwikkeling van vaccins rekening mee moet worden gehouden. "Er worden nu

specifieke omikron-vaccins gemaakt, maar wat nu uitgezocht wordt is: moet je alleen omikron pakken? Of een combinatie van meerdere varianten?"

Al met al is de viroloog hoopvol, maar blijft ze voorzichtigheid benadrukken: "We zijn op weg naar het einde van de pandemie, maar we moeten dat wel stapsgewijs doen."

TEXT 1:
[Een bosbrand kan altijd weer oplaaien.]

Volgens directeur Hans Kluge van het Europese deel van de Wereldgezondheidsorganisatie (WHO) is het mogelijk dat [het coronavirus in Europa uitdooft. Veel mensen hebben de afgelopen maanden de relatief milde omikron-variant gehad, waardoor er de komende periode meer immuniteit is.] Viroloog Marion Koopmans ziet deze ontwikkeling ook. […] "Er is veel meer immuniteit, door vaccinaties en besmettingen. Dat maakt de impact van omikron en andere varianten veel minder." [Bovendien benadrukt ze minder mensen met corona naar het ziekenhuis of de IC hoefden, ondanks de gigantische aantallen besmettingen. Toch wil Koopmans dat we niet te enthousiast worden.] Volgens haar zitten we nu echt nog in een pandemie: […] "Waar iedereen van uitgaat is dat we toegaan naar een situatie dat corona een wintergriep wordt." [Maar hoe lang dat nog gaat duren, is volgens haar de grote vraag. Een bosbrand kan namelijk altijd weer oplaaien, en in dat geval zullen we hem opnieuw moeten blussen.] Volgens Koopmans moeten we [blijven waken voor nieuwe varianten van het virus. Overal waar het virus hard blijft rondgaan is er kans dat er varianten ontstaan waar wij niet immuun voor zijn.] Nieuwe varianten ziet ze ook niet snel uit de omikron-hoek komen, [maar eerder uit de delta-hoek.] Al met al is de viroloog hoopvol, maar blijft ze voorzichtigheid benadrukken. [Het einde van de pandemie is nabij, maar we moeten onze blusmaterialen bij de hand houden.]

TEXT 2:
[Een verkeerde afslag is snel genomen.]

Volgens directeur Hans Kluge van het Europese deel van de Wereldgezondheidsorganisatie (WHO) is het mogelijk dat [Europa de route naar het einde van de pandemie aflegt. Veel mensen hebben de afgelopen maanden de relatief milde omikron-variant gehad, waardoor er de komende periode meer immuniteit is.] Viroloog Marion Koopmans ziet deze ontwikkeling ook. […] "Er is veel meer immuniteit, door vaccinaties en besmettingen. Dat maakt de impact van omikron en andere varianten veel minder." [Bovendien benadrukt ze dat minder mensen met corona naar het ziekenhuis of de IC hoefden, ondanks de gigantische aantallen besmettingen. Toch wil Koopmans dat we niet te enthousiast worden.] Volgens haar zitten we nu echt nog in een pandemie: […] "Waar iedereen van uitgaat is dat we toegaan naar een situatie dat corona een wintergriep wordt." [Maar hoe lang dat nog gaat duren, is volgens haar de grote vraag. Een verkeerde afslag is namelijk snel genomen, en in dat geval zullen we onze route moeten bijstellen.] Volgens Koopmans moeten we [blijven waken voor nieuwe varianten van het virus. Overal waar het virus hard blijft rondgaan is er kans dat er varianten ontstaan waar wij niet immuun voor zijn.] Nieuwe varianten ziet ze ook niet snel uit de omikron-hoek komen, [maar eerder uit de delta-hoek.] Al met al is de viroloog hoopvol, maar blijft ze voorzichtigheid benadrukken. [Het einde van de pandemie is nabij, maar we moeten blijven nadenken over welk pad we willen bewandelen.]

TEXT 3:
[Het kan altijd weer opnieuw fout gaan.]

Volgens directeur Hans Kluge van het Europese deel van de Wereldgezondheidsorganisatie (WHO) is het mogelijk dat [de pandemie in Europa bijna voorbij is. Veel mensen hebben de afgelopen maanden de relatief milde omikron-variant gehad, waardoor er de komende periode meer immuniteit is.] Viroloog Marion Koopmans ziet deze ontwikkeling ook. […] "Er is veel meer immuniteit, door vaccinaties en besmettingen. Dat maakt de impact van omikron en andere varianten veel minder." [Bovendien benadrukt ze dat minder mensen met corona naar het ziekenhuis of de IC hoefden, ondanks de gigantische aantallen besmettingen. Toch wil Koopmans dat we niet te enthousiast worden.] Volgens haar zitten we nu echt nog in een pandemie: […] "Waar iedereen van uitgaat is dat

we toegaan naar een situatie dat corona een wintergriep wordt.” [Maar hoe lang dat nog gaat duren, is volgens haar de grote vraag. Het kan altijd weer opnieuw fout gaan, en in dat geval zullen we weer maatregelen moeten nemen.] Volgens Koopmans moeten we [blijven waken voor nieuwe varianten van het virus. Overal waar het virus hard blijft rondgaan is er kans dat er varianten ontstaan waar wij niet immuun voor zijn.] Nieuwe varianten ziet ze ook niet snel uit de omikron-hoek komen, [maar eerder uit de delta-hoek.] Al met al is de viroloog hoopvol, maar blijft ze voorzichtigheid benadrukken. [Het einde van de pandemie is nabij, maar we moeten waakzaam blijven.]

Appendix B: English translation of condition texts

For the interested non-Dutch reader, this appendix contains an English translation of the condition texts of Appendix A. The texts have been translated as literally as possible so that they are well in accordance with the original conditions. However, this literal translation might have resulted in unusual language use in English. This did not affect the research, however, since all participant received the Dutch condition texts.

TEXT 1:

A wildfire can always flare up.

According to Hans Kluge, director of the European part of the World Health Organization, it is possible that [COVID-19 is extinguishing in Europe. Many people have been infected with the relatively mild omicron variant, causing more immunity for the upcoming period.] Virologist Marion Koopmans acknowledges this development as well. […] "There is much more immunity because of vaccinations and infections. That significantly reduces the impact of omicron and other variants." [Moreover, she emphasizes that fewer people were admitted to the hospital or the IC because of COVID-19, regardless of the enormous number of infections. However, Koopmans does not want us to get too enthusiastic.] According to her, we are still in a pandemic: […] "Everyone is assuming we are heading for the situation that COVID-19 is becoming a winter flu." [But how long that will take is still the big question. After all, a wildfire can always flare up, and in that case, we will have to extinguish it again.] According to Koopmans, we have to [watch out for new variants of the virus. Everywhere the virus keeps wildly circulating, variants might arise we are not immune to.] She does not assume new variants will come from the omicron family, [but rather from the delta family.] Altogether, the virologist is hopeful but keeps emphasizing cautiousness. [The end of the pandemic is near, but we have to keep our extinguishing materials at hand.]

TEXT 2:

A wrong path is easily taken.

According to Hans Kluge, director of the European part of the World Health Organization, it is possible that [Europe is taking the route toward the end of the pandemic. Many people have been infected with the relatively mild omicron variant, causing more immunity for the upcoming period.] Virologist Marion Koopmans acknowledges this development as well. […] "There is much more immunity because of vaccinations and infections. That significantly reduces the impact of omicron and other variants." [Moreover, she emphasizes that fewer people were admitted to the hospital or the IC because of COVID-19, regardless of the enormous number of infections. However, Koopmans does not want us to get too enthusiastic.] According to her, we are still in a pandemic: […] "Everyone is assuming we are heading for the situation that COVID-19 is becoming a winter flu." [But how long that will take is still the big question. After all, a wrong path is easily taken, and in that case, we will have to adjust our route.] According to Koopmans, we have to [watch out for new variants of the virus. Everywhere the virus keeps wildly circulating, there is the chance of variants arising we are not immune to.] She does not assume new variants will come from the omicron family, [but rather from the delta family.] Altogether, the virologist is hopeful but keeps emphasizing cautiousness. [The end of the pandemic is near, but we have to keep considering which path we want to take.]

TEXT 3:

It can still go wrong again.

According to Hans Kluge, director of the European part of the World Health Organization, it is possible that [the pandemic in Europe is almost over. Many people have been infected with the relatively mild omicron variant, causing more immunity for the upcoming period.] Virologist Marion Koopmans acknowledges this development as well. […] "There is much more immunity because of vaccinations and infections. That significantly reduces the impact of omicron and other variants." [Moreover, she

emphasizes that fewer people were admitted to the hospital or the IC because of COVID-19, regardless of the enormous number of infections. However, Koopmans does not want us to get too enthusiastic.] According to her, we are still in a pandemic: […] “Everyone is assuming we are heading for the situation that COVID-19 is becoming a winter flu.” [But how long that will take is still the big question. After all, it can still go wrong again, and in that case, we will have to take new measures.] According to Koopmans, we have to [watch out for new variants of the virus. Everywhere the virus keeps wildly circulating, there is the chance of variants arising we are not immune to.] She does not assume new variants will come from the omicron family, [but rather from the delta family.] Altogether, the virologist is hopeful but keeps emphasizing cautiousness. [The end of the pandemic is near, but we have to remain watchful.]

Appendix C: Questionnaire

This appendix shows the questionnaire as it was provided to the participant in Qualtrics.

Achtergrondinformatie

Beste deelnemer,
Wat fijn dat je mee wilt werken aan dit onderzoek! Het invullen van de enquête zal ongeveer 15 minuten duren. Je kunt de enquête op je telefoon, tablet, laptop of computer invullen. Dit onderzoek gaat over de actuele situatie van corona in Nederland. Zo langzamerhand beginnen we te spreken van het einde van de pandemie en horen we dingen voorbijkomen als 'corona is bijna weg.' Officieel mag bijna alles weer, maar toch hoor je vaak dat mensen het nog spannend vinden om grote groepen mensen op te zoeken of dicht op vreemden te zitten. Je krijgt straks een tekst die gaat over de actuele coronasituatie en aan de hand van die tekst vraag ik naar jouw beleving. Welke risico's neem je? Zijn er dingen waar je nu extra op let? Waarom wel of waarom niet? Onthoud dat er geen goede en foute antwoorden zijn. Ik ben niet op zoek naar het 'ideale' gedrag of iets dergelijks. Het is belangrijk dat je je eerlijke mening geeft over de situatie. Bovendien gaat het hier nadrukkelijk om jouw beleving **op dit punt in de pandemie**. Kijk dus niet naar keuzes die je bijvoorbeeld een jaar geleden maakte. Probeer je te bedenken wat je **nu** doet.

Voor we beginnen, is het belangrijk dat je je bewust bent van je rechten. Dit onderzoek wordt uitgevoerd in het kader van mijn scriptie van de Onderzoeksmaster Taalwetenschap aan de Universiteit Leiden. De ingevulde gegevens kunnen niet herleid worden tot jou als persoon. Ze worden alleen gebruikt voor mijn scriptie en niet voor verdere doeleinden. Je neemt vrijwillig deel aan het onderzoek en je mag op elk gewenst moment bepalen om je deelname stop te zetten, waarna jouw gegevens niet zullen worden gebruikt. Voor vragen kun je altijd mailen naar l.m.minderaa@umail.leidenuniv.nl.

- Ik ga akkoord en neem deel aan het onderzoek.
- Ik ga niet akkoord en neem niet deel aan het onderzoek.

Achtergrondvragen

Eerst wil ik je vragen om wat gegevens over jezelf in te vullen.

1. Ben je viroloog of studeer je hiervoor?
   - Ja
   - Nee

2. Met welk geslacht identificeer je jezelf?
   - Man
   - Vrouw
   - Anders, namelijk:
     - …
   - Zeg ik liever niet

3. Wat is je leeftijd (in jaren)?
   - Mijn leeftijd is:
     - …
   - Zeg ik liever niet

4. Wat is je hoogst genoten opleiding (als je momenteel een opleiding volgt, mag je die invullen)?
   - Basisonderwijs
   - VMBO
   - HAVO
   - VWO/Gymnasium
   - MBO
   - HBO
   - Universiteit (Bachelor)
   - Universiteit (Master)
   - PhD
   - Anders, namelijk:
     - …
   - Zeg ik liever niet

5. Woon je op dit moment in Nederland?
   - Ja
   - Nee
   - Zeg ik liever niet

6. Wat is je woonplaats?
   - Ik woon in:
     - …
   - Zeg ik liever niet

7. Waar woon je (plaats + land)?
   - Ik woon in:
     - …
   - Zeg ik liever niet

8. Is Nederlands je moedertaal?

- Ja
- Nee
- Zeg ik liever niet

9. Wat is je moedertaal?
- Mijn moedertaal is:
    - …
- Zeg ik liever niet

10. Hoe zou je je beheersing van het Nederlands beoordelen? Hier moet je 1 zien als 'ik begrijp Nederlands nauwelijks' en 10 als 'ik begrijp Nederlands net zo goed als mijn moedertaal.'
- Mijn beheersing van het Nederlands geef ik een…
    - 1/2/3/4/5/6/7/8/9/10

11. Stelling: Ik geloof dat COVID-19 bestaat.
- Eens
- Oneens
- Ik weet het niet / geen mening
- Eventueel ruimte voor toelichting:
    - …

12. In hoeverre ben je het eens met de volgende stelling: Ik vind het terecht dat COVID-19 de afgelopen jaren door de Nederlandse overheid serieus is genomen.
- Helemaal mee eens
- Een beetje mee eens
- Neutraal
- Een beetje mee oneens
- Helemaal mee oneens
- Ik weet het niet / geen mening
- Eventueel ruimte voor toelichting:
    - …

13. Op een schaal van 1 tot 10, hoe voorzichtig beschrijf je jouw eigen gedrag omtrent corona tijdens de afgelopen twee jaar? Hierbij moet je 1 zien als 'helemaal niet voorzichtig' en 10 als 'heel voorzichtig.'
- Mijn gedrag was te omschrijven als…
    - 1/2/3/4/5/6/7/8/9/10

14. Heb je het coronavirus gehad?
- Ik weet zeker van wel.
- Ik denk van wel.
- Ik weet het niet.
- Ik denk van niet.
- Ik weet zeker van niet.
- Ik heb momenteel het coronavirus.

15. Heeft jouw coronabesmetting voor je gevoel invloed gehad op jouw naleving van de coronaregels?
- Ja, ik ben veel voorzichtiger geworden.
- Ja, ik ben een beetje voorzichtiger geworden.

- Nee.
- Ja, ik ben een beetje minder voorzichtig geworden.
- Ja, ik ben veel minder voorzichtig geworden.
- Ik weet het niet.
- Anders, namelijk,
    - …

Conditie tekst

Dit waren de achtergrondvragen. We gaan over naar het volgende gedeelte. Je ziet hieronder een tekst die gaat over de actuele coronasituatie in Nederland. De tekst komt uit een interview met viroloog Marion Koopmans bij EenVandaag. Ik wil je vragen om deze tekst te lezen. Als je op het pijltje hebt geklikt, kun je niet meer terug. Lees de tekst dus aandachtig.

[Hier de Brand / Pad / geen metafoor]

16. Controlevraag: welk nummer staat er bovenaan de tekst?
- 0510
- 0511
- 0512

Begrijpelijkheidsvragen

Op basis van deze tekst krijg je nu een aantal vragen.

17. In welke mate ben je het eens met de volgende stellingen? (Van 'helemaal mee oneens' naar 'helemaal mee eens'.)
- Ik vond de tekst makkelijk te lezen.
    - Helemaal mee oneens
    - Grotendeels mee oneens
    - Een beetje mee oneens
    - Neutraal
    - Een beetje mee eens
    - Grotendeels mee eens
    - Helemaal mee eens
- De informatie in de tekst is duidelijk.
    - Helemaal mee oneens
    - Grotendeels mee oneens
    - Een beetje mee oneens
    - Neutraal
    - Een beetje mee eens
    - Grotendeels mee eens
    - Helemaal mee eens

18. Wat is, in één of twee zinnen, de hoofdboodschap van de tekst?
…

Scenariovragen

Je krijgt nu een paar scenario's te zien. Probeer, met de tekst die je zonet gelezen hebt in je achterhoofd, zo eerlijk mogelijk aan te geven wat je in elke situatie zou doen. Als je twijfelt tussen meerdere opties, kies dan de meest waarschijnlijke. Let op: het gaat dus om je beleving op dit punt in de pandemie; niet om wat je bijvoorbeeld een jaar of een halfjaar geleden had gedaan.

19. Een goede vriend nodigt je uit om een drankje te doen voor de gezelligheid. Hij stelt voor om komende zaterdagavond naar een kroeg te gaan in het centrum van de stad. De kroeg is nieuw, waardoor er altijd veel mensen op af komen. Je hebt die zaterdagavond nog geen andere afspraken staan. Wat doe je?

- Gezellig! Ik geef door dat ik kan en heb er zin in.
- Ik ga wel, maar ik zou me er een beetje ongemakkelijk voelen gezien de drukte.
- Ik stel voor om te zoeken naar een rustiger moment of een rustigere plek.
- Ik zeg dat ik helemaal niet kan.
- Anders, namelijk
    - …
- Niet van toepassing.

20. Optioneel
Waarom?
…

21. Je bent al een tijdje op zoek naar een nieuwe zomerjas en hebt een mooi model online gevonden. Omdat je graag wilt voelen hoe de jas zit voordat je hem koopt, besluit je hem niet online te kopen maar in een winkel. Je gaat naar een winkelcentrum in de buurt, maar zodra je daar bent, zie je dat het erg druk is. Wat doe je?

- Ik blijf gewoon in het winkelcentrum.
- Ik blijf in het winkelcentrum, maar voel me wel oncomfortabel. Ik besluit het een kans te geven, maar neem me voor dat ik naar huis ga als ik me oncomfortabel blijf voelen.
- Ik blijf in het winkelcentrum. Voor dit soort situaties heb ik m'n mondkapje / desinfectiegel mee!
- Ik ga direct weg uit het winkelcentrum. Misschien kan ik het op een rustiger moment nog een keer proberen.
- Ik ga direct weg uit het winkelcentrum en besluit de jas toch maar online te kopen.
- Anders, namelijk
    - …
- Niet van toepassing.

22. Optioneel
Waarom?
…

23. Je bent op een cursus (bv: EHBO-cursus) die altijd begint met een beetje theorie in klassikale vorm. Je kent de rest van de groep niet goed, op één iemand na: een vriend die toevallig ook meedoet. Dit is je derde les. Je loopt de instructieruimte binnen, waar je zelf je zitplaats mag kiezen. Van de vorige lessen weet je dat er altijd stoelen overblijven, zelfs als iedereen er is. Toevallig is je vriend er al, die je op een van de stoelen ziet zitten. Er zijn nog meer dan genoeg lege stoelen over. Wat doe je?

- Ik kies de stoel direct naast die van mijn vriend.
- Ik ga bij mijn vriend zitten, maar ik laat er één stoel tussen.

- Ik vraag aan mijn vriend wat die het liefste heeft.
- Ik kies voor de plek in de instructieruimte waar nog zo min mogelijk anderen zitten, ook als dat betekent dat ik verder van mijn vriend af zit.
- Anders, namelijk
    - …
- Niet van toepassing.

24. Optioneel
Waarom?
…

25. Vanaf woensdag 23 maart is een mondkapje niet meer verplicht in het OV. Je moet vanwege een afspraak in de spits reizen. Wat doe je?
- Ik hou mijn mondkapje op.
- Ik heb mijn mondkapje bij me, zodat ik hem op kan doen als ik het te druk vind.
- Ik heb mijn mondkapje bij me, maar ik weet niet of ik hem op zou doen.
- Ik heb mijn mondkapje niet bij me.
- Ik deed sowieso geen mondkapje op in het OV.
- Ik zorg er wel voor dat ik sowieso de spits vermijd (bijvoorbeeld door vroeger te vertrekken).
- Anders, namelijk
    - …
- Niet van toepassing.

26. Optioneel
Waarom?
…

27. Je bent op een familieverjaardag in een afgehuurd zaaltje. Je hoort wat familieleden (van buiten je huishouden) praten over een interessant onderwerp, dus je wilt graag het gesprek volgen en luistert van een afstandje mee. Plotseling betrekken ze je bij het gesprek. Waar ga jij staan? Hoe lager het cijfer dat je geeft, hoe dichter je op de anderen staat (zie 1 als 'midden in de groep, dicht op de anderen' en 7 als 'op 1,5 meter afstand van de groep').
1/2/3/4/5/6/7

28. Optioneel
Waarom?
…

29. Optioneel
Je wordt wakker met keelpijn. Om 12:00 moet je naar je werk toe. Je kunt niet altijd goed afstand houden op je werk. Wat doe je (en waarom)?
…

Mediator vragen

30. Je krijgt nu nog een aantal stellingen te zien. Geef bij elke stelling aan in welke mate je het ermee eens bent. Hier moet je 1 zien als ‘helemaal mee oneens’ en 7 als ‘helemaal mee eens.’
- Ik maak me zorgen over hoe besmettelijk het coronavirus is.
1/2/3/4/5/6/7
- Ik probeer er zo veel mogelijk aan te doen om geen corona te krijgen.
1/2/3/4/5/6/7
- Of de coronamaatregelen later weer worden aangescherpt of niet, hebben wij als maatschappij zelf in de hand.
1/2/3/4/5/6/7
- Ik ben bang dat de coronamaatregelen later weer worden aangescherpt.
1/2/3/4/5/6/7

31. In hoeverre denk je dat je zelf iets kunt veranderen aan de volgende dingen? Hier moet je 1 zien als ‘ik kan daar niets aan veranderen’ en 7 als ‘ik kan daar sowieso iets aan veranderen.’
- Je toilet zit verstopt.
1/2/3/4/5/6/7
- De opwarming van de aarde.
1/2/3/4/5/6/7
- Je avondeten voor morgen.
1/2/3/4/5/6/7
- Een bosbrand laait op.
1/2/3/4/5/6/7
- De uitslag van de presidentsverkiezingen in de VS.
1/2/3/4/5/6/7
- Er gaat een virus rond.
1/2/3/4/5/6/7
- Je staat in de file.
1/2/3/4/5/6/7
- Je wandklok geeft de verkeerde tijd aan.
1/2/3/4/5/6/7
- Je neemt een verkeerde afslag.
1/2/3/4/5/6/7
- De oorlog in Oekraïne.
1/2/3/4/5/6/7

Einde

32. Optioneel
Wat was volgens jou het doel van dit onderzoek?
…

Je bent aan het einde van het onderzoek. Bedankt voor je hulp! Waar het in deze enquête specifiek over ging, was de metafoor die in de tekst gebruikt werd. Een voorbeeld van een metafoor is: het virus is als een bosbrand. Als het goed is, heb je één van de volgende metaforen gezien: 'Een bosbrand kan altijd nog oplaaien' óf 'Een verkeerde afslag is snel genomen.' Het kan ook zijn dat je in de zogenoemde controleconditie zat en géén metafoor in de tekst zag. Wil je weten wat hier precies het idee van was? Mail dan gerust naar l.m.minderaa@umail.leidenuniv.nl.

Om de resultaten niet te beïnvloeden, wil ik je vragen om het doel van het onderzoek (de metaforen) geheim te houden.

Appendix D: English translation of questionnaire

For the interested non-Dutch reader, this appendix contains an English translation of the questionnaire in Appendix C. Translating the questionnaire might have resulted in different nuances in some places. But note that this is not the way the questions, answers, and leading texts were presented to the participant, since they all received the Dutch version.

Background information

Dear participant,
How wonderful that you are willing to take part in this research! Filling in this survey will take approximately 15 minutes. You can fill in the questionnaire on your phone, tablet, laptop, or desktop. This research is about the current situation of the coronavirus in the Netherlands. We are slowly beginning to speak of an end of the pandemic and hearing things like 'corona is almost gone.' Officially, almost everything is allowed again, but still, you often hear people finding it risky to be in large crowds or close to strangers. Soon, you will receive a text about the current state of the pandemic, and based on this text, I will ask you for your experience. Which risks do you take? Are there things you are paying extra attention to? Why or why not? Remember, there are no right or wrong answers. I am not looking for the 'ideal' behavior or something like that. Give your honest opinion about the situation. I am also emphasizing that it is about your experience of this state of the pandemic. So, do not consider choices you made, for example, a year ago. Try to think of what you are doing now.

Before we start, you must be aware of your rights. This research is done in the context of my thesis for the Research Master Linguistics at Leiden University. The provided data cannot be traced back to you as a person. They are only used for my thesis and not for other purposes. You are voluntarily participating in this research, and you can decide at any moment to stop participating, after which your data will not be used. In case you have questions, you can always send an e-mail to l.m.minderaa@umail.leidenuniv.nl

- I agree, and I am taking part in this research.
- I do not agree, and I am not taking part in this research.

Background questions

First, I would like you to fill in some personal data.

1. Are you a virologist or studying virology?
    - Yes
    - No

2. Which gender do you identify with?
    - Male
    - Female
    - Other, namely
        - …
    - I would rather not say

3. What is your age (in years)?
    - My age is
        - …
    - I would rather not say

4. What is your highest taken education (if you are momentarily following an education, you may fill in that one)?
    - Primary school
    - VMBO
    - HAVO
    - VWO / Gymnasium
    - MBO
    - HBO
    - University (Bachelor)
    - University (Master)
    - PhD
    - Other, namely
        - …
    - I would rather not say

5. Are you currently living in the Netherlands?
    - Yes
    - No
    - I would rather not say

6. What is your current place of residence?
    - I live in
        - …
    - I would rather not say

7. Where do you live (place + country)?
    - I live in
        - …
    - I would rather not say

8. Is Dutch your native language?

- Yes
- No
- I would rather not say

9. What is your native language?
- My native language is
    - …
- I would rather not say

10. How would you evaluate your proficiency in Dutch? Here, you should see 1 as 'I barely understand Dutch' and 10 as 'I understand Dutch just as well as my native language.'
- I consider my proficiency in Dutch as a…
    - 1/2/3/4/5/6/7/8/9/10

11. Statement: I believe COVID-19 exists.
- Agree
- Disagree
- I do not know / I have no opinion
- Optional space for clarification:
    - …

12. To what extent do you agree with the following statement: I find it justifiable that COVID-19 has been taken seriously by the Dutch government over the past two years.
- Completely agree
- Partly agree
- Neutral
- Partly disagree
- Completely disagree
- I do not know / I have no opinion
- Optional space for clarification:
    - …

13. On a scale from 1 to 10, how cautious do you evaluate your behavior regarding the coronavirus over the past two years? Here, you should see 1 as 'very incautious' and 10 as 'very cautious.'
- My behavior could be described as a…
    - 1/2/3/4/5/6/7/8/9/10

14. Have you been infected with the coronavirus?
- I know for sure I have.
- I think I have.
- I do not know.
- I think I have not.
- I know for sure I have not.
- I am currently infected with the coronavirus.

15. Do you think your infection with the coronavirus influenced your compliance with the measures?
- Yes, I have become much more cautious.
- Yes, I have become a bit more cautious.
- No.
- Yes, I have become a bit less cautious.

- Yes, I have become much less cautious.
- I do not know.
- Other, namely:
    - …

Condition text

These were the background questions. Now, we are heading to the next part. Hereunder, you see a text about the current pandemic state in the Netherlands. This text comes from an interview with virologist Marion Koopmans at *EenVandaag*. I would like you to read the text. Once you clicked the arrow, you cannot go back. Thus, read the text attentively.

[Insert wildfire / path / Control condition]

16. Control question: which number is on top of the text?
- 0510
- 0511
- 0512

Comprehensibility questions

Based on this text, you will now receive some questions.

17. To what extent do you agree with the following statements (from ‘completely disagree’ to ‘completely agree’).
- I found the text easy to read.
    - Completely disagree
    - Largely disagree
    - Partly disagree
    - Neutral
    - Partly agree
    - Largely agree
    - Completely agree
- The information in the text is clear.
    - Completely disagree
    - Largely disagree
    - Partly disagree
    - Neutral
    - Partly agree
    - Largely agree
    - Completely agree

18. What is, in one or two sentences, the gist of the text?
…

Scenario questions

You will now be faced with a couple of scenarios. With the text you just read in mind, try to indicate as honestly as possible what you would do in each situation. If you doubt between multiple options, then choose the most probable one. Bear in mind: this concerns your experience **of this state of the pandemic**; not what you would do half a year or a year ago.

19. A good friend of yours invites you for a drink for fun. He proposes to go to a pub in the center of the city this Saturday evening. The pub is new, so many people are coming to visit it. You have no other appointments this Saturday evening. What do you do?

- Sounds like fun! I tell him I will come, and I am looking forward to it.
- I will go, but I would feel a little uncomfortable there because of the crowdedness.
- I propose to search for a less crowded place or moment.
- I tell him I cannot come at all.
- Other, namely:
    - …
- Not applicable.

20. Optional
Why?
…

21. You have spent quite a while looking for a new summer coat, and you found a nice one online. Because you want to feel how it fits before buying it, you decide not to buy it online but in a store. You go to a shopping mall nearby, but once you arrive, you see it is very crowded. What do you do?

- I just stay in the shopping mall.
- I stay in the shopping mall, but I feel uncomfortable. I decide to give it a chance, but I intend to go home if I keep feeling uncomfortable.
- I stay in the shopping mall. For these situations, I have my face mask/disinfection gel with me!
- I immediately leave the shopping mall. Maybe I can try it again in a more tranquil moment.
- I immediately leave the shopping mall and decide to buy the coat online anyway.
- Other, namely:
    - …
- Not applicable.

22. Optional
Why?
…

23. You are taking a course (e.g., a first aid course) that always starts with some theory in class. You do not know the rest of the group well, except for one person: a friend who coincidentally also takes part. This is your third lesson. You enter the instruction room, where you can choose where to sit. From the previous lessons, you remember there will always be chairs left, even when everyone is seated. Coincidentally, your friend is already in the room, whom you see on one of the chairs. There are still plenty of empty chairs. What do you do?

- I choose the chair directly next to my friend's.
- I choose to sit close to my friend with one chair between mine and theirs.
- I ask my friend what they would prefer.
- I choose the spot in the instruction room where as few people as possible are seated, even if it means that I will be further away from my friend.

- Other, namely:
    - …
- Not applicable.

24. Optional
Why?
…

25. From Wednesday 23 March onwards, a face mask is not obliged on public transport anymore. Because of an appointment, you need to travel during rush hour. What do you do?
- I keep my face mask on.
- I have my face mask with me so that I can wear it if I find it too crowded.
- I have my face mask with me, but I do not know if I will truly wear it.
- I do not have my face mask with me.
- I never wore a face mask on public transport.
- I make sure I avoid rush hour anyway (for example by leaving earlier).
- Other, namely:
    - …
- Not applicable.

26. Optional
Why?
…

27. You are on a family birthday in a rented hall. You hear some family members (from out of your household) talking about an interesting topic, so you want to follow the conversation and listen from a distance. Suddenly, they involve you in the conversation. Where are you going to stand? The lower the number you give, the closer you are standing to the others (see 1 as 'in the middle of the group, close to the others' and 7 as 'on 1.5 meters distance from the group').
- A am standing…
    - 1/2/3/4/5/6/7

28. Optional
Why?
…

29. Optional
You wake up with a sore throat. You need to go to work at noon. You cannot always keep a distance at work. What do you do (and why)?
…

Mediator questions

30. You will now see a couple of statements. For every statement, indicate to which extent you agree. Here, you should see 1 as 'completely disagree' and 7 as 'completely agree.'
- I am worried about the contagiousness of the coronavirus.
1/2/3/4/5/6/7
- I try to do what it takes not to get infected with the coronavirus.
1/2/3/4/5/6/7
- Whether the corona measures will be tightened up again later or not, is something we control as a society.
1/2/3/4/5/6/7
- I am afraid the corona measures will be tightened up again later.
1/2/3/4/5/6/7

31. To what extent do you think you can change something yourself about the following things? Here, you should see 1 as 'I cannot change anything about that' and 7 as 'I can change this without a doubt.'
- Your toilet is clogged.
1/2/3/4/5/6/7
- Global warming.
1/2/3/4/5/6/7
- You dinner for tomorrow.
1/2/3/4/5/6/7
- A wildfire is flaring up.
1/2/3/4/5/6/7
- The results of the presidential elections in the US.
1/2/3/4/5/6/7
- There is a virus circulating.
1/2/3/4/5/6/7
- You are in a traffic jam.
1/2/3/4/5/6/7
- Your wall clock indicates the wrong time.
1/2/3/4/5/6/7
- You are taking a wrong path.
1/2/3/4/5/6/7
- The war in Ukraine.
1/2/3/4/5/6/7

Final part

32. Optional
What was, in your opinion, the goal of this research?
…

You have come to the end of the survey. Thank you for your help! This survey was specifically about the metaphor used in the text. An example of a metaphor is: the virus is like a wildfire. You have probably seen one of the following metaphors: ‘A wildfire can always flare up’ or ‘A wrong path is easily taken.’ It could also be that you were in the so-called control condition, and you saw no metaphor in the text. Do you want to know the exact idea of this? Do not hesitate to send an e-mail to l.m.minderaa@umail.leidenuniv.nl.

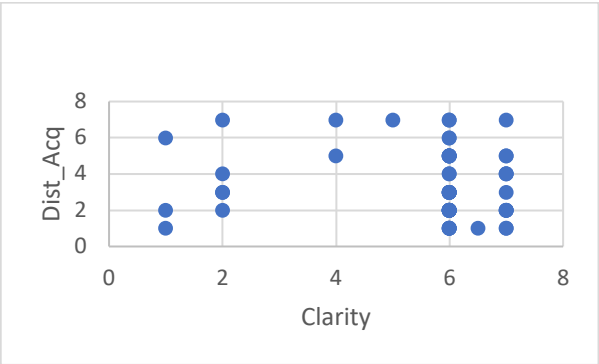
To not influence the results, I would like to ask you to keep the goal of the research (the metaphors) secret.

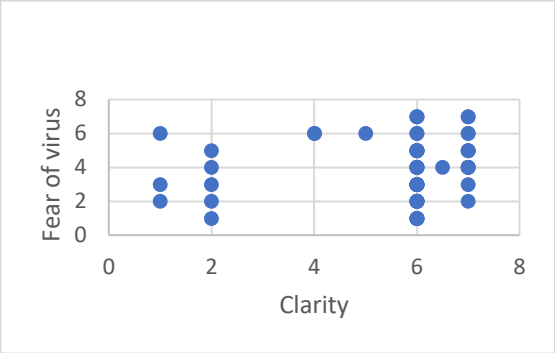
Appendix E: Scatterplots

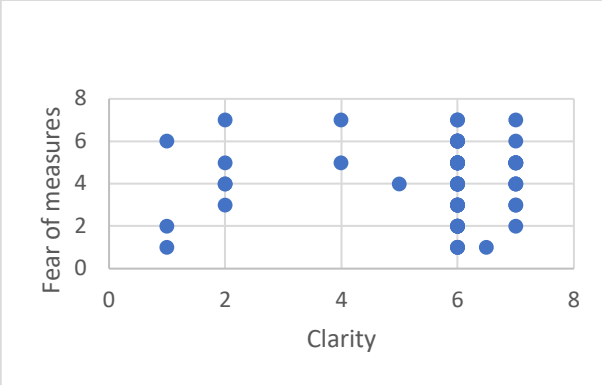
These scatterplots reveal the (non-linear) relationships between Readability/Clarity/Age and the continuous dependent variables Dist_Acq, *fear of virus, fear of measures, perceived control of virus*, and *perceived control of measures*, as mentioned in Chapter 4. This appendix has been divided into sets, with a different independent variable per set (Readability in set 1; Clarity in set 2; Age in set 3).

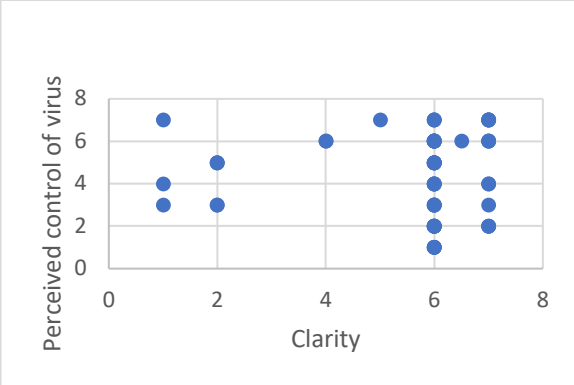
Scatterplot set 1: Relationship between Readability and the dependent variables.

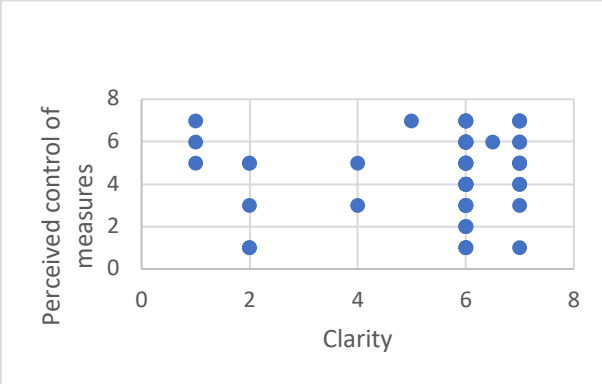
Scatterplot set 2: Relationship between Clarity and the dependent variables.



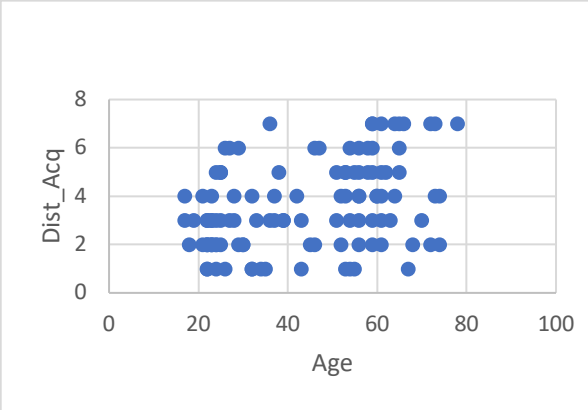


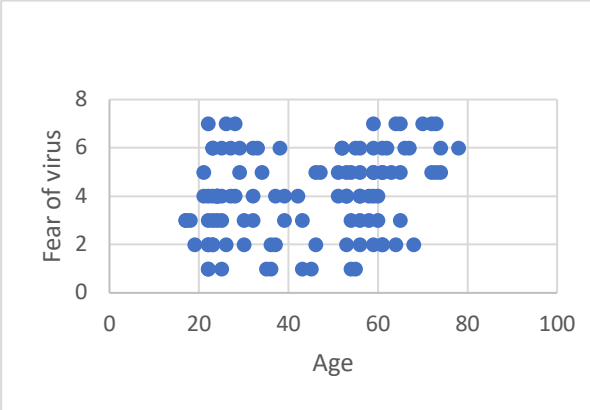


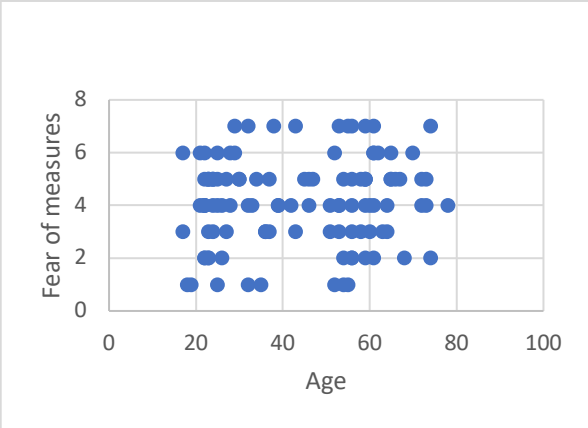


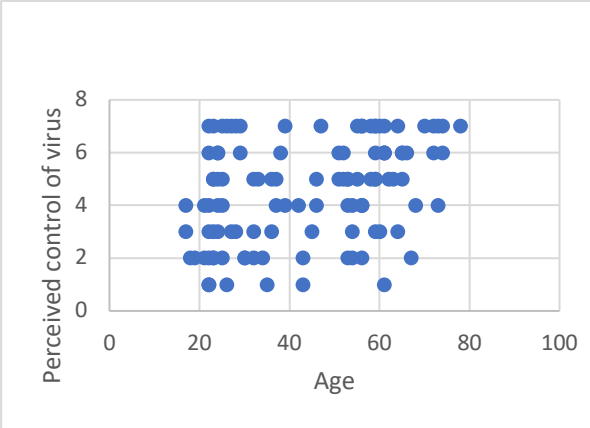


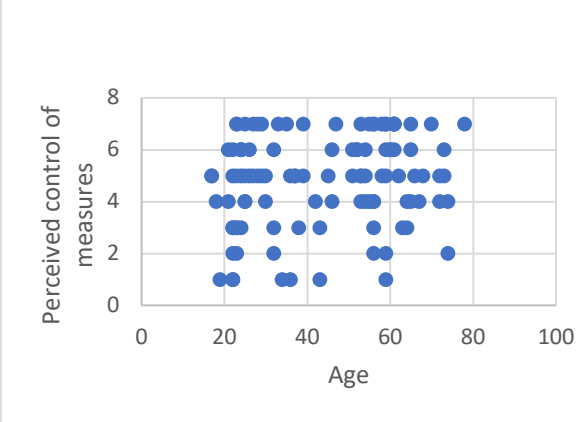
Scatterplot set 3: Relationship between Age and the dependent variables.











Appendix F: Multinomial logistic regression results

This appendix reports the beta values, standard errors, R-Square and Goodness-of-Fit values (Field 2005: 294, 312) for all significant or non-significant interactions that were described in Chapter 4. This appendix has been divided into sets, with a different independent variable per set (Readability in set 1, Clarity in set 2, Age in set 3, Behavior in set 4, Age + Behavior in set 5).

Set 1: Influence of Readability on scenarios

Set 1.1: Readability → Crowd_AcqStr:

Crowd_AcqStr[a]		B	Std. Error
I will go, but I would feel a little uncomfortable there because of the crowdedness.	Intercept	-1.254	.922
	Readability	.180	.153
I propose to search for a less crowded place or moment.	Intercept	-.730	.860
	Readability	.042	.147
I tell him I cannot come at all.	Intercept	-.744	1.035
	Readability	-.199	.194
a. The reference category is: Sounds like fun! I tell him I will come, and I am looking forward to it.			

Pseudo R-Square	
Cox and Snell	.031
Nagelkerke	.033
McFadden	.012

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	50.006	18	<.001
Deviance	33.590	18	.014

Set 1.2: Readability → Crowd_Str:

Crowd_Str[a]		B	Std. Error
I stay in the shopping mall, but I feel uncomfortable. I decide to give it a chance, but I intend to go home if I keep feeling uncomfortable.	Intercept	-1.857	1.001
	Readability	.266	.166
I stay in the shopping mall. For these situations, I have my face mask/disinfection gel with me!	Intercept	-1.061	.943
	Readability	.001	.166
I immediately leave the shopping mall. Maybe I can try it again in a more tranquil moment.	Intercept	-.857	.894
	Readability	-.025	.158
I immediately leave the shopping mall and decide to buy the coat online anyway.	Intercept	-1.856	1.374
	Readability	-.056	.247
a. The reference category is: I just stay in the shopping mall.			

Pseudo R-Square	
Cox and Snell	.034
Nagelkerke	.036
McFadden	.012

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	66.016	24	<.001
Deviance	38.060	24	.034

Set 1.3: Readability → Dist_AcqStr:

Dist_AcqStr[a]		B	Std. Error
I ask my friend what they would prefer.	Intercept	-2.142	1.202
	Readability	.057	.203
I choose to sit close to my friend with one chair between mine and theirs.	Intercept	-1.122	.815
	Readability	.029	.139
I choose the spot in the instruction room where as few people as possible are seated, even if it means that I will be further away from my friend.	Intercept	-3.103	1.804
	Readability	.087	.301
a. The reference category is: I choose the chair directly next to my friend's.			

Pseudo R-Square	
Cox and Snell	.002
Nagelkerke	.002
McFadden	.001

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	53.597	18	<.001
Deviance	27.682	18	.067

Set 1.4: Readability → Mask_Str:

Mask_Str[a]		B	Std. Error
I do not have my face mask with me.	Intercept	3.187	2.429
	Readability	-.133	.423
I have my face mask with me, but I do not know if I will truly wear it.	Intercept	1.256	2.562
	Readability	.191	.441
I have my face mask with me so that I can wear it if I find it too crowded.	Intercept	2.305	2.452
	Readability	.108	.424
I keep my face mask on.	Intercept	2.477	2.489
	Readability	-.114	.434
I make sure I avoid rush hour anyway (for example by leaving earlier).	Intercept	.171	2.833
	Readability	.248	.482
a. The reference category is: I never wore a face mask on public transport.			

Pseudo R-Square	
Cox and Snell	.052
Nagelkerke	.054
McFadden	.017

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	42.667	30	.063
Deviance	32.457	30	.347

Set 1.5: Readability → Test_Acq:

Test_Acq[a]		B	Std. Error
Going to work without (immediately) taking a test but taking an additional measure to ensure the safety of others.	Intercept	1.072	1.656
	Readability	-.194	.285
Going to work after a negative test result, without taking an additional measure to ensure the safety of others.	Intercept	2.270	1.412
	Readability	-.091	.237
Going to work after a negative test result, taking an additional measure to ensure the safety of others.	Intercept	.037	1.715
	Readability	.129	.284
Staying home.	Intercept	-.303	1.868
	Readability	.114	.309
Staying home and taking a test	Intercept	1.832	1.546
	Readability	-.326	.271

a. The reference category is: Going to work without (immediately) taking a test, without taking an additional measure to ensure the safety of others (e.g., keeping a face mask on, keeping distance, discussing the situation with colleagues).

Pseudo R-Square	
Cox and Snell	.047
Nagelkerke	.049
McFadden	.016

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	28.341	30	.552
Deviance	30.585	30	.436

Set 2: Influence of Clarity on scenarios

Set 2.1: Clarity → Crowd_AcqStr:

Crowd_AcqStr[a]		B	Std. Error
I will go, but I would feel a little uncomfortable there because of the crowdedness.	Intercept	-.617	1.424
	Clarity	.054	.237
I propose to search for a less crowded place or moment.	Intercept	.486	1.261
	Clarity	-.262	.223
I tell him I cannot come at all.	Intercept	.515	1.337
	Clarity	-.393	.252
a. The reference category is: Sounds like fun! I tell him I will come, and I am looking forward to it.			

Pseudo R-Square	
Cox and Snell	.071
Nagelkerke	.077
McFadden	.030

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	7.232	12	.842
Deviance	8.433	12	.750

Set 2.2: Clarity → Crowd_Str:

Crowd_Str[a]		B	Std. Error
I stay in the shopping mall, but I feel uncomfortable. I decide to give it a chance, but I intend to go home if I keep feeling uncomfortable.	Intercept	-2.212	1.488
	Clarity	.291	.247
I stay in the shopping mall. For these situations, I have my face mask/disinfection gel with me!	Intercept	-2.612	1.978
	Clarity	.172	.333
I immediately leave the shopping mall. Maybe I can try it again in a more tranquil moment.	Intercept	-.962	1.156
	Clarity	.001	.205
I immediately leave the shopping mall and decide to buy the coat online anyway.	Intercept	-2.139	1.880
	Clarity	-.004	.333
a. The reference category is: I just stay in the shopping mall.			

Pseudo R-Square	
Cox and Snell	.033
Nagelkerke	.036
McFadden	.012

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	27.911	20	.112
Deviance	21.685	20	.358

Set 2.3: Clarity → Dist_AcqStr:

Dist_AcqStr[a]		B	Std. Error
I ask my friend what they would prefer.	Intercept	-1.498	1.317
	Clarity	.025	.228
I choose to sit close to my friend with one chair between mine and theirs.	Intercept	-2.515	1.683
	Clarity	.220	.279
I choose the spot in the instruction room where as few people as possible are seated, even if it means that I will be further away from my friend.	Intercept	-5.275	4.014
	Clarity	.521	.639
a. The reference category is: I choose the chair directly next to my friend's.			

Pseudo R-Square	
Cox and Snell	.028
Nagelkerke	.032
McFadden	.013

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	19.557	15	.190
Deviance	16.663	15	.339

Set 2.4: Clarity → Mask_Str:

Mask_Str[a]		B	Std. Error
I do not have my face mask with me.	Intercept	3.987	3.824
	Clarity	-.362	.629
I have my face mask with me, but I do not know if I will truly wear it.	Intercept	1.872	4.012
	Clarity	.000	.657
I have my face mask with me so that I can wear it if I find it too crowded.	Intercept	3.414	3.841
	Clarity	-.209	.630
Ik hou mijn mondkapje op.	Intercept	2.397	4.003
	Clarity	-.196	.659
I make sure I avoid rush hour anyway (for example by leaving earlier).	Intercept	.693	4.575
	Clarity	.000	.749
a. The reference category is: I never wore a face mask on public transport.			

Pseudo R-Square	
Cox and Snell	.041
Nagelkerke	.043
McFadden	.013

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	28.736	25	.275
Deviance	22.739	25	.593

Set 2.5: Clarity → Test_Acq:

Test_Acq[a]		B	Std. Error
Going to work without (immediately) taking a test but taking an additional measure to ensure the safety of others.	Intercept	.466	1.833
	Clarity	-.201	.339
Going to work after a negative test result, without taking an additional measure to ensure the safety of others.	Intercept	1.330	1.473
	Clarity	-.010	.260
Going to work after a negative test result, taking an additional measure to ensure the safety of others.	Intercept	-3.550	2.986
	Clarity	.709	.486
Staying home.	Intercept	-1.813	2.547
	Clarity	.315	.427
Staying home and taking a test	Intercept	1.208	1.686
	Clarity	-.370	.328

a. The reference category is: Going to work without (immediately) taking a test, without taking an additional measure to ensure the safety of others (e.g., keeping a face mask on, keeping distance, discussing the situation with colleagues).

Pseudo R-Square	
Cox and Snell	.140
Nagelkerke	.147
McFadden	.048

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	22.825	20	.297
Deviance	18.076	20	.582

Set 3: Influence of Age on scenarios

Set 3.1: Age → Crowd_AcqStr:

Crowd_AcqStr[a]		B	Std. Error
I will go, but I would feel a little uncomfortable there because of the crowdedness.	Intercept	-1.356	.642
	Age	.028	.014
I propose to search for a less crowded place or moment.	Intercept	-2.245	.753
	Age	.041	.016
I tell him I cannot come at all.	Intercept	-3.820	1.313
	Age	.047	.026
a. The reference category is: Sounds like fun! I tell him I will come, and I am looking forward to it.			

Pseudo R-Square	
Cox and Snell	.086
Nagelkerke	.093
McFadden	.036

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	131.596	138	.637
Deviance	127.940	138	.719

Set 3.2: Age → Dist_AcqStr:

Dist_AcqStr[a]		B	Std. Error
I ask my friend what they would prefer.	Intercept	-.273	.841
	Age	-.042	.023
I choose to sit close to my friend with one chair between mine and theirs.	Intercept	-2.384	.739
	Age	.030	.014
I choose the spot in the instruction room where as few people as possible are seated, even if it means that I will be further away from my friend.	Intercept	-6.219	2.193
	Age	.070	.037
a. The reference category is: I choose the chair directly next to my friend's.			

Pseudo R-Square	
Cox and Snell	.128
Nagelkerke	.147
McFadden	.068

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	164.838	138	.059
Deviance	113.011	138	.941

Set 3.3: Age → Test_Acq:

Test_Acq[a]		B	Std. Error
Going to work without (immediately) taking a test but taking an additional measure to ensure the safety of others.	Intercept	-.354	.975
	Age	.013	.022
Going to work after a negative test result, without taking an additional measure to ensure the safety of others.	Intercept	-.067	.675
	Age	.046	.014
Going to work after a negative test result, taking an additional measure to ensure the safety of others.	Intercept	.895	.420
	Age	.001	.001
Staying home.	Intercept	-2.428	1.152
	Age	.065	.021
Staying home and taking a test	Intercept	.119	.484
	Age	.000	.000

a. The reference category is: Going to work without (immediately) taking a test, without taking an additional measure to ensure the safety of others (e.g., keeping a face mask on, keeping distance, discussing the situation with colleagues).

Pseudo R-Square	
Cox and Snell	.199
Nagelkerke	.209
McFadden	.072

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	280.832	225	.007
Deviance	192.155	225	.945

Set 4: Influence of Behavior on scenarios

Set 4.1: Behavior → Crowd_AcqStr:

Crowd_AcqStr[a]		B	Std. Error
I will go, but I would feel a little uncomfortable there because of the crowdedness.	Intercept	-4.360	1.450
	Behavior	.565	.189
I propose to search for a less crowded place or moment.	Intercept	-8.761	2.279
	Behavior	1.065	.279
I tell him I cannot come at all.	Intercept	-13.288	4.106
	Behavior	1.439	.473
a. The reference category is: Sounds like fun! I tell him I will come, and I am looking forward to it.			

Pseudo R-Square	
Cox and Snell	.280
Nagelkerke	.305
McFadden	.131

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	25.063	24	.402
Deviance	20.090	24	.692

Set 4.2: Behavior → Crowd_Str:

Crowd_Str[a]		B	Std. Error
I stay in the shopping mall, but I feel uncomfortable. I decide to give it a chance, but I intend to go home if I keep feeling uncomfortable.	Intercept	-4.831	1.553
	Behavior	.608	.200
I stay in the shopping mall. For these situations, I have my face mask/disinfection gel with me!	Intercept	-10.955	2.876
	Behavior	1.250	.341
I immediately leave the shopping mall. Maybe I can try it again in a more tranquil moment.	Intercept	-10.459	2.762
	Behavior	1.200	.329
I immediately leave the shopping mall and decide to buy the coat online anyway.	Intercept	-6.474	3.149
	Behavior	.585	.393
a. The reference category is: I just stay in the shopping mall.			

Pseudo R-Square	
Cox and Snell	.290
Nagelkerke	.308
McFadden	.121

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	26.385	32	.746
Deviance	22.953	32	.880

Set 4.3: Behavior → Dist_AcqStr:

Dist_AcqStr[a]		B	Std. Error
I ask my friend what they would prefer.	Intercept	-3.285	1.618
	Behavior	.196	.207
I choose to sit close to my friend with one chair between mine and theirs.	Intercept	-6.604	1.890
	Behavior	.707	.226
I choose the spot in the instruction room where as few people as possible are seated, even if it means that I will be further away from my friend.	Intercept	-17.590	5.916
	Behavior	1.743	.635
a. The reference category is: I choose the chair directly next to my friend's.			

Pseudo R-Square	
Cox and Snell	.197
Nagelkerke	.228
McFadden	.109

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	7.510	24	.999
Deviance	7.760	24	.999

Set 4.4: Behavior → Mask_Str:

Mask_Str[a]		B	Std. Error
I do not have my face mask with me.	Intercept	.529	1.669
	Behavior	.355	.316
I have my face mask with me, but I do not know if I will truly wear it.	Intercept	-1.029	1.842
	Behavior	.562	.332
I have my face mask with me so that I can wear it if I find it too crowded.	Intercept	-3.389	2.088
	Behavior	.943	.353
Ik hou mijn mondkapje op.	Intercept	-16.884	4.367
	Behavior	2.366	.547
I make sure I avoid rush hour anyway (for example by leaving earlier).	Intercept	-3.582	2.508
	Behavior	.802	.395
a. The reference category is: I never wore a face mask on public transport.			

Pseudo R-Square	
Cox and Snell	.318
Nagelkerke	.333
McFadden	.122

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	33.421	40	.759
Deviance	32.103	40	.809

Set 5: Joint influence of Age and Behavior (covariates) on scenarios

Set 5.1: Age + Behavior → Crowd_AcqStr:

Crowd_AcqStr[a]		B	Std. Error
I will go, but I would feel a little uncomfortable there because of the crowdedness.	Intercept	-4.792	1.534
	Behavior	.511	.192
	Age	.020	.015
I propose to search for a less crowded place or moment.	Intercept	-9.435	2.373
	Behavior	.993	.283
	Age	.029	.017
I tell him I cannot come at all.	Intercept	-14.070	4.226
	Behavior	1.361	.477
	Age	.032	.027
a. The reference category is: Sounds like fun! I tell him I will come, and I am looking forward to it.			

Pseudo R-Square	
Cox and Snell	.293
Nagelkerke	.319
McFadden	.138

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	237.706	252	.732
Deviance	186.650	252	.999

Set 5.2: Age + Behavior → Crowd_Str:

Crowd_Str[a]		B	Std. Error
I stay in the shopping mall, but I feel uncomfortable. I decide to give it a chance, but I intend to go home if I keep feeling uncomfortable.	Intercept	-4.937	1.603
	Behavior	.574	.205
	Age	.009	.015
I stay in the shopping mall. For these situations, I have my face mask/disinfection gel with me!	Intercept	-11.180	2.902
	Behavior	1.183	.343
	Age	.017	.020
I immediately leave the shopping mall. Maybe I can try it again in a more tranquil moment.	Intercept	-10.657	2.836
	Behavior	1.099	.337
	Age	.021	.020
I immediately leave the shopping mall and decide to buy the coat online anyway.	Intercept	-7.220	3.234
	Behavior	.467	.400
	Age	.036	.030
a. The reference category is: I just stay in the shopping mall.			

Pseudo R-Square	
Cox and Snell	.292
Nagelkerke	.310
McFadden	.122

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	345.082	348	.534
Deviance	229.383	348	1.000

Set 5.3: Age + Behavior → Dist_AcqStr:

Dist_AcqStr[a]		B	Std. Error
I ask my friend what they would prefer.	Intercept	-2.077	1.779
	Behavior	.269	.222
	Age	-.047	.024
I choose to sit close to my friend with one chair between mine and theirs.	Intercept	-6.871	1.966
	Behavior	.626	.232
	Age	.019	.015
I choose the spot in the instruction room where as few people as possible are seated, even if it means that I will be further away from my friend.	Intercept	-19.004	6.334
	Behavior	1.615	.652
	Age	.048	.037
a. The reference category is: I choose the chair directly next to my friend's.			

Pseudo R-Square	
Cox and Snell	.258
Nagelkerke	.298
McFadden	.148

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	240.881	261	.809
Deviance	161.559	261	1.000

Set 5.4: Age + Behavior → Mask_Str:

Mask_Str[a]		B	Std. Error
I do not have my face mask with me.	Intercept	-1.778	3.047
	Age	.056	.070
	Behavior	.438	.370
I have my face mask with me, but I do not know if I will truly wear it.	Intercept	-3.141	3.128
	Age	.059	.071
	Behavior	.608	.381
I have my face mask with me so that I can wear it if I find it too crowded.	Intercept	-6.068	3.291
	Age	.081	.071
	Behavior	.933	.400
I keep my face mask on.	Intercept	-19.707	5.185
	Age	.078	.073
	Behavior	2.378	.590
I make sure I avoid rush hour anyway (for example by leaving earlier).	Intercept	-5.902	3.579
	Age	.066	.072
	Behavior	.832	.439
a. The reference category is: I never wore a face mask on public transport.			

Pseudo R-Square	
Cox and Snell	.331
Nagelkerke	.346
McFadden	.128

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	366.141	420	.973
Deviance	250.893	420	1.000