The Effects of the Corona Measures on Dutch Society

An Interdisciplinary Research into the Effects of the Corona Measures on the Dutch Society and on Pandemic Governance

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Preface

This document contains our interdisciplinary bachelor thesis for our Liberal Arts & Sciences study at Utrecht University. Writing this thesis was a true learning curve in which we all gained more insight into our own discipline and interdisciplinary collaboration. It would not have been possible without the support of friends, family and supervisors. First of all, we would like to thank our supervisor Dennis Kerckhoffs for his guidance and critical feedback during the writing of our thesis. We would also like to thank our own professional supervisors Machiel van der Heijden, Sandra van der Hel and Nil Akyuz for their professionalism and critical view on our disciplinary parts.

We wish you a pleasant read!

Perry van Loon, Femke van der Zaag and Jonas Dano
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Abstract

In late December 2019, a new highly infectious coronavirus emerged in the Netherlands which infected 49,000 people. The Dutch government enforced an intelligent lockdown, which contained the enforcement of various restrictions to enhance social distancing, such as the closing of many hospitality locations (e.g. restaurants and cafes), the closing of public spaces and prohibition of gathering of groups larger than three persons. This lockdown had major effects on society. In this thesis, an attempt is made to answer the following research question: *What are the effects of the corona measures on Dutch society in the spring of 2020, and what could this imply for governance during future pandemics?* In order to curtail the coronavirus outbreak the Dutch government introduced a set of policy measures to reduce the transmission of the coronavirus. This thesis looked at how insights from behavioural public administration can be a valuable addition to existing policy measures. Additionally, the social distancing measures can have major effects on the mental health and well-being of individuals. The corona measures have also had effects on the environment. It is concluded that inclusion of environmental dynamics could assist pandemic governance. It is expected that climate change will affect infectious disease emergence and pandemics are expected to happen more often in the future.

The effects of the coronavirus outbreak in the Netherlands are complex and should be considered in policy for future pandemics. A more interdisciplinary team of experts could be a valuable addition for governing future pandemics or similar crises, by establishing more comprehensive policies.

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1. Introduction

In late December 2019, an unknown highly infectious virus was discovered in Wuhan, China. This disease was soon identified as closely related to the coronaviruses: Severe Acute Respiratory Syndrome (SARS) and the Middle East Respiratory Syndrome (MERS) (Chakraborty & Maity, 2020). The virus is classified as COVID-19 (Chen et al., 2020), and is also known under the abbreviation SARS-CoV-2. The World Health Organization (WHO) in January 2020 discovered the new coronavirus. This virus is distributed between humans through respiratory droplets, like coughs or sneezes, and via surfaces. On a global scale, the virus spread exponentially and was declared a pandemic by the end of March 2020, causing half of the world population experiencing some form of enforced lockdown (Tosepu et al., 2020; Muhammad et al., 2020).

The Netherlands, together with various other European countries, have been severely hit by the virus outbreak. On June 26, 2020, over 49,000 people tested positive on this virus in the Netherlands. The symptoms are very diverse. People suffering from this illness, experience problems with the lungs, colds, fever and dyspnea, and pneumonia or experience (almost) no symptoms at all (RIVM, 2020). In the Netherlands, this virus has caused over 6,000 deaths (RIVM, 2020). The most deaths are amongst the elderly, people with lung diseases and other high-risk groups. The main problem is the propagation, as no working vaccine has been discovered yet. Because of this, the only working method to reduce spreading COVID-19 is social distancing. The World Health Organization has put together a rapport in order to advise governments on the way to counter the spread of the coronavirus (WHO, 2020). Every country can make its own policies and legislation, based on this advice.

The Dutch prime minister, Mark Rutte, ensured that the Dutch government shall base her policies on the advice of experts of the national research institute*: Rijksinstituut voor Volksgezondheid en Milieu* (RIVM), which translates as National Institute for Public Health and the Environment and the Outbreak Management Team (Trouw, 2020). Subsequently, the Dutch government announced various measurements and declared an 'intelligent' lockdown (NOS, 2020). This 'intelligent' lockdown contains the enforcement of various restrictions and goes hand in hand with rules of social distancing, such as the closing of many hospitality locations (e.g. restaurants and cafes), the closing of public spaces and prohibits the gathering of groups bigger than three persons (RIVM, 2020). The Dutch population is asked to stay inside as much as possible, avoid social contact, and keep a distance of one and a half meter (RIVM, 2020). With these intelligent measures, the main focus is set on relieving the pressure on healthcare such as hospitals and the intensive care, whilst protecting the vulnerable and elderly. At the start of this research, the amount of time these measures remain in place was unknown, as they were based on developments in the spread of the virus. By writing this research, various restrictions have been lifted or changed as the

spreading of the virus has been decreased. The intelligent lockdown as declared in March 2020 has almost completely been lifted, however, the one-and-a-half-meter policy remains in place.

The restrictions of this intelligent lockdown have had a visible impact on Dutch society. People were required to work from home, whilst others were afraid of losing their jobs. The elderly were not allowed visitors, and students needed to study from home. Concurrently, environmental pollution dropped, as expected, by the decrease in industrial activities and the transport sector as a result of the various lockdowns (Muhammad et al., 2020). Thus, the magnitude of the sectors struck by this virus was and still is immense. Pandemics are identified as occurring more frequently over the last century (Ross et al., 2015), and it is stated that processes of climate change and pandemics are linked (Watson, 2020). The current virus outbreak clearly emphasizes the importance of expert information and academic research about pandemics and how to deal with a possible pandemic outbreak. Therefore, it is important to map the causal effects and concepts and actors involved in this outbreak. The aim is to use these findings to make implications for future pandemic governance. This resulted in the following research question: *What are the effects of the corona measures on Dutch society in the spring of 2020, and what could this imply for governance during future pandemics?*

Interdisciplinary research should comply with 4 criteria: the problem studied should be complex, important insights in the problem are offered by two or more disciplines, no single discipline has been able to explain the problem comprehensively, and the problem is an unresolved societal need (Repko & Szostak, 2017). The coronavirus outbreak is a complex problem. It is a crisis that affects the entire society. To decrease the spread of this virus the government needs to set up behaviour rules for society. These rules and laws affect almost every part of daily life and have a sizable effect on the environment. Because almost every aspect of Dutch society is affected, we need Public Governance, Governance for Sustainable Development and Social and Health Psychology to map the effects of the virus. The coronavirus problem is a very recent problem, so not much research is done. Therefore, the societal need is mostly unresolved. Due to these factors, we will use an interdisciplinary approach. We will use the insights from all three disciplines to map the actors and concepts involved to provide a more comprehensive understanding of the Dutch corona crisis, looking at policy, sustainability, and mental health.

Chapter One provides a view on the subject from the discipline of Public Governance. To handle any crisis, in the first place, there must be an appropriate policy from the government which the citizens can agree with, and which offers solutions to the problems at hand. The discipline of Public Governance is at the intersection of public administration and organizational science and focuses on governing and organizing public issues. It looks at how best policies can be made so that citizens adhere to them. These

issues are increasingly not only occurring in public organizations but also in private organizations, informal networks and partnerships. The discipline's main goal is tackling social issues, where policies are made within this discipline to keep citizens safe and healthy. This disciplinary part contains the following sub-questions: *What can the Dutch government learn from behavioural public administration insights in the fight against the coronavirus?*

Chapter Two provides a view of the subject from the discipline of Governance for Sustainable Development. It is widely accepted and acknowledged that lockdowns, enforced by a countries' government, have visible effects on society, whilst the environmental consequences are expected to be significant as well. Governance for Sustainable Development is a relatively young discipline, closely related to environmental social sciences. The objective of the discipline is to transform towards a more sustainable society by influencing governance processes to propose policies and frameworks in the long-term (UNU, 2013). It closely studies governance processes and incorporates complex social, environmental and technological systems. The discipline is focused on the international realm as it is affected by international policy processes and organizations. The relation between governance and environmental aspects make the discipline rather complex as well as growing in relevance, concerning processes as global warming. It is argued that this is very relevant in the research of pandemics because it can identify as well as positive as negative consequences of the lockdown on the natural environment and our health. This disciplinary part shall focus on the sub-question: *What are the environmental governance opportunities and challenges, following the coronavirus pandemic and concurrent measures, and what does it entail for the Netherlands?*

Chapter Three provides a view of the subject from the discipline of Social and Health Psychology. Policies, taken to combat the coronavirus, have effects on people's lives. People need to stay inside as much as possible, and work, study and school are done from home. Prime Minister Mark Rutte even stated that people need to prepare for a society where people need to stay one and a half meter away from each other (NOS, 2020). This will have an effect on mental health and well-being. This follows in the sub-question: *What are the effects of the rules of social distancing, due to the intelligent lockdown, on the mental health and well-being of humans?* Psychology studies mental mechanisms are needed for understanding human behaviour (Repko and Szostak, 2017). It looks at psychosociological and environmental factors that can affect this behaviour. This substantiates the assumption that human mental health and well-being results from internal and external factors

After the disciplinary insights are presented, the findings will be integrated. Common ground and a new more comprehensive understanding will be created through the integration techniques of Repko and Szostak (2017). In the final part, an attempt is made to create a more comprehensive understanding of the effects of the coronavirus outbreak and give perspective on how governments can act on future pandemic outbreaks.

2. How Behavioural Public Administration Can Help Combat the Coronavirus

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2.1 Introduction

After the first European cases of COVID-19 were reported on January 24, 2020, in France, within a matter of weeks the virus had spread across most of the European continent. On February 27, 2020, the first person was diagnosed with the coronavirus in the Netherlands (NOS, 2020). Many thousands of infections and deaths soon followed, and as the virus spread and became a threat to more and more citizens, politicians and policymakers understood that they needed to intervene. On March 15, 2020, the Netherlands proclaimed an 'intelligent' lockdown to contain the spread of the virus (NOS, 2020). The differences in policy between neighbouring countries are substantial, and national governments try in different ways to influence the behaviour of their citizens.

The Dutch government arranged an Outbreak Management Team, which provides advice during the coronavirus crisis on measures that can be taken. According to the Dutch National Institute for Public Health and Environment, the RIVM, this team includes specialists and experts with different backgrounds and substantial knowledge about the coronavirus (RIVM, 2020). When looking at the composition of the team, it can be found that it mainly contains virologists, doctors, biologists and ministers (Wier, 2020). However, the background of this group of advisers has received increasing criticism for lacking interdisciplinary knowledge (Klaassen, 2020). As a result, during the first few months, corona measures focused mainly on bans, fines and mandates. However, the relatively new subdiscipline *behavioural public administration* can provide valuable insights for managing the pandemic by paying attention to behavioural changes through incentives and nudges

This chapter, therefore, examines how the Dutch government can use behavioural public administration in the fight against the coronavirus. The chapter focuses on the following research question: *What can the Dutch government learn from behavioural public administration insights in the fight against the coronavirus?* First, the chapter will examine the subdiscipline of behavioural public administration, then the advantages of this subdiscipline will be set out. Afterwards, it will be investigated how these insights can be used in the Dutch fight against the coronavirus. Finally, recommendations will be formulated in the form of a conclusion, which will answer the main question.

2.2 The Rise of Behavioural Public Administration

In recent decades, governance and policies have been dominated by a *homo economicus* view on mankind, so human behaviour was seen as rational behaviour (Prast & Thomas, 2010). Against this background, governments have based policy on structuring choice options and stimulating rational actors, for example through market forces, privatization and self-determination. According to Overman (2015), many policies based on this rational view of citizens' behaviour had disappointing returns. Consequently, advisers, researchers and policymakers became increasingly interested in insights from behavioural economics and psychology. These disciplines analyse and predict human behaviour-based biases, as it turned out that most human choices are not predictably rational but predictably irrational (Ariely, 2008). According to Thaler & Sunstein (2008), policymakers would do good to base their policies on irrational citizens and not on the image of the homo economicus. Therefore, by gaining insight into the human brain and psychology, the effectiveness and efficiency of policy can be increased (Halpern, 2015).

Based on the insights above, a new form of management has emerged in the public administration discipline in recent years, so-called *behavioural public administration*. It provides policies that try to change behaviour with a combination of hard measures like bans and mandates and soft measures like incentives and nudges. In order to achieve this, psychologists and public administrators have to cooperate to achieve results in the practice of public administration (Lunn, Belton, Lavin, McGowan, Timmons, & Robertson, 2020). Nudging is an important policy measure in this regard. Nudging means promoting desired behaviour by directing human behaviour with small incentives. These nudges use insights from psychology to design more effective policies (Thaler & Sunstein, 2009). The idea for policymakers is to recognize citizens' limited rationality and cognitive abilities and use them to encourage citizens to engage in desirable behaviours. It is important to clarify that the goal is not merely to use behavioural public administration but show how this subdiscipline can be a valuable addition to 'regular' public administration (Jilke, Olsen, Tummers & Grimmelikhuijsen, 2017). By combining the disciplines, the discipline of public administration can maintain a multidisciplinary point of view.

In the Netherlands, interest in behavioural public administration has grown in recent years, resulting in several new organisations. The most important one is the Behavioural Insights Network Netherlands (BIN NL), which was established in 2014. It is an alliance of all Dutch ministries for the application of behavioural knowledge. BIN NL stimulates and facilitates knowledge sharing, behavioural cooperation, and knowledge building. In addition, BIN NL plays a supporting and stimulating role when it comes to the application of behavioural knowledge in policy, communication, supervision, and implementation. In line with this, the Dutch Scientific Council for Government Policy, *De*

Wetenschappelijke Raad voor het Regeringsbeleid (WRR), argued for a transformation in policy practice in which not only the economic and legal perspective is taken seriously, but also the behavioural science perspective (WWR, 2009).

2.3 Advantages of Behavioural Public Administration

According to Jilke et al. (2017), there are various advantages to using psychological insights on policy practice. They state that the added value of behavioural management for researchers and in practice is threefold. Psychological theories and methods can be valuable to 1) test and refine public administration theories, 2) to stimulate the methodological development of public administration and 3) to provide policy practice with richer scientific insights.

First, psychology can help test and refine public administration theories. The public administrators Hood and Heald (2006) argue that many citizens believe that government transparency helps to increase its legitimacy. Transparent governments should have 'nothing to hide' and transparency provides citizens with information that helps them better understand how decision-making and policy-making processes work. An experimental study by De Fine Licht (2014) shows that transparency does indeed increase the acceptance of public decisions, but that this effect depends on the type of decision. When citizens see a decision that does not coincide with their own beliefs, like cutting expenditure on healthcare, leading to the loss of lives, transparency reduces legitimacy. Transparency increases legitimacy in a decision where citizens do not feel harmed, such as cultural expenditure (Jilke et al., 2017). This example demonstrates how insights from psychological theories can explain citizens' behaviour in the context of public administration. More importantly, it shows how psychology can add nuance to public administration theories, so more suiting policies can be made, and citizens compliance can be increased.

Second, psychology can help to stimulate the methodological development of public administration. Psychologists use methods that are not often used in public administration but can be valuable to answer public administration issues. Behavioural management can benefit in particular from experimental research since experiments are widely used in psychology but are still relatively new in the discipline of public administration (Bouwman & Grimmelikhuijsen, 2016). Experimental research is valuable because it can establish causality properly, which would constitute a very useful addition in the methodological toolbox of public administration research. This can also be advantageous to policy practice: by conducting policy experiments, policy effects can first be tested on a smaller scale before it is implemented in society.

Third, behavioural public administration can help make better policy choices. The Dutch Scientific Council for Government Policy states that policymakers have to make serious use of new behavioural science knowledge because it can result in innovative policy solutions. Known in this respect are nudges, however, de WWR states that behavioural management goes beyond just nudging. The WRR concluded in 2014 that structural attention to behavioural science insights can result in a more complete problem analysis, more valid policy theories, improvement of existing policy, and implies a more inductive policy-making method that allows for lessons to be learned. However, public administrators have to look at behavioural insights with a critical eye. It is important that these insights are not simply adopted, but that they are analysed based on public administration insights, only when a valuable combination can be made, disciplines should be combined.

In conclusion, there are several examples of the use of behavioural public administration in public policy. The policy measures in the fight against the coronavirus have the aim of changing the behaviour of Dutch citizens, and to foster compliance. It is interesting to see how the government can use behavioural public administration in its policy against the coronavirus, this is explained in the next paragraph.

2.4 The Ways in which Behavioural Public Administration Can Help Fight the Coronavirus

Knowing that the transmission of the coronavirus can be reduced with beneficial individual and collective public behaviour, it is important to choose appropriate policies that can influence citizens' behaviour (Anderson, Heesterbeek, Klinkenberg, & Hollingsworth, 2020). Throughout the entire coronavirus crisis, there has been a strong reliance on experts, and politicians frequently refer to their advice when announcing new measures. Especially the epidemiologists of the Outbreak Management Team from the Dutch National Institute for Public Health and the Environment (RIVM) are taken seriously and their recommendations are often followed. As mentioned before in the introduction, the composition of the Outbreak Management Team has been criticized for not being multidisciplinary enough. Nevertheless, these experts have shaped the policy measures since the beginning of the coronavirus crisis in the following ways.

The measures against the coronavirus in the Netherlands arose mildly in mid-March but were increasingly expanded and intensified. In mid-March, people testing positive on the coronavirus had to refrain from any physical contact and were forced to stay at home. But policies shifted when more people got sick, from testing and isolating patients and relatives to a more active policy of containing the disease. On Sunday, March 15, 2020, a new set of measures was announced in the Netherlands to combat the

coronavirus, presented as the so-called ‘intelligent lockdown’. All universities, schools, contact occupations, restaurants, bars, and other social meeting places were closed (International Labour Organization, 2020). As a response to crowded beaches and parks during the weekend of March 21, 2020, measures were sharpened: all events were banned until June 1, only up to three people were allowed to go out on the streets together, and citizens had to keep 1.5 metres distance from others, families excluded (NOS, 2020). People who did not keep enough distance could be fined from March 23, 2020.

An exceptional aspect of the Dutch intelligent lockdown, compared to other European countries, was the fact that in addition to this hard policy with bans, fines and the closure of catering establishments and companies, soft measures were added to the set of rules. Citizens were not forced to stay in their homes, but rules of conduct have been introduced and citizens were expected to obey them. These rules aim to promote social distancing, regarding measures such as working from home, not shake hands, keep 1.5-meter distance, and stay at home in case of fever or a cold. Obeying social distancing has been strengthened by the government to close businesses, but in public spaces and at home, people must obey the rules of their own volition. Dutch citizens, therefore, have significantly more space to manoeuvre than other European countries: parks and beaches remained open and people were allowed to leave their home whenever they wanted. This contrasts with France, Spain or Italy where citizens were only allowed to leave their house under certain circumstances. Dutch Prime Minister Mark Rutte substantiated this policy by stating that the Netherlands is a 'mature democratic country' and that its citizens do not need a government that tells them what to do (NRC, 2020).

In this case, the Dutch government assumed their citizens as being a *homo economicus* who think rationally and follow orders properly. This premise soon turned out to be unrealistic, as described in paragraph 2.2, citizens are not rational, so they went *en masse* to the beach, supermarkets and parks during the first weekend of the intelligent lockdown. Consequently, the Dutch government introduced large fines for individuals and companies that did not obey to the rules (NOS, 2020). After this, the support for the measures seemed to increase, but research soon showed that fines cannot keep people motivated for a long time: the compliance to the measures then weakens. Knowing this, it is particularly important in the Netherlands to take advantage of the intrinsic motivation of citizens by using behavioural public administration. Insights from behavioural public administration can increase compliance with the measures taken to combat the coronavirus in various ways, two possible ways are explained below.

First, the Dutch government can combat the transmission of the virus by focussing on clear crisis communication, making it easier for citizens to adhere to the measures taken. That is because adherence to guidance can reduce the rate of transmission, which lowers the overall number of infections and

ensures that the health services have sufficient capacity to accommodate the patients (Anderson et al., 2020). However, according to behavioural insights from Lunn et al. (2020), it is very difficult to promote behaviour change that targets everyday activities such as habits and other embedded behaviour. That is because habits are usually designed to free up minds, to become more efficient, and being able to concentrate on other matters. (Gardner, Lally, & Wardle, 2012). Although, in a situation where habits such as handshaking, face touching and physical contact are no longer allowed, these habits make it harder to comply with the rules. Because habits are mostly done outside conscious awareness, it is difficult to unlearn them when people suddenly have to. Therefore, it is very important to present policy in an understandable and clear way through crisis communication, to gain as much support and compliance among citizens as possible.

Scientific literature by Jin et al., 2019, covers how people respond to crisis communication and aims to identify the best ways to communicate in a crisis. It is highlighted that fear is an effective but notorious way of making people change their behaviour and abide by the rules (Tannenbaum et al., 2015). This fear can be caused by repeatedly emphasizing the infectiousness of the virus in the media and making it tangible by mentioning numbers of sick people and deaths. Research by Trevena et al. (2016) shows that citizens trust numbers more than stories: this gives the government the opportunity to nudge citizens, using framing in the media by communicating numbers.

Citizen behaviour can be influenced by positive or negative framing (Peters, Hart, & Fraenkel, 2011). Positive framing mainly tells the number of negative test results and the number of patients healed, negative framing mainly focuses on the number of infections and the mortality rate. Positive framing ensures that the policy pursued by the government appears to be successful, but it decreases the support base and compliance with measures among citizens. By using negative framing, the policy seems less successful, but citizens continue to stick to the measures and rules for a longer period because they are more anxious (Gigerenzer, 2014). Fear has an effective impact on behavioural change and causes citizens to believe that their own actions make a difference in combating the virus. Research in behavioural public administration shows that the government can play a nudging role in this, by using negative or positive framing. Depending on the phase of the crisis, it is advisable to use both framing styles alternately, to stimulate the desired behaviour. In addition, the Dutch government can best communicate messages that contain a moral imperative for people, or when messages evoke fear or other strong emotional reactions. That is because they provide an internally sourced intrinsic motivation to comply with the rules. This intrinsic motivation appears to last longer than extrinsic incentives such as fines, and thus makes citizens show desired behaviour over a longer period of time (Van Der Linden, 2015).

According to Reynolds (2011), the Dutch government must adhere to several principles if it wants to occupy a strong position in crisis communication. The government must ensure that it can publish information quickly and factually. To maintain support and compliance, it is important that the government demonstrates empathy by recognizing that it is a difficult situation and that citizens can experience negative emotions. In addition, the government must provide clear information that everyone can understand and is able to obey. When measures become too complicated, certain groups of citizens will not be able to comprehend, which results in non-compliance. It is important to include all citizens in the chosen policy, as research shows that citizens are more likely to comply with rules when they see others comply (Schultz et al., 2007). At the same time, the study concludes that when more citizens see others violate rules, they are more likely to violate the rules themselves. Overall, behavioural public administration thus shows how the government can best communicate health crisis information when they want to achieve the greatest compliance among citizens.

The second important behavioural insight for the Dutch government to consider is the fact that, as citizens adhere more to social distancing and self-isolation, negative psychological effects can arise. Psychological research has shown that loneliness can cause mental health problems, including depression and anxiety (Cacioppo, Capitanio, & Cacioppo, 2014). In addition, research has shown that the duration of the isolation is important because the longer a period lasts, the worse mental health can become (Hawryluck et al., 2004). Mental health problems and extending the isolation period can demoralize people and increase noncompliance (Rona et al., 2007). Here an important insight of behavioural public administration is revealed. The government must, therefore, ensure that citizens do not get too many mental complaints, otherwise, compliance will decrease, and the transmission of coronavirus can increase. This could cause the Dutch approach of intelligent lockdown to fail. The Dutch government should be aware of these behavioural public administration insights and therefore try to tackle it prematurely by nudging and framing corona measures. This can be done by mentioning the psychological consequences as a preventive measure when announcing and urging self-isolation (Lunn et al., 2020). In this way, citizens can prepare and possibly prevent mental problems themselves. Research also states that citizens are more compliant when measures are time-specific and thus announced in advance. Familiarizing citizens with the self-isolation and its possible consequences provides better ways to cope and is likely to increase compliance.

In these two ways, behavioural public administration could thus be a meaningful addition to the current coronavirus crisis or to future crisis policy. It considers the effects of the corona measures from a broader perspective, which increases compliance among citizens and will result in a better policy against the coronavirus.

2.5 Conclusion

This chapter investigated to what extent behavioural science can make a constructive contribution to fighting the coronavirus in The Netherlands. During the research, an attempt was made to answer the following research question: *What can the Dutch government learn from behavioural public administration insights in the fight against the coronavirus?* First, the background of behavioural public administration in the Netherlands was explored. Secondly, the advantages of this subdiscipline were examined. Lastly, this chapter provided several recommendations based on behavioural public administration, which the government can consider when fighting the coronavirus.

It appears that to construct valuable and fitting policy against the coronavirus, public administrators and psychologists need to cooperate, so insights from both disciplines can be combined. Behavioural public administration is on the rise in both policy practice and science and can help policymakers to shape more fitting policies, but also in a broader sense, to strengthen problem analysis and policy theories. It was concluded that behavioural public administration can be valuable in three ways: to test and refine public administration theories, to stimulate the methodological development of public administration and to provide policy practice with richer scientific insights.

Subsequently, the chapter showed that the advisers of the Dutch Outbreak Management Team from the RIVM should take into account the limited rationality of the Dutch citizens. These insights are not included in current policies, mainly because the Outbreak Management Team is insufficiently multidisciplinary. Therefore, it is recommended to involve more experts from other disciplines in the Team, including experts from behavioural public administration. In this way, policy can be generated that is supported by research from psychology. Important to point out, is that behavioural public administration must not be seen as a substitute, but as complementary to traditional public administration and research. The following two recommendations are made to the Dutch government, which they can take into account in the continuation of the coronavirus crisis or in a comparable crisis situation in the future.

First, the Dutch government can increase compliance among citizens by focussing on clear crisis communication, making it easier for citizens to adhere to the measures taken. Research in behavioural public administration shows that the government can play a nudging role in the foster desired behaviour, by using positive or negative framing. The Dutch government can best communicate messages that contain a moral imperative for people or respond to fear because they provide an internally sourced intrinsic motivation to comply with the rules. This intrinsic motivation appears to last longer than extrinsic incentives such as fines, and thus makes citizens show desired behaviour over a longer period of time. In addition, the government must provide clear information that everyone can understand and obey, because including all the citizens will make most people comply with the rules.

The second behavioural insight for the Dutch government to take into account is the fact that as citizens experience more negative psychological effects because of social distancing, non-compliance can arise. The Dutch government should, therefore, mention the psychological consequences as a preventive measure when announcing and urging self-isolation. In this way, citizens can prepare and possibly prevent mental problems themselves, which can increase compliance.

To answer the main question: there is a multitude of ways in which the Dutch government can learn from behavioural public administration when combating the coronavirus. These ways can be found in the fields of clear crisis communication by using framing, and the correlation between negative psychological effects and compliance. However, further research must be done in order to fully substantiate the findings above, more restraints are stated in the next paragraph.

2.6 Discussion

At the time of writing, it seems that COVID-19 will affect people around the world for years from now. Even though behavioural public administration offers valuable opportunities in the fight against the coronavirus, the actual effect of many of these insights and nudges have yet to be proven empirically. In addition, there is a discussion about the risks of indoctrination and government influence. When can the government entice citizens into 'good' behaviour, and who determines within the government what that 'good' behaviour is (Zuure, 2014)? There is still a long way to go before policy is commonly fed by behavioural knowledge, and in the event of a crisis like the current coronavirus pandemic, the question is whether behavioural public administration is desirable when human lives are at stake. In addition, the use of behavioural interventions is difficult to test, especially the long-term effectiveness, while politicians often desire quick results for the effect of interventions (De Vet et al., 2015).

Another point of discussion that must be stated, is that this research amounts to only a literature study, written during times of the coronavirus pandemic and with constantly varying measures. Follow-up research is needed to get a complete picture of the effectiveness of the intelligent lockdown, and the associated behavioural science measures. It would be of importance if follow-up research would regard the difference in transmission, deaths, and damage to the economy between countries, in order to get a view on which policies have been most effective. In addition, the role of public administration could be investigated here, after which it can be examined whether it is a suitable way of conducting policy in subsequent crisis situations.

3. Environmental opportunities and challenges concerning the coronavirus crisis

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3.1 Introduction

In December 2019, a new, highly infectious disease emerged in the Chinese city Wuhan. The coronavirus (SARS-CoV-2 or COVID-19) spread rapidly and the outbreak was declared a pandemic in March 2020 (Tosepu et al., 2020). Roughly half the world populations' governments have enforced highly varying forms of quarantines and lockdown measures in order to contain and mitigate the aggressive expanding of the coronavirus. The Netherlands have incorporated what they call an 'intelligent lockdown' – a set of restrictions, aiming to diminish the number of infections, without actually enforcing a full lockdown. The restrictions, such as the closing of public facilities and the appeal to work from home, have a noticeable effect on everyday life (RIVM, n.d.). These protective measures henceforth referred to as coronavirus measures, oftentimes include border lockdowns and travel restrictions (Nicola et al., 2020).

The coronavirus measures are acknowledged to have significant effects on societal and economic aspects (Muhammed et al., 2020). Because of this reason, the current coronavirus crisis, by many, is considered as an enormous burden and is interpreted as "the greatest economic, financial and social shock of the 21st century" (Thorbecke, 2020). However, others view the current crisis as an opportunity to rebuild standards to aim for a low-carbon, resilient and inclusive society (Cameron, 2020). The post-corona society renewed the acknowledgement of the interconnectedness between societies and the natural environment (IRP, 2020), and could be interpreted as an opportunity for the transformation of an inclusive and green recovery opportunity that builds resilience and will integrate the climate change and biodiversity action, whilst recovering the economy (Gurría, 2020). In order to ensure sustainable development after the coronavirus crisis, it is important to study the effects of the coronavirus outbreak on the environment as environmental dynamics are indispensable for the 'green recovery'. However, governance strategies often solely emphasize on an 'outbreak' or 'short-term' narrative during epidemics – or in extension pandemics – due to a complete focus by governments on rapid identification in order to stop the spread of the virus as fast as possible (Leach et al., 2010). Due to the short-term narrative, long-term processes as environmental dynamics are oftentimes not included and not sufficiently considered whilst governing a pandemic. This is considered to be an enormous oversight as climatic factors are indisputable related to the distribution of infectious diseases and pandemics (Yeh, 2018; Leach et al., 2010). The role and importance of environmental dynamics and the governance thereof, during the

governance of a pandemic, is argued to be insufficiently represented in academic literature. For this reason, this chapter aims to answer the following question: *What are the environmental governance opportunities and challenges, following the coronavirus measures, and what does it entail for the Netherlands?*

In order to do so, recent academic literature concerning the coronavirus crisis and its environmental consequences is studied. This chapter is structured in the following manner. First, some significant global environmental trends following the corona crises pandemic are identified. Hereafter, a section follows about governance during pandemics and the importance of a resilient governance strategy is argued. Subsequently, the later section presents the environmental trends in the Netherlands and sums up the environmental challenges and opportunities. It is acknowledged that important environmental consequences can only be visible after longer periods. Nonetheless, academic research has already identified various environmental trends. It is recognized that academic research concerning environmental trends in the Netherlands is scarce. Because of this reason, some significant global environmental trends are presented, and the theory is applied to the situation in the Netherlands.

3.2 Global Environmental Trends Following the Coronavirus Crisis

The diffusion of the coronavirus varies highly between different continents, countries and cities. This depends, amongst others, on the number of infected persons and the coronavirus measures taken in different countries, as various mitigation strategies are implemented worldwide (Gibney, 2020). The public health is distinctively considered the highest priority worldwide because the infection of the coronavirus outbreak has serious negative consequences on people's health (Zambrano-Monserrate, 2020). Therefore, countries all over the world have taken extreme measures to mitigate the spread of the virus. The coronavirus measures, including social distancing and (partial) lockdowns, are acknowledged to have significant effects on societal and economic aspects and have distinctive consequences on human behaviour and movement.

It is argued that the measures have a significant effect on the natural environment as well (Muhammed et al., 2020). The coronavirus measures have caused industrial activities to suspend and industrial practices to close. They oftentimes include travel restrictions which consequently decreases emissions related to transport (Muhammed et al., 2020; Nicola et al., 2020). Due to these developments, environmental pollution is expected to drop (Muhammed et al., 2020). This would entail that the coronavirus outbreak, although indirectly, affects the environment and environmental conditions. Furthermore, environmental indicators and climatic factors have affected the distribution of the

coronavirus (Ahmadi et al., 2020; Bashir et al., 2020). The environmental dimension both influences and is influenced by the pandemic. The coronavirus measures are established to mitigate the coronavirus infection as soon as possible, but this strategy has various unforeseen consequences. This chapter will introduce two significant environmental trends to illustrate.

3.2.1 Emissions

Employed coronavirus measures contributed to the decrease of environmental pollution, especially air pollution (Dutheil et al., 2020; Muhammed et al., 2020). Because of governmental restrictions on movement, the usage of transportation has decreased for both the private and the public sector. (Partial) lockdowns and restrictions of travel by vehicle consequently entails a decrease in emissions, which are generally identified as harmful for the environment. Research indicates that an overall decrease of Nitrogen Dioxide (NO2) emission, Carbon Dioxide (CO2) concentrations and the amount of Particulate Matter with a diameter smaller than 2.5µm (PM 2.5) is observed due to the restrictions on travel and the enforcement of lockdowns (Zambrano-Monserrate, 2020; Vaughan, 2020). People travelling by air has dropped approximately 96%, which is the lowest it has been in 75 years (Muhammed et al., 2020). NASA (National Aeronautics and Space Administrations), as well as the ESA (European Space Agency), released evidence that the NO2 emissions have been reduced to approximately 30% (Muhammed et al., 2020). Furthermore, the Copernicus Atmosphere Monitoring Service (CAMS) governed by the European Union identified a significant drop of PM 2.5 during the month of February, when the most coronavirus measures were enforced, in relation to the previous years before (Zambrano-Monserrate et al., 2020). Furthermore, the coronavirus pandemic has already caused a drop of approximately 17% in global CO2 emissions (Vaughan, 2020). Thus, a correlation between the coronavirus outbreak (and the concurrent measures) and the improvement of air quality by the reduction of air pollutants are identified (Zhu et al., 2020). Air quality itself is essential for human health as air quality degradation is a significant percentage of mortality worldwide (Zhang et al., 2017). Air pollution is considered to contribute to approximately 7 million deaths every year (WHO, 2018).

The decrease in environmental pollution can, therefore, be considered as a positive effect, although it is not considered a sustainable solution for the enhancement of air quality as the decrease of these greenhouse gasses (GHGs) and air pollutants are expected to only be temporary as long as the measures are enforced, and therefore not effective enough to compensate the total concentrations in the atmosphere. For a significant decline in emissions, structural changes ought to be made (Zambrano-Monserrate et al., 2020).

3.2.2 Waste Management

Another form of environmental pollution affected by the coronavirus outbreak, yet discussed to a lesser extent, is waste management. Governments of different levels are urged to treat waste management (including but not limited to medical, household and precarious waste), especially in times of pandemic, as an important public service to minimize possible indirect effects upon public health and the environment (Geneva Environment Network, 2020). Due to the proposed measures, various observations are made in relation to waste management. Due to quarantine policies, environmental noise is reduced, and the natural environment is more often left untouched which results in e.g. clean beaches and the return of species to their ecosystems (Zambrano-Monserrate et al., 2020). Nevertheless, a rise of both organic and inorganic waste is identified as delivery services increased for both goods and nutrition. In addition, waste management is often restricted in affected countries and recycling centres are closed due to infection risk (Zambrano-Monserrate et al., 2020). Furthermore, medical waste has significantly increased due to increased infected people and the need for personal protective equipment such as facemasks (Calma, 2020). Adverse risks are occurring once governments do not properly manage these waste facilities, as more and more single-use medical equipment enters the natural environment (Saadat, 2020). It can be expected that medical waste shall enhance during future pandemic emergence, as it has during the coronavirus crisis.

Two prominent trends have been introduced to illustrate that the coronavirus outbreak, and the following measures, actively affect the natural environment and environmental pollution in various ways.

3.3 Governance During Times of Pandemic

Governance during times of pandemics – pandemic governance – is highly affected by emerging infectious diseases. A pandemic outbreak significantly affects the way that countries are normally governed. Governance is referred to as the sum of manners that individuals and institutions manage common affairs, both in the public as private spheres (Commission of Global Governance, 1995). It differs from governing, which is understood as "the purposeful efforts to guide, steer, control, or manage (sectors of facets of) society"' (Kooiman, 1993, p.2). Governance refers to the emerging patterns following governing activities of actors within the social, political or administrative dimension (Kooiman, 1993; Jordan, 2008). The 'governance' concept allows the inclusion of non-state actors such as corporations, non-governmental organizations and international organizations to be able to bring about societal change (Lemos and Agrawal, 2006, page 298).

3.3.1 Resilient Pandemic Governance

The governance of an epidemic - and by extension pandemic - of an 'emerging infectious disease', concerns challenges as it encompasses "highly dynamic, cross-scale, often-surprising viral–social–political-ecological interactions" (Leach et al., 2010, p.369). Infectious disease outbreaks significantly change the governance strategy of a government or international organization. 'Business-as-usual' does not apply. Governance in times of pandemic outbreaks is often dominated by an emphasis on 'short-term' or 'outbreak' narrative – e.g. rapid identification of the crisis, the implication of various measures in order to quickly stop the spread of the virus (Leach et al., 2010). This narrative focuses on a particular framing of the disease as a 'system' which includes a brief characterisation of the disease dynamics and a proposed emergency response (Dry and Leach, 2010). Furthermore, it highly emphasized the inclusion of experts such as virologists to realize a certain goal (Dry and Leach, 2010). The goal could be to keep the mortality rate to a minimum. To achieve such a formulated goal, a policy is created and in order to mitigate the spread of the virus and measures concerning e.g., border control is enforced. The 'short-term' narrative thus focuses on direct containment of the virus.

This 'short-term' narrative has various shortcomings. Traditional response mechanisms have been proven inadequate to the task of prevention and control of emerging infectious diseases as this overwhelms government institutions and governance strategies (Ross, 2015; Schwarts and Yen, 2017). Therefore, the revision of the governance strategy concerning infectious diseases and the possibility of future pandemics are necessary. However, this revision would require adjustments in outbreak policies and governance structures of national governments and international organizations to be equipped to emerging infectious diseases. It is noted that the inclusion of enhanced pandemic preparedness and response infrastructures in governance strategies would enhance its resilience. The term resilience has various academic understanding, varying from stability to adaptability to change (Hegger at al., 2016). When discussing resilient governance, the term resilience reflects on the adaptability and transformability of a system (Davoudi et al. 2012). Resilient governance should 'learn-by-doing' to foresee a system implosion and avoid the collapse of the system if a shock occurs. It ensures the system to survive the changing circumstances by reacting to it appropriately. A pandemic outbreak has a significant effect on the governance system and can be identified as a shock to the governance system. It is important to build resilient governance systems to be able to foresee an implosion of the governance modes in times of pandemics. As pandemics are identified as occurring more often in the last half-century and are therefore expected to happen more often in the future (Ross et al., 2015), resilient governance strategies are becoming increasingly relevant and important. By understanding and learning from the dynamics

underlying pandemics, it can be argued that the strategy concerning governance during pandemics will be more adaptable, transformable and therefore more resilient (Davoudi et al., 2012). It is important to understand pandemics in order to properly govern them.

3.3.2 Environmental Governance in Times of Pandemics

The 'short-term' governance strategy often does not include valuable dynamics underlying an infectious disease outbreak (Dry and Leach, 2010). Long-term processes within systems such as the health system and the environment are oftentimes not included within, whilst these dynamics are very influential to the disease emergence and diffusion (Dry and Leach, 2010). Due to this short-term narrative of these governance processes, environmental governance is not comprehensively considered within and during governance during pandemics. Environmental governance is receiving more attention due to the acknowledgement of environmental development such as global warming and environmental degradation (Lundberg, 2019). Environmental governance refers to the "set of regulatory processes, mechanisms and organizations through which political actors influence environmental actions and outcomes" (Lemos and Agrawal, 2006, p.298).

The modes of governance responses that normally govern epidemic – and by extension pandemic – have been identified as having shortcoming "when it comes to dealing with the full range of systems dynamics involved with disease and ecology in a complex world" (Leach et al., 2010, p.373). This entails that governance during times of pandemics insufficiently acknowledges the relationship between environmental dynamics and infectious disease outbreaks. Due to the short-term narrative, long-term processes are oftentimes not included and not sufficiently considered whilst governing a pandemic. This also counts form environmental processes, as they are long-term and complex (Leach et al., 2010). This, while environmental indicators and climatic factors are identified as affecting the distribution of infectious diseases and pandemics (amongst others, see Ahmadi et al., 2020; Bashir et al., 2020). At the same time, pandemics are identified as occurring more frequently in the last half a century and are expected to occur more often in future (Ross et al., 2015). Changing climatic conditions are highly related to infectious disease transmission (WHO, n.d.), and the problems of pandemics and climate change are indispensably linked (Watson, 2020). Therefore, it is expected that, with a persistent climate change, pandemics will occur more often in the future.

Because of this reason, it is important to achieve an overarching understanding of pandemic outbreaks on an environmental level as ecological dynamics processes affect pandemic outbreaks and the distribution of infectious diseases (Leach et al., 2010). Inclusion of ecological and environmental dynamics

is argued to be very relevant within the scope of governance during times of pandemic. Climatic factors have already been identified to play a role in the spreading of the coronavirus (Ahmadi, 2020). An understanding of the environmental and ecological contexts of climate in relation to infectious diseases could assist with the prevention and detection of infectious diseases and the governance thereof (IOM, 2008), and assist in the formulation of policies and governance strategies for the pandemic in question. The specified governance strategies would, therefore, be more equipped to overcome the shock that an emerged disease causes. Inclusion of environmental dynamics could strengthen governance resilience in times of pandemic. This will become more and more important in the future, as global warming is already contributing to the emerging and diffusion of lethal diseases and influences both the geographical diffusion of illnesses and transmission dynamics. It is expected that climate change will also affect other additional contributors to infectious disease emergence (IOM, 2008). Furthermore, the short-term narrative negatively affects the need for long-term sustainability and long-term actions to create environmental and social impact (Duceman, 2018).

3.4 Environmental Challenges in the Netherlands

The coronavirus outbreak has had significant effects in the Netherlands as well. The virus has been detected in the Netherlands for the first time at the end of February 2020. The first measures were taken at the beginning of March 2020, such as the 'intelligent lockdown' as a measure to ensure social distancing and isolation in order to protect the public health and to prevent the virus from spreading (Keulemans, 2020). The coronavirus measures have had effects on the natural environment in the Netherlands.

3.4.1 Emissions

In the Netherlands, following worldwide trends, significant differences in GHG emissions can be observed in comparison to last year during the same period. Air pollution in the Netherlands has decreased between 20% to 60% according to satellite measurements of the Royal Netherlands Meteorological Institute (KNMI), comparing the period right after the coronavirus outbreak to the same last year. Especially the Carbon dioxide (CO2) and Nitrogen dioxide (NO2) emissions decreased (Levelt et al., 2020).

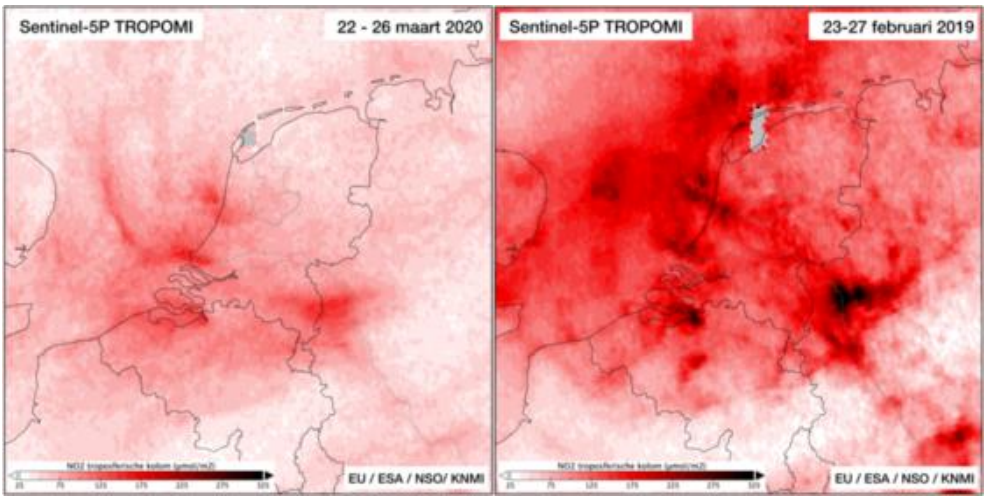

Figure 1: NO2 measurements over the Netherlands by the KNMI from 22-26 March 2020 (left) compared to 23-27 February 2019 (right), a period with comparable meteorological conditions (Levelt et al., 2020).

It is stated that the decrease of polluting substance emissions has a direct relation to the decrease in economic activity in the Netherlands (Levelt et al., 2020). The decrease in industrial activities and transport cause lesser air pollutants. Although nitrogen emissions have decreased, the decrease is expected to only be temporary. It can, therefore, be concluded that a temporary decrease will not fix the nitrogen dispute in the Netherlands. For this reason, the Dutch government has decided to continue with the enforced nitrogen policy to enforce a more structural approach (Rijksoverheid, 2020). On the other hand, the Dutch government has decided that the CO2-tax is suspended this year because of the decrease in economic activities due to coronavirus measures (van Hest & Duintjer Tebbens, 2020). The CO2-tax is ought to be paid by the top 300 most polluting businesses in the Netherlands. However, by reducing the CO2-tax, it is more likely that the emissions will skyrocket as soon as the coronavirus measures are lifted. This is expected to have a negative consequence on environmental pollution and on environmental development as soon as the coronavirus measures are lifted and on the longer-term. It can be concluded that the short-term measures, such as the coronavirus measures, is not a sustainable approach in order to lower the greenhouse gasses produced in the Netherlands.

3.4.2 Waste Management

In the Netherlands, an increase in medical waste due to the corona pandemic has also been identified (Leijster, 2020). Following the new guidelines presented by the European Commission in order to ensure safe waste management in times of the coronavirus crises (European Commission, 2020), waste management facilities have anticipated on the expected increase of domestic during the 'intelligent lockdown' (see amongst others Wastenet, 2020; AfvalOnline, 2020).

3.4.3 Challenges and Opportunity

In the Netherlands, 170 Dutch environment and development scientists and academics published a manifesto, calling for a 'post-neoliberal development planning in the post-COVID-19 future' (Straver, 2020). The manifesto calls for a revision of the current worldwide GDP focused development strategy. This current 'economic development strategy' oftentimes does not consider important complex systems as ecology and biodiversity and tends to oversee its serious negative consequences on them (Straver, 2020). The manifesto proposed various briefly explained policies, including an economic framework focused on redistribution and reduction of consumption and travel, is critical for a more sustainable, equal and diverse society (Straver, 2020). It calls for a society that is better equipped to deal with and possibly prevent massive shocks such as climate change and the emerging pandemics to come (UU, 2020). The post-corona society could, and arguably should be acknowledged as an opportunity because the current coronavirus pandemic emphasizes the interconnectedness between societies and the natural environment (IRP, 2020). The development following the crisis should include the environmental dynamics as an opportunity for strengthening pandemic governance. Furthermore, it should see the opportunity for the transformation of an inclusive and green recovery opportunity that entails goals that build resilience and will integrate the climate change and biodiversity action, whilst recovering the economy (Gurría, 2020).

In order to ensure this development, the used 'outbreak' narrative during this coronavirus outbreak, should make room for extended research to ensure environmental dynamics within the Dutch governance structures. This narrative, in the Netherlands, is partly characterized by the group of medical experts, the Outbreak Management Team (OMT), which advises the Dutch government concerning policy and necessary measures (RIVM, n.d.). The OMT exists merely out of medical experts, which obviously is very important during an infectious disease outbreak. Inclusion of other experts, e.g. biologist and environmentalists focussing on the underlying dynamics of the pandemics, could strengthen the medical team to make it more resilient.

The short-term narrative is necessary, however, could very well be complemented with a more structural approach which would include important dynamics to strengthen Dutch pandemic resilience and environmental developments.

3.5 Conclusion

To conclude, the coronavirus outbreak has affected the natural environment in various ways. Due to the short-term narrative of governance during times of pandemics, environmental dynamics are oftentimes not included in the decision-making process. It is argued that it should be complemented with a more structural approach focussing on the long term to include important processes within pandemic governance and e.g. foresee environmental degradation. Environmental effects have a major influence on the spread of infectious diseases and climate change and pandemic emergence is indispensably linked. If climate change continues in the current situation, this can lead to more humanitarian and ecological disasters, including the emergence of pandemics.

The coronavirus does not merely have direct negative environmental consequences but also present an opportunity. A revision of the current pandemic strategy, with the inclusion of environmental dynamics, can enhance governance strategies. An understanding of the underlying environmental dynamics of the emerging infectious disease will, therefore, assist the decision-making process during the pandemic outbreak and assist in the detection of other possible future pandemic outbreaks. The inclusion of environmental dynamics will make governance strategies during and for pandemic more resilient.

The Netherlands have ensured the consequences of the coronavirus crises and its concurrent measures as well. Some temporary environmental changes are identified. A revision of the current development structure in the Netherlands and the opportunity of inclusion of environmental dynamics in the post-corona society is emphasized. The Dutch post-coronavirus should include environmental dynamics more, in order to ensure resilient pandemic governance and sustainable development.

3.6 Discussion

This chapter analysed the environmental governance opportunities and challenges resulting in the coronavirus crisis and its concurrent measures and its effects on Dutch society. It is noticed that at the time of writing, the coronavirus pandemic is still in place, but the coronavirus measures have been significantly changed and reduced in comparison to the beginning of March 2020.

It is acknowledged that further research is required to map the different environmental direct and indirect effects, both worldwide as for the Netherlands, as environmental consequences are considered to be long-term. Furthermore, it is noticeable that this chapter focused broadly on global environmental trends and the theoretical framework. Mostly due to a lack of usable academic literature focused upon the Netherlands. The emphasized relationship of environmental dynamics and importance for pandemic governance is hardly studied and it is argued this relationship is promising for future pandemic governance.

4. Loneliness Virus and Touch Starvation

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4.1 Introduction

On March 16th, the Dutch Prime Minister Mark Rutte announced the intelligent lockdown in the Netherlands. This had a huge impact on the whole society. Restaurants and borders closed, and the social distancing rule was established. The social distancing rules necessitate people to stay at home as much as possible. They need to work from home and are advised to not meet friends or family (Ministerie van Algemene Zaken, 2020). These rules result in people having much fewer social contacts a day. If people still meet, they need to stay one and a half meter apart (Ministerie van Algemene Zaken, 2020). Rutte stated in his speech that we move to an 'anderhalvemetersamenleving': a society where people need to stay one and a half meter away from each other (NU.nl, 2020). The 'one-and-a-half-meter-rule' follows in people having fewer daily touches, especially from people outside their household. So, these social distancing rules, if followed, can result in much fewer social contacts, and fewer touches a day.

Humans are a social species: we need other people around us, as a primary need (Baumeister & Leary, 1995). Evolution has shaped human genes to be sensitive to contact and relationships with others (Cacioppo et al.,2000). Social contacts positively affect mental state, as well as taking away that social aspect of people's lives can result in negative consequences. In this part, we will illuminate the effects of these fewer of the social distancing rules on mental health and well-being. Well-being is seen as a state of absence of mental and physical disease and positive emotions (Ishak, Kahloon, & Fakhry, 2011). We will focus on the following sub-question: *what are the effects of the social distancing rules, due to the intelligent lockdown, on the mental health and well-being of humans?*

In the years 1947 till 2017 the number of people in the Netherlands that live alone has risen from 285 thousand till almost 3 million (Central Bureau for Statistics, 2018). Those people normally get their share of social contacts in meeting with friends, going out, or from their interactions at work: things that are now restricted by the government. For these people, the quarantine can have a massive effect on their amount of social interactions and therefore on their mental wellbeing. According to a survey done in the United Kingdom, which took place a few weeks in lockdown (2-3 April), 24% of the respondents said they have had feelings of loneliness in the past weeks (Mental Health Foundation, 2020). This is more than before the lockdown when the percentage of people stated that they had felt lonely was at 10% (Mental Health Foundation, 2020). When mentioning feelings of loneliness, people tend to think of the elderly.

But in this same survey, we have seen a rise in the feelings of loneliness in young people: aged 18 to 24 (Mental Health Foundation, 2020). Before the lockdown, only 16% experienced feelings of loneliness, since the start of the lockdown this percentage has risen to 44%.

Loneliness, or perceived social isolation, has been described as the dissatisfaction with the discrepancy between desired and actual social relationships (Holt-Lunstad et al., 2015). Loneliness negative health effects, such as low subjective quality of life and poor self-rated health (Lauder et al., 2006). Objective social isolation is the objective or actual lack of interactions with others or the wider community (Leigh-Hunt et al., 2017). Being socially connected is not only influential for psychological and emotional well-being, but social isolation on its own is associated with risk behaviours, behaviours that form a threat for health, and higher risk for early mortality (Holt-Lunstad et al., 2015).

The social distancing rules do not only affect feelings of social isolation or loneliness but also affect the number of touches we receive a day. The coronavirus has made platonic physical touches, such as hugs, high fives, and kisses a taboo (Pierce, 2020). Touch is a basic necessity of life (Keizer, 2020). Anouk Keizer (2020), professor at Utrecht University examines that being touched has many positives effects on mental and physical health. Touching other humans will stimulate the release of Oxytocin, a hormone that is related to social bonding, stress regulation and mental health (Olff, et al., 2015).

The coronavirus is not only attacking our physical health, but also our mental health (Guterres, 2020). Many experts point out that the psychological consequences of the corona outbreak will outlive the physical consequences (Guterres, 2020). The feelings of loneliness and lack of touch are seen as major consequences of the coronavirus. Therefore, it is important to investigate the effects of those feelings on mental health and well-being (Holmes et al., 2020). In this literature overview, we will investigate the, mostly negative, effects that come with social isolation, loneliness and lack of touch due to the social distancing rules taken to combat the coronavirus.

4.2 Social Isolation and Loneliness

As seen in the previous numbers from the survey conducted in the UK, the amount of people experiencing feelings of loneliness has risen since the start of the corona pandemic (Mental Health Foundation, 2020). Already, a few studies acknowledge this increase in loneliness and focused on reducing these feelings in quarantine to protect against possible mental and emotional problems (Holmes et al., 2020). It is observable that social isolation and loneliness become more evident during the quarantine. Therefore, we expound the negative effects of social isolation and loneliness on well-being.

The distinction between social isolation and loneliness is in most studies explained by the perception of social networks. Social isolation is objectively observable by the frequency of social contact, and small social networks (Holt-Lunstad et al., 2015). Where loneliness is a perception or feeling, it is described as the subjective feeling of the absence of a social network or a companion (Leigh-Hunt et al., 2017). In their systematic overview, Leigh-Hunt et al. (2017) found a significant association between social isolation and loneliness. Hence, we will combine the effects of the two concepts on mental health and well-being.

Social isolation and loneliness are both associated with increased all-cause mortality and social isolation is associated with cardiovascular diseases and depression (Leigh-Hunt et al., 2017) (Cacioppo & Hawkley, 2003) (Holt-Lunstad et al., 2015). In their meta-analysis, Holt-Lunstad et al. (2015) found that the odds of mortality for people in social isolation are 1.29 (95% CI 1.06, 1.56), times higher than the odds for people not in social isolation. The odds of mortality for people reporting loneliness are 1.26 (95% CI 1.04, 1.53) times higher than the odds for people not reporting loneliness. The evidence was the strongest for the relationship with cardiovascular disease with an odds ratio of 1.5 (95% CI 1.2, 1.9) (Leigh-Hunt et al., 2017). The risks of the lack of social connections are comparable with big risks factors for mortality like lack of physical activity, obesity and substance abuse (Holt-Lunstad et al., 2015). We will focus on three mechanisms through which social isolation affects mental and physical well-being: stress, health behaviours and a healthy sleeping pattern.

4.2.1 Stress

Socially isolated people can suffer more stress and are more likely to withdraw into themselves because they do not have the opportunity to fall back on their social networks for support (Leigh-Hunt et al., 2017). In stressful times, such as the corona crisis, having dependable social ties can mitigate the levels of stress an individual is perceiving (Cacioppo & Hawkley, 2003). Having a reliable social network and feeling embedded helps to cope with the stress the current virus pandemic brings.

On themselves, loneliness and perceived social isolation are stressors that can have negative outcomes (Cacioppo, & Hawkley, 2003). As Baumeister and Leary (1995) stated, social interactions and social acceptance are basic human needs: withdrawal from these can cause stress. Furthermore, being socially isolated is associated with higher levels of anxiety and perceived stress, and by lower levels of optimism, happiness, and life satisfaction (Cacioppo, &Hawkley, 2003). Perceiving high levels of stress can result in more engagement in risk behaviours, such as smoking and drinking alcohol and less engagement in healthy behaviours. For example, remaining on a healthy diet (Cacioppo, &Hawkley, 2003).

4.2.2 Health Behaviour

Lonely people are more likely to engage in risky behaviours as a psychological relief mechanism (Leigh-Hunt et al., 2017). So, were socially isolated adolescents associated with higher levels of tobacco use (Leigh-Hunt et al., 2017). These people are more likely to engage or sustain these behaviours because they are less subjected to normative pressure from people around them (Cacioppo & Hawkley, 2003). With smaller or no social networks people are also less exposed to healthy behavioural norms and healthy advice (Leigh-Hunt et al., 2017). Friends and family can put direct or indirect pressure on someone to maintain a healthy lifestyle.

4.2.3 Sleep

Loneliness is a state of high alert for potential threats in the environment (Hawkley, Preacher & Cacioppo, 2010). Lonely people are perceiving more feelings of danger and threat. These individuals will thereby focus more on negative stimuli in their environment than socially embedded individuals. This state of threat will consciously affect the daytime functioning, but will also unconsciously affect sleep quality (Hawkley, Preacher & Cacioppo, 2010). In this state of constant alertness, socially isolated people are less likely to fully recover and receive the rest needed to function optimally during the day.

Sleep deprivation has dramatic negative effects on the repair and maintenance of physiological functioning (Cacioppo, & Hawkley, 2003). It affects hormonal, metabolic and neural regulation. Cacioppo & Hawkley (2003) showed in their research that young adults who perceived themselves as socially isolated had worse sleep conditions. Lonely individuals experience poorer sleep efficiency, latency and more micro-awakenings: small moments of awakening during the night (Hawkley, Preacher & Cacioppo, 2010). The sleep duration did not differ between socially isolated and not isolated individuals: the socially bonded individuals slept more efficiently and effectively (Cacioppo, & Hawkley, 2003).

The worse sleeping quality seen in lonely individuals is likely to result in daytime dysfunction: low energy levels, high levels of sleepiness and fatigue (Hawkley, Preacher & Cacioppo, 2010). This daytime dysfunction is shown to further increase feelings of loneliness. This results in a vicious circle, which traps lonely individuals in their feelings of loneliness (Hawkley, Preacher & Cacioppo, 2010).

4.3 Social Distancing and Touch Starvation

These social distancing rules need to prevent the virus to spread but also prevent people from touching each other. This decrease in touches can affect our health as affective touches, such as hugs and strokes contribute to good mental and physical health (Keizer, 2020). In this part, we will focus on the effects on mental and physical well-being as a result of the decrease in effective touches.

4.3.1 Affective Touch

Our skin is the largest organ of our body (Pierce, 2020). It has not only developed for sensing the world around us, but also for receiving affective touches (Keizer, 2020). Affective touches are slow, lovely touches. Humans can distinguish between two types of touches: sensing and feeling (Keizer, 2020). Sensing is the observation of the world around us. For example, sensing an insect on your arm. The feeling is described as experiencing affective touch, such as a loving stroke. These two types of touches are processed in different regions of our brain. Affective touch develops at a very young age. Scanning brain activities in newborns showed that already at 2 months old, children can distinguish between normal touch and affective touch (Keizer, 2020). Our body is programmed, from a young age on, for effective touches. These touches have many positive effects on mental health and well-being.

Affective touch can influence the perception of pain, as they can increase the pain threshold (Mcglone, Wessberg & Olausson, 2014). Anouk Keizer (2020) stated that women who held hands with their husbands could withstand the pain of holding their hand in ice water longer than individuals who held no hands. Furthermore, affective touch is not only associated with the reduction of pain, but also with stress reduction (Keizer, 2020). Patients who are touched by a nurse showed a decrease in observed and reported levels of stress (Mcglone, Wessberg & Olausson, 2014). At last, affective touch is also associated with the reduction of social exclusion or ostracism (Mohr et al., 2017). Mohr et al. (2017) stated that, in their research, slow touch was able to a degree buffer the effects of personal threatening experiences, such as social exclusion.

Thus, affective touch can affect pain reduction, stress relieves and feelings of social exclusion. Being able to give or receive a loving touch, due to the social distancing measures in these stressful and

socially isolated times can relieve these negative feelings. But for people in objective loneliness, this is not something that is possible.

4.3.2 Oxytocin

Oxytocin is a hormone that is released in social interactions and touches, such as hugs, cuddles and sex (Psychology Today). This hormone plays a critical role in positive social interactions, resulting in a general feeling of well-being (Ishak et al., 2011). Firstly, Oxytocin reduces fear and increases trust (Ishak et al., 2011). On the physiological level, it plays a role in decreasing blood pressure. It also reduces the subjective sense of anxiety, overall calm and it regulates stress (Ishak et al., 2011) (Ollf, et al., 2013). Oxytocin reacts on stress, as it decreases subjective stress responding and reduces cortisol levels. This hormone has a direct and indirect effect on the amygdala activity through which stress and fear reduction, increased trust and overall calm are influenced (Ollf, et al., 2013).

4.4 Conclusion

The social distancing rules have a big impact on society as a whole, as well as on an individual level. People are not allowed to meet friends or family and if they meet, they need to keep a distance of one and a half meter. These new rules can have many effects on the mental health and well-being of individuals. The numbers of people experiencing feelings of loneliness have risen from 10% to 24% per in the first stadium of the coronavirus outbreak. The large decrease in social contacts can result in a discrepancy between the desired social contacts and the actual social contacts, in other words loneliness. Loneliness and social isolation are associated with serious illnesses, such as depression, cardiovascular disease and even all-cause mortality. The risk of the lack of social contacts on mortality is comparable to those of substance abuse or obesity. Individuals who feel socially isolated suffer from more stress. Loneliness and social isolation are stressors on themselves. Thereby, these people do not have the opportunities to fall back on a wide social network to help them with dealing with this stress or to keep them on a healthy track. Perceiving high levels of stress increases the likelihood of engagement in risk behaviours, which makes it hard for socially isolated people to break out of a vicious circle of unhealthy behaviour. Thus, all the above factors interact and trigger each other, which makes feeling lonely or socially isolated a serious issue with a big amount of possible negative outcomes.

The new rules not only affect feelings of social inclusion, but the ‘one-and-a-half-meter-rule’ also prevents people from touching each other. The amount of loving touches likes hugs, kisses and cuddles a day declined. Whereas these affective touches can affect pain reduction, stress relieves and feelings of

social exclusion: things that can counter the effects of social isolation. The lack of touch also results in less Oxytocin release. This hormone can reduce stress and fear and increase trust and calm.

In the end, the coronavirus is not only attacking our physical health, but also our mental health. Many experts point out that the psychological consequences of the corona outbreak will outlive the physical consequences. The social distancing measures, due to the intelligent lockdown, do have major effects on the mental health and well-being of individuals in society.

4.5 Discussion

Social distancing, as seen above, can cause many negative outcomes for the mental health and well-being of individuals. Naturally, it is not a straight line from social distancing to social isolation or touches starvation. People who live with a big family or students who live with a group of peers, do not have to suffer from social distancing measures. Thereby, socially distancing allows digital contact. Contact over social media is not the same as face to face contact, but it can provide feelings of connection (Antheunis, 2020).

Even though the social distancing rule does not in every individual directly affect the mental health and well-being, the psychological suffering, due to the corona measures, increases and should be addressed (Guterres, 2020). The consequences of psychological suffering can continue after the virus is long gone. Being socially embedded is a basic human need (Baumeister & Leary, 1995). Social distancing is, therefore, a word poorly chosen. In these stressful times, people need others around them. Social distancing should be called by what it is about: physically distancing you to protect the weaker in society. The focus should shift from social distancing to staying socially connected while staying physically apart. The Dutch King, in a speech on national television, appealed to people to give extra attention to people in our neighbourhood who need it. He stated that we cannot stop the coronavirus, but we can stop the loneliness virus (NOS, 2020). This community feeling is what is needed to counter the effects of social distancing rules. Policymakers need to take mental health into account when making policies limiting social contact. Naturally, the decrease in infected people should number one priority, and face to face contacts should not take place when not safe, but there are other possibilities to address the sake of mental health.

5. Integration

In the previous three chapters, the disciplines of Public Governance, Governance for Sustainable Development and Social and Health Psychology outlined their own disciplinary perspective on the effects of the coronavirus outbreak and the taken measures of the intelligent lockdown on Dutch society. In this chapter, these insights are integrated, step by step, using the interdisciplinary research method of Repko and Szostak (2017). The completed interdisciplinary research will answer the following question: *What are the effects of the corona measures on Dutch society in the spring of 2020, and what could this imply for governance during future pandemics?*

First, section 5.1 briefly presents the core insights of the three disciplines so that similarities and differences between insights, theories, concepts and assumptions can be more easily identified (Repko & Szostak, 2017). Next, section 5.2 creates a 'common ground' for the various conflicts which have been identified between the insights of Public Governance, Governance for Sustainable Development and Social and Health Psychology (Repko & Szostak, 2017). The creation of common ground is necessary in order to combine the disciplinary parts into a more comprehensive understanding. Adjusting disciplinary concepts is of importance to ensure that they are no longer in conflict, and a common 'language' or jargon is created in preparation for integration. This resolving of conflict is done by means of different integration techniques by Repko and Szostak (2017). The common grounds then forms the bridge to connect the three disciplines and makes it possible to successfully integrate the presented insights. The common grounds, therefore, provide the building blocks to achieve a more comprehensive understanding of the various disciplinary insights. The more comprehensive understanding is created by the integration of concepts and assumptions as a means to an end of integrating insights (Repko & Szostak, 2017) This more comprehensive understanding is used in order to answer our main research question. This is done in section 5.4.

The goal of this thesis is to create a holistic understanding of the different effects that the coronavirus outbreak has had on Dutch society, in order to foresee and use this knowledge for possible futuristic pandemics. It is argued, based upon the insights of Governance for Sustainable Development, that environmental changes and trends are linked to the emergence of infectious diseases which could cause future pandemics. It is acknowledged that the coronavirus outbreak has had multiple varying consequences, however, the policies in the Netherlands have focussed mainly upon public health. By integrating the insights, we argue that pandemic strategies can become more resilient and better equipped for possible future pandemics. Therefore, the thesis argues that we should learn from the coronavirus outbreak in the spring of 2020 in order to gain a more inclusive understanding of the

consequences of a pandemic outbreak. In this way, the Dutch government can better shape policies when a pandemic breaks out in the future.

5.1 Disciplinary Individual Insights

Research from the Public Governance discipline has investigated to what extent behavioural science can make a constructive contribution to fighting COVID-19 in The Netherlands. During this interdisciplinary research, an attempt was made to answer the following sub-question: *What can the Dutch government learn from behavioural public administration insights in the fight against the coronavirus?* It appeared that to construct a valuable and fitting policy against the coronavirus, public administrators and psychologists need to cooperate, so insights from both disciplines can be combined. Behavioural public administration can help policymakers to shape more fitting policies, strengthen problem analysis and policy theories. The chapter showed that the advisers of the Dutch Outbreak Management Team from the RIVM should take into account the limited rationality of the Dutch citizens.

It is recommended to involve more experts from behavioural public administration in the team. In this way, policy can be generated that is supported by research from psychology. The second recommendation is based on crisis communication. The Dutch government can best communicate messages that contain a moral imperative for people and make use of positive and negative framing. This will create an internally sourced intrinsic motivation among citizens to comply with the rules. In addition, the government should mention the psychological consequences as a preventive measure when announcing and urging self-isolation. In this way, citizens can prepare and possibly prevent mental problems themselves, which can increase compliance.

Research from the Governance for Sustainable Development discipline concluded that the coronavirus outbreak, and the concurrent measures, have had significant effects on the natural environment but are expected to be only temporarily positive. This counts for the Netherlands as well. In order to do so, the chapters answered the question: *What are the environmental governance opportunities and challenges, following the coronavirus measures, and what does it entail for the Netherlands?*

Environmental factors are indicated as influential during the coronavirus outbreak, as well as for other infectious diseases and pandemics. However, environmental dynamics underlying the disease emergence and transmission are too often not sufficiently considered during formation of governance strategies in times of pandemics. It is concluded that governance modes should become more resilient and better equipped for pandemic outbreaks, as they are expected to occur more frequently in the future. Furthermore, it is argued that a deeper understanding of the underlying environmental dynamics of the

emerging infectious disease assists the governing process during the pandemic outbreak and could assist the detection of future pandemic outbreaks which are expected to happen more often in the future partly due to deterioration of the environment. The inclusion of environmental dynamics will make governance strategies during and before pandemics more resilient and this will strengthen pandemic governance. Exclusion, which is observed during the current coronavirus crisis, therefore has a negative effect. The Dutch post-corona society should include environmental dynamics more, in order to ensure a resilient pandemic governance strategy and sustainable development.

Research from the Social and Health Psychology discipline investigated the impact of the corona measures, in specific the social distancing measure, on the mental health and wellbeing of individuals. This measure asks people to stay inside, work from home and avoid social contact as much as possible. Thereby, if people meet, they need to keep a distance of one and a half meter. These policy measures result in fewer social contacts and fewer human touches a day. Humans are a social species, we need other people around us, as a primary need. Evolution has shaped the human genes to be sensitive to contact and relationships with others. The following main question is studied: *What is the effect of much fewer social contacts, due to the intelligent lockdown, on the mental health and well-being of humans?* Fewer daily contact can enhance feelings of loneliness and social isolation. Both of these concepts are associated with increased all-cause mortality, cardiovascular diseases and depression. Lonely people are more likely to engage in risk behaviours, such as tobacco use, maintaining an unhealthy lifestyle and experience higher stress levels. Furthermore, less physical touches a day have negative consequences for mental health. In conclusion, the rules of social distancing can cause problems with mental health and well-being.

5.2 Common Ground

In order to create interdisciplinary research and a more comprehensive understanding, it is important to integrate disciplinary insights. During the integration process, conflicts can emerge because of certain conflicting disciplinary perspectives and disciplinary jargon (Repko and Szostak, 2017). This chapter shall present the identified conflicts between the disciplines presented in the first part of these studies. We have considered creating common ground by looking at underlying theories but concluded that focussing on conflicting concepts and assumptions would be more useful for creating common ground. These conflicts include differences in underlying assumptions of the disciplines, but mainly include different understandings of some concepts. These will be presented in section 5.2.2.1 and consists of the concepts

'Effects', 'Corona measures' and 'Dutch society', which are all essential for the answering of the interdisciplinary research question.

The different interpretations do not necessarily conflict, but they do highly vary in scope. By stepping back to see the larger context - contextualization - is expected to achieve a more comprehensive understanding, instead of merely seeing the concept from different angles. In order to foresee the different relations, we will use the integration technique of organization to achieve common ground and present a model of the wide interdisciplinary (see figure 1 which is presented in section 5.2.4). However, it is argued that the approach contextualization is often identified as incomplete and in need of a wide interdisciplinary integration. Therefore, we use the broad integration model (Repko and Szostak, 2017). Wide interdisciplinary means that the epistemologies of the disciplines are very much apart and therefore vary a lot. It is argued that for this reason, it is more difficult to create common ground (Repko and Szostak, 2017). The disciplines vary in epistemologies and use different theories. Because of this, this thesis focuses on creating common ground between concepts and underlying assumptions instead of theories. These different understandings of these concepts have to be integrated in order to eventually answer the question: *What are the effects of the corona measures on Dutch society in the spring of 2020, and what could this imply for governance during future pandemics?*

5.2.1 Corresponding Assumptions

Some of the existing differences between the disciplines can be explained by looking at the underlying assumptions. We acknowledge that there are multiple underlying assumptions worth identifying, however, we made a selection of a few which are presented below. A prominent difference between the three disciplines, on assumptions, is the following. The disciplines of Public Governance and Governance for Sustainable Development considered policy as a 'tool with a certain purpose'. Both are highly involved with governance, as their titles already suggest. Governance is understood as the sum of manners that individuals and institutions manage common affairs, both in the public and private spheres (Commission of Global Governance, 1995). Both disciplines see policy as a means to bring about (societal) change. However, in this research, the discipline of Public Governance interprets corona measures as a 'tool' with the purpose of the mitigation of the coronavirus. Whereas, Governance for Sustainable Development mainly focused on the policy as a tool for creating a healthier environment and stimulating sustainability. Moreover, interesting within this research is to see the policy initiated by Public Governance have had effects upon the finding of the discipline Social and Health Psychology and Governance for Sustainable Development. These disciplines followed the assumption of causal relationships. They mainly focused on

the causal effects following the corona measures. In this thesis, Public Governance has conducted research into the best possible measures with the highest compliance rate, to decrease the spread of the virus. The other two disciplines analysed the causal effects following those measures. It is argued that the trends found in the chapters of Governance for Sustainable Development and Social and Health Psychology are caused by the measures proposed by Public Governance.

5.2.2 Finding Common Ground through concepts

In order to properly integrate the conflicting concepts, it is important to create a common understanding. We use concepts to create common ground because the disciplines view some important concepts differently. The concepts in question are: 'Effects', 'Coronavirus measures' and 'Dutch society'. They all are used slightly differently, because of their various scopes and diverse understandings in the disciplinary chapters. Effects refer to the different timelines which the disciplinary insights uphold. Where one discipline focuses on the short-term effects, another is more inclined to focus on the long-term effects. 'Coronavirus measures' means the understanding of the different measures taken by the Dutch government in order to mitigate the coronavirus transmission. In order to successfully integrate, we provide a clear understanding of the concept of 'Dutch society'. We will aim to overcome these conflicting understandings using the integration techniques given by Repko and Szostak (2017).

5.2.2.1 Expanding Corona Measures

The concept 'corona measures' or 'measures taken to combat the coronavirus' conflicts between the disciplines. All three disciplines broadly understand corona measures in the same manner: they are understood as established measures that have been taken in order to mitigate the transmission of the coronavirus. Nonetheless, all disciplines focus on a different aspect of these measures. The biggest difference is that Public Governance understands the corona measures as a 'tool to a purpose', the other two disciplines look at the consequences of those 'tools'.

Public Governance views corona measures as a tool. These measures are used to affect the behaviour of the citizens in their jurisdiction. The corona measures serve as a device to reach a higher purpose for the repulsion of the coronavirus. So, for the discipline of Public Governance, corona measures are not an outcome themselves but a tool to achieve a higher cause. In contradiction to the other disciplines, Public Governance focuses on how these measures should be implemented to get the needed results and not on what these measures bring about.

Governance for Sustainable Development sees corona measures and climate as a causal relationship, by which climatic effects can be influenced. The discipline examines changes in the environment caused by corona measures. According to this discipline, the corona measures are mostly disruptive, for example, travel restrictions, border closure and the decrease in industrial activities.

Social and Health Psychology looks at one specific measure, namely social distancing rules. This discipline looks at the measures as affecting human individuals. The measures that social distancing rules imply, can cause mental health problems to arise. In conclusion, the discipline of Psychology focuses on the effects of the corona measures on human mental health and well-being.

The textual understanding of corona measures corresponds to various diverse measures in order to diminish the number of infected corona patients. However, the disciplines do not necessarily focus on the same measure as presented above. Furthermore, the objective of the concept is different. Simplified, the Public Governance discipline sees it as an answer to the problem and the other disciplines see it as a cause for other problems. To give this concept a broader meaning, we use the technique extension. Extension is used to give a bigger meaning and widen the scope of a concept (Repko and Szostak, 2017). The conceptual definition can be widened beyond the disciplinary meaning and made into a more common contextual language suited for all disciplines. We use the extension strategy upon the concept of corona measures with using the understanding of the discipline Public Governance as a basis. We view corona measures as a governance strategy and a tool including various measures to mitigate the transmission of the coronavirus in order to diminish the number of infected corona patients. We expand it by adding the perception of the other disciplines, as acknowledging that these measures bring about possibly unforeseen effects on the mental wellbeing of individuals and on the natural environment and environmental governance. The common understanding of the concept corona measures which is created by using this method is as follows: a governance strategy including various measures to mitigate the transmission of the coronavirus in order to diminish the number of infected corona patients which cause effects on the mental wellbeing of individuals and the environment and environmental governance.

5.2.2.2 Extending Effects

When looking at the Dutch timeline of the effects of the coronavirus, there are a number of differences. In order to achieve an inclusive and complete map of the effects - understanding as consequences - of the coronavirus outbreak and concurrent corona measures, it is important to unify the various disciplinary definitions of the concept of 'Effects'. The disciplines have different definitions of the term effects in three aspects. The effects happen within different times frames, and therefore it is important to integrate them.

This part can be explained due to the underlying assumptions of causal relations. The effects important for the Public Governance discipline are located at the 'beginning of the timeline': where the Dutch government responds to the coronavirus crisis by means of policy formulation. The effects of the coronavirus start from the moment the virus is diagnosed in the Netherlands. The government responded by delivering advice through press conferences and intensifying it by declaring the intelligent lockdown. The Public Governance discipline looks at the effects of the coronavirus from the first measures to the measures taken until June 15, 2020. In addition, it provides a comprehensive framework for a possibly comparable situation in the future concerning pandemic outbreaks.

The Governance for Sustainable Development discipline focuses on the effects of the moment measures are taken, but also offers a long-term vision. The discipline looks at the measures taken in the fight against the coronavirus and looks at its effects on the natural environment. This is done by looking at the short-term effects as less greenhouse gas emissions are occurring due to reduced traffic, such as aviation or driving. In addition, the discipline draws conclusions for future pandemic governance by including a long-term perspective. It is argued that inclusion of environmental dynamics would both be beneficial for the natural environment in the long run but also for a future resilient pandemic governance strategy as the two - environmental dynamics and pandemics - are connected. The effects of the short-term 'outbreak' narrative is expected to have negative consequences on environmental governance and on the environment in the long run. Both are long-term processes and because of this are oftentimes not included within the short-term pandemic governance. The discipline therefore also offers a vision of the future.

The Social and Health Psychology discipline mainly focuses on the consequences of self-isolation and its consequences. Because this only occurs after the intelligent lockdown has started, the discipline starts there on the timeline. The consequences last as long as citizens are expected to obey self-isolation, taking into account psychological complaints that continue even after the lockdown.

As is identified, the disciplines all focus on different time spans. We do so by using the integration technique extension. In order to find common ground between the different understandings of the effects, it is important to solve the conflict concerning the different timelines of the effects. The scope of a concept or insight is extended beyond the disciplinary meaning of a concept so that it also includes the meanings of the other disciplines (Repko & Szostak, 2017). The concept of 'effect' will be explored and broadened by means of extension from all disciplines. The disciplines use a different definition of the term effect. This conceptual disagreement can be resolved by expanding the definition of the term, to merge the definition maintained by each of the disciplines into a broad definition of the term effects. This

expansion into the domain of another discipline almost inevitably entails a change of the concept in question. In order to formulate an overarching definition of the concept, it is important that every discipline fit within the new definition of the concept. We do so by expanding the understanding of the Public Governance discipline, as this is the starting point of the timeline of the 'Effects': the intelligent lockdown is established as tools to mitigate the spread of the coronavirus. The other two disciplines face the consequences of these established measures. The effects of the coronavirus will eradicate the Public Governance discipline as soon as the coronavirus measures stop existing. It is argued that the (direct) consequences of the Social and Health Psychology will dissolve with them, excluding possible exceptions which have longer effects. The positive effects on the natural environment, because of e.g. travel restrictions, will stop and the possible compensation for this period will arguably affect the environment negatively in the long run. In order to ensure that all these components are included within the understanding of 'Effects', we have formulated the integrated definition of the concepts as follows: effects of the coronavirus include corona measures, which start at the moment that the Dutch government takes the first measures against the coronavirus (oftentimes referred to as the intelligent lockdown), and last as long as this affects society, citizens or the environment. By applying the extension technique to the concept of effects, the conflicts between the various disciplines are therefore resolved. In this way, the disciplines are aligned when the concept is used.

5.2.3 Redefining Dutch Society

The main research question includes the concept of 'Dutch society'. However, we have identified that the understanding of the concept 'Dutch society' varies between the different disciplines. Whereas Social and Health Psychology focuses merely on the effects on the citizens, both Public Governance and Governance for Sustainable Development focus on the governance structures, policies and institutions. In order to ensure proper communication between disciplines, it is important to create interdisciplinary jargon. Because of this reason, we argue that redefinition of the concept 'society' is necessary.

For once, the discipline Public Governance requires the inclusion of 'institutions' within the definition. The public institutions, such as the Dutch government and other national organizations, have created policies and measures in order to mitigate the transmission of the coronavirus. These are considered to be the key actors within the creation of the coronavirus measures and its concurrent consequences.

On the other hand, Governance for Sustainable Development has widened the scope of the definition as it concluded that the proposed measures have had effects on the Dutch environment. Furthermore, it stated that the inclusion of environmental dynamics within the governance process is becoming more important. For this reason, the concept 'environment' should be included as well.

The discipline of Social and Health Psychology researched the effect of the Coronavirus on a smaller scale, focus on the individual. So, individuals should be included in the definition of Dutch society.

To foresee different understandings of the definition 'Dutch society', we have applied the integration technique of redefinition by Repko and Szostak (2017). To overcome the sources of the conflicts between the insights, we have created a new definition that creates common ground between the insights concerning the terminology of 'society'. We have formulated a new definition of the term 'Dutch society' as follows: "the Dutch society is the large group of interacting Dutch individuals, with each other and with their environment, in a defined territory within the boundaries of The Netherlands sharing a common culture with institutions such as the Dutch national government governing them."

5.2.4 Integration of Organization

We acknowledge that our disciplines operate on different levels and focus on different trends and causal relations. Therefore, we argue that it is important to clarify and map how certain phenomena related to the coronavirus crisis relate to one another and what their causal relationships are. We have seen that the different disciplines concluded different effects focused on different causal relations. To create common ground, we will use the integration technique of organization. This technique focuses on "mapping the overall relations between distinct variables or clusters of distinct variables" (Repko and Szostak, 2017, p.286). We have created a schematic map where the causal relations of the different disciplines are presented, which can be observed on the next page 48.

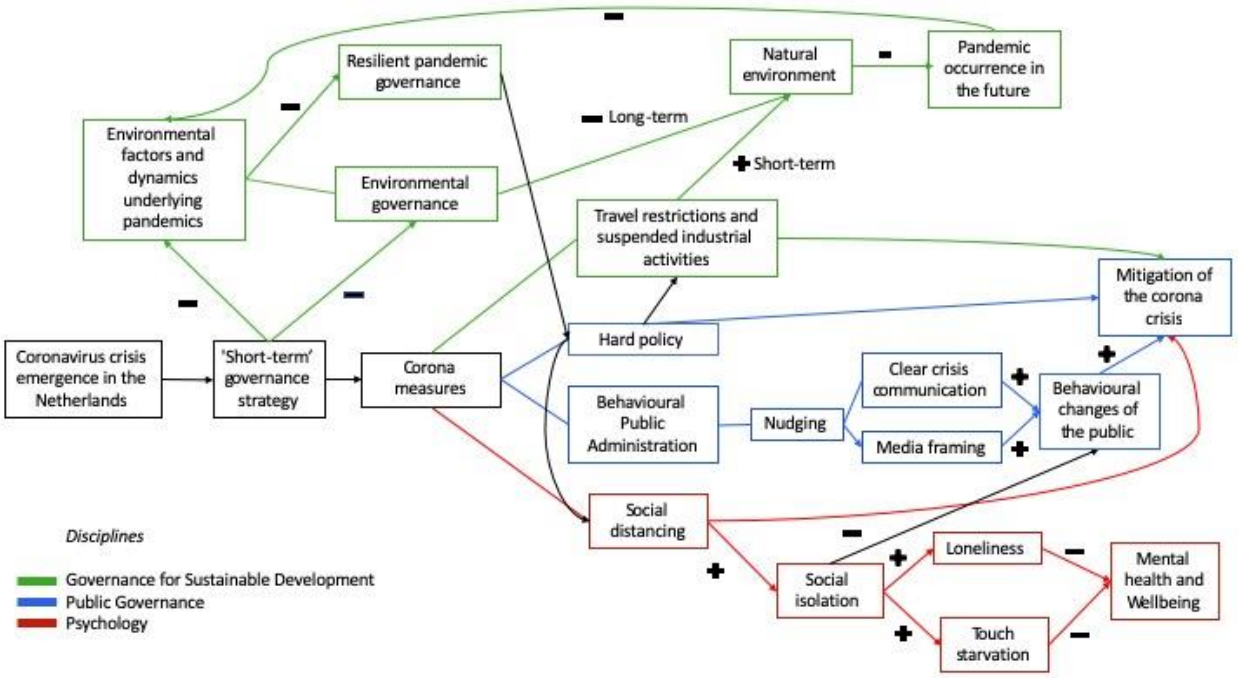

Figure 2: schematic map about the effects of the coronavirus of the different disciplines.

The map visualizes the direct effects of the coronavirus outbreak and combines the conclusions of the different disciplinary chapters. What can be observed, is that the corona measures all have indirect effects upon the mitigation of the coronavirus crisis, which is the goal of the measures in the first place. Furthermore, the hard policy measures from Public Governance translate to measures which have effects within the disciplines of Governance for Sustainable Development and Social and Health Psychology. This corresponds with the assumptions of causal relations as a result of the proposed policy by Public Governance. This is a display of the underlying assumption, of Public Governance, that the measures serve as tools, but also causes effects in aspects of society which possibly were unaccounted for. Within the map, we could observe the common use of concepts between the disciplines of Social and Health Psychology and Public Governance: the corona measure social distancing can cause feelings of social isolation, which can trigger a direct negative behavioural change of the public. It can be expected that an indirect relation exists between creating a resilient governance strategy within pandemic governance as this strengthens and assists institutions in dealing with a crisis, as proposed by the discipline Governance for Sustainable Development with Public Governance. 'Short-term' governance strategy, as the Dutch government focuses on, has a significant effect on governance institutions as is expected during governance in times of pandemic. The map clearly visualizes the wide interdisciplinary character of the research. By visualizing and integrating the causal relations, common ground can be achieved.

The map shows a negative relationship between social isolation and behavioural changes in the public. The Social and Health Psychology discipline has concluded that the measures taken by the Dutch government with regard to social distancing, can lead to self-isolation and loneliness among certain groups. At the same time, the Public Governance discipline has concluded that mental health problems can demoralize people and increase noncompliance, which is an important insight into behavioural public administration.

5.3 More Comprehensive Understanding

After creating common ground, disciplinary insights can be integrated into a more comprehensive understanding. A more comprehensive understanding is the product of the integration of the disciplinary insights, to formulate and create a more holistic understanding (Repko & Szostak, 2017). After we have created common ground the integration that directly modified the used concepts and indirectly upon the underlying assumptions in order to combine the separate elements into the more comprehensive understanding. This will be used to formulate an interdisciplinary answer to our main research question: *What are the effects of the coronavirus outbreak, and the following intelligent lockdown, in the spring of 2020 on Dutch society, and what could this imply for governance during future pandemics?* Following the disciplinary insights and the integrated common ground, we will expound the effects of the coronavirus outbreak of 2020. Furthermore, we aim to use these findings in order to formulate a framework of guidelines for governance during future pandemics.

Due to the wide interdisciplinary nature of this research, the more comprehensive understanding is expected to exist out of many varying elements. In order to integrate these elements, we will construct the understanding by achieving causal integration by using the sequential or end-to-end technique as well as horizontal or side-by-side integration technique (Repko & Szostak, 2017). It is argued that multiple integration techniques would be applicable in this case. For this research, we will make use of the following techniques because different causal relations can be observed: both linking to the direct immediate cause of the problem as well as an explanation of a certain phenomenon is complementary but focuses on a different aspect of the problem in question (Repko & Szostak, 2017). In this research, there are different explanations concerning the effects of the coronavirus crisis and its concurrent measures on Dutch society. We will construct a more comprehensive understanding concerning the causal relation following the coronavirus outbreak and the concurrent corona measures. Furthermore, direct causal links are observed that fully integrate complementary explanations of the aspects of the problem into the explanation of the complete problem (Repko & Szostak, 2017). The individual insights share

common variables and to integrate them is challenging due to the different causal explanations of certain relationships. In order to do so, we use the strategy of organization to construct a more comprehensive understanding. In both cases, the technique of organization is best employed to "set the stage" for the more comprehensive understanding" (Repko & Szostak, 2017 p.329).

5.3.1 Effects of Coronavirus Outbreak on Dutch Society

In this part of the more comprehensive understanding, we will expound the effects of the coronavirus outbreak in order to answer the first part of our research question: *What are the effects of the corona measures on Dutch society in the spring of 2020, and what could this imply for governance during future pandemics?* The more comprehensive understanding is constructed from the modified set of concepts and assumptions (Repko & Szostak, 2017). We formulated the definition of *society* as a large group of interacting individuals, both with each other and their direct environment, in a defined territory sharing a common culture, with their own institutions governing them. The *effects* are seen as the consequences observed as a result of the coronavirus outbreak and from the moment that the Dutch government takes its first measures against the coronavirus. The *effects* last as long as the above effects society, citizens or the environment. We will use the horizontal causal integration and use the strategy of organization to construct a more comprehensive understanding (Repko & Szostak, 2017).

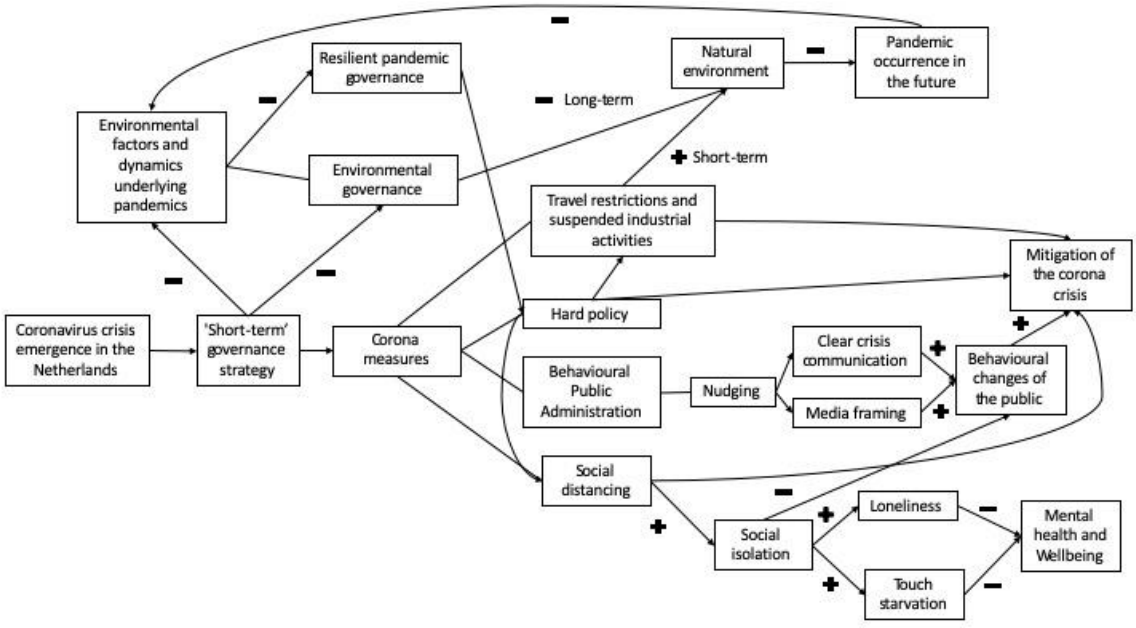

Figure 3: the more comprehensive understanding of the causal relations concerning the effects of the coronavirus.

We have used the schematic map by the means of the organization technique to fully understand all relations concerning the effects, as this is a prerequisite for the horizontal causal integration. It can be observed that some concepts share multiple causal relations because some common variables are shared within different explanations. Furthermore, various causal chain relations can be observed as is represented by the sequential integration technique.

The causal map starts at the emerging of the virus in the Netherlands. This results in a short-term governance strategy, which has the main objective to quickly mitigate the spread of the coronavirus crisis in the Netherlands. This short-term governance strategy mainly focuses on short term goals and does not include other long-term processes such as environmental governance. If lesser attention is given to environmental governance, this is expected to have negative long-term effects on the natural environment. If this further deteriorates, concerning climate change, pandemics are expected to happen more often in the future and this will create a feedback loop with environmental governance. Furthermore, this outbreak strategy often excludes important environmental processes that affect infectious disease transmission. For that reason, the inclusion of these environmental dynamics would be very valuable in the creation of a more resilient strategy in order to govern pandemics in the future. This resilient governance strategy could relieve the formulation of hard policies in the long-run which have a very disruptive effect. The current short-term governance strategy includes the formulation of corona measures, which in the Netherlands is embodied by the 'intelligent lockdown'. The corona measures have as main objective to mitigate the spread of the coronavirus, but they have had various contingency effects. The corona measures mostly exist out of hard policies, such as travel restrictions, suspended industrial activities and social distancing rules. The travel restrictions and suspended industrial activities have a positive short-term effect on the natural environment. The corona measure social distancing can increase feelings of social isolation which can result in feelings of loneliness and touch starvation which both have negative effects on mental health and well-being. As concluded before, when individuals experience more self-isolation, an individual's obedience to adhere to the measures decreases, due to negative psychological effects.

The explanations above all focus on a different aspect of the complexity embodied by the consequences of the coronavirus outbreak in the Netherlands. Furthermore, various causal chain approaches can be observed. By using the organization technique, the effects of the coronavirus outbreak on Dutch society is mapped and the causal relationships can be understood. This results in a more comprehensive understanding of the effects of the coronavirus outbreak upon Dutch society.

5.3.2 Future Pandemic Governance

The effects and their causal relations have been mapped using the organization technique. After looking at the effects of the coronavirus on Dutch society, we will use these findings into answering the second part of the research question which is the main objective of this research: *What could this imply for governance during future pandemics?* Using the more comprehensive understanding of the effects of the coronavirus, focussing on the situation in the Netherlands, recommendations can be made for the governance of possible future pandemics. Pandemics are expected to happen more often in the future, as we have established within this research. Climate change and the emergence of infectious diseases are highly related and this can lead to more humanitarian and ecological disasters, including the emergence of pandemics. Because the Netherlands, and the rest of the world, can expect more pandemics in the future, it is valuable to draw up a framework and make various recommendations to the government, so that better policy can be made in the future.

The first recommendation we would like to make is that RIVM's Outbreak Management Team should include more experts from other disciplines. Currently, policies against coronavirus are primarily determined by virologists, biologists, doctors and public administrators. As examined in this thesis, the current policy has numerous effects on Dutch society, which are not taken into account. Mental health problems, long-term negative climatic effects, and reduced compliance with the corona measures are effects that are currently not properly incorporated in the Dutch policy. With adding more experts from these disciplines to the Outbreak Management Team, a more comprehensive policy can be made, which can take these effects into account, or even attempts to mitigate them.

The second recommendation that we want to put forward, is that the government should be aware of the strength it has with its means of communication. The thesis has shown that citizens can gain more intrinsic motivation for compliance with certain types of framing and crisis communication. When the government applies these resources, the policy can be better monitored, which means that the virus can be controlled more quickly. The interdisciplinary results have shown that this is beneficial in several areas and that it can strengthen the Dutch COVID-19 approach.

A third recommendation for the Dutch government, and world leaders in general, is to make fighting climate change a bigger priority because climate change can cause pandemics in the future to happen. It is therefore questionable when governments pretend to do everything they can to prevent a future pandemic if they do not try to fully combat climate change. This thesis has concluded that climate change and pandemics are highly related. After this crisis, governments can no longer claim that citizens could not change their behaviour, in favour of the climate. It would, therefore, be important that after

the coronavirus crisis, one does not revert to their behaviour before, but gives more consideration to the state of the earth. Ultimately, this would help people in several ways, and reduce the chance of a future pandemic.

Thus, in future pandemics or other similar crises, the government should create an interdisciplinary team that allows for more comprehensive policies. The final effects in both the short and long term can thus be managed, which can make the chosen policy more comprehensive and successful.

6. Conclusion

In this interdisciplinary thesis, an answer on the following question was formulated: *What are the effects of the corona measures on Dutch society in the spring of 2020, and what could this imply for governance during future pandemics?* We aimed to use these findings to make implications for future pandemic governance. The complexity of this question, together with the broad scope of sectors hit by the coronavirus made that interdisciplinary research was mandatory. The wide interdisciplinary nature of this research resulted in a wide range of varying consequences. All disciplines shedding their light on a different aspect of this outbreak. Public Governance focused on the governance developed to counter the spread of this virus. Governance for Sustainable Development mapped the effects of the intelligent lockdown on the environmental aspects and concluded that the inclusion of environmental dynamics could assist pandemic governance. In addition, Social and Health Psychology outlined the possible effects of the rules of social distancing on mental health and well-being. The integration of these findings led to a more comprehensive and complete map of the effects of the coronavirus outbreak.

The coronavirus outbreak affects the whole society. The causal map starts at the short-term governance strategy and the following corona measures. An important finding is that this short-term governance strategy involves hard policies that, on the one hand, positively impact the natural environment, through the deployment of travel restrictions and suspended industrial activities. On the other hand, this short-term governance loses sight of the goals of environmental governance, which possibly, in the long run, negatively affect the environment and enhances the chances of future pandemic outbreaks. It furthermore emphasizes the relationship between environmental dynamics and pandemics. Nevertheless, it is important to pay more attention to the discipline of behavioural public administration because it can provide interesting insights into the behaviour of citizens. The Dutch government can influence citizens' compliance with corona measures in various ways. By means of clear crisis communication, positive and negative framing and the use of psychological insights in combination with policy compliance, the government can influence citizens' behaviour. Ultimately, this benefits the intrinsic motivation of citizens to adhere to the measures, which can make the intelligent lockdown a greater success.

Therefore, in future pandemics or other similar crises, the government should assemble an interdisciplinary team, allowing more comprehensive policies to be made. The final effects in both the short and long term can thus be managed, which can make the chosen policy more comprehensive and successful. In this way, hopefully, pandemics can be better managed in the future, and many cases of illness and deaths can be prevented.

7. Discussion

In this study, our first aim was to map the effects of the coronavirus outbreak. We are certain that the usage of the disciplines Public Governance, Governance for Sustainable Development and Social and Health Psychology made a worthy contribution for this aim. Nevertheless, we are aware that the coronavirus outbreak has such a significant impact on the whole society that other disciplines could have made a valuable contribution to this research. For example, the discipline Sociology could shed light on the interest of different groups and the usage of Biology or Virology disciplines, could be an addition to the interaction between the policies to mitigate the virus and the spread of this virus.

Due to the wide interdisciplinary nature of this research, it was rather difficult to find common ground between the disciplines as they were epistemologically distant and therefore more difficult to integrate (Repko & Szostak, 2017). However, we foresaw this possible conflict by using different integration techniques and the importance of using the organization technique to integrate the causal relations. The varying disciplines were found important to create a more comprehensive understanding of the varying, possibly unforeseen, consequences of the coronavirus outbreak and its current measures.

Furthermore, the coronavirus outbreak is a recent and still ongoing problem. Therefore, it is hard to determine the full effects of this outbreak. Some effects are yet to be discovered or will develop over time. With this in mind, our recommendations regarding future pandemics or similar crises can be expanded based on new or unforeseen effects, after which a more complete set of recommendations can set up. Follow-up research will be needed to map these effects and recommendations in an academic and substantiated manner.

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Chapter Four: Social and Health Psycology

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