ON THE CONCEPT AND ETHICS OF VACCINATION FOR THE SAKE OF OTHERS

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"Truly, our beginnings never know our ends."
—Fyodor Dostoevsky, *The Crocodile*

Introduction

Health and disease are basic facts of life with which all human beings eventually become acquainted. They are also key concepts in bioethics with extensive social and political consequences (Murphy 2021). Most individuals want to be healthy rather than ill; most citizens would prefer to live in a healthy society. While perfect health, especially over time and population-wide, is an unattainable ideal, there are important ways in which governments can and should safeguard the health of citizens (cf. WHO 2017). One important tool at the disposal of governments and public health institutions is vaccination, which can prevent people from contracting diseases and spreading them to others. Vaccination ranks among the most important public health developments of the last 100 years (Feemster 2018). In the United States alone, it has been estimated that mass vaccination programs prevented over 100 million cases of contagious diseases between 1924 and 2011 (Van Panhuis et al., 2013). In the Netherlands, vaccines are estimated to have prevented the deaths of around 9000 children between 1903 and 1992 (Van Wijhe et al. 2016). At least one human disease—smallpox—has been successfully eradicated with vaccines (Henderson 2009). In short, vaccination is a crucial public health tool that has been highly beneficial for the health of individuals as well as populations. This is true even if there are historical examples where vaccination campaigns have unfortunately led to net harms, as in the case of the Dengvaxia vaccine that resulted in the deaths of at least 130 children in the Philippines before it was suspended in 2017 (Normile 2017; Arkin 2019).

The benefits of individual acts of vaccination often extend beyond the health of individual vaccinees (Bärnighausen et al. 2014). This has become a policy consideration in several cases where individuals may opt to get vaccinated for the sake of others. First, there is the case of maternal immunization, which can protect the fetus and future infant by means of transfer of maternal antibodies from mother to child. The World Health Organization (WHO) recommends maternal influenza immunization, and the Health Council of the Netherlands has recently advised for vaccination against pertussis (Gezondheidsraad 2015). Second, there is the matter of professional immunization, notably of health care workers, which may serve to protect patients at higher risk of severe outcomes following disease. Vaccination against influenza is the most common example, but other vaccines (e.g., against pertussis) have also been recommended (Van den Dool 2009). Third, through a so-called process of cocooning, family members in close contact with a person at higher risk of illness may decide to get vaccinated to protect—that is, to form a protective 'cocoon' around—that person. Finally, there has been increased attention for more general 'indirect' vaccination strategies in public health, through which significant 'vectors'[1] of disease in the community may get vaccinated as a means toward reducing risks for more vulnerable groups. This has been proposed, for example, as a

[1] I use the term 'vector' with some reluctance. While it makes sense to describe individuals or groups as 'vectors' of disease from a strictly epidemiological perspective—if such individuals or groups should be known to make above-average contributions to the spread of disease—the risks of those individuals or groups becoming *reduced* to the status of mere vectors, along with the accompanying processes of stigmatization, dehumanization, ostracism, and so on, are unacceptable. As such, I will generally resist the terminology except where unavoidable, and always with the caveat (noted here) that the term should be understood as being descriptive and *not* normative. For a larger discussion of the potential dangers of inappropriate moralization in public health, see Kraaijeveld and Jamrozik (2022).

justification of influenza immunization of children (Sugaya 2014; Bambery et al. 2018) and HPV vaccination of boys (Malmqvist 2011).

This dissertation focuses on the concept and ethics of these kinds of vaccination strategies where the benefits of are primarily aimed at others. Indirect vaccination stands to generate significant health benefits, but it also raises ethical questions and may well lead to public controversy. If the benefits for vaccinees are relatively small, and the burdens are relatively high, then some groups will mainly experience burdens, while other groups will enjoy the benefits of vaccination, which might be considered unfair. Moreover, if benefits for the vaccinated are minimal, while side-effects are more common or more potentially severe, people may not consider vaccination to be in their own best interests. In such cases, the commonly used ethical justifications for vaccination programs—that is, to protect individual vaccinees, to protect public health and societal life, and to promote a fair distribution of benefits and burdens (Gezondheidsraad 2013; Verweij & Houweling 2014)—do not self-evidently apply.

The potential for vaccination to benefit other members of society beyond individual vaccinees thus raises important conceptual and ethical questions, yet so far there has not been a systematic conceptual or ethical analysis of the relevant issues. In principle, vaccination for the sake of others could be formalized and regulated through policy; but it could also be initiated by individuals themselves, of their own volition. How is vaccination that is primarily aimed at benefiting others best understood? Is there only one kind of vaccination for the sake of others? Which actors and/or decision-makers are at stake? Should governments proactively encourage vaccination for the benefit of groups to which individual vaccinees do not necessarily belong? Finally, are coercive indirect vaccination strategies ethically justified?

In this dissertation, I will attempt to provide answers to these questions. Importantly, aside from indirect vaccination policies from the perspective of governments and public health institutions, individuals might have moral reasons to get vaccinated to protect other people. Both considerations raise the idea of vaccination for the sake of others, which is the topic that I will be concerned with most directly throughout this dissertation.

Background

Preventive vaccination is complex in several ways. Unlike taking certain kinds of medicine directly to treat illness, vaccination is generally intended to prevent illness and death at some future point (Feemster 2018). This means that any burdens (e.g., material costs, risks of adverse side-effects, etc.) associated with the medical intervention in question—i.e., vaccination—are accepted against the current state of health (rather than illness) in exchange for the future prospect of protection from disease. This is true both for childhood vaccination, where parents and guardians generally make the decision for an infant or child to get vaccinated,[2] as well as for adult vaccination, where people generally make the choice of whether or not to get vaccinated for themselves.[3] The benefits and burdens of vaccination are thus not as closely linked as they are, for instance, in cases where medicine is taken directly to alleviate illness; the individual benefits from vaccination tend to play out at a temporal remove from the moment of getting vaccinated. The temporal sequence can be more or less closely connected, of course, depending on how soon after getting vaccinated a person is exposed to a pathogen. Exposed to infection might happen shortly after vaccination. On the other hand, it is theoretically possible

[2] Infants and children do not yet possess full decisional autonomy, which is why decisions about vaccination are made for them by their parents and guardians. There is some discussion about whether adolescents should be allowed to make vaccination decisions on their own; it has been argued, for instance, that there should be self-consent for minors in the case of HPV vaccination (Agrawal and Morain 2018). I will say more about the question of autonomy and vaccination decisions for children later, especially in Chapters Two and Five.

[3] Some adults who are not or not fully autonomous (e.g., people with severe mental disabilities) may also require others to make vaccination decisions on their behalf. I discuss this idea further in Chapter Two.

for a person to have gotten vaccinated against a disease to which she is ultimately never exposed. Having said that, vaccination programs generally target—or should target, in any case—serious diseases that represent a significant public health problem (Verweij and Dawson 2004). Chances of post-vaccination exposure to infection are therefore likely to be significant for most vaccines that are offered as part of standard public vaccination programs.

While some vaccines only stand to protect individual recipients (e.g., tetanus vaccine), most vaccines can have beneficial effects for people beyond individual vaccinees (Bärnighausen et al. 2014). These potential extrapersonal benefits exist in the space between the self and others. I will focus on these kinds of benefits, which are located beyond strictly individual cost-benefit considerations (however these might be weighed) or prudence with regard to one's own health. The extrapersonal benefits of vaccination can be more direct, for instance when an individual is prevented post-vaccination from becoming infected and transmitting a disease to others (Verweij, 2005; Orenstein and Ahmed, 2017). A person getting vaccinated will often reduce the probability of that person spreading infection, as well as the associated harms, to other people. Vaccine developers ideally create vaccines that provide what is known as sterilizing immunity, which is a long-term immune response that can "rapidly prevent a returning virus from gaining ground in the body" (Ledford 2020, 21). The ideal vaccine offers complete sterilizing immunity, so that vaccinees will not become infected post-vaccination and will not spread disease (Geise and Duerr 2009). When a vaccine provides sterilizing immunity, this appears to offer the strongest case for the argument that individuals are prevented from harming others after getting vaccinated. If one cannot get infected with a disease post-vaccination, then one cannot spread that disease to others.

In practice, however, not all vaccines will produce the required neutralizing antibodies to provide sterilizing immunity (Ledford 2020). Different vaccines will be associated with various levels of effectiveness against infection. The influenza vaccine, for instance, has been found to be only modestly effective. Over fourteen consecutive influenza seasons following 2004–2005, the mean effectiveness of influenza vaccines was found to be 41%, which "stands in sharp contrast to effectiveness rates for other commonly used vaccines in clinical practice, many of which exceed 90%" (Edmond 2019). This means that the extent to which the risk of spreading infection to other people can be minimized or eliminated through vaccination will importantly depend both on the nature of the disease and on the available vaccines. It also means that individual protection from disease can be incomplete even when a person has gotten vaccinated. Furthermore, sometimes vulnerable people may not be sufficiently protected against a common infection because they cannot (yet) be vaccinated, or because their immune response to the vaccine is less than optimal. Examples are pertussis risks for newborns (Van Hoek et al. 2013), influenza risks for the elderly, or more generally risks for people with severe immune deficiency.

The extrapersonal benefits of vaccination can also be more indirect, for example when getting vaccinated means that an individual contributes to wider 'herd' immunity (Metcalf et al. 2015). The term 'herd immunity' is frequently used, but not always in the same way. It has been used to designate "the proportion immune among individuals in a population," and to refer to "a particular threshold proportion of immune individuals that should lead to a decline in incidence of infection," as well as, more generally, to describe "a pattern of immunity that should protect a population from invasion of a new infection" (Fine, Eames, and Heymann 2011, 911). While the term is now almost exclusively reserved to indicate the aims and outcomes of mass vaccination, the idea of herd immunity has a longer history that admits of a more varied understanding, which includes ecological factors that are unrelated to vaccines (Robertson 2021, e1). While recognizing the importance of other aspects of population health and immunity (e.g., good public hygiene and sanitation, proper nutrition, etc.), for the purpose

of this dissertation I will use the term herd immunity specifically in relation to vaccination.[4] What matters for the discussion of the ethics of vaccination is that, by getting vaccinated, individuals can potentially make a contribution to wider immunity against a particular disease. In the case of measles, for instance, it has been estimated that approximately 95% of a population needs to be vaccinated to achieve herd immunity, while in the case of polio the threshold is lower at about 80% (Macmillan 2021). When a herd immunity threshold is consistently maintained for a particular disease, that diseases cannot spread widely across populations, which clearly has important consequences for public health.

Gaps in population immunity may increase with declining vaccination rates, for instance due to increasing vaccine hesitancy and refusal (Van Lier 2017; Dubé et al. 2013; Larson 2016). At the same time, it must be acknowledged that achieving herd immunity is not always possible (Rashid, Khadaker, and Booy 2012; Aschwanden 2021; Bruemmer 2022). The feasibility of reaching and/or maintaining herd immunity will depend on specific epidemiological circumstances, like the nature of the disease and the effectiveness of the available vaccines. It should also be noted that an individual act of getting vaccinated is highly unlikely to make a substantial difference to whether herd immunity is achieved (Giubilini 2019), which underscores the complex relation—including from an ethical perspective—between individual and collective action when it comes to vaccination. If, by getting vaccinated, one cannot substantially contribute to herd immunity, should contributing to herd immunity be a moral consideration in one's decision to get vaccinated? Some have argued that it should (e.g., Giubilini, Douglas, and Savulescu 2018). I will return to this issue later in this dissertation when I discuss moral reasons to get vaccinated for the sake of others (especially in Chapter Seven).

Practically speaking, vaccination against infectious diseases will often be associated with some combination of direct as well as indirect benefits to others. As a result, vaccination can play a crucial role in the prevention and control of infectious diseases, offering protection at both individual and population levels (Greenwood 2014). Vaccination thus brings the relations between individual health and public health into sharp relief. Whereas in medicine, the patient is an individual person, "in public health, the 'patient' is the whole community or population" (Beauchamp and Steinbock 1999, 25). While public health is essentially directed toward promoting and protecting the health of populations (Faden, Bernstein, and Shebaya 2022), populations necessarily consist of individuals, who form the locus of decision-making when it comes to medical interventions like getting vaccinated. Determining and maintaining the optimal relationship between individual and public health is a perennial concern and constitutes a major ethical challenge for governments and health care providers (Williams 2008). Individual rights may conflict with, and should be balanced against, public health interests (Hunt 2004; Parmet, Goodman, and Farber 2005). Moreover, public health itself may be a human right (cf. Rothstein 2002).

Aside from policy considerations from the perspective of governments, the possibility of vaccination for the sake of others also raises questions about individual moral actions. What are the potential motives and moral reasons behind vaccination that aims to benefit others? In particular, one might ask the general question: To what extent should people get vaccinated for the sake of others? How could such a claim—that one ought to get vaccinated for the benefit of others—be grounded? Attempts to answer these questions have usually relied on formulating moral duties and obligations. Two general lines of argument for vaccination duties may be distinguished in the literature. The first line of argument is based directly on harm to third parties, which people ought to avoid, and which might be prevented by getting vaccinated.

[4] For a fascinating short history of herd immunity that covers the complexity of the concept as well as other factors aside from vaccination, see Robertson (2021).

According to Verweij (2005), for instance, individuals have a moral obligation to take necessary precautions against infection to avoid infecting others, which may entail getting vaccinated. Others have also emphasized the primacy of harm avoidance when it comes to moral duties to get vaccinated (Ivanković and Savić 2021). Harm-based arguments for vaccination duties are often applied to specific populations, for example people who work with vulnerable members of society (e.g., Van Delden et al. 2008). Since vaccination can be a way to avoid becoming both a victim and vector of disease, people may have a moral obligation to get vaccinated (Jamrozik, Handfield, and Selgelid 2016).

The harm principle, originally formulated by John Stuart Mill (1859/2005), has played an important role in arguments about government regulation of individual behavior generally, and specifically that of vaccination. According to the harm principle, the prevention of harm to third parties is a necessary, if not a sufficient, condition for the restriction of individual freedoms. Given the potential for vaccination to prevent the spread of disease to other people, and thus for harm to third parties to be avoided, the harm principle appears highly relevant (cf. Brennan 2016). Appeals have often been made to the harm principle to justify the argument that governments have a duty to implement vaccination policies, including coercive ones (e.g., Upshur 2002).

The second line of argument for moral vaccination duties is not directly based on harm or harm prevention; it is grounded instead in additional moral principles like fairness or solidarity. Giubilini, Douglas, and Savulescu (2018), for example, have argued that people have a moral duty to get vaccinated so as to contribute to herd immunity. The idea is that herd immunity against infectious diseases is a public good, especially in paradigm cases where herd immunity alone can produce disease elimination. Given that people have a fairness-based duty to contribute to public goods, people therefore have a duty to contribute to herd immunity by getting vaccinated. Fairness has been proposed as a moral principle that grounds vaccination duties more generally (Giubilini 2019). Fairness-based approaches have also been invoked to justify legal requirements, including coercive measures such as vaccine mandates (e.g., Giubilini 2019). The idea of solidarity has likewise been appealed to as a (moral) justification for vaccine mandates. It has been argued, for instance, that people ought to get vaccinated out of solidarity with others—for the sake of the wider community, but perhaps especially for those who are particularly vulnerable to disease (Bayefsky 2018; Yeh 2022).

Yet, while there are often moral reasons to get vaccinated, that does not necessarily mean that one has a moral duty or obligation to do so (Rieder 2021). The realm of moral reasons to get vaccinated therefore appears to be larger than that of moral duties. Exploring moral reasons to get vaccinated can offer a more complete picture of vaccination for the sake of others. So far, this approach has not been attempted in a systematic way. It is therefore worth exploring what a more systematic account of moral reasons to get vaccinated has to offer; what a reasons-based account of vaccination for the sake of others might add to vaccination ethics. This is one of the goals of this dissertation. Furthermore, vaccination ethics has often cast moral consideration in terms of binary moral duties (i.e., where people either have or do not have a moral duty to get vaccinated). Would a scalar account according to which people can have stronger or weaker moral reasons for getting vaccinated for the sake of others offer a more compelling approach? One advantage of such an approach would be that it seems to be able to capture why a person might have strong moral reasons to get vaccinated with Vaccine A, but only weak moral reasons to get vaccinated with Vaccine B. In short, it may be more finetuned to the complexities of epidemiological circumstances.

Importantly, while an account of indirect vaccination would be motivated from a policy and/or public health perspective, an altruistic account of vaccination might be motivated from the perspective of an individual who desires to benefit others by getting vaccinated. There is a potential tension here between allowing people to act on moral reasons (and thus letting

people's altruistic behaviors emerge freely) and more strictly regulating altruistic behavior. We know that strict regulation, especially through coercion, seriously threatens to crowd out altruistic motives—including for vaccination (Schmelz 2021; Schmelz and Bowles 2022). Enforcing other-regarding behavior can more generally undermine solidarity, trust, reciprocity, and other communal values (Savulescu 2020). Importantly, when it comes to vaccination for the sake of others, governments may need to make decisions about whether to actively promote altruism, for instance, or whether to opt instead for indirect vaccination in a stronger sense, thereby potentially overriding would-be altruistic vaccination decisions. Ought governments to encourage the altruistic motives of citizens? Should they go further, for instance by making indirect vaccination mandatory? What are the major ethical issues at stake? This is another set of questions that this dissertation aims to explore.

In the end, the idea and prosect of vaccination for the sake of others raises conceptual and ethical questions not only for governments and policymakers, but also for individuals who face real (moral) choices about whether to get vaccinated for the benefit of others. Before getting into some of the more practical and applied ethical issues, it is worth first scrutinizing and clarifying the concept. In fact, I will argue that there is more than one way to conceptualize vaccination for the sake of others. I will approach the concept by distinguishing between self- and other-regarding motives for vaccination, thus categorizing different kinds of vaccination.

An important question, and one that will return throughout this dissertation, is to what extent a person should get vaccinated for the sake of others. Relatedly, there is the question—almost in a mirror image—of how (and how not) governments ought to regulate individual vaccination decisions that are primarily aimed at others. Given that there were no ethical frameworks that systematically accounted for self- and other-regarding aspects of vaccination when I began this research, developing a taxonomy was a natural starting point. This would also put me in the position of being able to use that taxonomy, and the different kinds of vaccination that it mapped out, as a guide to work through subsequent ethical issues.

The Emergence and Impact of the COVID-19 Pandemic

So far, no mention has been made of a subject that must be conspicuous by its absence. My research officially begun on May 1, 2018. On March 11, 2020—just under two years into the four-year PhD program that would lead to this dissertation—the WHO classified the outbreak of a novel coronavirus disease 2019 (COVID-19) as a global pandemic.

The novel coronavirus disease, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), irreversibly changed not only public life, but also the focus and gravitational center of much of the debate in public health ethics. It also affected the scope of this dissertation. Where I had intended to focus on cases like HPV vaccination for boys/men and measles and pertussis vaccination for childcare workers (which are still covered in Chapters Two and Three), the urgency of thinking about public health ethics and especially vaccination in relation to COVID-19 was too great to ignore. My research gained more urgency and relevance than I could have imagined at the outset.

I had already drawn the distinctions in Chapter Two—and published the paper that conceptualized the taxonomy—before the pandemic emerged. The focus group studies described in Chapter Three had also partly been conducted prior to the outbreak COVID-19. They were ultimately completed during the pandemic. The duality of the chapter—interrupted by the pandemic, focused on other areas of vaccination but unavoidably drawing conclusions about COVID-19—nicely represents the different routes that this dissertation would take as a result of the acute and worldwide public health crisis. Here was a chance—a call, perhaps even a moral one—to reflect on and to contribute to the ongoing debates that took center stage not just among the scientific and academic communities, but among most societies around the world at one time or another. Few people were left unaffected by the pandemic and the policies

that emerged in response to it. When I began this research, I could not have imagined that it might make a major contribution to the ethics of vaccination and public health policy for a novel infectious disease—one that would become a pandemic, no less. To reiterate this chapter's epigraph: truly, our beginnings never know our end.

Thankfully, the taxonomy that I had developed (in Chapter Two) prior to the appearance of COVID-19 offered me a conceptual framework from which to analyze certain COVID-19 vaccination policies. It would prove to be so useful, in fact, that I was able to use it to discuss not only different matters related to COVID-19 vaccination, but also for other kinds of public health policy. Namely, in Chapter Four, I apply the distinction between altruistic and indirect vaccination to the lockdown approaches that were implemented in many places around the world in the attempt to curb the spread of the virus. The different kinds of vaccination for the sake of others that I had distinguished pointed not only toward a policy choice between leaving people free to decide to get vaccinated for the sake of others or to enforce that choice in some way through top-down decisions; it also pointed to a parallel between allowing people to take pandemic measures upon themselves, or to enforce such behavior through so-called hard lockdowns.

The pandemic changed the focus of my research, which gradually became more centered on addressing the major ethical challenges surrounding COVID-19 vaccination and public health policies. As Albert Camus wrote in his novel *The Plague*: "Everybody knows that pestilences have a way of recurring in the world; yet somehow we find it hard to believe in ones that crash down on our heads from a blue sky."

Research Aims and Questions

The overarching aim of this dissertation is to examine, clarify, and develop the concept and ethics of vaccination for the sake of others. The research seeks to fill a gap in the literature by providing an account of moral reasons to get vaccinated that has not been offered to date, as well as a comprehensive overview and discussion of vaccination for the sake of others that is sensitive to ethical questions surrounding self- and other-directed aspects of vaccination.[5]

Ultimately, this dissertation seeks to provide answers to the following general questions:

1. How is vaccination for the sake of others best characterized and understood?

2. What are the ethical issues specific to different kinds of vaccination based on who gets vaccinated, who receives the primary benefits, and who makes the decision?

3. What do people think about altruistic vaccination? How receptive are people to getting vaccinated to benefit others, and do they consider potential coercive measures (e.g., mandates) to be acceptable?

It also aims to provide answers to the following basic questions:

4. To what extent should individuals get vaccinated for the sake of others? What are the moral reasons for doing so, and what are the limits?

5. To what extent are governments ethically justified in implementing coercive vaccination policies aimed at benefiting third parties, for instance in the case of COVID-19? Does the harm principle justify such policies?

[5] As such, this dissertation will not explicitly engage with general discussions about mandatory vaccination (e.g., Pierik 2018; Pierik and Verweij Forthcoming).

The outbreak of COVID-19 elicited a question with a wider scope, pertaining to pandemic measures:

6. Can the concepts of altruistic and indirect vaccination be meaningfully extended to other areas of public health where similar tensions arise, like pandemic lockdown measures?

Finally, two vaccination-related questions arose in relation to COVID-19, which required careful consideration of the potential self- and other-directed effects of vaccination:

7. Should healthy children get vaccinated against COVID-19? Would this be serving their own best interests? If not, then should they perhaps get vaccinated primarily for the benefit of others (e.g., higher-risk populations)? What ethical considerations are at stake here?

8. Are coercive COVID-19 mandates for the general public ethically justified? Might the harm principle, which is often invoked to justify coercive public health policies, provide a compelling ground?

To clarify the concept of vaccination for the sake of others, self- and other-regarding motives for vaccination must be distinguished. Normative analysis can help to assess the ethics of how governments are implementing such policies, especially in relation to COVID-19, and whether or not—and on the basis of which principle(s)—they are justified. Gaps in the ethical underpinning of indirect vaccination are especially problematic in relation to vaccine hesitancy, which has been associated with decreasing vaccination rates in developed countries such as the Netherlands (Van Lier et al. 2017) and new outbreaks of 'old' diseases like measles (Woudenberg et al. 2017; Muscat et al. 2014). After all, should governments embrace indirect vaccination strategies, they may be taken to admit that current programs do not offer sufficient protection, which may in turn reaffirm the beliefs of vaccination critics who have doubts about the benefits of vaccination in the first place. This has been a serious concern in the case of COVID-19 vaccines. Especially when indirect vaccination strategies are coercive in nature, this could undermine trust and lead to negative public responses that could undermine confidence (or stimulate hesitancy and distrust) in vaccination generally, which may even spill over into other areas of vaccination and public health behavior.

Approach and Methods

Rather than committing to any one overarching philosophical theory, this dissertation develops arguments that are or could be relevant to different theories. My approach was[6] generally that of the applied ethicist, confronting pressing social-moral issues, trying to reveal key ethical questions at stake, and addressing potential ethical problems and consequences of specific vaccination and public health policies. I was most directly concerned with questions surrounding individual moral behavior and the ethics of altruism—more so than with political philosophical questions about the responsibilities of governments, although the latter cannot, of course, always be avoided. I did not turn away from questioning the ethics of public health policies directed by governments, even if I did not go so far as a systematic political philosophical critique.

Before addressing more particular issues, however, I first developed a taxonomy of different kinds of vaccination, which was meant to help guide ethical discussions surrounding

[6] I refer to my approach in the past tense, here and elsewhere in the introduction, because the articles that form the basis of the substantive chapters of this dissertation were all written and/or published earlier.

vaccination where the benefits of vaccination may be asymmetrically distributed—that is, where one group potentially stands to benefit more from vaccination than other groups, or where the benefits of vaccination may accrue to one group only *through* another group getting vaccinated. The taxonomy was meant to order the field and would prove to be helpful as a way of structuring the different ethical issues at stake in subsequent discussions throughout this dissertation. Much of the normative argumentation surround specific issues, like COVID-19 vaccination of healthy children, would draw on the different considerations that were outlined in the taxonomy.

In a philosophical dissertation, one might not expect empirical research methods to be employed. Nevertheless, this dissertation has one empirical component, namely a focus group study that was conducted on one of the key subjects (i.e., altruistic vaccination). There has been an increasing recognition and defense of the importance and value of empirical methods in bioethics (e.g., Ives and Draper 2009; Draper and Ives 2007; Earp et al. 2020). The aim of these studies, then, was to gain a better understanding of people's actual attitudes toward vaccination for the sake of others, both as an inherently interesting component but also as valuable input for further reflection.

More specifically, a focus group approach was adopted that included discussions with participants from selected target groups (Fern 2001). The target groups derived from populations that are most directly involved in discussions about vaccination in the following two areas: 1) HPV vaccination for boys and men, and 2) pertussis vaccination in daycare centers for employees. These cases were selected because they are especially relevant to debates about vaccination where the benefits of vaccination are potentially greater for people other than the individuals who get vaccinated. More details about the specific methods of the focus group studies can be found in Chapter Three. The results of the focus group studies served to gather ethical considerations and arguments about altruistic and indirect vaccination, which also offered additional input for the normative analyses in later chapters.

Dissertation Structure and Overview of Chapters

In what follows, I introduce and discuss each of the six substantive chapters that comprise this dissertation. I provide context and background to the major questions that I seek to address, and briefly summarize the main steps that I take in response to them for each respective chapter. I also include a rough timeline of major COVID-19 developments to show how some of the subject matter was directly affected by the pressing ethical questions at different stages of the pandemic. The sudden emergence and eventual ubiquity of SARS-CoV-2—as well as the responses to it at all levels of society—vastly impacted the lives of most people around the world. It also had major ramifications for social and moral debates surrounding public health and vaccination policy. These debates have hardly lost steam. In the end, even if the urgency of COVID-19 as a public health crisis should dwindle, the major ethical issues to which the outbreak and management of the virus gave rise are bound to remain significant as case studies for vaccination and public health ethics. We face these and similar questions for as long as pandemics are a possibility of life.

Chapter Two: Vaccinating for Whom? Distinguishing between Self-Protective, Paternalistic, Altruistic and Indirect Vaccination

In Chapter Two, I seek to tease apart potential self- and other-directed effects of vaccination. Some vaccines only seem to protect individual vaccinees; other vaccines also have wider benefits, for instance when they prevent the spread of illness from vaccinated people to others with whom they may come into contact. Might there be different kinds of vaccination, based on these potential self- and other-directed effects? Do the different motives that people might have when it comes to getting vaccinated (or not) matter here? And how might these effects

and motives be linked to the *source* of the vaccination decision—to whether the decision stems from would-be vaccinated individuals themselves, or whether it is imposed on them in some way (e.g., through vaccination policies)?

Thus, in Chapter Two, I try to approach these questions in a structured way. This leads me to develop a taxonomy of different kinds of vaccination. This chapter therefore provides the conceptual work on which subsequent chapters are more or less explicitly based. I try to gain greater conceptual clarity about different kinds of vaccination, based on the potential motives at stake, the various decision-makers at play, and the question of who stands to receive the major benefits of vaccination. I am also concerned with examining the concept of 'vaccination for the sake of others' more closely. What does—or could—this mean? Is it a unidimensional concept? In the attempt to determine how best to characterize vaccination for the sake of others, I find that there is an important tension within the idea, because it matters who forms the locus of the vaccination decision. Ultimately, then, the concept seems best understood as a twofold rather than a singular idea. That is, two kinds of vaccination can properly be called vaccination for the sake of others: *altruistic* vaccination and *indirect* vaccination. The difference between the two is that for the first, the decision to get vaccinated stems from the individual vaccinee, while for the latter, the vaccination decision is derived from elsewhere (e.g., governments, institutions, etc.). I make this distinction because it is important from an ethical perspective to locate and recognize the agency behind potentially other-directed vaccination decisions.

The definitions at which I arrive are as follows. Altruistic vaccination is when someone decides by their own volition to get vaccinated primarily for the benefit of others. Indirect vaccination is when others (i.e., usually governments) decide that one person or group should get vaccinated primarily for the benefit of others. Differentiating between these kinds of vaccination helps to gain a better sense of the different motives—and potential decision-makers—that may lie behind vaccination that is geared primarily toward those other than the individual vaccinee.

While thinking about vaccination for the sake of others, I found that there are more kinds of vaccination that could be distinguished. Since there had been no systematic characterization of this kind, in Chapter Two I develop a more general taxonomy of different kinds of vaccination based on the self- and other-directedness of primary benefits. The definitions of these are as follows. *Self-protective* vaccination is when someone decides to get vaccinated primarily to protect themselves (e.g., getting a tetanus shot), whereas *paternalistic* vaccination is when the decision to get vaccinated stems from someone other than the vaccinee, but is ultimately made for the vaccinee's own benefit (e.g., parents having their children get vaccinated).

The different kinds of vaccination seem to pose different questions for public health ethics, especially when it comes to the potential ethical justification of coercive measures. This appears to be an especially important matter in cases where vaccination of individuals or groups primarily for the benefit of third parties is under consideration. Which measures and means are ethically justified to steer people to get vaccinated when doing so would be primarily for the sake of third parties? This would turn out to be a major question behind at least some COVID-19 vaccination policies, which I discuss later (especially in Chapters Five and Six).

Chapter Three: Altruistic Vaccination—Insights from Two Focus Group Studies

What do people who might get vaccinated for the sake of others think about altruism? What do they think about altruism in relation to vaccination? How do they feel about vaccination decisions potentially being imposed on them indirectly, for instance through mandates? In Chapter Three, I present the empirical work that was conducted for the purpose of this dissertation. This research was intended both to contribute to a better understanding of the

potential role of altruistic motives in people's vaccination decisions in key areas, as well as to provide additional input for normative reflection.

More specifically, two focus group studies were conducted among groups who face vaccination choices where potential other-regarding motives may be especially relevant. Study 1 includes three focus groups on the subject of HPV vaccination for boys. Study 2 includes three focus groups on the subject of pertussis and measles vaccination for childcare workers (CCWs). These two areas—and the target subjects—were selected because, in each case, there is the possibility of benefiting others by getting vaccinated. Boys and men getting vaccinated against HPV can yield significant health gains for girls and women, by further protecting them against a number of HPV-associated cancers that are major causes of death in women (Bray et al. 2018). CCWs getting vaccinated against pertussis and measles can help to prevent vulnerable children from contracting those respective diseases (Hope et al. 2012; Rebman et al. 2018; Kohfal et al. 2020). Vaccination for childcare employees against pertussis, for example, has been recommended to protect infants younger than 12 months old (Parker and Conner 2016). How do these target groups view the idea of getting vaccinated for others?

The results suggest that other-regarding motives were important across all focus groups. Participants largely agreed that the potentially positive effects on the health of other people is an important good and is a morally relevant reason to consider when it comes to the choice of getting vaccinated. This suggests that altruistic motives can be an important factor in vaccination decisions, at least among the groups that were examined. There was more debate about indirect vaccination among the CCWs, agreed about the importance of protecting children through vaccination, but who also greatly valued the freedom to make their own vaccination decisions and were troubled by potential mandates. I discuss this tension—between making the choice to get vaccinated for the sake of others freely or through more coercive measures—at greater length both in this chapter as well as in later ones.

It is at this point during my research that the COVID-19 pandemic began to play a significant role. The pandemic emerged, and the Dutch government introduced containment measures, while the focus group studies were being conducted. Thankfully, the research presented in Chapter Three could be completed in a timely manner, after transferring some of the discussions to an online platform. This chimerical arrangement is symbolic of the beginning of a more direct engagement with COVID-19 in this dissertation. It already enters the discussion section in Chapter Three, prompted by the question of what the findings about altruistic vaccination and potential indirect vaccination might mean for COVID-19 vaccination policy.

Chapter Four: COVID-19—Against a Lockdown Approach

In late 2020, when measures were being taken around the world in response to the outbreak of COVID-19, I decided to direct some attention to urgent pandemic-related questions. With on the one hand the rising number of COVID-19 infections, and on the other hand the increasingly strict lockdowns that were implemented as a response—including 'hard' lockdowns that prevented people from leaving their homes for anything other than urgent and/or government approved activities—the question of whether such hard lockdowns were ethically justified became important. Are stay-at-home orders and other highly restrictive measures the best—that is, the most ethically desirable and/or justifiable—way to encourage people to adopt behaviors that could help to curb the spread of COVID-19?

At the heart of this question, I found the same tension as between altruistic and indirect vaccination. That is, the central tradeoff—between compelling certain behaviors during a pandemic or allowing people to adopt such behaviors on their own—echoes that of leaving people free to decide whether to get vaccinated for the sake of others or enforcing that choice in some way instead. The general question of how to regulate potential other-related behavior

took center stage. Pandemic policies seemed geared mostly toward the protection of third parties. The pandemic measures (e.g., stay-at-home orders and various closures) were not so much designed to protect individuals (who, in the end, could always decide to stay home on their own) as to protect vulnerable populations[7] and to relieve pressure on healthcare systems. Like vaccination policies primarily meant to benefit others, pandemic measures imposed on individuals primarily to benefit others could be enforced using more or less coercive means.

More specifically, as lockdown measures were being implemented around the world, including in the Netherlands, I foresaw a number of ethical problems with hard lockdowns. The taxonomy that I developed in Chapter Two would prove to be useful again, as I found that it could be meaningfully extended to the ethics of different COVID-19 measures. Given that there had been no ethical work on COVID-19-related lockdowns at the time, I considered this to be a potentially important contribution to the ethics of lockdowns and public debate more generally. To make that contribution—even if it took me in a slightly different direction from the perspective of this dissertation—seemed justified.

Therefore, before explicitly returning to ethical questions surrounding vaccination, Chapter Four applies the distinction made in Chapter Two between altruistic and indirect vaccination to a different area of public health policy and regulation, namely to nonpharmaceutical interventions (NPIs) or pandemic measures intended to slow the spread of COVID-19. In principle, pandemic measures could either be voluntarily adopted (like altruistic vaccination) or they could be enforced in different ways (like indirect vaccination). The strictest enforcement (so-called hard lockdowns) happened at different times in various countries, perhaps most conspicuously in Italy and China. What are the potential ethical problems associated with such an approach? What would an alternative approach look like? Would a less coercive approach be preferable from an ethical perspective?

In Chapter Four, I raise several ethical issues with hard lockdowns based on considerations about freedom and justice. If hard lockdowns are ethically problematic, what might be an alternative approach? I suggest an altruistic approach that allows, as much as possible, for people to take the necessary measures upon themselves. Such an approach preserves important citizen freedoms, avoids a number of potential injustices, and gives people a much-needed sense of meaning in precarious times. I also argue that there are important moral reasons—both theoretical and practical—to allow space for individuals to voluntarily adopt the necessary measures. Freedom seems to be a necessary condition for altruism, which depends on the proper kind of self-chosen motive; and freedom is important for people to enable them to express solidarity with their fellow human beings, especially during times of crisis. I discuss the psychological and existential benefits of engaging in altruistic behavior, like experiencing a greater sense of meaning and purpose in life. Seeing one's life as meaningful is crucial to human existence; it is associated in the psychological literature with greater longevity, better physical health, and reduced depression, anxiety, and overall psychological distress. Prosocial behavior has also been linked to greater psychological flourishing. Consequently, I argue that there are also important practical reasons for governments to actively encourage, rather than coerce, prosocial behaviors.

Chapter Four thus builds on the conceptual distinction in Chapter Two, albeit in relation to a different area of public health policy. I return to the matter of vaccination for the sake of others in the following chapters.

[7] Although, as I will further discuss in Chapter Eight, the idea of lockdowns to protect vulnerable people was somewhat of a double-edged sword, with vulnerable people often becoming socially isolated and disproportionately suffering mentally as well as physically (see, e.g., Kasar and Karaman 2021; Van Jaarsveld 2020; Panteli et al. 2022; Colucci et al 2022).

Chapter Five: Against COVID-19 Vaccination of Healthy Children

This point of the pandemic saw the introduction of vaccines against COVID-19. In most countries, the vaccines were rolled out to the most vulnerable populations first. Eventually, the question arose whether children, too, should get vaccinated against COVID-19. This was, and still is, the population for which vaccination is most strongly debated among the public and experts alike. Should healthy children get vaccinated against COVID-19?

Even at the beginning of the pandemic, it was clear that the rates of morbidity and mortality among children was many times lower than for elderly people. Whereas most childhood vaccines (e.g., measles) are intended to prevent illnesses that substantially affect pediatric populations, COVID-19 did not appear to be an acute pediatric public health emergency. The benefit to children of the vaccines was therefore not as clear as it was for people at relatively much higher risk of severe illness from COVID-19. Furthermore, there were both known and emerging risks associated with the vaccines (e.g., myocarditis and pericarditis) relatively early in the rollout of vaccines—and the long-term safety profile of these vaccines for children was unknown, because, being novel, there were no medium or longer-term safety studies available. The benefit-risk ratio of COVID-19 vaccines for healthy children was therefore not self-evident.

Setting aside for a moment the direct benefits of COVID-19 vaccination for children, perhaps by vaccinating children the spread of COVID-19 could be substantially reduced, and herd immunity achieved. This seemed to be a hope early in the vaccine rollout. In this way, then, the primary benefits might not so much be for children themselves, but rather for older adults, vulnerable groups, and society more generally. Would it be ethically justified to vaccinate healthy children for the sake of these other groups? The taxonomy developed in Chapter Two again served to structure the ethical discussion about the vaccination of healthy children against COVID-19.

In response to these questions, Chapter Five provides an ethical analysis of vaccinating children against COVID-19. Specifically, it presents three of the strongest arguments that might justify COVID-19 vaccination of children: an argument from paternalism (i.e., that it is in their own best interests), an argument from indirect protection and altruism (i.e., that it is necessary to protect others), and an argument from global eradication (i.e., that it is necessary to eradicate the virus). The chapter then offers a series of objections to each of these arguments to show that none of them is ultimately convincing. Given (1) the minimal direct benefit of COVID-19 vaccination for healthy children, (2) the potential for rare risks to outweigh these benefits and to undermine vaccine confidence, (3) the substantial evidence that COVID-19 vaccination confers adequate protection to risk groups whether or not healthy children are vaccinated, (4) that current vaccines do not provide sterilizing immunity, and (5) that eradication of the virus is neither feasible nor a high priority for global health, routine COVID-19 vaccination of healthy children does not seem ethically unjustified at this point.

Since COVID-19 vaccine mandates for children have already been implemented in some places (e.g., California) and are being considered elsewhere, this chapter also presents two additional ethical arguments explicitly against making COVID-19 vaccination mandatory for children.

Chapter Six: The Ethical Significance of Post-Vaccination COVID-19 Transmission Dynamics

Chapter Six focuses on COVID-19 vaccination policies for the general public rather than for children. It critically examines some of the vaccination policies that were implemented around the world, especially ones that employed coercive methods. What is the ethical basis of these policies? Are the policies ethically justified?

These were and remain pressing questions, for in many countries around the world, coercive vaccination policies have been implemented or are still being considered to increase COVID-19 vaccine uptake. Such coercive measures have taken many forms—for example, preventing unvaccinated people from being able to work, barring the use of public transportation for unvaccinated people, requiring proof of vaccination to attend college, and so on (see, e.g., Giuffrida 2022; Bardosh et al. 2022b). In Italy, compulsory vaccination for people over 50 has even been implemented (Giuffrida 2022), and there were also discussions about compulsory vaccination for the general population in other countries, like Austria (Chadwick 2022).

As evidence increasingly showed that the COVID-19 vaccines have only a modest and temporary effect on reducing SARS-CoV-2 transmission, the ethical foundation of coercive policies seemed to become more questionable. Could coercive vaccination policies (still) be justified even when getting vaccinated does not reliably mean preventing the spread of COVID-19 to others?

More specifically, Chapter Six examines whether the coercion of COVID-19 vaccination can be justified by the harm principle. Presumably, the harm principle is the rationale for restrictive COVID-19 measures like vaccine passports and vaccine mandates. If such measures are unable to substantially prevent harm to third parties, what would be their public health justification? Does the harm principle hold for coercive policies, given the limited effects of the COVID-19 vaccines on reducing transmission? More generally, what is the significance of post-vaccination transmission dynamics for the ethics of vaccination policies?

I argue that the limited effects of the COVID-19 vaccines on reducing transmission give rise to at least four important ethical consequences: (1) getting vaccinated should be seen primarily as a self-protective choice for individuals, (2) moral condemnation of unvaccinated people for causing direct harm to others is unjustified, (3) the case for a harm-based moral obligation to get vaccinated is weak for COVID-19, given that harm cannot meaningfully be prevented through vaccination, and (4) coercive vaccination policies that exclude unvaccinated people from society cannot be directly justified by the harm principle. I urge governments and public health officials to be clear about the ethical grounds on which coercive COVID-19 vaccination policies are based.

Chapter Seven: A Scalar Approach to Vaccination Ethics

While chapters Four, Five, and Six focused on ethical questions of policy—respectively, pandemic policy, COVID-19 vaccination policy for children, and coercive COVID-19 vaccination policy for the general population—Chapter Seven takes a more general approach to vaccination ethics. It aims to answer the follow question: To what extent should people get vaccinated for the sake of others? I am motivated here by the idea that there often seem to be moral *reasons* for a person to get vaccinated even if that person does not have an all-things-considered moral *duty* to do so. Furthermore, these reasons are not all equally compelling, and may differ in strength. What does it mean to have a stronger or weaker moral reason to get vaccinated? Focusing on moral reasons to get vaccinated departs from the main strand of vaccination ethics literature, which tends to focus on moral duties and obligations.

The aim in this chapter, then, is to systematically examine the moral reasons that people might have to get vaccinated for the benefit of others, focusing on harm prevention as the key moral good at stake. As such, Chapter Seven focuses most directly on what I have called altruistic vaccination in Chapter Two. More specifically, I introduce and defend a harm-based, reasons-based consequentialist account of vaccination ethics. Instead of understanding other-directed vaccination in terms of binary moral duties (i.e., where people either have or do not have a moral duty to get vaccinated), I outline eight harm-based and probabilistic factors that give people moral reasons to get vaccinated:

(A) The probability that Person *P* will at some point be infected with pathogen *Z*.
(B) The probability that *P*, if infected, will infect an individual *I* (or individuals *I*s) with *Z*.
(C) The ex-ante probability that *P*, if infected, causes severe harm to *I*/*I*s through *Z*.
(D) The degree to which *I*/*I*s can reduce the risk of contracting *Z* or the risk of severe harm caused by *Z*.
(E) The probability that *I*/*I*s would be infected by people other than *P*, whether or not infected by *P*.
(F) The ex-ante probability of onward chains of transmission beyond close contacts of *P*.
(G) The probability of recovery through treatment for disease(s) caused by *Z*.
(H) The sum of costs (e.g., material, risks) for *P* to vaccinate against *Z*.

With these factors in mind, I develop what I call a scalar approach, according to which people can have stronger or weaker moral reasons for getting vaccinated for the benefit of others, in relation to the unique moral good of vaccination (i.e., the harm to others that might be prevented by getting vaccinated).

One advantage of this approach is that it captures the idea that a person may have strong moral reasons to get vaccinated against Disease X with Vaccine A, for example, but that she may have only weak moral reasons to get vaccinated against Disease Y with Vaccine B. There may even be more reason for her to get one rather than another available vaccine for the same disease (e.g., if it has a larger potential effect on reducing chances of transmission, has a better safety profile, etc.). These nuances can sometimes be lost in arguments about moral duties to get vaccinated as such. In contrast, the approach developed in Chapter Seven allows for a fine-grained and far-reaching ethical analysis of potential moral reasons to get vaccinated.

Chapter Eight: Discussion and Conclusion

In this final chapter, I summarize and tie together the major ideas covered in this dissertation. I reflect on the research aims that were described at the outset and provide an overview of the central arguments and findings from each of the six substantive chapters in relation to those aims. I discuss the theoretical and practical contributions of my research for vaccination and public health ethics; in particular, what it means for the concept and ethics of vaccination for the sake of others.

As Knut Hamsun wrote in his novel *The Women at the Pump*, "[t]ime passes, then; everything passes; and many things even pass off well" (1978, 389). Given that various amounts of time have passed since the academic articles that constitute the bulk of this dissertation were published—in some cases, the space of several years—I also examine some of my arguments in light of more recent evidence and additional reflection.

Finally, before concluding, I propose some policy implications and offer various suggestions for future research before concluding.

CHAPTER

2

Vaccinating for Whom? Distinguishing between Self-Protective, Paternalistic, Altruistic and Indirect Vaccination

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Chapter Two
Vaccinating for Whom? Distinguishing between Self-Protective, Paternalistic, Altruistic and Indirect Vaccination

Introduction

Preventive vaccines represent one of the most significant advances in public health over the past 100 years (Feemster, 2018). Recent quantitative analyses have estimated that mass vaccination programs prevented over 100 million cases of contagious diseases since 1924 in the USA (Van Panhuis et al., 2013) and averted around 9000 deaths of children born between 1903 and 1992 in the Netherlands (Van Wijhe et al., 2016). Despite the overwhelming overall success of vaccination, parents in the industrialized world increasingly refuse routine childhood vaccines (Omer et al., 2009; Navin, 2016). Vaccination thus remains a contested but vital issue for individual and public health; so important, in fact, that the years 2011–2020 were named "decade of vaccines" by the World Health Organization (2013).

Importantly, vaccination can protect not merely the vaccinated individual, but also others. It can do so directly, by preventing transmission to others (Verweij, 2005; Orenstein and Ahmed, 2017), indirectly, by contributing to herd immunity (Metcalf et al., 2015), or through a combination of direct and indirect effects. Ethical reflection on vaccination has often centered on the question of whether or not (certain types of) vaccines ought to be mandatory (Galanakis et al., 2013; Dubov and Phung, 2015; Pierik, 2018) and on whether particular vaccination programs are justified (Krantz et al., 2004; Houweling et al., 2010; Schwartz and Caplan, 2011). In discussions about the protective effects of vaccination, self-interest and the interests of others are usually highlighted. The rationale behind encouraging or regulating vaccination, for instance, is often the protection of third parties (Giubilini, 2019). To date, however, there has been no systematic study of the self- and other-directed motives behind vaccination. Yet vaccination debates are often implicitly if not explicitly about dynamics between the self and others within the context of individual vaccination decisions and vaccination programs.[8] It is important to distinguish between self- and other-directed effects of vaccination, in order to clarify and address questions about, for example, the extent to which people ought to be altruistic in their vaccination behavior, or the degree to which governments should regulate vaccination in order to protect third parties. The relations between self- and other-directed motives behind vaccination have potential ethical implications for individual vaccination decisions as well as for public health policy. The possibility of vaccinating for the sake of others presents itself when vaccines are able to protect people other than those who are vaccinated. It is this phenomenon especially that I wish to explore. In order to examine vaccination that is directed toward benefiting others, it is useful first to differentiate it from vaccination that more fundamentally concerns the self.

I assume that the overarching motive of vaccination as such is protection against (a specific) disease.[9] In order to recognize the more specific self- and other-directed motives behind vaccination, I conceive of vaccination as emerging from a combination of (i) the vaccination decision-maker, (ii) the vaccine recipient and (iii) the primary beneficiary of vaccination.[10] Inquiry into ethical questions surrounding self- and other-directed motives behind vaccination will benefit from a better understanding of the relations among these three elements.

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[8] Throughout this article, when I refer simply to 'vaccination' I mean an instance of individual vaccination, whereas by 'vaccination program' I mean a program of collective vaccination.

[9] I will not provide additional arguments for this assumption, taking it as uncontroversial that the purpose of preventive vaccination is protection against disease.

[10] For the sake of simplicity, I use the singular form for each; as will become clear later, each element may comprise more than a single individual.

Taking up this task, I develop a taxonomy of four kinds of vaccination that I call self-protective vaccination, paternalistic vaccination, altruistic vaccination and indirect vaccination.[11] These kinds of vaccination are descriptive, in that they map onto existing vaccination practices (as I will illustrate). At the same time, they may function as ideal types, and can explicitly be adopted as vaccination policies, for instance by governments seeking to regulate vaccination for the sake of third parties.

While the motive of vaccination generally is protection against disease, for each of the four kinds of vaccination the specific motive is to realize the benefits of vaccination for a particular person or group (i.e., the primary beneficiary). While the general motive is thus the same for each kind of vaccination, how that motive is ultimately realized—that is, by, through and for whom—will, as I hope to show, determine much of the ethical nature of each kind of vaccination. For example, while protecting third parties may be achieved through either altruistic or indirect vaccination, these approaches are not equivalent in the ethical concerns that they raise.

I discuss the concrete case of human papillomavirus (HPV) vaccine regulation for men and women in order to illustrate the value of the proposed taxonomy and to explore how applying the different kinds of vaccination can help to advance vaccination debates.

Self-Protective Vaccination

The first kind of vaccination that I distinguish involves an individual agent, autonomous in her ability to make decisions, who is motivated to protect herself against becoming ill. With self-protective vaccination, the agent, aware that there are certain diseases that she may contract, and conscious of the fact that there are vaccinations to be had that will probabilistically protect her against those diseases, decides to vaccinate.[12]

The motive for this kind of vaccination is self-protection, since the primary benefits of vaccination (i.e., protection against disease) are sought for oneself. The person who decides to be vaccinated, then, is identical to the person who ultimately receives the vaccine, and the primary benefits and burdens associated with vaccination are accordingly borne by the one who makes the decision. If the perceived benefits of vaccination outweigh the perceived burdens to the agent, it may be assumed that they will go ahead and vaccinate.

An example of self-protective vaccination is an adult who decides to get a tetanus shot after cutting her hand on a rusty nail. The tetanus booster is explicitly sought out to prevent serious illness. More generally put, this category includes any case where someone is vaccinated of their own volition in order to protect their own person, and where the health of others is not directly at stake.

Compared with other kinds of vaccination, the ethics of self-protective vaccination is relatively constrained, since questions concerning moral duties, obligations and so on occur most pressingly at an interpersonal level, where the interests of one or more persons meet and potentially conflict with those of others. Unlike other kinds that I will discuss later, questions about respecting autonomy are unlikely to arise for self-protective vaccination, since deciding to vaccinate to protect oneself presumably requires an ability to make autonomous decisions. It seems implausible, for example, that an infant will seek a tetanus shot on her own initiative. There are nevertheless at least two areas in which ethical questions about self-protective vaccination arise.

First, governments may have an obligation to protect the basic conditions for public health (Verweij and Houweling, 2014), which includes ensuring equitable access to vaccination.

[11] The classification is not meant to be exhaustive; should further elements be recognized or different kinds be conceived, there is no reason why they could not be integrated.

[12] Henceforth I will drop the qualifier 'probabilistically', making the point here that vaccination decisions are always based on calculations of probability under conditions of uncertainty.

Given various conditions of need, safety and scarcity of resources, the particular selection of vaccines that are included in collective vaccination programs—including vaccines that only seem to offer self-protection—is a matter for ethical debate.

Second, human beings may have duties to prevent harm to themselves (negatively stated), or to promote their own health and well-being (positively stated). These duties may be understood within the domain of prudence, which seems generally to be served by self-protective vaccination. Prudential arguments about whether and how comprehensively one ought to vaccinate in order to protect oneself against diseases will therefore be foregrounded. One might vaccinate in order to be healthy for others (e.g., if one has a duty of care). However, when the primary motive is to benefit others (even if through self-care), then, for reasons that will become clear later, this is best understood not as self-protective but as altruistic vaccination.

That being said, for questions about what human beings might owe others, we have to look to different kinds of vaccination—that is, to instances of vaccination whose decisional and motivational structures involve other agents.

Paternalistic Vaccination

The second kind of vaccination fundamentally implicates more than one individual person. Paternalistic vaccination occurs when an autonomous agent, aware that there are diseases that another person may contract, and conscious of the availability of vaccines that will protect that person against the deleterious effects of those diseases, makes a decision for the latter to be vaccinated.[13]

The motive for this kind of vaccination is the direct protection of others for their own sake and circumscribed to those others. One must be careful here not to confuse paternalistic vaccination with indirect vaccination, which I will describe later. Without getting ahead, what must be noted here is that paternalistic vaccination, unlike indirect vaccination, takes as its primary motive protection against disease for the person who is vaccinated. Of course, motives may overlap, especially when the effects of a vaccine will protect the vaccinated person and third parties to relatively similar degrees. There is bound to be some degree of overlap between categories; for instance, altruistic vaccination will usually also protect the vaccinated person (thus potentially including a self-protective motive). What matters for my account, however, is the primary motive for the vaccination decision. In any case, as Broadbent (2019: 37) puts it, '[l]ack of clarity at the border does not obviate the value of the distinction'.

An important further consideration for paternalistic vaccination is whether or not the person for whom the vaccination decision is made is autonomous.[14] An example of paternalistic vaccination for not or not fully autonomous persons is when a parent ensures that their child receives her tetanus shots. An example of paternalistic vaccination for autonomous persons, on the other hand, is when this same decision is taken and enforced by governments for citizens of legal age. The latter case negatively affects autonomy, since the vaccination decision is taken out of the hands of persons who are otherwise autonomous in their capacity to make vaccination decisions. When governments make the decision for citizens to vaccinate, thereby endorsing a form of paternalistic vaccination, the 'decision' may take various forms and may range from less to more coercive—from milder and relatively more autonomy-respecting measures like persuasion and nudging, to incentives, fines and more drastic measures like compulsion (cf.

[13] I use the singular for the sake of simplicity; the agent could be a party of agents (e.g., parents/guardians of a child), and the vaccinated person could be more than one (e.g., a group of children).

[14] That is, autonomous in their ability to make competent and fully informed (vaccination) decisions. There might be other ways in which children, for instance, are autonomous (e.g., in their movements). Here and elsewhere, when I refer to autonomous agents, I mean agents who are autonomous specifically in their decision-making capacity.

Giubilini, 2019). The more coercive the measure, the less freedom there is for a citizen to take her own decision. This is where paternalistic vaccination is distinguished from self-protective vaccination: in the former kind, the decision is imposed on the vaccinating person (e.g., through government regulation), while in the latter kind, the decision is freely taken by the vaccinating person.

More generally stated, paternalistic vaccination encompasses any case in which an agent decides for another person to be vaccinated, to the explicit benefit of the latter and with no one else's well-being substantially at stake. The agent who makes the decision to vaccinate is, therefore, distinct from the person who is vaccinated, so that the main vaccination benefits and burdens are accordingly borne not by the agent from whom the decision stems, but by the person who receives the vaccine. Although there may be incidental benefits and burdens for the decision-making agent, these are not decisive.[15]

Important ethical considerations associated with paternalistic vaccination are likely to cluster around the responsibility and authority of the agent who makes the vaccination decision and are primarily steered by whether or not the person whom the vaccination decision affects is autonomous. This is not to suggest that overruling autonomy is intrinsically ethically unacceptable. There might be good reasons for paternalism when it comes to behavior that negatively affects health (e.g., Conly, 2013a,b), which may also apply to paternalistic vaccination, so that autonomy may sometimes justifiably be overridden. When potential subjects of paternalistic vaccination are autonomous, this simply means that questions about whether paternalism is justified will be most pertinent and that the requirements for justification itself will be more stringent compared with cases where subjects are not autonomous. Furthermore, it must be noted that paternalism is unlikely to be an all-or-nothing approach. Autonomy may be reduced in various ways and to different degrees, which also holds for paternalism in the area of vaccination policy.

When subjects are not autonomous, as in the case of children vaccinated by their parents, relevant ethical concerns are those that apply whenever decisions are made on behalf of someone who is not or not fully autonomous, when the latter's health and well-being are substantially at stake. The principles of nonmaleficence and beneficence (Beauchamp, 2003; Beauchamp and Childress, 2012) are likely to take center stage here, as guides and measures to decisions about what is best for those who cannot make fully informed decision for themselves.

Since the crux of paternalistic vaccination is that a vaccination decision is made for another person—for that person's benefit—the agent making the decision assumes a critical role, because the moral weight of the decision and its consequences ultimately rests on them.

Altruistic Vaccination

Altruistic vaccination involves an autonomous agent who, conscious of the fact that there are diseases that others may contract, and aware that there are vaccinations to be had that would protect others from the noxious effects of those diseases, decides to be vaccinated.

The primary motive for this kind of vaccination is thus to protect other people against disease through one's act of vaccination. In vaccination of this kind, the agent who makes the decision to vaccinate is identical to the agent who receives the vaccine (as in self-protective vaccination). However, the primary benefits of vaccination are directed toward someone other than the agent being vaccinated (unlike in self-protective vaccination).

The concept of altruism has been used in myriad ways across a number of disciplines (Scott and Seglow, 2007). At its core it is an act or desire to benefit someone other than oneself for

[15] Benefits may include, for instance, low doctor's costs associated with having a healthy child, while burdens may include the cost of taking one's child to a pediatrician.

the other person's sake (Kraut, 2009). I adopt a moderate view of altruism, positioned between the strong view in which an act is only altruistic when it comes at a net cost to the actor, and the weak view in which it is sufficient that an act be motivated, at least in some part, by the fact that it benefits others (Kraut, 2016). Altruism does not necessarily entail self-sacrifice (although it might). It is enough that the desire to benefit others underlies one's act of vaccination as a primary motive for it to constitute a case of altruistic vaccination. After all, vaccination can and often does confer benefits on the vaccinated individual as well as on those whom they seek to protect (and even on people not explicitly considered in the vaccination decision, for instance through herd immunity effects). On my account, it is sufficient that other-directed considerations primarily motivate an act of vaccination for it to be a case of altruistic vaccination.

As in the case of self-protective vaccination, concerns about respecting autonomy are unlikely to play an important role in altruistic vaccination, since the latter presupposes an ability to make autonomous decisions to decide to vaccinate for others. It is unlikely, for example, that an infant will seek a flu shot on her own account in order to protect others. There may be a gray area where children not entirely autonomous in their decision-making could decide to vaccinate for others. I leave this as an open question. However, when there is really no decision-making autonomy to speak of (e.g., in infants or severely mentally disabled people), then it seems to me that would-be altruistic vaccination will invariably be indirect vaccination (to be discussed in the following section). The decision will come from someone else.

As will become clear from the following examples, those who might benefit from altruistic vaccination can range from one particular, identifiable person to a more diffuse group of people.[16]

Through the practice of cocooning, people in close contact with newborns and infants—too young to be fully vaccinated—are immunized (Healy et al., 2011; Urwyler and Heininger, 2014). This strategy is a case of altruistic vaccination when the decision is primarily intended to protect newborns and infants against becoming ill.

In the case of maternal immunization, levels of antibodies may be boosted during pregnancy so as to protect newborns from diseases that are caused by pathogens in the perinatal period, at least until the infant is old enough to be vaccinated (Munoz, 2018). When maternal immunization is chiefly directed toward protecting the health of the future child, this is an example of altruistic vaccination.[17]

Healthcare workers (HCW) may be immunized to protect high-risk groups of patients (e.g., the severely immuno-compromised) with whom they enter into close contact (Galanakis et al., 2013). There may be good arguments for mandatory vaccination of HCW against influenza (Van Delden et al., 2008), but we should consider it altruistic vaccination when HCW freely decide to vaccinate for the sake of patients.

Having offered examples of altruistic vaccination, what follows is a discussion of ethical considerations that these and other cases prompt. When one seeks to benefit others through vaccination, this constitutes a form of altruistic behavior that brings to light different moral concepts and ethical questions from those associated with, for instance, self-protective or paternalistic vaccination.

Altruism and freedom are intimately related, in that altruism seems to require freedom because it depends on the right kind of self-chosen motive (Seglow, 2004). Once altruism is

[16] These examples are not meant to be complete, nor can they be discussed in the detail they deserve; their purpose is more modest, namely to illustrate altruistic vaccination.

[17] It must be noted that in this and in other examples, the vaccinated party often also benefits from the vaccine (Chu and Englund, 2018; Kachikis et al., 2018). What matters for my account is who receives the intended primary benefits.

institutionalized, however, a tension emerges because the motive to engage in altruistic acts is no longer free; it becomes tied to compliance with external demands. My account of vaccination accommodates this tension as follows: when the decision to vaccinate stems from the person who is vaccinated, then this is properly understood as altruistic vaccination. If, on the other hand, the decision is imposed from outside, then, as will be discussed in the next section, this is better conceived as indirect vaccination. The mere fact that people sometimes do vaccinate for the well-being of others (e.g., Betsch, 2014) is of course insufficient by itself to ground a normative account. However, whether and to what extent people ought to vaccinate altruistically is a different matter; it is central to the ethics of altruistic vaccination.

One objection to this reasoning might be that it is not always clear-cut whether someone vaccinates out of purely altruistic motives (Verweij et al., 2016). For instance, a person may be conforming to social norms or peer pressure, even without government mandates. All the same, while degrees of freedom may vary, as long as the decision ultimately resides with the person who is vaccinated, then this is a case of altruistic vaccination. The moment that vaccination for others is imposed on people—whether by governments, through social pressure, or by any other means—it is no longer altruistic, and should not be viewed or explained as such.

Altruistic vaccination is an important example of vaccination for the sake of others, but it does not cover the whole range of the concept. Given that having an altruistic motive is a precondition for altruism, decisions that do not derive from the right kind of motive cannot be accommodated by altruistic vaccination—even if there are benefits to others. Another kind of vaccination must be distinguished.

Indirect Vaccination

The final kind of vaccination involves a decision-maker who is neither the person who is vaccinated nor the one who receives the primary benefits of vaccination. Specifically, indirect vaccination[18] entails a decision-maker who, recognizing that there are diseases that (a member of) a group may contract, and, knowing that there are vaccinations to be obtained by nonmembers that would protect (a member of) that group from the harmful effects of those diseases, decides that a nonmember should be vaccinated.

The primary motive for this kind of vaccination is to protect an individual or a group of people against disease through others. Indirect vaccination, then, is like paternalistic vaccination by virtue of the separation between vaccination decision-maker and recipient, and like altruistic vaccination in that the primary benefits of vaccination are extended to someone other than the one being vaccinated. In this latter sense, it is a form of vaccination for the sake of others. Nevertheless, because the decision to vaccinate does not come from the person who is vaccinated, it cannot be considered altruistic; instead, it is a form of vaccination indirectly meant to benefit others.

The identity of the decision-maker may, at least at first glance, appear to be more obscure for indirect vaccination than for other kinds. This is partially due to the nature of indirect vaccination, which will usually be instantiated at the level of institutions—unlike other kinds of vaccination, which tend to involve clearly identifiable individuals. To clarify: in the context of indirect vaccination, I take a vaccination decision to mean, loosely, an explicit decision to try to achieve the aims of vaccination—protection against disease. Decisions may take place at various levels, from companies, organizations and institutions (e.g., hospitals requiring that HCW are vaccinated for the sake of patients) to governments (e.g., mandatory vaccination programs to protect vulnerable citizens). Any form of pressure may come into play, from

[18] 'Indirect vaccination' does not capture the subject of vaccination in the way that self-protective (i.e., the self), paternalistic (i.e., the subject of paternalism) and altruistic (i.e., the subject of altruism) vaccination do. This is in a sense unfortunate; it is also inevitable, and speaks to both the complexity of indirect vaccination and to the importance of further specifying the relevant actors.

punishment to reward. The methods used to enforce the vaccination decision will be part of the ethical evaluation of indirect vaccination, rather than intrinsic to it. It must be noted that indirect vaccination is not necessarily confined to the level of institutions. For instance, parents may decide to vaccinate one of their two children for the sake of the other child. The decision here derives from the parents—not the vaccinated child—and the primary benefits do not go to the vaccinated child.

When the decision to vaccinate for the sake of others is freely taken by an individual, we should speak of altruistic vaccination, so that a certain amount of persuasion may be compatible with an altruistic approach. However, when the decision takes place beyond the individual, and especially when enforcing it becomes a possibility and practice, we enter the terrain of indirect vaccination. The distinction may not always be clear-cut, and it may be contested—yet it is nevertheless important to draw.

An example may be useful here. So far, I have not mentioned the possibility of vaccination that aims at achieving or maintaining herd immunity, for instance for an infectious disease like influenza (Plans-Rubió, 2012). Herd immunity effects necessarily reach others beyond the vaccinated individual. Vaccination for herd immunity may therefore provide an instance of either altruistic or indirect vaccination, depending on the primary motive and where the decision ultimately lies. Under which category it will ultimately fall depends, I have argued, on whether people altruistically decide to vaccinate in order to contribute to herd immunity (altruistic vaccination), or whether this decision comes from elsewhere and is required in some way (indirect vaccination). While it is possible, in principle, that an individual vaccinates primarily for the sake of herd immunity, this is unlikely in practice to be a primary motive for individuals. Herd immunity is an abstract and rather elusive goal of vaccination, which limits its motivating force—although governments may, of course, attempt to strengthen its motivating force directly, for instance through public campaigns that appeal to the importance of herd immunity and of individuals altruistically vaccinating in order to help achieve it. Furthermore, an individual person's act of vaccination is highly unlikely to make a difference to whether or not herd immunity is actually achieved (Giubilini, 2019). It is therefore improbable that sufficiently large herd immunity effects can be achieved by merely relying on peoples' inclinations toward altruistic vaccination. Furthermore, there is the related issue of fairness in the distribution of the burdens of vaccination, which is likely to fall disproportionately on those individuals who vaccinate altruistically, and which may require that governments have to undertake an indirect vaccination approach as a matter of justice (Giubilini, 2019). At a socio-political level, therefore, relying on altruistically vaccinating individuals may be both impractical, given the aims of vaccination, and unfair, given that others would end up enjoying the benefits of herd immunity without bearing any of the burdens.

A further consideration for indirect vaccination is whether or not the person for whom the vaccination decision is made is autonomous. An example of indirect vaccination for persons who are not fully autonomous is when one group of children is required to be vaccinated against measles for the benefit of yet another group of children (e.g., those who are too young to be vaccinated). A case of indirect vaccination for autonomous persons is when professionals are required to vaccinate for the sake of people for or with whom they work. Practically speaking, questions about autonomy will play a part even if the direct subjects of indirect vaccination are not themselves autonomous, because those who are not capable of making autonomous vaccination decisions will usually be cared for by others who are authorized to make decisions on their behalf. In the case of young children, it will often be the autonomy of parents that is at stake. Governments could, for instance, require parents to vaccinate their children even if the primary motive is not to benefit their particular children. In such cases, parental autonomy seems to be at stake.

Indirect vaccination is the most complex and demanding kind of vaccination in terms of ethical justification. It has the highest threshold for acceptability, not only because it tends to override autonomy (Beauchamp and Childress, 2012), but also because it is generally more difficult to defend imposing burdens associated with vaccination, like side effects, inconvenience, money or time (Fine et al., 2011), when the primary benefits do not go to those who bear them. Removing the decision to vaccinate from the realm of individual discretion may, however, provide a solution to low vaccination uptake and may serve to achieve or preserve herd immunity. These considerations will ultimately require ethical justification beyond that associated with the previously considered kinds of vaccination. For it is one thing to encourage someone to vaccinate for the sake of others, yet it is quite another thing to require them to do so through coercive measures. Where altruism is untenable for bringing about the benefits of vaccination, aside from the previously considered issue of fairness, a normative conception of solidarity (e.g., Carson and Flood, 2017) and a moral duty to contribute to public goods (e.g., Verweij and Houweling, 2014) are potential justifications for why governments could opt for indirect vaccination. As for the shape that indirect vaccination might take, the vaccination intervention ladder proposed by Giubilini (2019) offers a useful guide; interventions involving persuasion are compatible with altruistic vaccination, since they preserve freedom of choice, while financial incentives and disincentives already begin to erode altruistic vaccination and bring one within the realm of indirect vaccination.

Individuals, institutions or governments may wish to protect certain individuals or groups of people against disease; in order to do so, what must be considered first and foremost is to whom the benefits and burdens of vaccination are directed, especially and most pressingly when decision are made for others through an indirect vaccination approach.

Case Study: HPV Vaccination

Since most decisions about vaccination take place at the level of government policy, I want to focus the discussion on vaccine regulation. More specifically, I want to explore how my taxonomy contributes to current ethical debates by examining some tensions that arise when governments consider regulating vaccination for the sake of others, which, as I have tried to show, can be conceived of as altruistic (when the decision comes from the person vaccinating) or as indirect (when the decision comes from elsewhere). See Figure 1 for an overview of the four different kinds of vaccination.

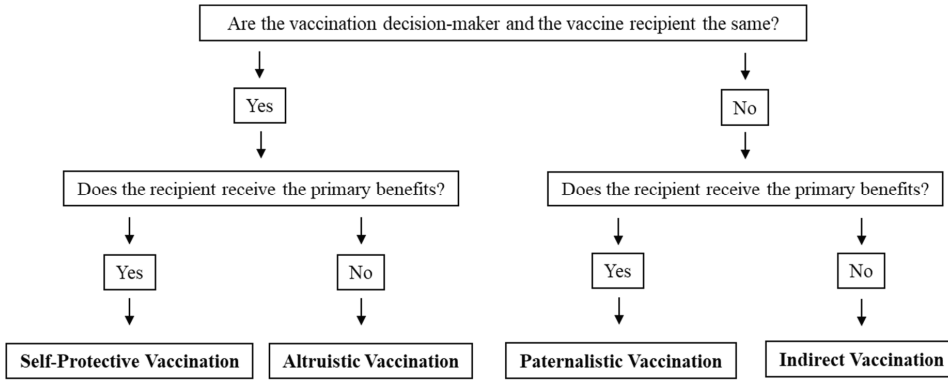

Figure 1. Taxonomy of four different kinds of vaccination.

Let us take the case of a government considering not only vaccinating girls against HPV, but also boys. HPV is among the most common sexually transmitted infections; while most infections are temporary and remain subclinical, persistent infection can lead to cancers—including cervical cancer, which for cancer incidence and mortality in women ranks fourth worldwide (Bray et al., 2018). Evidence of the safety and effectiveness of HPV vaccines currently on the market is highly robust (Schiller et al., 2012; Donken et al., 2018; Sipp et al., 2018). By including boys in HPV vaccination programs, boys and men will contribute to herd immunity and thereby help to protect women; the greatest potential health benefits are ultimately for women, because they bear the largest HPV-related disease burden. This difference in potential health gains is significant, because it will partially determine the kinds of vaccination that are applicable. In particular, there are two main areas of tension, which generally revolve around the asymmetry of the HPV disease burden.

First, when it comes to women, the government may take a self-protective approach by making the vaccine available for women and encouraging its uptake, thereby allowing them to protect themselves—yet doing nothing to enforce it.[19] On the other hand, the government may opt to take the decision out of women's hands by means of a paternalistic approach—for instance, by mandating HPV vaccination for women. Respect for autonomy favors the former choice, while duties of benevolence (Beauchamp, 2003) and providing equal access to basic healthcare (Verweij and Houweling, 2014) may justify the latter approach.

Second, in the case of men, another tension emerges.[20] The government may opt for an altruistic approach by encouraging men to vaccinate against HPV for the sake of women, for instance by means of persuasion. It may emphasize duties to contribute to herd immunity (Dawson, 2007; Giubilini et al., 2018) or emphasize concern for sexual partners and the potential benefits that current and/or future partners stand to gain (Luyten et al., 2014). There are also benefits for men that can be stressed in a self-protective approach, but given the substantial asymmetry of disease burden and the relatively small risk of HPV-related cancers for men, such an approach is unlikely to be compelling enough to obtain the necessary vaccination coverage. The altruistic approach has the virtue of respecting autonomy and freedom of choice. Alternatively, the government may take an indirect approach, for instance in the form of mandatory HPV vaccination for boys, thus ultimately taking the decision out of the hands of men. This might be done to minimize the incidence of HPV and thus to reduce the risk of HPV-related cancers especially in women. Since men contribute at least as much to the spread of HPV infections as women, it may be justified to require men to be vaccinated against HPV primarily for the sake of women.[21]

The move from altruistic to indirect vaccination requires a different defense from the altruistic approach, as it considerably constrains individual autonomy. It also requires a stronger ethical justification than the paternalistic approach for women, because it lacks the defense that it is in the best interest of those bearing the burdens of vaccination (that is, boys and men). Which is not to say, of course, that such an intervention is always indefensible.

The case of HPV vaccination reveals the following. First, it is very important to know what the effects of a given vaccine actually are. There is unlikely to be debate about altruistic or indirect approaches to tetanus vaccination, because the effects simply do not extend to people other than those who are vaccinated, thus precluding discussion of other-directed motives. As mentioned earlier, one might vaccinate to be healthy for others (e.g., for one's children or other

[19] The case is slightly more complex, because HPV vaccination is often recommended for minors (Kim and Goldie, 2009). Granting adolescent self-consent (Agrawal and Morain, 2018) may avoid issues of autonomy, but even without consent, my approach can inform the discussion through paternalistic vaccination.

[20] HPV vaccination is also important for men who have sex with men (Wheldon et al., 2017). I limit my discussion to relations between men and women for reasons of space.

[21] Thanks to Marcel Verweij for this point.

dependents). However, keeping oneself healthy in this particular case is part of a more general phenomenon; when specifically considering tetanus vaccination, the primary motive is still likely to be to receive the benefits of vaccination for one's own person—even if others might also benefit from the things that one is ultimately able to do through good health. Nevertheless, unlikely as it might be, should one's primary motive for tetanus vaccination truly be to benefit others, then this might yet qualify as altruistic vaccination. From the perspective of vaccination programs, of course, this is still unlikely to a fruitful approach. Vaccines like those against different strands of HPV will take center stage in reflections on altruistic and indirect vaccination, precisely because of the significant effects that those vaccines are likely to have beyond the vaccinated individual.

Second, it is important how governments understand actual and potential vaccination programs. It will help governments to ask what they ultimately want from a vaccination program. Who are supposed to be the primary beneficiaries of the vaccine in question? Who is to receive it? And should people be kept free in their decision-making regarding vaccine uptake, or should some form of pressure or coercion be applied? The answers to these questions, as I have argued, will lead toward one kind of vaccination or the other, along with specific ethical considerations. Even if there are mixed motives, as there may well be, I think that for most vaccines it is—or will at some point be—clear where the largest disease burden lies and who will, accordingly, benefit the most. Examining vaccination from a framework of action–reasons rather than mere actions (Grill, 2007) may also help to clarify the motives and normative issues at stake. In any case, governments should have a clear vision of the motives behind vaccination programs.

Third, it is significant to know the motives of people who are actually or potentially involved in vaccination programs. If, for instance, people are already (potentially) inclined to vaccinate for the sake of others in particular cases (e.g., for current and/or future sexual partners), then it makes sense for governments to explore an altruistic approach—harnessing extant feelings of altruism—before taking an indirect approach, which would limit freedom of decision. If, on the other hand, one finds very little inclination to vaccinate for others, then an altruistic approach may turn out to be ineffective.

Finally, it matters how governments frame the kind of vaccination under consideration to the public. If the (perceived) burdens of vaccination are very high, and the (perceived) benefits to others are very low, then framing vaccination in terms of altruism may gain little traction. Likewise, if the benefits of a particular vaccine to an individual are negligible, then self-protection is clearly not an appropriate way to frame vaccination in this case.

In the end, vaccination policy is unlikely to be static. It will need to be adjusted over time to shifting patterns of disease incidence and vaccine availability, safety and acceptance—acceptance both in the service of one's own health as well as that of others. What will remain more constant are the larger moral questions, which are intimately related to the particular kinds of vaccination in question.

Conclusion

I have distinguished different kinds of vaccination along the lines of self- and other-directed motives, and I have argued for the importance of clarifying the structure of the relations that hold between the vaccination decision-maker, the vaccine recipient and the primary beneficiary. Accordingly, I classified four kinds of vaccination: self-protective, paternalistic, altruistic and indirect. Each of these kinds of vaccination evokes a particular set of ethical issues, so that the ethical justification of vaccination is served by clarifying which kind is being considered.

More specifically, moral reflection on vaccination for the sake of others is best approached by first distinguishing between its two forms: the freely opted altruistic kind of vaccination and

an imposed kind of indirect vaccination. Governments ought to carefully consider these two kinds of vaccination—and the particular ethical considerations foregrounded by each—when deciding on an approach to take for the regulation of vaccination in the interest of third parties. To this end, it will be fruitful for empirical research to examine what particular target groups (e.g., those who might vaccinate altruistically) consider to be relevant motives, and how much weight they give to these. While my taxonomy provides a solid basis for discussions about self- and other-directed motives, it will benefit from being fleshed out further—both through conceptual refinements as discussions persist, as well as by incorporating relevant empirical data.

CHAPTER

3

Altruistic Vaccination: Insights from Two Focus Group Studies

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Chapter Three
Altruistic Vaccination: Insights from Two Focus Group Studies

Introduction

An important feature of preventive vaccination is that the health benefits can and often do extend beyond individuals who receive a particular vaccine (e.g., by preventing or reducing transmission to others or by contributing to herd immunity (Rashid, Khander, and Booy 2012; Mallory, Lindesmith, and Baric 2019)). Recent work on vaccination ethics has conceptualized different kinds of vaccination according to whether the underlying motives are more self- or other-directed; while vaccination may be guided by the goal of self-protection, it might also be undertaken primarily for the sake of others in what has been termed altruistic vaccination (Kraaijeveld 2020a). Altruistic vaccination may have health benefits for the person receiving the vaccine, but the main impetus is to protect the health of someone else. Altruistic vaccination has been contrasted with indirect vaccination, which is when the decision for one person or group to get vaccinated for the sake of others is not taken by the vaccinee but by someone else, for instance by governments through the implementation of mandates (Kraaijeveld 2020a).

In order to gain a better understanding of altruistic vaccination and the dynamic between self-directed and other-directed vaccination motives, we conducted two focus group studies that centered on specific kinds of vaccination that appear to lend themselves particularly well to altruistic vaccination, because their potential benefits may be more substantial for people other than the individual vaccinees. More specifically, Study 1 examined the case of human papillomavirus (HPV) vaccination for boys, while Study 2 focused on the case of pertussis and measles vaccination for childcare workers (CCWs).[22] These two subjects were selected because protecting the health of others appears to be particularly relevant in these areas, given that in both cases vaccination can considerably benefit others beyond individual vaccinees. Boys and men getting vaccinated against HPV can yield significant health gains for girls and women by helping to protect them against a number of HPV-associated cancers that are leading causes of death in women (Bray et al. 2018), while for pertussis and measles, vaccination by CCWs can help to prevent vulnerable children from contracting the respective diseases (Hope et al. 2012; Rehman et al. 2018; Kohfal et al. 2020). Vaccination for childcare employees against pertussis, for example, has been recommended to protect infants younger than 12 months old (Parker and Conner 2016). Aside from gaining insight into what people who may face choices regarding vaccination in these areas think about altruistic vaccination, we also sought to explore the normative implications of vaccination for the sake of others.

A research question was formulated for each respective study. First, what role do altruistic motives play in the considerations that are offered to boys and parents of boys to accept vaccination against HPV (for the sake of girls and women)? Second, how do altruistic motives factor into the acceptance of occupational vaccination of CCWs (for the sake of children)? Answers to these questions are important in order to better understand the motives behind vaccination that are relevant to the specific target groups, which can ultimately help to inform vaccination policy and feed into normative reflection. Should altruistic vaccination motives be found to be robust, for instance, then this would provide support for policies that cultivate such motives rather than for measures that potentially override them through more coercive measures, or ones that (merely) emphasize self-interest. Clarifying the role of altruistic motives will also contribute to theoretical work on the notion of altruistic vaccination. It can offer insight, for example, into whether people's actual moral considerations and commitments

[22] It should be noted that the two studies were part of a larger project, which also included topics that are not reported in this paper.

regarding vaccination for the sake of others align with altruistic vaccination as a normative principle (i.e., that one ought to get vaccinated for the sake of others).

The paper is structured in the following way. First, we outline the methods employed for both studies. Second, we report the subjects and findings of Study 1, which examined HPV vaccination for boys. Second, we report the subjects and findings of Study 2, which addressed pertussis and measles vaccination for employees of daycare centers. Finally, we discuss the findings from the two studies within the context of vaccination policy as well as their importance to more general normative-theoretical discussions surrounding vaccination for the sake of others.

Methods

A focus group methodology was selected because focus groups are a productive means of stimulating discussion and of gathering a rich set of data on complex issues in bioethics (Simon and Mosavel 2008). Focus groups may lead to discoveries about the moral considerations for potential actions, and of how and why participants make certain decisions; importantly, focus groups also tend to encourage people who might normally not speak up to contribute to the debate (Kitzinger 1995). For each of the two studies presented in this article, we selected a total of three focus groups. This number is in line with study design guidelines for focus groups (Kitzinger 1994). Having three focus groups per study was considered to be an effective means of organizing the discussions, as it allowed us to include a sufficient total number of participants for each study while having about 6 to 8 participants in each group, which is considered the optimum size for focus groups (Gill et al. 2008).

While all studies were intended to be conducted in person, the outbreak of a novel coronavirus disease (COVID-19) resulted in some parts of the studies having to be conducted online, including the session with young adults for Study 1 as well as all of the discussions for Study 2. Therefore, for Study 1, only the discussions with the two parent groups were conducted in person, while the discussion with the young adults was held via Skype chat. Using the chat function on Skype meant that all participants, including the moderator, exchanged text messages with each other in a single chat room. We decided to use the chat function as it offered participants more time to respond and a higher degree of anonymity compared to speaking and listening through video. Furthermore, during the beginning of the first lockdown in the Netherlands, many people were not yet accustomed to online group meetings; we wanted to avoid the potential for technical issues and differences in ability to video call to negatively affect discussions. Audiotaping and transcription of the sessions were outsourced to external companies with respective areas of expertise. For an overview of the focus groups, see Appendices I and II.

All studies were conducted in March and April of 2020. The specific timeline for the studies is as follows. The three focus groups for Study 1 were conducted on March 2, March 3, and March 9. The first lockdown in the Netherlands in response to COVID-19 was implemented in the middle of march. The three focus groups for Study 2 were conducted on March 30, April 1, and April 6.

The focus groups were moderated by the second author BM. A topic list was used to guide the discussion for each study. For Study 1, the list provided steps from the subject of altruism, vaccination in general, HPV, and specific considerations about whether or not to opt for HPV vaccination for children (see Appendix III). For Study 2, the list was the same, expect the subject moved to pertussis and measles vaccination (rather than HPV) for the CCWs.

For each study, the discussion was initiated by asking the following very general question: "To what extent do you see people do things for each other?" We decided to start the discussion by introducing the topic of altruism from a broad yet personal perspective, because we first wanted to explore the context in which people experience altruism (or a lack thereof) in their

daily lives. This context of lived experiences shapes the factors that underlie attitudes towards altruism as well as other-regarding considerations relevant to vaccination. In particular, we sought to avoid introducing the polarization that characterizes much of the public debate surrounding vaccination early on in the discussion. By asking participants about quotidian experiences with regard to people doing things for each other (not yet explicitly naming 'altruism'), we wanted to offer participants the chance to get to know each other and to acquaint themselves with how the discussion would proceed, in order to encourage the disclosure of personal opinions and experiences while also avoiding potentially controversial and confrontational topics right at the beginning of the discussion.

Participants were selected who were generally accepting of vaccination and who had previously participated in the national immunization program. People against any kind of vaccination were not included for two reasons. First, in order to prevent discussions from being derailed by debates about whether one should get vaccinated at all (i.e., for any reason). We opted for a shared background among participants of at least a general acceptance of the potential benefits of vaccination. Second, and relatedly, we wanted to examine altruistic vaccination specifically among people who might actually consider getting vaccinated for the benefit of others. We assumed that a person who is against any kind of vaccination on principle would not consider altruistic vaccination either. While it is certainly interesting and important to understand why people might be categorically against vaccination, this was not the focus of the present research.

In line with common practice (Barbour 2018), the coding scheme for the transcripts for both studies was partly developed a-priori (based on the literature) and partly developed in-vivo (based on the empirical input received from the focus groups). Transcripts were analyzed based on principles of thematic analysis (Braun and Clarke 2006), and using Atlas.ti software for coding. The analysis ran through several phases, in line with best practices (Krieger 2020). First, both authors independently read the transcripts to immerse themselves in the data and for a general impression. Together with two graduate students, second author YY proceeded to code the transcripts, using the concepts from the topic list as a priori codes at the start of the coding process. Subsequent codes were developed in-vivo by assigning new and descriptive codes to quotations that were deemed relevant. In a next phase, BM and the graduate students compared coded transcripts to allow for emergence of different themes. Finally, first author SRK independently checked the identified themes against the transcripts. Consensus was reached by reviewing, integrating, and modifying the themes.

All research conducted for the purpose of this article was approved by the Social Sciences Ethics Committee of Wageningen University (number: 2020-6-Eerden), based on a review of the combined research protocols and materials. All participants signed informed consent before taking part in the focus groups and after being informed about its aims, the voluntary nature of participation, and the confidential treatment of all collected data. All transcripts were fully anonymized.

Study 1: HPV Vaccination for Boys

Subjects

All participants (n = 22) in the three focus groups conducted for Study 1 were recruited by a commercial agency specialized in recruitment and selection of research participants. From a database of over 25,000 participants, purposeful sampling was employed to organize three focus groups: one focus groups with parents from rural areas (n = 7); a second focus group with parents from the large city of Amsterdam (n = 9); and a third focus group (n = 6) with young adults aged 18 to 20 years, not specified as to residential area. The target groups were selected based on a recent study by the Dutch National Institute for Public Health and the Environment (RIVM) that recommends including male young adults as a target group for the Dutch national

HPV immunization program (RIVM 2019). Parents were also included, because parents have been found to play an important role in the vaccination decision of young adults (Wyatt 2001). The parent groups were further subdivided into parents from a rural area ('rural parents') and parents from an urban area ('urban parents'), because previous research has indicated that there are meaningful differences in beliefs about HPV infection and vaccination between parents from urban as compared to rural areas (Degarege et al. 2018; Reiter et al. 2009).

In terms of composition, we aimed for groups in which approximately a third of parents had at least one son, a third of parents had at least one daughter, and a third of parents had both a son and a daughter. The third focus group ('young adults') included a mix of male (n = 2) and female (n = 4) young adults aged 18 to 20 years. This group included both females who had already been vaccinated against HPV as well as those who had not. Even though the focus was on male young adults, female young adults were included as stakeholders in discussions surrounding HPV vaccination. As indicated in the Methods section, the discussions with the two parent groups were conducted in person, while the discussion with the young adults was held via Skype chat (for an overview of the focus groups, see Appendix I).

Results

Altruism in General

The discussion was steered by the moderator first to altruistic behavior in general—to what it means to do something for someone else.[23] This choice was made so as to approach the subject from a broad perspective and to avoid immediately shaping the discussion around vaccination.

Participants agreed that altruistic behavior can take various forms and can exists for a number of reasons. The most commonly offered example of altruism was voluntary work, or more specifically, volunteering to help others in need (e.g., family members, elderly people suffering from dementia, refugees, food banks). Historical changes in altruism were mentioned, but only by the rural parents, who suggested an increase in individualism over time as an explanation for decreased altruism within communities. Urbanization and increased general welfare were seen as a cause for the increasingly individualistic nature of contemporary (Dutch) society. Generational differences were mentioned by both rural and urban parents, emphasizing a decrease in altruism over time, but not by the young adults.

A consensus developed regarding the general complexity of striking a balance in life between benefitting others and benefitting oneself—between altruism and egoism. Participants considered it important to help others as much as possible, but they also agreed that one should not forget one's own interests or "let others walk all over you" (male, rural parent).[24] One young adult stated that helping others should not come at the cost of your own health and wellbeing. According to another young adult, "it is important to commit myself to others, but it is me before anything else." A rural parent, on the other hand, experienced trouble saying 'no' to people in need, which meant that she often put her own issues aside.

In all three focus groups, participants considered the status and nature of interpersonal relationships to be an important factor in altruistic behavior: knowing someone facilitated and made it more appropriate for them to be helpful, altruistic, and welcoming toward someone else. At the same time, they recognized that in some situations, like emergencies, whether or not you know someone personally is much less relevant.

Across the focus groups, three themes surrounding altruistic behavior were identified based on the discussions. The first comprises self-regarding motives, such as seeking to benefit in some way from the would-be altruistic act. Feeling satisfied with/about oneself was frequently mentioned as the most common way of 'benefitting' from an altruistic act. Social engagement

[23] The discussions were moderated by second author BM.

[24] The discussions were conducted in Dutch; all quotations throughout the article were translated into English by first author SRK.

and social inclusion were also commonly identified ways of benefitting from helping others. Reciprocity or mutual benefit was also mentioned by several participants as a norm when it comes to helping others, but not everyone agreed. Interestingly, none of the participants mentioned negative emotions (such as feeling bad or guilty) or negative social consequences (such as punishment) as reasons to help someone.

The second theme involves other-regarding reasons, such as wanting to make others happy and to be useful to them, as well as empathic concern for other people. A general theme emerged of people wanting to be there for each other and to make others happy. Empathy was identified in the discussion as a potentially important factor in, and means of generating, altruistic behavior. One rural parent explicitly offered empathy as a motive for altruism. A young adult mentioned that sometimes people help others under the supposition that their money is better spent on someone else who needs it more, which suggests empathy with the person in need.

The third theme encompasses norm-based and duty-based motives, such as helping someone else out of commitment to particular group or organization. This theme was lively among the young adults, who mentioned helping other members of their student association as an example. Norms and values were generally considered important motives for altruistic behavior: most participants mentioned 'norms and values' either generically or with specific content in relation to helping others. Doing things for someone else was considered 'normal' across all three focus groups; nevertheless, the source of the norms surrounding helping behavior was debated. Several participants claimed that helping others just feels like the right thing. Others insisted that helping others is part of one's upbringing. One participant (female, urban parent) mentioned that her daughter does volunteer work, explaining that "to her [daughter] that is normal."

Altruism and Vaccination

When it came to the subject of vaccination, the discussion centered more on the potential benefits to other people than to the vaccinee. Vaccination was seen by one parent as something that benefits not just individuals, but also society at large. Other parents responded that they had not expressly thought about vaccination in this way, but they agreed that is important for society that people get vaccinated in order to minimize the spread of disease. Yet another parent related this idea to the outbreak of the novel coronavirus disease (COVID-19), which had made them more aware of the societal importance of vaccination. That vaccination by others can protect children who are undergoing chemotherapy, or who are otherwise unable to get vaccinated (e.g., due to allergies), was also brought up by participants. This resulted in a consensus among the parents that vaccination is important to protect vulnerable children, given that, as one parent pointed out, in every group there's probably a vulnerable child. When it came specifically to boys getting vaccinated against HPV, one parent summarized the state of affairs as follows: getting vaccinated would mean avoiding that one contracts the virus that might result in ovarian cancer in girls and other cancers in boys. Both self-protective motives (for boys getting the vaccine) and altruistic motives (regarding girls and woman as potential sexual partners) were thus considered to be relevant by the parents.

Among young adults, this was also the case. Aside from self-protective motives, altruistic motives (i.e., protecting others) were clearly indicated in the willingness that was expressed to get vaccinated against HPV, considerations surrounding which mostly centered on males getting vaccinated for the sake of women. One young adult (male) told others, in a prelude to the discussion about HPV specifically, that he is receiving a meningococcal vaccine, which "prevents spreading of the disease, so that you increase the health of others." Another young adult pointed out that not every disease is contagious, so that benefitting others cannot always be a consideration. Nevertheless, the young adults agreed that when it comes to infectious

diseases, vaccination means not just individual protection, but also protecting other people and society at large. According to one participant, "precisely because HPV is infectious, it seems to me that you can prevent it by collectively getting vaccinated," and "you naturally want to protect yourself, but also your sexual partner and the community."

Study 2: Pertussis Vaccination for Childcare Workers

Subjects

All participants (n = 15) in the three focus groups conducted for Study 2 were recruited by a commercial agency specialized in recruitment and selection of research participants. The target groups consisted of CCWs who were actively working in childcare centers within the Netherlands at the time of the study. From a database of over 25,000 participants, three focus groups were selected. The first group (n = 4) included participants from across the Netherlands; the second focus group (n = 6) included participants from the city of Amsterdam; and the third focus group (n = 5) included participants from the region of Amersfoort. The participants' age ranged from 24 years old to 61 years old (μ = 38,9 years). The participants' work experience ranged from 1 year to 27 years (μ = 11,5 years). Of the fifteen participants, three were men. All of the discussions took place online, via Skype chat. For an overview of the participants, see Appendix II.

As indicated in the Methods section, all of the discussions took place online via Skype chat. For an overview of the participants, see Appendix II.

Results

Altruism in General

As in Study 1, the discussion was first led to the subject of altruistic behavior generally, before moving to considerations in relation to vaccination. With regard to the question of why people help or do things for others, CCWs agreed that it is good to help people when one is in a position to do so. People help each other because it makes them feel good; helping others gives one a sense of accomplishment and feelings of happiness. Some self-directed motives were thus identified for other-regarding behaviors; helping others can sometimes result in a benefit to the self by generating positive emotions and making one feel better about oneself. The CCWs, however, concluded that for them the good feeling is not the most important outcome—it is only a bonus. The consensus was that is normal and self-evident to sometimes engage in behavior for the sake of others.

Three other themes surrounding altruistic behavior were identified. First, the theme of what may be called altruism out of love, which entails doing something for another person because you love that person and care about them. Second, there was the theme of reciprocal altruism, or engaging in altruistic behavior in hopes of being the recipient of other people's altruistic behavior in the future (also referred to as 'karma' in the discussion). Third, there was the theme of altruism as a personality, which involves embracing altruism as part of who one is as a person—explicitly adopting it as part of one's personality. Participants in focus group three in particular mentioned that they thought that CCWs are more caring than most people, and possess the innate quality of altruism, which is why they work in care and "from the heart," according to one participant.

Vaccination Beliefs

The CCWs general views of vaccination were unequivocally positive. Participants first highlighted the protective effects of vaccination for them individually; when the discussion moved to occupational vaccination, the focus shifted to the beneficial effects for the children with whom they worked. One participant summed it up as follows: "I think that that vaccination is important so that children are protected [from diseases] and can grow up in a safe

environment." One participant agreed that it is important to vaccinate young children against infectious diseases, suggesting the metaphor of "building as strong a wall as possible" around vulnerable children with children who have gotten vaccinated.

The positive views of vaccination remained throughout the focus group session, although the CCWs became more critical of vaccination as the discussion moved toward risk perception and the explicit importance of vaccination in order to protect others. At this point, it became clear that the CCWs felt that protecting others through vaccination is part of one's professional role; they considered it to be part of their responsibility in caring for the children.

Altruism in Vaccination

Altruism was not found to be an independent theme for CCWs when it comes to accepting vaccination for the sake of others. Altruism was instead considered to be part of the responsibility of being a CCW, which includes protecting others through vaccination. In contrast to altruism in general, altruistic vaccination was not linked to generating a good feeling; it was primarily identified by participants in relation to the idea of protecting others and to the notion of responsibility. Altruism and altruistic behavior were often taken for granted and seen as the unquestioned norm in their line of work: the CCWs found it self-evident that people would take the responsibility to protect the children with whom they work. As one CCW put it, "I take zero risks with my own children, so I also don't [take risks] with someone else's child."

This sense of responsibility toward the children at their childcare center was shared by all participants. Protecting the children constituted a major reason for them to get vaccinated. This sense of responsibility was rooted in their protective feelings toward the children, as well as the expectation that one should do what is best for them. Participants agreed that CCWs are held responsible for the children, and also want to feel responsible: "This is also the reason that we work with children. We care about them, and we do not want to make them ill."

Responsibility and/or Autonomy

One point of ambivalence developed in the discussion about vaccination and (moral) responsibility. Occupational vaccination was considered to be "something you just do, because you want to protect the children you work with. You wouldn't want something to happen to them." Vaccines were held to "exist for a reason," according to one participant. And yet, the value of autonomy when it comes to making the choice of accepting or refusing vaccination was regarded very highly by the CCWs. The responsibility of protecting others and/or maintaining their own autonomy was identified as a source of moral tension: while accepting that vaccination is more or less self-evidently an important good based on their responsibility as CCWs (i.e., toward the children under their care), they nevertheless also greatly valued having autonomy over this decision and thus also having the option to potentially refuse vaccination.

The importance of shared responsibility regarding vaccination was also a talking point. Participants often mentioned that vaccination was not solely their responsibility. In their opinion, one is only able to protect others when everybody takes their societal responsibilities seriously and accepts vaccination. This extends to the responsibility of parents having their children get vaccinated, as well as that of the government to promote and facilitate vaccination.

Autonomy over the choice to vaccinate also plays a role in shared responsibility: when people have individual autonomy, but fail to act according to their societal responsibilities by refusing vaccination, the CCWs consider it more justified if the government limits autonomy by, for instance, introducing a mandatory vaccination program. The CCWs would find mandatory vaccination acceptable if it were to 1) protect themselves and others, and 2) likewise apply to people in professions similar to theirs. These results suggest, then, that for CCWs

altruistic vaccination is not so much an individual as a wider, societal choice. Given that success of getting vaccinated for the benefit of others depends more on larger groups of people than any given individual, CCWs consider it a shared responsibility of all of those involved to get vaccinated in order to protect the health and well-being of children.

Discussion

Central Findings Concerning Altruistic Vaccination

For both the target groups of HPV vaccination for boys (Study 1) and pertussis and measles vaccination for CCWs (Study 2), altruistic motives were generally embraced by participants. Across the two studies, participants were accepting of the idea of getting vaccinated in order to protect the health of others. The findings from the focus group discussions thus support the notion of altruistic vaccination (Kraaijeveld 2020a), and are in line with previous research that has found altruistic motives to play a role in vaccination decisions and acceptance among other populations (e.g., healthcare workers and occupational physicians) (Betsch 2014; Betsch and Wicker 2014).

One of the central findings is that altruistic motives, especially in the form of a willingness to protect the health of others, were an important factor for people to potentially accept vaccination within each respective domain. While there were some participants for whom altruism or protecting others were not major considerations in deciding whether or not to vaccinate, people largely agreed that the potentially positive effects on the health of other people, on the whole, constitutes an important good and is a morally relevant reason to consider getting vaccinated.

While participants sometimes spontaneously brought up the positive effects of vaccination for others, as well as the importance of these positive effects for vaccination decisions, this more frequently occurred across the two studies only after the moderator pointed out these potential positive effects. Two main conclusions can be drawn from this. First, that altruistic motives (e.g., to protect the health of others) are on the whole considered morally relevant to vaccination decisions by target groups, at least within the specific areas of potential vaccination considered in this paper. Second, that this idea—i.e., that other-regarding effects of vaccination are morally significant—is not always spontaneously arrived at by people when they consider vaccination. Nevertheless, people were generally responsive to normative arguments for altruistic vaccination when these were suggested to them by the moderator. This reveals that, when it comes to vaccination policy, it is imperative to explicitly address the health benefits to other people of the vaccines in question, above and beyond the positive effects on the health of the individuals (or more directly the self) who would be getting the vaccine. As the findings show, people tend to be receptive to such altruistic considerations, even if they had not previously recognized them. This demonstrates the importance of tailoring information to what we know about the substantive motives of a given target group, and that an approach that overtly engages with these motives may be more effective than approaches that attempt to bypass more rational deliberation (e.g., nudging), although more research is needed in this area.

The intrinsic motivation to protect the health of others through vaccination was present among the target groups that we examined, which means that mobilizing altruistic motives may be importance when it comes to increasing vaccination for the sake of others in these areas. Although we did not study altruistic attitudes toward COVID-19 vaccination, future research should investigate these in order to examine whether a similar picture emerges. Some research does suggest that altruistic motives matter for COVID-19 vaccination (Rider 2020; Dorman et al. 2021; Sherman et al. 2020; Machida et al. 2021). Of course, the idea of getting vaccinated for the sake of others (i.e., to reduce the chances that one would transmit a disease post-vaccination), especially if it is to be mobilized to motivate people to get vaccinated, has to be sensitive to the actual affordances of different vaccines. Different vaccines will, for instance,

be associated with different levels of effectiveness. This has been one of the issues with COVID-19 vaccines, which, according to the most recent evidence, have only a modest and temporary effect on reducing transmission (Singanayagam et al. 2021; Wilder-Smith 2021). This makes arguments and communication strategies that rely on other-directed effects more difficult than for vaccines that have more robust effects on reducing transmission. The specific effects of particular vaccines are important for the ethics of vaccination policy, especially when coercive measures are involved (Kraaijeveld 2022). Indirect vaccination strategies must also take into account the potential effects of vaccines on reducing transmission and the possibility of achieving herd immunity. To give but one example, while some have argued that children should get vaccinated against influenza for the sake of the elderly (Giubilini, Savulescu, and Wilkinson 2020), in the case of COVID-19, it has been argued that such a strategy is currently not ethically justified (Gur-Arie, Kraaijeveld, and Jamrozik 2021; Kraaijeveld, Gur-Arie, and Jamrozik 2022). One related issue, which also arose in the context of HPV vaccination, is that, while influenza vaccines are not very effective for elderly people who are particularly vulnerable to the effects of influenza, COVID-19 vaccines do seem to be effective for the elderly and even the immunocompromised (Dagan et al. 2021; Menni et al. 2021). When vulnerable target populations can effectively protect themselves, this generally weakens the reason that others have to get vaccinated for their sake—although people may still wish to do so, as the discussion surrounding HPV vaccination for boys has demonstrated. Even if girls and women can get vaccinated against HPV themselves, boys and men may still have a reason to get vaccinated beyond individual benefits.

Ambivalence and (Moral) Conflicts

In each study, there was some ambivalence between different moral considerations when it came to getting vaccinated for the sake of others. The specific nature of this ambivalence—and the degree to which it might be considered to be a moral conflict—differed substantively between the two studies, which we will now address in turn.

Egoism vs. Altruism

In Study 1, the main source of ambivalence concerning HPV vaccination for boys was between what may be called egoistic and altruistic motives—between vaccinating to protect one's own health and/or vaccinating for the good of the health of others (specifically, potential sexual partners). The relevant self-regarding and other-regarding motives were clearly distinguished in the discussions for the target groups. However, the discussions never quite reached the point of uncovering a moral tension, given that participants—parents and young adults alike—tended to see the moral value both of boys/men protecting themselves against HPV through vaccination and of males thereby also ultimately protecting girls/women. Therefore, one cannot strongly delineate an either/or situation or moral conflict here, because individual interests were not seen as being strongly juxtaposed against the interests of others. In the end, self-interest and the interests of others were more or less aligned for the target groups in the case of HPV vaccination.

Freedom vs. Coercion

The situation was different in Study 2. The main area of tension when it came to getting vaccinated against pertussis and measles for CCWs was between the moral value of retaining one's autonomous choice in vaccination decisions and/or protecting others (i.e., the children under one's care) by getting vaccinated. For the CCWs, a moral conflict emerged, which can be formulated as follows. On the one hand, there was consensus regarding the importance of protecting children by getting vaccinated, meaning that there were strong motives to protect others in this way. On the other hand, the CCWs greatly valued the freedom to make their own

choices about getting vaccinated, and they were troubled by potential mandates that might limit their decisional freedom. One aspect of this conflict that did not wholly surface in the discussion, but which may be important as a partial explanation, is that responsibility for the health of the children under their care—and especially taking responsibility in this area—was revealed to be very important to the CCWs. Participants indicated in the discussions that they prided themselves in taking responsibility for the children's well-being. Yet, one can only take responsibility for something when there is a genuine choice to be made—when there is a real opportunity to exercise one's moral agency. Should vaccination decisions be subject to coercion, for instance through mandates, then this would limit the CCWs (perceived) ability to take responsibility for protecting the health of the children under their care.

With regard to vaccination policy, this finding about conflicting moral values among CCWs provides a compelling argument for leaving CCWs free to make their own vaccination decisions. To the extent that the values of CCWs ought to be respected, vaccination policy should avoid overriding their choice to get vaccinated for the sake of the children. The results of the discussions suggest that it would be better to encourage pertussis and measles vaccination and to make the vaccines readily available and accessible without, however, going so far as mandates. Given that CCWs are already inclined to want to protect children in their care by means of vaccination, but that they hesitate when faced with potential coercion, such mandates may ultimately backfire by generating resistance and reactance. Mandates may undermine the extant altruistic motives of CCWs to care for the children in their charge (cf. Kraaijeveld 2020b). Similarly, mandates can also undermine trust (Gur-Arie, Jamrozik, and Kingori 2021).

Nevertheless, some room for mandates was left open by the CCWs. They would consider mandatory vaccination acceptable if it 1) protected them and others, and 2) also applied and extended to people in professions similar to theirs. Perhaps a mandate in some form may ultimately be acceptable to CCWs, as long as policies are in place to ensure that (at least) their own acceptability criteria for mandatory vaccination are met. This is interesting to consider in relation to different potential approaches to vaccination for the sake of others that turn on varying degrees of decision freedom and coercion (Kraaijeveld 2020a). An altruistic approach would leave CCWs free to vaccinate against measles and pertussis (or not) in order to protect children, and would encourage policies that refrain from enforcing the decision in some way. Based on the findings and the foregoing discussion, this ultimately appears to be the approach best suited to the articulated wishes of the CCWs.

In Study 1, the discussion did not explicitly turn to mandatory vaccination. The young adults as well as the parents recognized the moral significance of protecting one's sexual partner against contracting HPV through vaccination and also of thereby minimizing the spread of HPV among the community more generally. The motives revealed in this study may also be understood within the context of altruistic vaccination, even if self-protective motives were likewise widely considered. The current study does not lead us to a conclusion regarding mandatory HPV vaccination for boys in order to protect girls and women, but it does suggest that stressing the benefits to others may be crucial for boys and their parents to opt for vaccination against HPV. Personal responsibility in any case weighs more heavily against potential mandates for some vaccines, given that it is easier for people to control transmission of some infectious diseases than others (Navin and Atwell 2019). Since HPV is only transmitted through intimate skin-to-skin contact, "a sexually active teen or adult who receives regular screenings for sexually transmitted infections can radically reduce her chances of infecting others," meaning that the ethical justification of coercion is significantly weaker than for more readily transmitted diseases (Navin and Atwell 2019, 1047). Moreover, whereas vaccination for CCWs would be undertaken primarily for the sake of vulnerable children who cannot (yet) be vaccinated, a similar dynamic does not hold in the case of HPV vaccination,

where girls/women can get vaccinated as well as boys/men. In the end, girls and women can also protect themselves against HPV by getting vaccinated. The health benefits of HPV vaccination are thus less exclusively obtained by one of the parties getting vaccinated. This weakens the case for more coercive measures, given that there is still the option for girls and women to get vaccinated against HPV and thus protect themselves against HPV-related cancers, even when greater public health benefits may ultimately be achieved when all parties (i.e., girls and boys) are vaccinated.

Social Norms and Moralization

An interesting aspect of the discussion among CCWs was that they would consider coercive mandates to be more acceptable should they also be extended to other people in similar professions. There has been recent debate about the moralization of vaccination decisions, which may at times be morally inappropriate and which may have pervasive negative consequences (Kraaijeveld and Jamrozik 2022). It could be that the reluctance of CCWs to be singled out for vaccine mandates at least partly reflects their perception of moralized social norms for their occupation. Even though they were not specifically asked about moralization, the fact that CCWs so clearly perceived getting vaccinated to be the dominant social-moral norm suggests that vaccination of childcare workers may be subject to moralization. To what extent such moralization may play a role, and to what degree it stems from people within their own field or is imposed on them from wider society is an important question for future research. It in any case speaks to a sense of fairness when it comes to vaccination policy: CCWs did not believe that mandates would be fair unless others, in similar professions, would also be subjected to them.

Communication Considerations

Effective public communication is vital to the success of vaccination programs (May 2005). Our findings suggest that tapping into altruistic motives by stressing the health benefits of vaccination to others beyond the self should be part of this communication infrastructure. Our results build on previous findings that employing altruistic frames and informing people about the social benefits of vaccination (like community protection) can increase vaccination intentions (Böhm et al. 2016). If the goal is to increase vaccine uptake, then only providing information about vaccines and vaccine-preventable disease may not be sufficient (Nyhan et al. 2014). Given that participants did not always realize the benefits of vaccination to others, yet were receptive to such benefits when they were pointed out to them, communication about vaccination should stress other-regarding considerations—especially for vaccines where the benefits to others are very substantial. As previously discussed, in the case of COVID-19 this strategy may not be as effective, given the more limited vaccine effectiveness in terms of preventing infection and transmission of the virus.

Limitations

There are at least three potential limitations to the studies presented in this article. First, the participants may not have felt entirely free to express socially undesirable opinions (e.g., more selfish attitudes) within their respective discussion groups. It should be noted that this is a limitation of focus group studies more generally (Stewart and Shamdasani 2015). However, the discussions with young adults about HPV vaccination were anonymously conducted, which attenuates concerns about social appearance at least for those findings. The freedom with which participants expressed themselves anonymously did not appear to differ substantively from in-person discussions, which further attenuates this concern. Finally, given that there was at least one instance where a participant explicitly expressed what might be considered a socially undesirable attitude (i.e., qualifying their concern for others with the statement that is "me

before anything else"), this suggests that people did not feel structurally prohibited from expressing more 'selfish' attitudes.

Second, all of the studies were conducted in the Netherlands, which means that our findings cannot be taken to represent people's attitudes in other settings. Cross-cultural and cross-national comparison was, however, beyond our scope. One interesting aspect to point out is that previous research has shown that participants from countries with a collectivistic background (e.g., South Korea) were more likely to express prosocial vaccination attitudes compared to those from a more individualistic cultural background (e.g., the U.S.) (Böhm and Betsch 2022). That prosocial vaccination attitudes were robustly present in a sample of people from a relatively individualistic country like the Netherlands (Heu, Van Zomeren, and Hansen 2016) suggests that collectivism may not be necessary for the emergence of such attitudes, although comparative research is necessary to examine this idea more rigorously.

Finally, people who are categorically opposed to vaccination were excluded from the current research, which may be seen as a limitation with regard to the representativeness of our findings. However, since we were interested in the idea of altruistic vaccination, we reasoned that people who would not get vaccinated for any reason would also, by extension, not get vaccinated for the sake of other people. Perhaps the discussions in the focus groups would have progressed differently had people who are strongly opposed to vaccination been included; but the dynamic that might have ensued would tell us more about how people opposed to vaccination might influence those who are generally accepting of it, than it would about the views of those who might at least in principle be willing to get vaccinated for the benefit of others.

Conclusion

We found evidence across two focus group studies for the presence of altruistic vaccination motives. In Study 1, protecting the health of girls and women was generally considered to be an important motive for boys to be vaccinated against HPV. In Study 2, protecting the health of vulnerable children was a widely shared motive for childcare workers to get vaccinated against pertussis and measles. Altruistic motives for vaccination thus played an important role for the respective target groups. These findings underscore the significance of the idea of altruistic vaccination and suggest that vaccination policy, at least for HPV vaccination for boys and pertussis and measles vaccination for childcare workers, should highlight potential health benefits to others. Given that people are sensitive to the moral importance of those benefits—even if they had not previously realized it—public health strategies to increase vaccination for the sake of others should tap into people's altruistic motives as much as possible. This approach is preferable to more coercive measures, since it respects the autonomy and the values of the target groups and stands to reinforce rather than undermine intrinsic altruistic motivation.

CHAPTER

COVID-19:
Against a Lockdown Approach

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Chapter Four
COVID-19: Against a Lockdown Approach

> "The world can understand well enough the process of perishing for want of food: perhaps few persons can enter into or follow out that of going mad from solitary confinement."
> —Charlotte Brontë, *Villette*

Introduction

The recent outbreak of a novel coronavirus disease (COVID-19) caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was classified as a pandemic by the World Health Organization (WHO) on 11 March 2020. Given the unavailability of either a vaccine or a cure in the aftermath of the outbreak, governments around the world have faced the challenge of how best to respond so as to curb the spread of the virus. Since little is currently known about COVID-19, no single course of action has been unequivocally recommended by epidemiologists, virologists, and other experts. The Chinese government responded to the outbreak in the city of Wuhan, where the virus first appeared in December 2019, by practically shutting down life in the city. The implementation of a lockdown of this kind, which has subsequently been followed by other nations—most notably Italy, which witnessed the first major outbreak of the novel coronavirus in Europe—has been the subject of much discussion in the media and elsewhere. The focus, however, has been more on whether or not a lockdown is (likely to be) effective, than on the ethical issues that such a severe and far-reaching response raises.

In this paper, I want to examine the morality of a lockdown response to COVID-19. In order to do so, I draw a parallel to recent work on vaccination ethics, where the goal of protecting vulnerable third parties through vaccination has been argued to be achievable, at least in principle, either by leaving people free to vaccinate for the sake of others or by taking the decision out of their hands and enforcing it in some way. I conceptualize two roughly analogous approaches to the COVID-19 pandemic: an altruistic approach and a lockdown approach.[25] The fundamental difference between the approaches is whether or not people are left at least some freedom to take upon themselves the necessary measures in light of the pandemic. A lockdown approach permits freedom of movement outside of the home only for what are judged to be the most strictly necessary activities, whereas an altruistic approach preserves at least some freedoms beyond essential undertakings.[26]

At least in principle, an altruistic approach is able to achieve the goals of an enforced lockdown. According to a recent modeling study, for instance, individual adoption of handwashing, mask-wearing, and social distancing can be an effective strategy to mitigate COVID-19; in fact, self-imposed measures were found to be able to prevent a large epidemic if efficacy exceeded 50% (Teslya et al. 2020).[27] Assuming that the aim of COVID-19 measures is to drastically reduce the spread of the virus, or what has come to be known as flattening the curve, then what is needed is for people to follow the requisite procedures that will lead to the desired outcomes (i.e., self-isolating when infected, careful attention to personal hygiene,

[25] I introduce them to address the recent COVID-19 pandemic, but the approaches—and the moral issues that they raise—may also be usefully applied to other disease outbreaks, both past and future.
[26] What constitutes an essential activity may be a matter of some interpretation and may vary between countries. It is certainly up for debate, and will likely be a political decision; governments decide what citizens still need to be able to do, in which activities that may still engage, and so on.
[27] It must be noted that this model included short-term government-imposed social distancing, rather than self-imposed social distancing.

social distancing,[28] and so on), which can in principle be achieved freely as well as through enforcement. Flattening the curve refers to community isolation measures, which, over time and compared to no intervention, are meant to slow the acceleration of new cases, to reduce the peak number of cases, and to decrease demands on hospitals and other health care infrastructure (Specktor 2020). Another way in which this has been formulated is in terms of R0, the basic reproduction number (or ratio) of the virus. R0 represents "the number of cases that are expected to occur on average in a homogeneous population as a result of infection by a single individual, when the population is susceptible at the start of an epidemic, before widespread immunity starts to develop and before any attempt has been made at immunization"; if R0 is greater than 1, the virus will spread exponentially, whereas if R0 is less than 1, the virus will spread more slowly and gradually die out (Aronson et al. 2020). Two crucial aims here are to minimize morbidity and mortality among the most vulnerable members of society and to ensure that health care systems are not overwhelmed by the number of cases requiring critical care.

To this end, adopting the necessary measures means that people will have to take on burdens—some more substantial than others. Additionally, in most cases, those burdens will have to be borne by people not primarily for their own sake, but for the sake of others. This is because the majority of citizens will not be members of the group of people who are most vulnerable (e.g., the elderly, the chronically ill, the immunosuppressed). An appeal to self-interest here is unlikely to provide sufficient motivation to take the appropriate measures. Given the goal of preventing the spread of the virus as much as possible, especially in order to protect the most vulnerable people, an important question thus emerges: To what extent ought governments to allow citizens the freedom to take upon themselves the necessary measures in response to COVID-19? The juxtaposition of lockdown and altruistic approaches as normative strategies provides the framework from which I will address this question.

I proceed as follows. First, I develop the analogy to vaccination approaches in order to show their usefulness for a discussion about the morality of government approaches to COVID-19. Second, I describe the two approaches—lockdown and altruistic—in turn, providing examples from nations that have implemented one or the other. Finally, I make a case for the moral value of taking an altruistic as opposed to a lockdown approach, focusing on the domains of freedom and justice.

Ultimately, I argue that an altruistic approach is morally preferable because it conserves some important freedoms and at least partly avoids injustices and harms associated with a lockdown approach.[29] If an altruistic approach is found to insufficiently serve the public health goal of curbing the spread of the virus and protecting vulnerable members of society—if people do not take personal responsibility and fail to heed the call to take appropriate measures to flatten the curve—then the move toward a lockdown approach may appear warranted, perhaps even necessary. Nevertheless, the moral problems raised by a lockdown approach should neither be ignored nor downplayed, and it will still be better to introduce more stringent measures into a basically altruistic approach than to resort to locking down. Even if a lockdown is effective in reducing the spread of the virus, there are still reasons to favor an altruistic approach on moral grounds.

[28] I prefer the term "physical" to "social" distancing, because it importantly avoids connotations of reduced sociality. However, the term has stuck since it was first introduced, so I will adopt it throughout this paper.

[29] It may appear straightforward that an approach that preserves freedom is preferable to one that does not, but governments might choose (and, I think, some have chosen) a lockdown without necessarily (1) realizing fully the moral costs of doing so and (2) considering investing instead in the alternative that I outline in this paper. Thanks to an anonymous reviewer for pressing me on this point.

Approaches to COVID-19

With the ultimate goal of limiting interpersonal contact as much as possible, especially in order to prevent vulnerable members of society from contracting the virus, the situation presented by the spread of COVID-19 parallels a dilemma that I have previously identified in relation to people vaccinating for the sake of others (Kraaijeveld 2020). What could—or should—governments do in order to increase the uptake of vaccines that do not necessarily benefit most those who would take them, but which would contribute to protecting vulnerable members of society? On the one hand, governments could rely on people to realize the importance of vaccinating (e.g., against influenza) in order to help protect vulnerable others (e.g., the elderly or immunocompromised)—even if for many people, it is the case that they personally do not stand to benefit most from the vaccine (e.g., if they are healthy young people). On the other hand, governments could decide not to rely on people's other-regarding motives in these matters. This becomes a more pressing issue when vaccination uptake is too low to establish or maintain herd immunity—that is, when people, left to their own inclinations, are not vaccinating sufficiently on the whole to achieve the public health goal of protecting vulnerable people.[30] Governments could then opt for a more proactive approach to vaccination, in order to explicitly increase vaccine coverage. This could be achieved through a range of methods, including more coercive measures (e.g., fines or exclusion from certain activities) and even compulsion. I have called an approach that leaves people free to decide to vaccinate for the sake of others an altruistic approach, while a more hands-on option, where governments are proactively involved in the decisions of citizens, I have called an indirect approach (Kraaijeveld 2020). In drawing a parallel to COVID-19, I will keep the term "altruistic" for the first kind of approach, while, for the sake of clarity, I will call the second kind "lockdown."

These ideas from vaccination ethics will thus form the conceptual basis of the approaches that I describe in the following sections. Of course, once a vaccine for COVID-19 is found, this dilemma will readily present itself in relation to vaccines again. For, in order to protect those who are likely to suffer the most serious complications from COVID-19, a large number of those who are unlikely to suffer as much will likely need to be vaccinated (e.g., a sufficient number of younger people in order to establish herd immunity for those who cannot become vaccinated—like the immunosuppressed). This is an important subject for discussion, but one that I will not pursue here.[31]

The dynamic that underlies the considerations behind vaccination and the potential approaches to vaccinating for the sake of third parties to which they give rise thus translates to the current situation, where governments try to decide how best to respond to the COVID-19 pandemic. However, instead of having to decide how to regulate vaccination so as to ensure that more vulnerable people are protected by those less so, the dilemma now centers on how to regulate the adoption of relevant curve-flattening measures toward the same end. In the face of COVID-19, how should governments act in order to safeguard society's most vulnerable populations and maintain the functioning of health care systems?

I want to clarify that I do not wish to give the impression that there have been, or that there possibly are, only two ways in which governments could respond to the pandemic. The two approaches will, to some extent, serve as ideal types. That they should do so makes sense;

[30] One might think that vulnerable people ought simply to be vaccinated, thus eliminating the risk of infection altogether. However, aside from the fact that not all vaccines offer complete protection against a disease, so that a vulnerable person who is vaccinated will additionally benefit from the presence of herd immunity (as it further decreases their chance of becoming ill), there are groups of people who cannot be vaccinated. Among those are, for instance, infants who are too young, people who are immunosuppressed (e.g., those undergoing chemotherapy), and people who are allergic to particular vaccines.

[31] For some relevant literature in this area, however, see Bambery et al. (2018) on vaccinating children—rather than healthcare professionals and individuals in high-risk groups—against influenza; and see Giubilini et al. (2020) on vaccinating the young in order to protect the old in the case of a COVID-19 vaccine.

although I will provide empirical examples to give real-world content to the approaches, my main purpose in conceptualizing them is normative, namely to provide an answer to the question of whether a lockdown approach is morally justified—and therefore should or should not be taken by governments—in light of an alternative, altruistic approach.

Within the larger scheme of things, what one finds is that the question of what governments ought to do to halt the spread of the novel coronavirus has concentrated on whether or not they ought to enforce a complete lockdown like China did in the city of Wuhan, or whether they should instead allow citizens to retain at least some degree of freedom of movement, decision-making about their activities, and so on. It is this question concerning the freedom of citizens—especially the freedom to engage in at least some non-essential activities—that I wish to capture through my discussion of the different approaches.

Lockdown Approach

Perhaps the most conspicuous approach to the COVID-19 pandemic has been the locking down of cities and even entire countries. The precedent of shutting down virtually all public life and of people being largely confined to their homes was set by Chinese authorities in the city of Wuhan. In Europe, Italy followed suit after experiencing the first major outbreak on the continent. Since then, a number of other countries around the world have opted to lock down. A lockdown, also known as a stay-at-home order, generally disallows all but the most essential activities for the general public (e.g., going to the supermarket, pharmacy, hospital). A great many aspects of regular public life will be affected, even while the operations of vital work and services will often be maintained. Public (and even private) modes of transportation will frequently be halted or reduced in numbers and/or operating hours, while restaurants, cafés, bars, shops, hairdressers, gyms, and numerous other places of public entertainment and services will frequently be closed. For my account, the shutting down of these public places and activities is not decisive in distinguishing the two approaches. The crucial element is whether citizens are free to stay home and to take at least some of the required COVID-19 measures upon themselves, or whether this is enforced.[32] An altruistic approach can be compatible, for instance, with the closing down of most public places, as long as citizens are still free to leave their homes for some non-essential activities. On the other hand, it appears unlikely that a lockdown approach would not entail much of public life grinding to a halt, given that citizens have to remain home in any case.

Importantly, a lockdown has to be enforced through state power in order to be effective, so that certain acts will become criminalized. Fines will be introduced, and the threat of detainment, arrest, and in some cases even jailtime will be utilized to ensure that citizens do not flout the terms of the lockdown (whatever these may be). In this way, a lockdown approach occupies an extreme point on a spectrum where on the other end lies a *laissez-faire* policy that allows people to do exactly as they otherwise would (i.e., before COVID-19).

The following examples are not meant to provide a complete list of all the countries that have so far enforced a lockdown, nor is it supposed to be exhaustive of all aspects of public and private life that have been affected. I focus on three particular countries that have taken lockdown approaches, in respective chronological order: China (specifically Wuhan), Italy, and France. My purpose in doing so is to illustrate the lockdown approach and to provide a general sense of what it involves.

One report describes the situation in Wuhan after the lockdown as follows. "The streets … are eerily quiet. The city of 11 million people, the center of the coronavirus outbreak, has been

[32] An additional element of the altruistic approach is that governments stress the importance of citizens taking the necessary measures, even if these are not enforced. I will discuss this in more detail later.

locked down since 23 January,[33] with all public transport, flights and trains suspended. 'You pretty much don't see anybody outside,' says a man who lives in Wuhan… Private vehicles are banned in the downtown area. Highways are shut so residents aren't able to leave the city" (Lu 2020, 7).

A similar picture emerges in Italy, which was the first European country to implement unprecedented lockdown measures so as "to restrict citizens' mobility and try to contain the COVID-19 epidemic, rapidly escalating to more aggressive interventions to reduce social mixing and interrupt transmission chains," through a range of policies "from school closure, advice against traveling or even banning non-authorized trips to and from areas with sustained transmission, university closure, ban of large-scale and public events, and then of any social gatherings, closure of museums, increasing restrictions on the opening hours of restaurants and bars, and encouraging or mandating smart/remote working whenever possible," with nearly every day seeing "new and stricter policies … in an increasing number of Italian provinces" until finally, on March 10, "the whole country [was] under lockdown" (Pepe et al. 2020, 2).

In France, a lockdown was also instated. It became official on 17 March, and meant that "all non-essential outings [were] outlawed and [could] draw a fine of up to €135 ($148)" (Regan et al. 2020).

The upshot of these measures has been that, unless people have something justifiably urgent to do—and activities often do have to be justified, for instance by having to carry a document that indicates one's reason for leaving home—people must remain inside their homes, at the threat of punishment.[34] That is, the behavior that is needed to flatten the curve (i.e., social distancing, self-isolation, and so on) becomes enforced. In this way, people are not, or no longer, free to act as they see fit given the situation. To clarify: people under lockdown can violate lockdown rules, thus exercising their agency to some extent. They are still free to not follow the lockdown rules, even though this will likely come at a significant cost (e.g., through fines or even arrest). They can still choose to accept whatever consequences are at stake. However, under a lockdown, people are no longer free to decide to follow the measures required to flatten the curve for the sake of other people. There is no real choice to do the right thing, when doing the right thing is enforced—when not doing the right thing means that you will be punished. This is an important point, for reasons that I will discuss in more detail later.

Altruistic Approach

Whereas a lockdown precludes all non-essential activities, an altruistic approach can in principle achieve the same goals of flattening the curve, while letting citizens keep at least some of their regular (i.e., pre-pandemic) freedoms. The term "altruistic" here refers not to the motives of the governments that would select such an approach—the approach itself is not altruistic—but to the space that governments leave citizens to behave in other-regarding ways that are necessary to prevent the spread of the virus. A different way of formulating it is that under a lockdown approach, citizens are compelled to act in ways that will collectively protect vulnerable others, while an altruistic approach allows citizens at least some freedom toward that end. This is an important difference between the two approaches, which is clearly relevant for any justification of the approaches from a public health ethics perspective.

When one speaks of altruism, the question of what exactly it means quickly arises. There is much debate in the philosophical and other literature about how to best understand the concept (Scott and Seglow 2007). I do not wish to get caught up here in a discussion about

[33] All dates in this section refer to the year 2020.

[34] This is assuming that people have homes. The question of how—and perhaps especially how not—to treat homeless people during the COVID-19 pandemic is a very important one, which nevertheless lies outside of the scope of this paper.

definitions. My conception of altruism is minimal; it involves doing something for someone else (or for a group of others) primarily for the latter's sake. This will often entail taking on some kind of burden, which may be more or less significant. In extreme cases, altruism may take the form of self-sacrifice, but it does not have to. Some have argued that self-sacrifice is required for an act to be truly altruistic, but I disagree.[35] I think that doing something for others—primarily for their sake—even when this is done at the cost of only a relatively small burden, is properly understood as an altruistic act. Altruism is not necessarily heroic; if we reserve the notion only for heroic acts, then we will both find and be able to ask very little of it. More concretely, within the present discussion, altruistic behavior is exemplified by the things that people do to avoid spreading COVID-19, primarily for the sake of others (i.e., to protect vulnerable people, to lighten the burden on health care workers, and so on). Of course, self-interest will be involved. People do not wish to become ill themselves, and people want a properly functioning health care system for when they should require critical care. Yet stressing self-interest is unlikely to be sufficiently motivating across the board, because, as I have indicated earlier, the majority of people are not going to become very ill or die from the virus. Low-risk groups, like healthy teenagers, quite simply do not face the same stakes as the elderly or the chronically ill do when they are exposed to COVID-19. These groups of low-risk and otherwise mobile and active people would therefore stay home primarily for the sake of others.

While a lockdown approach tends to be categorical (either a lockdown is in place or it is not), an altruistic approach can vary in terms of how many restrictions are introduced—as long as some basic non-essential freedom-preserving activities are retained. It allows more variation and tweaking in terms of specific policies. A lockdown approach does not have this kind of leeway; it is the all in the all-or-nothing approach, as has been demonstrated by countries like China and Italy in their respective lockdowns. Importantly, an altruistic approach does not mean that everything remains as it was before the outbreak of the virus; the guiding assumption in light of COVID-19 has been that governments do need to take some kind of action to curb the spread of the virus. An altruistic approach means that governments do proactively engage the public with regard to the importance of taking measures to flatten the curve, so as to protect vulnerable people and health care systems.[36] Knowledge about the coronavirus and about the measures that can be taken against its spread needs to be disseminated among the public. In fact, for the approach to be properly altruistic in my sense of the term, and not simply a hands-off approach, governments have to stress precisely what citizens could and ought to do in order to flatten the curve and to help one another get through the pandemic.

When an altruistic approach is adopted, citizens are left free in some ways, then, to act responsibly. This remaining freedom could be something as relatively small (yet still significant) as being allowed to go outside for a leisurely stroll whenever one wants, rather than merely to perform a narrowly defined goal-directed activity, like going to the supermarket or pharmacy. These still-allowed activities can be paired with suitable guidelines, like making sure to keep an appropriate amount of distance from other people (e.g., the 1.5-meter rule). Again, the crucial point is that people are still allowed to do things in public spaces that are not very narrowly defined as essential.

The altruistic approach maps onto some policies that countries have already taken in response to COVID-19. In the Netherlands, for example, the National Institute for Public Health and the Environment (RIVM) has formulated three potential approaches to combat COVID-19 as part of their advice to the Dutch House of Representatives. These approaches

[35] For an overview of positions on altruism, see Kraut (2020).

[36] In a manner similar to how governments should highlight the importance of vaccinating for others even without enforcing such vaccination (Kraaijeveld 2020).

are as follows: (1) no intervention, (2) maximum control, and (3) lockdown.[37] The approaches that I have described roughly correspond to the latter two, with a lockdown being equivalent to my conception of it, and a "maximum control" approach resembling an altruistic approach in the demands that it makes of citizens and the freedom that it leaves them. I do not describe taking no action (no intervention) as an approach, because I think that it is clear that some intervention is required by governments of countries where infections have appeared. A discussion of the morality of taking no action whatsoever would seem to me to be rather short: it is the wrong approach. Even in a country like Sweden, which has taken a relatively hands-off approach to COVID-19 (leaving most public places open), the government has nevertheless been proactive with regard to communicating the need for social distancing. This highlights the need for governments to robustly inform and engage with the public when opting for an altruistic approach.

At the time of writing, the Netherlands has decided against a lockdown and has opted for maximum control or, in the current terminology, an altruistic as opposed to a lockdown approach.[38] The dual goal of this approach is to protect vulnerable groups of people and to maintain the integrity of the health care system, which it aims to accomplish without locking down.

Under an altruistic approach, governments should stress the importance of solidarity and of helping others, of the need to make sacrifices for the greater good, of taking personal responsibility for the necessary measures to protect oneself and others against the virus, and so on. Numerous means of persuasion and non-coercive measures to motivate citizens to act so as to flatten the curve can and should be employed. Such means have, in fact, been used widely and creatively in places like the Netherlands. Government and health officials have taken this line by publicly emphasizing the need for solidarity and by encouraging people to act responsibly, and through television commercials and social media have underscored the importance of staying at home and protecting others. In this way, an attempt was made to offer people (1) knowledge of what needs to be done (e.g., stay home as much as possible), (2) an understanding of why this is necessary, with an emphasis on altruism and solidarity (i.e., to help flatten the curve), and (3) a sense of personal responsibility to make sure that one adheres to the necessary measures and implements the required changes.

Of course, leaving people free to decide how to act can result in the desired behavior (i.e., altruism and solidarity), but it may also lead to undesired behavior (i.e., selfishness and disregard for public health measures). This is why it is not enough for a government to do nothing—there needs to be a proactive, guiding approach that makes it very clear what is being asked of people and why it matters that they pay heed to the advice. Desired norms should be accentuated, and, in all of this, relevant insights from social psychology and related disciplines can and should be utilized (cf. Van Bavel et al. 2020).

In Sweden, a relatively relaxed approach to COVID-19 has been taken, as schools, gyms, bars, and restaurants have been left open throughout the crisis to date. Nevertheless, the government has urged citizens to behave responsibly and to follow the proper social distancing guidelines (Rolander 2020). Sweden's approach is considered paradigmatic for its lack of stringent measures. While there is some evidence that the Swedish COVID-19 approach was

[37] For an overview (in Dutch), see: https://www.tweedekamer.nl/sites/default/files/atoms/files/20200325_briefing_coronavirus_tweede_kamer_presentatie_rivm.pdf

[38] The "maximum control" approach was later called an "intelligent lockdown" by the Dutch government. Terminology matters, of course, yet for the purpose of this paper what is decisive is not what an approach is called locally, but what it means for citizens—especially with regard to the freedoms that it permits. For more information regarding the decision, see (in Dutch): https://www.tweedekamer.nl/sites/default/files/atoms/files/20200325_briefing_coronavirus_tweede_kamer_presentatie_rivm.pdf

able to "achieve results highly similar to late-onset stringent mandates" (Kamerlin and Kasson 2020), there is also evidence that the relatively laissez-faire approach ultimately resulted in a significant increase in mortality especially among the vulnerable (Habib 2020). More data is required to ascertain the specific consequences of different approaches. For now, however, the Swedish case at least suggests that much can be achieved by means of voluntary measures (Kavaliunas et al. 2020).

The paths taken by the Netherlands and Sweden might appear very different if one focuses on public spaces, because in the Netherlands most restaurants and places of entertainment have been shut down in response to the coronavirus. However, my conception of an altruistic approach unites the two cases: while there has been more loss of freedom in the Netherlands compared to Sweden, fundamentally the two nations have taken the same approach by not opting for a lockdown, and by allowing people freedom of movement while at the same time emphasizing the need for people to be responsible and to show solidarity with others. It is important to keep this point in mind, especially throughout the following sections, where I will argue that it is ultimately better for governments to include stricter measures within an altruistic approach than to go so far as locking down.

Moral Issues

I will focus on a number of issues broadly within two moral domains—freedom and justice—in order to show why the lockdown approach is problematic and why an altruistic approach to COVID-19 is the morally preferable policy for governments.[39]

Freedom

The most obvious feature of a lockdown is the restriction of freedom that it entails. This is inherent in the concept of a lockdown, which requires that people stay put where they are. When a stay-at-home order is enforced by the state, citizens are prevented from leaving their homes at their own discretion. Freedom of movement is an important human good, so that infringing on it is problematic from a moral point of view. In fact, freedom of movement is so important that Article 13 of the Universal Declaration of Human Rights states that everyone "has the right to freedom of movement … within the borders of each state" (United Nations 1948). This notion was later taken up in Article 12 of the International Covenant on Civil and Political Rights (ICCPR), which incorporates the human right to freedom of movement into treaty law, stating that "everyone lawfully within the territory of a State shall, within that territory, have the right to liberty of movement" (United Nations General Assembly 1966). When governments refuse citizens the right to move freely within the country, this constitutes a violation of their basic human rights. As such, a lockdown should not be taken lightly.

There may be some situations in which restricting freedom of movement is nonetheless justified. Article 12 of the ICCPR, for instance, includes a proviso that the right to freedom of movement may be subject to restrictions; among other things, the right can be restricted when doing so is necessary to protect public health (United Nations General Assembly 1966). A recent policy brief developed by the WHO Working Group on Ethics & SARS-CoV-2 (2020, 1) reiterates the idea that "it can be legitimate in some circumstances to introduce restrictions for the sake of protecting the health of the public." The idea of restricting freedom in order to protect public health is linked to a widely acknowledged *prima facie* grounds for limiting an individual's freedom, namely when that individual's behavior is likely to cause harm to third parties (Holland 2015). As John Stuart Mill (1859/2003, 80) originally formulated the idea, "the only purpose for which power can be rightfully exercised over any member of a civilized

[39] I focus on these two not because they are the only areas of moral concern, but because I have to prioritize given limited space. Where relevant, I will touch briefly on other morally relevant matters (like privacy). I leave it to others to develop these and other moral issues more fully.

community, against his will, is to prevent harm to others." According to this line of reasoning, also known as the harm principle, preventing harm to others is a sufficient reason to limit the freedom of a person who might cause such harm. Relating this idea to the present situation, one might think that stopping citizens from leaving their homes prevents them from spreading the virus, and thus causing harm to others, so that limiting their freedom is justified according to the harm principle.

This conclusion is hasty. Lockdown orders are among the most extreme measures that a government can take, since they are the most restrictive of freedom, and the harm principle does not entail that, if there is some chance of harm being caused, then the severest measures are automatically justified. There needs to be some sense of proportionality, a reasonable weighing of means and ends (cf. Giubilini and Savulescu 2020). An important principle here is that of the least restrictive means, which holds that "public health measures should interfere with the autonomous freedom of individuals to the least possible or necessary extent" (Byskov 2019, 511). In relation to COVID-19 measures, harm might still be avoided under certain conditions that do not go as far in their restriction of individual freedom as a lockdown. For instance, while mass gatherings may be limited, given that the risk is high of the virus spreading and causing harm under those conditions and there are currently no alternative ways to safely accommodate mass assemblies of people, citizens might still be left free to go outside for a walk, say, simply to stretch their legs and breathe some fresh air, as long as they keep an appropriate distance from others. In this way, harm can reasonably be prevented without governments entirely encroaching upon citizens' freedom of movement. The recent modeling study showing that individual adoption of handwashing, mask-wearing, and social distancing can prevent a large epidemic if efficacy exceeded 50% (Teslya et al. 2020) is important to consider here, as all of those measures could be taken by citizens under an altruistic approach. An altruistic approach that is sensitive to harm prevention and to flattening the curve is morally preferable to a lockdown approach because it preserves at least a basic freedom of movement.

One potential issue that is related to the issue of freedom of movement concerns the matter of privacy. One consequence of a lockdown is that it necessitates enforcement. If a government decrees that citizens are not allowed to leave their homes except for absolutely necessary activities or via special exceptions, then it follows that ways of overseeing and enforcing the decree are required, especially if violations of lockdown orders are to constitute criminal offences. That is, when citizens are not merely encouraged but positively required by law to stay home, the question of control arises. How will governments ensure that citizens actually stay home? There seems to be a slippery slope here toward increasingly invasive forms of government surveillance and privacy violations. An altruistic approach makes the need for surveillance less pressing, although even when people are allowed some freedom of movement, there may be some monitoring by governments to make sure that people adhere to whatever conditions have been stipulated.[40] Yet the kind of control that one currently sees in Italy, for instance, where citizens have to justify to local authorities why they are leaving their homes (through documentation known as 'autocertificazione') is unthinkable under an altruistic approach. Perhaps it is not inevitable that citizens have to justify their (otherwise innocuous) movements to the state under a lockdown, but it should worry us that the lockdown approach taken by a democratic country like Italy has resulted in such a state of affairs.

[40] Of course, under an altruistic approach, privacy concerns are still likely to arise during the pandemic. Tracking people's movements and health conditions may be part of public health measures against the virus, even apart from whether or not there is a lockdown (or perhaps even as a condition to prevent a lockdown). It still appears to me that, as far as controlling individual movement goes, there is reason to think that a lockdown approach stands to exacerbate privacy concerns in the manner that I have outlined. Thanks to an anonymous reviewer for raising this point.

There are also more pragmatic reasons to limit citizens' freedoms as little as possible. A lockdown is a heavy burden to bear, and it is unlikely that people will be able to keep up being shut inside their homes for a long stretch of time. Reactance (also known as "lockdown fatigue") may very well develop to lockdown measures; in fact, there have been widely publicized protests against lockdowns in the USA as well as in a number of European countries like France and Germany. Even citizens who are initially prepared to make sacrifices may eventually tire of overly strict measures. Given that COVID-19 may be with us for a considerable while longer, governments have to consider carefully how best to ensure that citizens can take reasonable measures against the virus in a sustainable way, without needlessly exhausting endurance. There is some tentative evidence, based on an analysis of Google Trends, which suggests that lockdowns around the world have substantially increased the search intensity for terms like boredom, worry, and loneliness (Brodeur et al. 2020). Although this is admittedly speculative, given that there is currently no data (as far as I know), I would suggest that being allowed to go outside for leisure—and not merely for the essential tasks—will make other COVID-19 measures more bearable, and is likely to lead to less boredom, among other things, than when staying home is strictly enforced. Empirical research in this area is needed.

I have so far focused on the idea of freedom largely to argue against a lockdown approach. I want to make a final point regarding freedom here that speaks more positively to the direct moral value of an altruistic approach. There is a normative argument to be made for giving people the space to be altruistic and for allowing them to express solidarity with their fellow human beings, especially during a time of crisis. Freedom is necessary for altruism; the two concepts are intimately linked, because altruism depends on the proper kind of self-chosen motive (Seglow 2004). Differently put, if someone has no choice but to act a certain way, then the way in which one acts cannot be altruistic. Without freedom, there is no responsibility. Once a lockdown is enforced, room for altruism in this area is more or less squeezed out of society. There will be much less space, if any, for people to act based on other-regarding motives. Choosing to self-isolate for the sake of others can give meaning to one’s situation. It can make it more bearable to stay home if one knows that one is doing it by choice and for good reasons. I think that this is an important but underappreciated point.

There is empirical support for this idea. In a series of three studies, Klein (2016) found that people who engaged in prosocial behaviors (like volunteering or spending money to benefit others) subsequently reported experiencing a greater sense of meaning and purpose in their lives. Seeing one's life as meaningful is crucial to human existence; it is associated with greater longevity (Krause 2009), better physical health (Taylor et al. 2000; Hooker et al. 2018), and reduced depression, anxiety, and overall psychological distress (Debats et al. 1993). Prosocial behavior has also been linked to greater psychological flourishing (Nelson et al. 2016) as well as an increase in well-being and vitality—even in the absence of direct contact with a beneficiary (Martela and Ryan 2016). Altruistic attitudes, volunteering, and informal helping behaviors were also found to uniquely contribute to the maintenance of life satisfaction, positive affect, and psychological well-being among retirement community member dwellers (Kahana et al. 2013). Although none of this research was conducted during the COVID-19 pandemic or a similar state of affairs, it stands to reason that people who remain at home for the sake of others will experience a greater sense of meaning and purpose compared to those whose staying at home is strictly enforced by the state. The actions of people who take measures upon themselves, because they know that they are thereby helping others, can experience a sense of meaning that those who are doing the same at the risk of punishment cannot. This line of reasoning again suggests the importance for governments of actively promoting and fostering the kind of prosocial behaviors that are not only necessary for a

collective response to COVID-19 but which also stand to offer people a much-needed sense of meaning in existentially uncertain times.

Respect for autonomy—for allowing people to make their own decisions and decide how to live their lives—is an important moral principle in and of itself (Beauchamp and Childress 2012). It is a principle that is seriously challenged by a lockdown approach. I suggest that, as much as it is problematic for freedom and autonomy to be undermined by a lockdown, it is also especially good to offer people a window through which to act for the sake of others. It can give people a sense of meaning and purpose, which is always good but particularly so during a time of global crisis. This is another reason why governments ought to favor an altruistic approach.

Having discussed several matters concerning freedom, I will now address some issues related to justice.

Justice

Only in hindsight will we be able to more fully assess the negative ramifications of the COVID-19 pandemic. As things stand, it is clear that the virus is having a detrimental impact on the lives of a great many people around the world, even if only indirectly—through the global economic consequences of the crisis, for instance. In countries where far-reaching measures have been taken in response to the pandemic, citizens have to bear not only the burdens of the virus itself but also (and perhaps especially) the particular burdens of the imposed measures. Generally speaking, the stricter the measures, the greater will their impact be on people's everyday lives.

I want to focus here on one area of justice, namely the fair distribution of the burdens associated with COVID-19 measures. One might think that a general lockdown is eminently democratic: after all, everyone—rich and poor, young and old—has to stay at home. However, this is far from the case. When citizens are confined to their homes, there are reasons to consider it very unlikely that the burdens of a lockdown will be fairly distributed among the population. More specifically, there are at least two ways in which a lockdown approach can be unjust, in the sense that the burdens of the measures will be experienced disproportionately more acutely by some individuals and groups than by others.

First, there is what might be called the unequal home conditions argument. Home conditions for citizens are bound to vary greatly, so that some people are much more likely to suffer from having to stay home than others. For instance, while having to remain at home for long periods of time is tough on anyone, it is bound to be much more burdensome for people of lower socioeconomic status than for those of higher economic status. The very rich will tend to have access to comfortable accommodations, plenty of living space in which to spend their time, gardens for fresh air and exercise, and so on. At the same time, those who are less well-off will often find themselves confined to small apartments, perhaps even single rooms, with little chance of getting fresh air. After all, especially in large industrialized cities, gardens and balconies are a luxury. Those who are more well-off are likely to be able to live comfortably and independently for a significant stretch of time, having the means to afford all sorts of deliveries of goods, online means of entertainment, and so on. The least well-off, on the other hand, are often dependent on others in important ways: on the kindness of friends and family for help getting by, on food banks, and so on. Continued access to these important services by others will not always be guaranteed.

Other than socioeconomic status, forced isolation will be especially difficult for other vulnerable members of society. For instance, there is a serious risk that people with psychological problems (e.g., those suffering from depression or anxiety disorders) will suffer disproportionately from enforced isolation. There is evidence that, compared to 2018 numbers,

US adults at the height of the pandemic in April 2020 were eight times more likely to fit the criteria for serious mental illness (27.7% vs. 3.4%), with especially pronounced differences among younger adults and those with children (Twenge and Joiner 2020). These statistics are not specific to lockdown conditions or to vulnerable populations, but they do suggest that, if the general population is experiencing increased mental disturbance, then those already at risk are likely to be especially stricken. A survey assessing mental health outcomes in the Italian general population three to four weeks into national lockdown measures against COVID-19 found high rates of negative mental health outcomes; among 18,147 individuals who completed the questionnaire, endorsement rates for post-traumatic stress symptoms (PTSS) were 6604 (37%), for depression, 3084 (17.3%), for anxiety, 3700 (20.8%), for insomnia, 1301 (7.3%), for high perceived stress, 3895 (22.9%), and for adjustment disorder, 4092 (22.9%) (Rossi et al. 2020). During a lockdown, the anxious stand to become more anxious, the loneliest even lonelier. People suffering from domestic violence, which may increase under conditions of isolation, when frustrations increase as outlets for violence dwindle, may also be at greater risk of being harmed under lockdown conditions, when they may quite literally have nowhere to go. Part of the logic of a lockdown is undermined by these considerations: while a lockdown is meant to protect the most vulnerable members of society, it ends up disproportionally hurting its most vulnerable populations. That it should do so is unjust.

Second, there is what might be called the unequal geographical disease burden argument, which is related to the proportionality principle and that of the least restrictive means. The incidence and impact of COVID-19 is unlikely to be (even roughly) equally distributed across geographical regions within a given country. If the prima facie justification of a lockdown is that it is immediately necessary in order to prevent the spread of the virus and to flatten the curve, then, assuming this justification to hold, it will apply most readily to areas where there is a significant amount of infection that needs to be curbed. It may not be apt, however, for areas where the incidence and rate of infection is very low. For instance, the decision by the Italian government to lock down the entire country in response to COVID-19 might, at least on the surface, appear to be justified from the perspective of parts of the country that became coronavirus hotspots, like the region of Lombardy. While my arguments suggest that even in those areas, a lockdown is morally problematic, there is an additional argument to be made that it might be particularly unjust if such stringent lockdown measures are also enforced in other regions, like Molise or Basilicata, where the relative impact of the virus is much smaller.

Of course, there may be reasons to introduce stricter measures in these areas, too (e.g., to keep infection rates low). Yet, to also enforce a lockdown in little-affected areas, especially if they are far removed from coronavirus hotspots, still appears to require more justification than it does in those areas where the virus is rampant. The Chinese government did not lock down the entire nation in response to the pandemic; they enforced lockdown measures first in the city of Wuhan, and later in other, more or less circumscribed areas that saw outbreaks of the virus (like in the province of Jilin). Had the government enforced measures as strict as those in Wuhan for the entire nation, one might rightfully have questioned whether this were a just policy, on the grounds that it would seriously encroach on people's freedom while other measures, more respecting of liberty and autonomy, could have been maintained.

This argument admittedly leaves room for local lockdowns in areas greatly affected by the virus, but I have argued that there are other reasons to think that a lockdown is unjust. The unequal geographical disease burden argument suggests that a lockdown approach taken by a government for an entire nation in order to tackle the virus within a particular region can be unjust in another way.

Conclusion

Governments around the world have needed to respond quickly to the COVID-19 pandemic. If the public health goal is to protect vulnerable people from contracting the novel coronavirus and to prevent health care systems from being overrun with cases—that is, if we all need to contribute to flattening the curve—then this poses a dilemma similar to one that is found in vaccination ethics. The dilemma centers on the question of whether governments should leave room for people's altruistic inclinations, or whether they ought to bypass these and enforce the required measures in some ways. I have conceptualized two potential approaches to COVID-19, and I have argued that an altruistic approach is morally preferable to a lockdown approach. An altruistic approach maintains important citizen freedoms, is more respectful of personal autonomy, is less prone to result in immediate privacy violations, and avoids a number of injustices. Importantly, this approach also leaves citizens a greater sense of individual responsibility and freedom to act on altruistic inclinations, thus allowing them to give meaning to their actions and their lives during a time when despair over lack of control is a real concern.

All in all, then, governments ought to favor an altruistic approach on moral grounds. Given that the approaches are ways of responding to a crisis, and are meant to meet crucial and ongoing public health goals, there should be room for re-assessment based on empirical feedback. Should a more permissive altruistic approach that lets people almost entirely free to take action to flatten the curve fail to result in the necessary responses, then stricter measures may yet be justified. However, even then, these measures ought to be introduced within an approach that is in principle altruistic, and which does not go as far as confining people to their homes all together.

While the different approaches that I have described immediately apply to the present situation, both in guiding decisions about how to govern and in determining the morality of policies already taken, the distinction between altruistic and lockdown approaches will also be relevant to future outbreaks. One hopes, of course, that the question of how much freedom governments ought to leave citizens in the face of pandemics never arises again, but it is likely that even after COVID-19 has become a painful memory, the way in which governments handle such crises will remain a subject of much concern—including moral.

CHAPTER

5

Against COVID-19 Vaccination of Healthy Children

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Chapter Five
Against COVID-19 Vaccination of Healthy Children

Introduction

In an increasing number of countries, COVID-19 vaccines are being approved for use in children aged 12 to 15 and even in children as young as six months (Mandavilli 2021; CNA 2021; SATP 2021; Pfizer 2021). In the United States, the Federal Drug Administration (FDA) has authorized emergency use of the Pfizer-BioNTech COVID-19 vaccine in children 5 through 11 years of age (USDA 2021). The European Medicines Agency (EMA) is currently also considering extending the use of the Pfizer-BioNTech COVID-19 vaccine for this age group (EMA 2021). Vaccinating children against COVID-19 would presumably be part of a larger vaccination strategy intended to increase vaccine uptake in order to control the pandemic and reestablish normal social and economic life (Gostin, Salmon, and Larson 2021; Eberhardt and Siegrist 2020).

This article presents an analysis of the ethics of vaccinating healthy children against COVID-19 by responding to the strongest arguments that might favor such an approach.[41] In particular, we present three arguments that might justify routine[42] COVID-19 vaccination of children, based on (a) an argument from paternalism, (b) an argument from indirect protection and altruism, and (c) an argument from the global public health aim of COVID-19 eradication.[43] We offer a series of objections to each respective argument to show that, given the best available data, none of them is tenable. These arguments, which might be compelling for childhood vaccination against other diseases and in different circumstances (Kraaijeveld 2020a), do not appear to hold in the case of COVID-19 with the currently available vaccines. Given the present state of affairs and all things considered, COVID-19 vaccination of healthy children is ethically unjustified.

If one accepts our conclusion that routine vaccination of healthy children against COVID-19 is ethically unjustified, then it follows that coercion, which is an ethically problematic issue in itself, is even less warranted. Nonetheless, mandatory vaccination of healthy children against COVID-19 is already being considered—and, in some places, implemented—as a way of increasing vaccine uptake (Plotkin and Levy 2021; Savulescu, Giubilini, and Danchin 2021; BBC 2021; Gutman 2021). We therefore also provide two objections specifically against making COVID-19 vaccination mandatory for children, which center on additional ethical concerns about overriding the autonomy of parents and legal guardians and of children who are capable of making autonomous decisions. If vaccinating healthy children against COVID-19 is ethically problematic, then coercing vaccination is even less acceptable—but even if vaccinating healthy children against COVID-19 should at some future point be considered

[41] We focus our analysis on healthy children because, as will be discussed later in the article, there may be more compelling reasons to vaccinate at least some vulnerable children against COVID-19. Throughout the article, where we refer simply to children, this should be taken to imply healthy children.

[42] By "routine" vaccination we mean vaccination that is recommended for everyone, so that routine vaccination of children should be understood as the general recommendation that all children get vaccinated against COVID-19, whether or not the rationale for the recommendation is emergency use. In the United States, for example, given the emergency use authorization of the Pfizer-BioNTech COVID-19 vaccine in children aged 5–11, routine vaccination for this age group means offering the vaccine to all eligible children (whether it is simply offered, actively encouraged, required, or even mandated).

[43] We consider these three arguments to be the most ethically relevant and potentially convincing for vaccinating children against COVID-19. However, should additional arguments for vaccinating children be raised, then these would have to be critically appraised together with the three arguments presented in this paper for an all-things-considered judgment. In other words, those who would argue in favor of vaccinating children against COVID-19 would have to show that the objections against the three arguments in this paper do not hold, or that some additional argument(s) are of greater ethical significance than the arguments considered here. Thanks to an anonymous reviewer for pressing us to clarify this point.

more defensible (e.g., should a much more favorable cost-benefit analysis emerge), important ethical objections against coercive mandates will still remain.

Argument from Paternalism

The first argument in favor of childhood vaccination for COVID-19 derives from paternalistic considerations and holds that routine vaccination of healthy children is justified because it is in the best interests of the would-be vaccinated children. The argument from paternalism suggests that COVID-19 vaccination will, all things considered, benefit children the most (or cause them the least harm). Given that routine vaccination is the most effective way to ensure vaccine uptake, it is therefore justified for the sake of the health and well-being of children themselves.

Objection 1: Low Risk of COVID-19 Morbidity and Mortality to Children

According to the best available data, healthy children are at a much lower risk of severe illness from COVID-19 and are less susceptible to infection than older adults (Verity et al. 2020; Bhopal et al. 2021). In contrast to many other vaccine-preventable diseases, healthy children are at low risk of severe COVID-19 infection, morbidity, and mortality (Piroth et al. 2021). Hospitalization of children with COVID-19 is rare, although emerging data suggest that children with severe underlying comorbidities are at higher risk (Salje et al. 2020). Deaths among healthy children due to COVID-19 are very rare; for example, a large study in Germany found no deaths among children aged 5–11 without comorbidities (Makary 2021; Ledford 2021; Sorg et al. 2021). We agree with the assessment that COVID-19 is not a pediatric public health emergency (Pegden, Prasad, and Baral 2021).

Earlier concerns that the Delta variant might be associated with significantly greater morbidity and/or mortality in children do not appear to be supported by the latest data. A recent study of 258,790 children aged 5–17 years in the UK, for instance, found that illness from the Delta (B.1.617.2) variant resembled illness from the Alpha (B.1.1.7) variant, with short illness duration and similar symptom burden (Molteni et al. 2021). Overall, the burden of COVID-19 in children appears to be similar to or lower than that of typical seasonal influenza in the winter (unlike the much higher disease burden of COVID-19 in adults) (Molteni et al. 2021). In 2020, 198 children aged <17 officially died of COVID-19 in the United States (NCHS 2021). In 2021, with Delta being the predominant variant, that number increased to 378 (NCHS 2021),[44] which is comparable to the official number of children aged <17 who died in the 2018–2019 influenza season in the United States (i.e., 372) (NCIRD 2021). Mortality of children in Spain is low, with 8 deaths per 100,000 in children aged 0–9, and 18 deaths per 100,000 in children aged 10–19 years (Tagarro et al. 2021). In Australia, with high testing rates and local transmission of the Delta (B.1.617.2) variant, 2864 (27%) of the 10,782 cases of COVID-19 in New South Wales were among those aged 0 to ≤18 years, and the majority of children (98%) had asymptomatic or mild infection (NCIRS 2021). In the Netherlands, the official COVID-19 death statistics published by the National Institute for Public Health and Environment (RIVM) are not broken down by age under 50, because "so few people under 50 die [that] RIVM groups together people of all ages up to and including 49," with this group making up only 0.7% of the total number of people who died from COVID-19 to date. It must also be noted that none of these data specify relevant comorbidities, yet most children who become severely ill or die from COVID-19 have one or more underlying medical conditions (McCormick et al. 2021; Tsankov et al. 2021). For infection with the Omicron variant, the severity of disease outcome

[44] It must be noted that this dataset includes deaths up to November 2021; the total number for 2021 is likely to be higher.

was found to be significantly lower for all ages, including pediatric age groups, compared to Delta (Wang et al. 2022).

Furthermore, post-infection immunity has been found to be at least as effective as vaccination at protecting against disease due to reinfection with COVID-19 (Pritchard et al. 2021; Gazit et al. 2021). An increasingly large body of evidence suggests that immunity after previous severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection is at least as robust as vaccine-induced immunity (Gazit et al. 2021; Pilz et al. 2021; Neidleman et al. 2021; Turner et al. 2021; Haveri et al. 2021; Letizia et al.2021; Wadman 2021; Pilz et al. 2022). Childhood exposure to SARS-CoV-2, which, as previously discussed, is generally associated with mild viral illness, may offer protection against more severe illness in adulthood (Rees et al. 2021). To date, hundreds of millions of children have already been infected with COVID-19. For children with immunity from previous infection, the potential benefits of vaccination are likely to be lower than for children without immunity; in fact, health authorities in Norway no longer recommend vaccinating children aged 12–15 who have recovered from COVID-19 (NIHP 2021). Given that the risks of the vaccines are not negligible, as we discuss in the next section, the case for vaccinating all children is therefore even less compelling when this includes large numbers of children who have already recovered from a previous SARS-CoV-2 infection.

It has sometimes been maintained that children often suffer significant post-acute symptoms (also known as "long covid") even after mild or asymptomatic infection (Buonsenso et al. 2021; Ludvigsson 2020). The preliminary data for studies supporting such an association have lacked control groups and therefore must be interpreted with caution (Akst 2021). The idea that healthy children suffer significant post-acute symptoms after mild or asymptomatic infection is not supported by more careful analysis of current evidence (Bhopal and Absoud 2021). A large-scale recent estimate in the UK found that rates of symptoms 12–16 weeks after COVID-19 infection in children were not statistically different from rates of symptoms among controls (Ayoubkhani, Pawelek, and Gaughan 2021). Relatedly, it is biologically implausible that an infection that is usually mild or asymptomatic in children would commonly result in severe post-infection symptoms; post-COVID-19 fatigue in adults was found to be strongly correlated with the severity of illness (Crameri et al. 2020). Therefore, at this point, protecting healthy children against "long covid" does not in itself provide a strong argument for routinely vaccinating all healthy children. Should adequately controlled future data show that "long covid" more substantially affects healthy children, then this would add more weight to the argument that COVID-19 vaccination is justified for the sake of healthy children themselves.[45]

As COVID-19 may pose more serious risks in some children (e.g., children with obesity or severe comorbidities), vaccinating those children may be better justified by appeals to their own interests.[46] It should be noted, however, that not all "vulnerable" groups are necessarily at increased risk of severe illness from COVID-19. A recent study, for instance, found that immunocompromised children and young people in the UK were at no increased risks of severe

[45] Given that there are both risks and uncertainties related to COVID-19 vaccines for children, this gives us reason to be cautious. On the other hand, uncertainty about long-term effects of COVID-19 on children may provide a reason to consider vaccination after all. However, given that the effects of long covid appear to be minimal, and given the already known rare but potentially severe harms of the vaccines, the balance of ethical considerations appears to be against routine vaccination of healthy children. Thanks to an anonymous reviewer for pressing us on this point.

[46] It might turn out that tailored vaccination against COVID-19 for vulnerable children will be more expensive to implement than universal vaccination. A cost–benefit analysis of this kind is important to consider when it comes to the ethics of COVID-19 vaccination of children. At present, however, potential implementation costs provide relatively little weight against a tailored approach given that several risk factors (such as obesity) are now well described, and provided that (under a tailored approach) vaccines remain easily accessible for parents who wish to access them for their children. Thanks to an anonymous reviewer for raising this point.

COVID-19 (Chappell et al. 2022). In any case, in light of present knowledge, it is much more difficult to justify vaccination of all children for their own sake, given the relatively low vaccine-generated benefits and mild average disease severity.[47] These low expected benefits need, moreover, to be balanced against potential risks, which will be addressed in the following section.

Objection 2: Known Risks and Unknown Long-term Vaccine Safety Profile for Children
The case for vaccinating healthy children against COVID-19 for their own sake is undermined by uncertainty; that is, by the currently poorly characterized potential for rare, harmful outcomes associated with the vaccines in children. Public safety data from the Pfizer-BioNTech clinical trials in children included 2,260 participants aged 12 to 15, of which 1,131 received the vaccine (USFDA 2021). In addition to a small sample size, the trial follow up period was of short duration; therefore, no reliable data presently exist for rare or longer-term vaccine-related harms (Pfizer 2021). Though common adverse events occurring less than 6 months after vaccination may be ruled out, the risks of rare or delayed adverse outcomes can simply not yet be evaluated (Pegden et al. 2021; Benn 2021). Should vaccine harms occur, they will be revealed in the general pediatric population only after thousands or millions of children are already vaccinated, which would also risk seriously undermining vaccine confidence. The restriction of AstraZeneca vaccines to older age groups due to blood clotting events early on in the COVID-19 vaccination rollout, as well as reports of increased rates of vaccine-related myocarditis among younger age groups illustrates that rare risks are sometimes more common in younger age groups and might sometimes outweigh benefits in children (Marshall et al. 2021; Vogel and Couzin-Frankel 2021). Severe cardiac manifestations such as myocarditis and pericarditis are now recognized as rare risks of the COVID-19 vaccines (Witberg et a. 2021; Kim et al. 2021; Paul et al. 2021; Diaz et al. 2021; Simone et al. 2021). Myocarditis-induced deaths following COVID-19 vaccination have been documented in adolescents as well as in adults (Gill, Tashjian, and Duncanson 2022; Choi et al. 2021; Mevorach et al. 2021). The risk of vaccine-caused myocarditis appears to be higher in younger age groups—especially males—compared to older groups (NCIRD 2021; Hause et al. 2021; Meorach et al. 2021; Høeg, Krug, and Mandrola 2021[48]). Sweden and Denmark, for instance, recently announced that they are halting use of Moderna's COVID-19 vaccine for younger age groups after reports of rare cardiovascular side-effects (Ahlander and Jacobsen 2021). Sweden, in fact, has decided against recommending COVID-19 vaccines for children aged 5–11 altogether (Ahlander 2022). France and Germany have also announced that they will no longer offer the Moderna vaccine to people under the age of 30 due to elevated risks of heart inflammation (Hart 2021). The U.K. Joint Committee on Vaccination and Immunization (JCVI) has moreover recommended against vaccinating healthy children (i.e., children who do not have underlying health conditions that increase their risk from severe COVID-19). Upon reviewing the evidence for vaccination in children aged 12–15, the JCVI concluded that for this population, "the health benefits from vaccination are marginally greater than the potential known harms" (PHE 2021). The JCVI recommendation concerns children aged 12–15. For children aged 5–11 (the group for whom the U.S. FDA has recently authorized emergency use), the balance for vaccination is

[47] We do not wish to give the impression that we reject paternalistic reasons for routine childhood vaccination altogether. Paternalism—the best interests of children—is probably the single most important justification for childhood vaccination. Even for rare diseases (e.g., polio), routine vaccination may be justified on the grounds that, while the disease is rare, the protection provided by herd immunity is in the best interest of children as a group, given the severity of the disease for children should they become infected (i.e., should herd immunity wane). As we have argued, however, these conditions do not hold for COVID-19 in the case of children. Thanks to an anonymous reviewer for pressing us to clarify this point.
[48] For a criticism of this study, see Munro (2021).

presumably less favorable, given that COVID-19 morbidity and mortality rates decrease with younger age groups (Twohig et al. 2022). The difference of opinion among experts and regulators suggests, at a minimum, that it is currently uncertain whether the benefits of mRNA vaccines for children outweigh the risks.[49]

Although COVID-19 might pose more serious risks for children with severe underlying comorbidities, so that some potential vaccine risks may be more justified by potential benefits in such groups, there is reason to think that a uniform approach for all such children may be problematic. Common vaccine side effects, for instance, include fever (WHO 2021), which for some vulnerable children may in itself pose significant risks. For the group of vulnerable children, then, who are not homogenous in terms of health status and susceptibilities, it would be preferable for COVID-19 vaccination recommendations to be tailored at an individual level, as recommended by their pediatricians (who, after all, are arguably in the best position to provide such children with medical care). That not all vulnerable children appear to be at increased risk of severe outcomes from COVID-19 underscores this idea (Chappell et al. 2022).

Vaccines have been recalled in the past after adverse effects in children were identified when the vaccine was already in routine use (Collignon, Doshi, and Jefferson 2010). In some cases, the adverse effects occurred many months after vaccine administration (Jamrozik et al. 2021; Stowe et al. 2020). The lack of long-term safety data therefore warrants caution about vaccinating children against COVID-19. Given that the combination of known vaccine risks and uncertainties (i.e., poorly characterized risks) might outweigh the limited benefits of COVID-19 vaccination to healthy children, routine vaccination is ethically unjustified. Should positive long-term safety data become available, this assessment might change. However, because of the low expected benefits for healthy children rooted in the best available evidence, justifying COVID-19 vaccination by appealing to children's own interests will most likely remain ethically questionable.

In sum, vaccination of healthy children against COVID-19 cannot presently be defended on paternalistic grounds.

Argument from Indirect Protection and Altruism

The second argument is grounded in the potential benefits that vaccinating healthy children against COVID-19 can provide to others. According to this argument, routine vaccination of children against COVID-19 is ethically justified because healthy children should get vaccinated in order to protect vulnerable groups.

Objection 3: Children are Not a Major Driver of Transmission

Children are both substantially less susceptible to COVID-19 infection and, if infected, are significantly less likely than adults to infect others (Monod et al. 2021). Most secondary infections directly attributable to children tend to occur within households (Lei et al. 2020). Yet the secondary attack rate for children to household members is low compared to adults (Kim et al. 2021; Madewell et al. 2021; Soriano-Arandes et al. 2021). Since high community transmission in adults is the main driver of COVID-19 epidemics—and infection of children—as well as disease burden, the public health benefits of vaccinating children in terms of transmission reduction (even if current vaccines were to provide sterilizing immunity, which, as we will discuss, they do not) are likely to be small and may be negligible where a high proportion of adults are already vaccinated (Lee and Bhopil 2021).

[49] For an overview of different positions by governments around the world regarding vaccinating children against COVID-19, see Fidler, Forero, and Lieber (2021). See also Lavine (2021); Benn (2021).

Moreover, if vaccination of adults and vulnerable children is maintained at a high level, as discussed in the next objection, then the public health consequences of the spread of the virus among healthy children and from them to others will be limited.

Objection 4: Vulnerable Groups Can Protect Themselves and Current Vaccines Do Not Provide Sterilizing Immunity

Some vaccines (e.g., influenza) are much less effective in certain vulnerable groups (e.g., the elderly). When, in addition, non-vulnerable groups are significant spreaders of a virus (e.g., children in the case of influenza), there may be a strong prima facie case for vaccinating the non-vulnerable group—even if that group does not stand to benefit as much from the vaccine as the vulnerable group, for whose sake vaccine policy could in part be ethically justified (Bambery et al. 2013; Bambery et al. 2018). On neither count, however, does this reasoning seem to hold for COVID-19.

For COVID-19, vaccines are safe and effective in higher-risk groups, including older adults and the immunocompromised (Dagan et al. 2021), and significantly reduce the risk of severe illness even when vaccinated groups are exposed to substantial community transmission (Menni et al. 2021). While there are some people for whom the current COVID-19 vaccines are contraindicated (e.g., those with severe allergies), this group appears to be small (Rasmussen et al. 2021). It is therefore not the case that vulnerable groups cannot protect themselves, which would make routine vaccination of less vulnerable groups—children, in this case—more compelling. Moreover, as argued above, children are not major drivers of COVID-19 transmission. As such, there is no strong ethical justification for COVID-19 vaccination of healthy children for the sake of vulnerable groups.

It has been argued that people have a moral obligation to contribute to population or "herd" immunity by getting vaccinated (Giubilini, Douglas, and Savulescu 2018). However, in the case of COVID-19, it now appears unlikely that elimination via herd immunity is a possibility (Aschwanden 2021). Furthermore, as previously discussed, COVID-19 vaccination is highly effective in vulnerable groups. The case for routinely vaccinating children in order that they might contribute to herd immunity is therefore weak, especially since it has become clear that the current COVID-19 vaccines do not provide sterilizing immunity (Vashishtha and Kumar 2022; Singanayagam et al. 2021; Federman 2022). Protection against infection with the Omicron variant falls to zero percent within a few months of the second dose of vaccine, and a similar pattern is observed for third doses (UKHSA 2022b). Vaccinated individuals, once infected, transmit SARS-CoV-2 infection to others at similar rates to unvaccinated individuals (Wilder-Smith 2021). This significantly deflates the argument for indirect protection as a justification for routine vaccination of children. However, given that transmission may still be reduced through vaccination, there may be more circumscribed instances where indirect protection weighs more strongly in favor of vaccinating children. For example, a vulnerable individual who has few contacts outside the household might receive a short-term benefit if a child who lives with them is vaccinated, to the extent that this might at least temporarily reduce the chance of the child passing the virus onto them. At the same time, given the presently uncertain safety profile of COVID-19 vaccines for children and the little direct benefit that they stand to derive from it, indirect protection arguments are still ethically questionable to the extent that they rely on children being used as a mere means for the protection of others (Giubilini 2021; Malm and Navin 2020).

There are also other reasons to think that the indirect protection argument is less apt in the case of COVID-19. Unlike in the case of vaccines for some other pathogens, very few people in risk groups will be unable to get vaccinated, provided that access is unconstrained. First, because most COVID-19 vaccines are not live vaccines (meaning that they are safe for immunocompromised people); and, second, because there are multiple different vaccine

platforms, meaning that in rare cases where someone has an allergy to a product in one particular vaccine, they may be offered an alternative one.

Even if COVID-19 vaccines are highly effective (say 95%–99%) against severe disease, there might be a small group (say 1%–5%) in whom protection is weaker and who may therefore be better off if everyone were vaccinated. Nevertheless, since vaccination of the majority of adults will already significantly reduce the probability that those less protected by vaccination will be infected in the first place, this reasoning is hardly sufficient to justify routine COVID-19 vaccination for all children at this point—at least not until there is a vaccine for this population with a well-confirmed, very high safety profile.

That few people will in principle be unable to get vaccinated does not imply, of course, that everyone who is eligible will get vaccinated. That may be unwarranted optimism; vaccine uptake among adults mostly likely will not reach high levels in some places (De Figueiredo et al. 2020). Nevertheless, if it should be the case that vaccine uptake is not sufficiently high in adult populations, the burden appears to rest on adult populations, rather than on children (cf. Figueiredo et al. 2020).

Objection 5: A Questionable Case for Altruism

While children with at least some degree of decisional autonomy (e.g., teenagers) may have an obligation to take precautions against infecting others in certain cases (Verweij 2005), this obligation is significantly weakened when others are able to effectively protect themselves and when vaccines do not provide sterilizing immunity. As we have argued above, this is the case for COVID-19. Nonetheless, one may still want to argue that, even if there is no moral obligation for children to get vaccinated against COVID-19 for the sake of others, there should still be space for them to potentially make the altruistic choice to nevertheless get vaccinated (Kraaijeveld 2020a). That is, in the absence of an obligation to get vaccinated and even if children do not stand to benefit individually from vaccination—and perhaps even in the case of a net cost to children as a group—they could still individually choose to accept the risks of vaccination for the sake of others (assuming that vaccines, while not providing sterilizing immunity, do have a significant effect on transmission). Given that one cannot be certain that by getting vaccinated against COVID-19 one inevitably prevents harm, and if there are reasons that one does not have a strong moral obligation to get vaccinated (e.g., in the case of children), then getting vaccinated might nevertheless be seen as an altruistic act when done from the right motives (cf. the discussion of altruism in Kraaijeveld 2020b). COVID-19 vaccination of healthy children would facilitate such an altruistic choice.

While it may be a good thing to allow room for altruistic COVID-19 vaccination decisions, this is not a sufficient justification for routine COVID-19 vaccination of healthy children—not only because of the ethical issues surrounding routine vaccination outlined so far, but also because the group of children who might make genuine altruistic decisions is only a subset of the larger group of all children. While parents and legal guardians are de facto decision-makers for children in early infancy, the point at which children obtain decisional autonomy is complex and may be subject to cultural differences (Helwig 2006). Aside from a widely recognized age of majority at 18 years, there is no universal age of consent for children regarding medical decisions as such, although 16 years is often recognized as the age at which some children may at least in some cases take medical decisions in the absence of parental consent (Coughlin 2018). Even a 14-year-old "may have sufficient capacity to understand and consent" to a particular treatment, "when risks are minimal and the benefits of a proposed therapy are clear" (Coughlin 2018, 139). In the case of vaccination against COVID-19, however, when the relevant data are still being collected and when experts are still assessing and re-assessing the associated risks and benefits, it is implausible to think that children would be able to understand and reason well about the associated risks and benefits.

Younger children are in any case not autonomous in their ability to make medical decisions, thus relying for these decisions on their parents and legal guardians. The argument from altruism does not hold for these children, because altruism presupposes decisional autonomy; insofar as children lack autonomy, they cannot make an altruistic choice to vaccinate. At the same time, parents and guardians acting on behalf of their children cannot simply subsume the child's decision: one cannot act altruistically through someone else (one's child in this case). If parents wished to vaccinate their healthy children against COVID-19 for the sake of others, then this would not be an altruistic choice. It would be a case of parents instrumentally using their children for the benefit of others. There are, of course, ethical reasons why parents ought not to solely regard their own children's interests as being worthy of moral consideration. Parents may have good reasons to vaccinate their child against an infectious disease even if they do not consider the risk of this disease to be substantial for their own child; for example, because their child frequently interacts with another child who is more vulnerable to the disease and cannot get vaccinated.

From a public health ethics perspective, treating children as a mere means to serve other people's or collective interests, if it can be justified, at the very least requires sufficiently large benefits to others and sufficiently small costs to children, which does not seem to be the case for COVID-19 vaccination (Giubilini, Gupta, and Heneghan 2021; Bhopal Bagaria, and Olabi 2021). Given the upshot of the discussion so far, including that vulnerable children and adults can be adequately protected by getting vaccinated and that people can still spread infection post-vaccination, the case of COVID-19 does not appear to raise sufficiently compelling reasons for parents to vaccinate their children solely or even primarily for the sake of others.

It must also be noted that healthy children who face very low risks from the virus have already been disproportionately harmed by non-pharmaceutical interventions against COVID-19, like school closures and lockdowns, all of which were primarily for the benefit of older and more vulnerable people (Von Bismarck-Osten, Borusyak, and Schönberg 2020; UNICEF 2021). A great deal has been demanded of and given by these children—ought we really to ask for more?

All in all, COVID-19 vaccination of healthy children is not justified on the grounds that healthy children should get vaccinated against COVID-19 in order to protect others.

Argument from Global Eradication

The third argument is grounded in a pandemic "endgame" scenario: COVID-19 vaccination of healthy children is justified because it is necessary for the global eradication of the virus. The idea is that the global reduction of SARS-CoV-2 incidence to zero and the ultimate cessation of vaccine programs and control measures (e.g., as in the case of smallpox) is the most ethically appropriate goal for global public health. In order to reach this goal, it is necessary to vaccinate healthy children against COVID-19. Since no pandemic respiratory virus has ever been eradicated (Heriot and Jamrozik 2021), this goal is in our view implausible. Yet, since several versions of this argument have appeared and may appeal to some policymakers, it is arguably worth refuting (Wilson et al. 2021).[50]

This argument might rely on at least three claims regarding unbridled transmission of the virus, namely that ongoing transmission will: (a) lead to the evolution of viral variants that are more harmful, perhaps also for children; (b) make the virus more likely to evolve to evade vaccine-derived immunity; and/or (c) ceteris paribus make the long-term cost-effectiveness of eradication more favorable than control. We provide objections to each of these claims in turn.

[50] A number of policymakers and leaders have suggested some variation of this idea, whether or not explicitly as a policy of global or local "eradication." In Australia, "zero covid" is still official policy at the time of writing (see Scott (2021)).

Objection 6: Evidence against the Evolution of More Harmful Variants
Evolutionary fitness is primarily determined by transmissibility rather than virulence (i.e., propensity to cause harm), although these two terms are often confused or conflated (Van Dorp et al. 2020). Insofar as viruses readily infect human hosts, there is an evolutionary cost to causing (fatal) harm, even if this does not exclude the possibility of viral variants becoming somewhat more harmful than their predecessors (Alexander 1981; Kirchner and Roy 2002). Should variants evolve to be more harmful particularly for children, then the argument from paternalism might be strengthened (i.e., to the extent that children stand to benefit more from vaccination). However, this scenario is in our view improbable. Several seasonal coronaviruses (which also have variants) have continued to cause predominantly mild "common cold" illness in healthy children despite persistence as seasonal globally endemic viruses for decades or centuries (Fehr and Perlman 2015); even SARS, caused by a far more virulent coronavirus than COVID-19, is not particularly harmful to children (Leung et al. 2003). Furthermore, the virulence of SARS was one factor that made this disease relatively easy to control and eliminate (i.e., because those infected were readily identifiable) compared to COVID-19, where mild or asymptomatic illness is far more common. The notion that more harmful variants of the virus might evolve therefore does not constitute a particularly compelling argument for routine COVID-19 vaccination of healthy children—neither for their own sake, nor for the sake of global public health goals.

Objection 7: The Immunity Evasion Argument is Self-defeating or Highly Costly
The notion that unbridled transmission would make the virus more likely to escape vaccine-derived immunity makes the eradication argument either self-defeating or incredibly costly. Aside from the fact that current vaccines do not prevent infection or transmission, if certain variants really are highly efficient at evading vaccine-derived immunity—or, worse still, if more variants continuously evolve to evade vaccines more efficiently—then attempts at eradication through global vaccination, and the strong evolutionary selection pressures this entails, will be met with diminishing returns for the costs of such a program.

Insofar as vaccine evasion is significant, eradication would necessitate prolonged—perhaps indefinite—non-pharmaceutical measures while up to 100% of the global population is vaccinated (including children), and/or the development of vaccines producing sterilizing immunity, including against escape variants. Given the enormous social and economic costs of prolonged non-vaccine control measures as well as the costs of developing multiple generations of vaccines, the attractiveness of such a strategy diminishes. Moreover, both vaccine evasion and mild disease severity in children make the alternative "endgame" of global COVID-19 endemicity (discussed below) both more plausible (Lavine, Bjornstad, and Antia 2021; Heriot and Jamrozik 2021) and arguably more ethically acceptable, especially given the many other unmet needs in global health.

Objection 8: One Cannot Assume Cost-effectiveness of Eradication over Control
The claim that eradication would be more cost-effective in the long run than control remains an open question to some extent, as it does for many vaccine-preventable diseases (Bart, Foulds, and Patriarca 1996; Sicuri, Evans, and Tediosi 2015). Nevertheless, given that historically the efforts of global public health have successfully eradicated only one disease (smallpox), and given also that there have been significant stumbling blocks in the "last mile" of polio eradication, it appears unlikely that COVID-19 eradication is feasible in the near term with current vaccines, due to their insufficient prevention of infection and/or transmission (Lavine, Bjornstad, and Antia 2021). The costs of such an approach have to be squared against investing in other potential global public health goals—global scourges of children such as malaria, tuberculosis, pneumococcus, diarrheal disease, and measles (as discussed below).

While a questionable end in itself, to the extent that COVID-19 eradication would be supported by vaccinating healthy children, this goal would probably not, all things considered, be in the best interest of children. In fact, it would arguably be unethical to prioritize COVID-19 eradication by universal vaccination of children, because there are currently far more pressing health concerns than COVID-19 for the global population of children. The pandemic has already had a deleterious effect on routine childhood vaccine coverage, which is a serious issue that must be addressed and weighed against investing limited resources in eradicating COVID-19 (Eberhardt and Siegrist 2020). Measles, for example, which has re-emerged during the COVID-19 pandemic in Pakistan and the wider region, arguably poses a significantly bigger threat to children (Rana et al. 2021). Measles kills over 100,000 children every year for want of vaccine access—many more children than have died from COVID-19 to date (WHO 2020). Furthermore, the measles virus has so far demonstrated limited clinically significant immune escape in the face of vaccination (Yang, Grenfell, and Mina 2019), while it is widely held that measles is a candidate for an eradicable vaccine preventable disease (Moss and Strebel 2011). These conditions are not met, or remain uncertain, for COVID-19. Even if they were met, global health policy should, insomuch as it is directly concerned with the health of children, prioritize measles eradication and many other health goals before considering universal childhood vaccination for COVID-19.

Since low-income countries have little incentive to participate in a COVID-19 eradication campaign by universal vaccination while many other critical health needs of children are unmet, SARS-CoV-2 will inevitably become a globally endemic virus (Philips 2021; Veldhoen and Simas 2021). Yet this is likely to produce very little morbidity or mortality insofar as the majority of adults and are fully vaccinated. Over time, the age at first infection will continue to fall for COVID-19, such that, as for other coronaviruses, people will be universally infected in the early years of life and experience mild re-infections every few years (Edridge et al. 2020; Rees et al. 2021; Lavine et al. 2021). While it is possible that vulnerable older adults will continue to face significant disease burden, as they do for other coronaviruses despite prior infection (Patrick et al. 2006), this burden can be controlled with an appropriate use and extension of existing vaccines. If we wish to minimize harms from COVID-19, it would be better to vaccinate vulnerable older adult populations around the world in low- and middle-income countries, who stand to benefit much more from getting vaccinated and for whom access is still scarce, than children in high-income countries (Gur-Arie, Kraaijeveld, and Jamrozik 2021). Eradication of COVID-19 is therefore currently neither a feasible nor an ethically justifiable goal; its likely low long-term global disease burden, once most adults are vaccinated, will soon be insufficient for prioritization above other, more pressing, global health problems.

Thus, given the objections, routine vaccination of children is not justified on the grounds that it is required to globally eradicate COVID-19.

Objections against Mandates

While the ethics of vaccinating healthy children against COVID-19 is still being debated around the world, mandatory vaccination of healthy children for COVID-19 has already been implemented in some places, like California and Costa Rica, and may be considered elsewhere (OGGN 2021; BBC 2021; Plotkin and Levy 2021; Savulescu et al. 2021). The World Health Organization (WHO) defines a COVID-19 vaccine mandate as a way to "compel vaccination by direct or indirect threats of imposing restrictions in cases of non-compliance," which can be ethically justified under certain circumstances (e.g., to protect the health and well-being of the public), even if it interferes with individual freedom and autonomy (WHO 2021). Some have argued that selective mandates are ethically justifiable for specific populations, such as

paternalistic mandates for those who are at highest risk of severe illness from COVID-19 (Williams 2021).

However, if our ethical objections to routine vaccination of healthy children against COVID-19 are convincing—if one accepts that routine vaccination is at least presently unjustified—then it must follow that coercion, to the extent that this would require still further ethical justification, is also unwarranted. Even among populations for which there may be more pressing reasons to increase vaccine uptake than for children, like healthcare workers, mandatory vaccination already involves serious ethical issues and may cause collateral harms (Gur-Arie, Jamrozik, and Kingori 2021; Waters 2022).

Nevertheless, given that the discussion about mandates is already underway and is likely to persist, we present two additional objections specifically against mandating vaccination of healthy children against COVID-19, which might be considered in addition to any relevant ethical problems related to vaccine mandates in general.

Objection 9: Limiting Parental Autonomy

Mandates for children to be vaccinated against COVID-19 would limit and, depending on their nature, even override the autonomy of parents and guardians to make decisions about the health of their children. This requires ethical justification as such, but it demands stronger justification in proportion to the level of coercion that mandates would involve (Giubilini 2019). When mandates are in place, the actors who make decisions for the health and well-being of children de facto become governments and public health officials rather than parents, although less coercive measures (e.g., small fines) might allow some parents to opt out and thereby retain decisional autonomy.[51]

To justify mandates that would limit or override parental autonomy, there needs to be at least some indication that parents and guardians might not be adequately discharging their duties to safeguard the health and well-being of their children (Pierik 2018). Should neglect of children's basic interests be demonstrated, then there might be a legitimate reason for states to intervene and to coerce parents and guardians into making choices that are better aligned with their children's interests and well-being (Pierik 2020).

In the case of COVID-19, however, there is no such indication. There is no compelling reason to assume that by not vaccinating their healthy children against COVID-19, parents are failing in their duty to uphold their children's best interests. As previous objections have shown, it is currently questionable whether the balance of benefits and risks even weighs in favor of vaccinating healthy children against COVID-19. Not vaccinating one's children against COVID-19 therefore does not presently constitute a clear case of parental failure, which makes the coercion of parental vaccination decisions for one's children unwarranted on those grounds.

If one accepts our conclusions that vaccinating healthy children against COVID-19 is not required in order to protect others and not necessary for the public health goal of eradicating COVID-19, then it follows that other-regarding and public health considerations also do not justify making COVID-19 vaccination mandatory for children.

Objection 10: Mandates Preclude Altruism for Autonomous Children

As previously discussed, perhaps some healthy children (e.g., teenagers) can autonomously make the altruistic choice to get vaccinated for others. Clearly, overriding the autonomy of these children through coercive measures will be as ethically problematic as for parents and legal guardians. However, there is an additional element to consider.

[51] It should be noted here that one ethical worry with mandates is that it may create an unfair situation where some parents and guardians may be able to "afford" (i.e., literally when mandates take the form of a fine) to disregard mandates and to retain decisional autonomy in disregarding COVID-19 vaccination for their children, while others (e.g., less affluent parents and guardians) are significantly less able and thus less free to opt out.

Encouraging children with decisional autonomy to get vaccinated for the sake of others may be a good thing, insofar as the vaccines are safe for them in the long term and insofar as children are able to adequately understand the associated risks and benefits.[52] Yet altruism crucially requires freedom; it depends on the proper kind of self-chosen motive to act for the sake of someone else (Seglow 2004; Kraaijeveld 2020b). Thus, even if some healthy children might choose to get vaccinated for the sake of others, mandates would preclude the possibility of freely acting on laudable altruistic motives. This argument is important for any attempt to enforce civic duties (e.g., through payments or fines), because regulating and especially enforcing other-regarding behavior arguably undermines solidarity, trust, reciprocity, and other communal values (Savulescu 2020). The same argument also affects potential altruistic behavior in the case of coercive vaccination policies for adults (Kraaijeveld 2020b). For healthy children who can make their own decisions, mandating vaccination against COVID-19 would undercut the altruistic motives that these children might otherwise heed.

Conclusion

We have presented three of the most compelling arguments that might justify routine vaccination of healthy children against COVID-19: an argument from paternalism or the best interests of children, an argument from indirect protection or the best interests of vulnerable others, and an argument from global eradication or the best interests of a global COVID-19 public health endgame. Through sustained objections to each respective argument, we have shown that, given the present evidence regarding the disease and the available vaccines, none is ultimately sufficient to justify routine COVID-19 vaccination of healthy children. We also elaborated two further objections specifically against mandating COVID-19 vaccination for children: one based on ethical issues surrounding coercion and parental autonomy, and the other based on the idea that mandates would undermine potentially altruistic decisions of autonomous children to get vaccinated for the sake of others. All things considered, neither routine nor mandatory vaccination of healthy children against COVID-19 is currently ethically justified.

[52] Here, again, it should be noted that getting vaccinated for the sake of others is only a possibility when a vaccine significantly reduces one's chances of transmitting infection to others.

CHAPTER

6

The Ethical Significance of Post-Vaccination COVID-19 Transmission Dynamics

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Chapter Six
The Ethical Significance of Post-Vaccination COVID-19 Transmission Dynamics

Introduction

Vaccines represent a hugely important development in public health (Feemster 2018), not only because they can prevent people from becoming ill, but also because vaccines can often stop an individual from spreading disease to others (Orenstein and Ahmed 2017; Verweij 2005). Vaccine developers ideally aim for sterilizing immunity, which is a long-term immune response that can "rapidly prevent a returning virus from gaining ground in the body," although not all vaccines or infections will produce the necessary neutralizing antibodies (Ledford 2020, 21). While some vaccines only protect individual recipients (e.g., against tetanus), other vaccines can also have effects for people beyond individual recipients, which is an important factor when it comes to the ethics of vaccination (Kraaijeveld 2020a). When a vaccine provides sterilizing immunity, the strongest case can be made that, by getting vaccinated, individuals also protect others. After all, if one can no longer transmit a virus post-vaccination, then one is prevented from spreading a disease—and the harms associated with that disease—to others.

There were early hopes and signs that the current COVID-19 vaccines would provide sterilizing immunity to SARS-CoV-2, which would diminish the risk of people with minimal symptoms spreading the virus widely (Ledford 2020). Unfortunately, we now know that the vaccines have not been able to provide sterilizing immunity (Vashishtha and Kumar 2022). This does not necessarily mean that the vaccines do not affect transmission, but it does mean that a more sophisticated understanding of COVID-19 transmission dynamics is necessary to evaluate the ethics of certain vaccination policies. This is especially true when the policies are restrictive of individual liberties and when they are coercive in nature. While there are different definitions of coercion, I adopt the general view that it is "a condition in which someone is forced to do X, for example, vaccinating one's children, in the sense that she is left with 'no reasonable choice' or 'no acceptable alternative' […] but to do X when she would otherwise not choose to do X" (Giubilini 2019, 68).

Coercion may be used in public health, but requires ethical justification (Biglan 2015). According to the harm principle, originally formulated by John Stuart Mill, governments may justifiably coerce citizens or curtail their freedoms only in order to prevent harm to third parties (Mill 2005/1859). For Mill, preventing harm to others is a necessary—if not a sufficient—condition for states to limit individual freedoms. The harm principle is a central principle in public health ethics, and can provide an ethical justification for coercive public health measures generally (Holland 2015) and for coercive infectious disease measures and vaccination policies specifically (Krom 2011; Amin et al. 2012). Yet, even when the harm principle applies, this does not automatically justify coercive policies. It is a necessary but not a sufficient condition for coercion. Other principles, like proportionality and subsidiarity, must also be taken into account, so that coercive measures are justified "only if they are the sole, or incontestably the most effective, way to achieve [an] outcome, and if the benefits associated with this outcome outweigh the social damage thereby produced" (Haire et al. 2018).

In many countries around the world, coercive vaccination policies have been implemented or are being considered as a means to increase COVID-19 vaccine uptake. Preventing people from being able to work, to make use of public transportation, or to attend college unless they are vaccinated are examples of coercive measures (in light of the above definition) that have been adopted in many places around the world (e.g., Giuffrida 2022; Bardosh et al. 2022b). In Italy, compulsory vaccination for people over the age of 50 has even been implemented (Giuffrida 2022), and there are serious discussions about compulsory vaccination for the general population in other countries, like Austria (Chadwick 2022). The harm principle is often provided as a justification for these coercive measures. It is, presumably, the rationale for

COVID-19 vaccine passports and vaccine mandates. If such measures did not prevent harm to third parties, it is unclear what their public health justification would be—even if coercive policies were morally neutral and even if they did not lead to collateral harms (which, as I will argue later, is rarely the case).

In principle, then, the harm principle could ethically justify coercive COVID-19 vaccine measures. Whether or not it actually does, however, critically depends on whether the current vaccines substantially prevent people from spreading infection and thereby potentially harming others. Sterilizing immunity might not be necessary, but there must be a significant post-vaccination reduction in SARS-CoV-2 transmission for coercive mandates to be justified by the harm principle. Should it turn out that the COVID-19 vaccines do not substantially reduce transmission, then the harm principle cannot directly justify coercive vaccination policies.

In this paper, I discuss evidence that the effects of current COVID-19 vaccines on transmission are modest and temporary at best. I argue that this has at least four ethical implications. First, getting vaccinated against COVID-19 should primarily be seen as a self-protective choice for individuals. Second, moral condemnation of unvaccinated people for causing direct harm to others is unjustified. Third, the case for a harm-based moral obligation to get vaccinated against COVID-19 is weak. Finally, and perhaps most importantly, coercive vaccination policies (e.g., those that exclude unvaccinated people from society) cannot be directly justified by the harm principle.

Post-Vaccination COVID-19 Transmission

By now, there are numerous examples of 'breakthrough' infections among groups of fully vaccinated people (Steinbuch 2022; Quiroz-Gutierrez 2022). More systematic and controlled studies are, of course, needed to determine the extent to which vaccines might nevertheless reduce SARS-CoV-2 transmission.

Early evidence that the vaccines significantly reduced SARS-CoV-2 transmission was provided by a study published in the *New England Journal of Medicine*. It found that, in households of vaccinated people, the likelihood of household transmission was approximately forty to fifty percent lower than in households of unvaccinated people (Harris et al. 2021). This finding was widely publicized and is still used as evidence that vaccines substantially reduce, if not prevent, transmission (e.g., UK Health Security Agency (2022a). I will refer to this study again later, but for now it should be noted that the data were gathered between January 4 and February 28 of 2021. Since then, the epidemiological characteristics of the pandemic appear to have changed, as is suggested by the following evidence.

A later study published in *The Lancet Infectious Diseases* investigated differences in transmission dynamics between vaccinated and unvaccinated individuals. More specifically, it explored the difference in infection risks of household transmission, and found that the secondary attack rates (SAR) among household contacts exposed to vaccinated or unvaccinated people was, respectively, 25 per cent and 23 per cent (Singanayagam et al. 2021). Based on this study, the conclusion may be drawn that the effect of the vaccine on reducing transmission is minimal (Wilder-Smith 2021). The study furthermore examined transmission and viral load kinetics in vaccinated and unvaccinated individuals with mild Delta infection. It found that fully vaccinated individuals with breakthrough infections "have peak viral load similar to unvaccinated cases and can efficiently transmit infection in household settings, including to fully vaccinated contacts" (Singanayagam et al. 2021). If vaccinated and unvaccinated people do not significantly differ in peak viral load when infected, there is little reason to assume that infectivity would nonetheless significantly differ between the groups. These findings are additionally supported by a study that found no significant difference in cycle threshold values between vaccinated and unvaccinated individuals—both asymptomatic and asymptomatic—infected with Delta (Acharya et al. 2021).

Another study examined the relationship between the percentage of populations fully vaccinated and new COVID-19 cases across sixty-eight countries and 2,947 U.S. counties. It found no significant signal of COVID-19 cases decreasing with a higher percentage of populations fully vaccinated; at a country level, the trendline even suggested a marginally positive association between a higher percentage of populations fully vaccinated and a higher number of COVID-19 cases per one million people (Subramanian and Kumar 2021).[53] Replications of studies like this are clearly needed. Yet, infection rate data from highly vaccinated countries also suggest that vaccines do not significantly reduce infection rates among the fully vaccinated. In Denmark, for instance, unvaccinated people infected with Omicron make up only eight and a half per cent of the total number of infections (Statens Serum Institute 2021). In the U.K., among people over the age of thirty, those who are fully vaccinated currently have significantly higher infection rates than those who are unvaccinated (UK Health Security Agency 2022a). Respectively, 81 per cent and 72 per cent of the populations in Denmark and the U.K. are fully vaccinated, with 58 per cent and 55 per cent having received an additional dose (Holder 2021). It does not stand to reason that unvaccinated people are major drivers of transmission in these countries; the data do not support this interpretation. If peak viral load is highly similar between the groups, as several studies have shown, then one would actually expect that in highly vaccinated populations, infections are increasingly occurring among fully vaccinated people (i.e., the relatively larger group).

A study that estimated the number needed to exclude (NNE) for vaccine passports provides additional evidence that unvaccinated people are not the major drivers of transmission. The study found that at least a thousand unvaccinated people must likely be excluded in order to prevent a single SARS-CoV-2 transmission (Prosser, Helfer, and Steiner 2021). If unvaccinated people were disproportionately spreading infection, one would expect the NNE to be much smaller. The authors of the study conclude that unvaccinated people are not likely at significant risk of infecting others, and that excluding unvaccinated people has negligible benefits for reducing transmission (Prosser, Helfer, and Steiner 2021).

A recent summary of the evidence regarding post-vaccination transmission in the *BMJ* suggests that, while the vaccines are good at preventing serious infection, the fact that they are "less good at preventing transmission makes policymaking difficult" (Stokel-Walker 2022). Another summary in the *New England Journal of Medicine* characterizes the situation in the following way, namely that "currently available vaccines have only modest effectiveness against mild infection and transmission, which is further reduced in the context of the newly emerging omicron subvariants" (Nohynek and Wilder-Smith 2022). While post-vaccination transmission rates were found to be lower compared to transmission rates for unvaccinated people without previous infection, they were not found to be significantly lower compared to rates for previously infected unvaccinated people—which is likely to be the majority of unvaccinated people by now—and the post-vaccination effect on transmission generally "doesn't last for long" (Scully 2022).[54]

What might be responsible for the minimal effect of COVID-19 vaccines on transmission? The science does not appear to be settled yet on this question, which in any case cannot be fully addressed here. One reason may be related to the prevalence of and specific characteristics of Omicron, which now dominates in many countries. A recent study from Israel about the effectiveness of a widely administered fourth dose showed a "slightly higher" increase in antibodies than the third dose, but "the increased antibodies did not prevent the spread of infection" (Federman 2022). Early estimates of reduced transmission may have held when Delta circulated widely (as in the study by Harris et al. (2021)), but they no longer seem to hold

[53] It should be noted that the original study has been criticized by Backhaus (2021).
[54] It should be noted that these findings are based on a preprint article (Sophia et al. 2022).

with Omicron. A potential forty to fifty per cent reduction in post-vaccination transmission is no longer realistic—it is contradicted by more recent studies and by the Omicron infection rates among the fully vaccinated in many countries around the world.

In sum, it must be concluded at this point that the current vaccines have only a modest and transient effect on reducing SARS-COV-2 transmission. What this means for vaccination policy is a pressing and ongoing question. In what follows, I explore some of the ethical implications.

Ethical Implications

If COVID-19 vaccines have only a relatively small and short-lived effect on transmission, this gives rise to at least four important ethical implications.[55]

First, because the vaccines still significantly reduce the personal risk of COVID-19-related hospitalization and death (Zheng et al. 2022), getting vaccinated against COVID-19 should be considered primarily as a self-protective choice from the perspective of individuals (cf. Kraaijeveld 2020a). The most compelling reason for a person to get vaccinated against COVID-19, in other words, is to protect oneself. From the perspective of governments, COVID-19 vaccination might be said to be chiefly a paternalistic intervention; although a more indirect version of the harm principle may still be relevant, for instance when vaccination choices put pressure on healthcare systems.[56] It must be noted, however, that (1) for many potentially and even likely self-injurious activities (e.g., extreme sports) through which people risk needing healthcare services, we do not generally accept coercive interventions, and (2) coercive measures that appeal to healthcare pressure apply only when such pressure exists, which does not seem to offer a stable basis for long-term health policy. Furthermore, given that health is a basic human right that creates a legal obligation on states "to ensure access to timely, acceptable, and affordable health care of appropriate quality" (World Health Organization 2017), and given that access to healthcare itself is arguably a human right (Denier 2005), states cannot indefinitely place responsibility for healthcare on individual citizens without also taking responsibility themselves (e.g., by increasing healthcare capacity, supporting healthcare workers, etc.).

Second, given that there is support neither for the judgment that by not getting vaccinated a person is thereby directly harming others, nor for the corollary that by getting vaccinated a person thereby directly avoids harming others, the moralization of vaccination status—and especially the moral condemnation and social exclusion of unvaccinated people—is unjustified on those grounds. There have already been appeals to stop publicly discriminating against unvaccinated people (e.g., by Amnesty International (Piovaccari 2022)). Kraaijeveld and Jamrozik (2022) have recently introduced and developed the concept of mismoralization, which is when moralization is morally inappropriate. They argue that moralization of COVID-19 vaccination status constitutes a case of mismoralization in public heath, given that it is unjustified from a metaethical perspective. Given the potential negative effects of widespread

[55] There is another potential consequence, namely for the ethics of vaccinating children against COVID-19 for the sake of others, which I will not address in this paper (for discussions of the significance of the minimal effects of COVID-19 vaccines on transmission in this area, see Giubilini (2021); Kraaijeveld, Gur-Arie, and Jamrozik (2022); Gur-Arie, Kraaijeveld, and Jamrozik (2021)).

[56] To the extent that vaccination reduces harms for individuals, there may also be indirect effects on other people, for instance people who depended on those individuals (e.g., children). My concern is with the direct application of the harm principle, so that, while these potential collateral harms are certainly important to consider, they do not directly affect my questioning of coercive policies based on the harm principle. It should also be noted that the vaccines offer imperfect protection, which further complicates discussions about these kinds of collateral harms. Thanks to an anonymous reviewer for raising this issue.

moralization (e.g., stigmatization, dehumanization, ostracism, social conflict, etc.),[57] it is imperative that it be addressed and ameliorated wherever possible—both for the sake of affected individuals, as well as for the better functioning of society. Whatever might be objectionable about people's decisions not to get vaccinated against COVID-19, unvaccinated people cannot justifiably be blamed, condemned, or ostracized for directly causing harm to others.

Third, given that the link between not getting vaccinated and directly harming others is tenuous at best, the case for a moral obligation to get vaccinated is weak to the extent that such an obligation would be grounded in the obligation to avoid harm to others (Ivanković and Savić 2021). If harm to others cannot concretely be averted by getting vaccinated, then it difficult to see why one should nevertheless have a moral obligation to get vaccinated based explicitly on a duty to avoid harm to others. Individual moral obligation to get vaccinated, or COVID-19 vaccine mandates more generally, may still be grounded in other principles, like solidarity (Yeh 2022)[58] or fair contribution to herd immunity as a public good (e.g., Giubilini, Douglas, and Savulescu 2018). Given that I am specifically concerned in this paper with harm and harm prevention, I will not address other approaches here. It should be noted, however, that potential fairness-based approaches to vaccination against COVID-19 presuppose that vaccine-induced herd immunity (i.e., the public good in question) is a possibility, which scientists are increasingly considering to be impossible (Aschwanden 2021; Bruemmer 2022).

Finally, the minimal and temporary effects of COVID-19 vaccines on transmission means that the harm principle in itself cannot justify coercive vaccination policies. The difference in the propensity to cause harm to others between vaccinated and unvaccinated people is insufficiently substantial for the harm principle to hold directly. Clear ethical grounds are needed for governments to be justified in taking highly coercive measures to push people to get vaccinated against COVID-19. As Verweij and Dawson have argued, participation in vaccination programs "should, generally, be voluntary because of the importance now given to autonomous decision making by competent adults in health care" (2004, 3125). In some cases, as I have argued earlier, the harm principle could provide an ethical justification for coercive vaccination policies—but there has to be a real and a reasonable sense in which they stop one party from harming others or more generally "prevent a concrete and serious harm" (Verweij and Dawson 2004, 3123). What we currently know about COVID-19 post-vaccination transmission dynamics does not provide concrete grounds. Yet, public health interventions, even in times of uncertainty, must be ethically defensible and communicable to the public (Ho and Huang 2021). Public health officials must be able to explain why the minimal effects of the vaccines on transmission nonetheless warrant coercive vaccine mandates—especially in light of the many small risks of harm to others that we permissibly take in other ways and in different areas of life (cf. Hansson 2003).

The idea that one avoids harming others by getting vaccinated is pervasive and, if untrue, also potentially deleterious. If people mistakenly believe that getting vaccinated against COVID-19 will protect others, then they may alter their behavior accordingly—and, paradoxically, increase their risk of infecting others. This is a real concern, for many influential public health communications still urge people to get vaccinated, "To Protect Yourself, Your Coworkers, Your Patients, Your Family, and Your Community" (United Nations 2022). Furthermore, should people learn that the case for protecting others by getting vaccinated is not as strong as public health officials have communicated it to be, then this could lead to reactance and a larger breakdown of public trust and support for COVID-19 measures. The

[57] For an overview of the negative effects of moralization in public health, and for potential ways to address inappropriate moralization, see Kraaijeveld and Jamrozik (2022).

[58] See Barbara Prainsack (2022) for persuasive criticism of COVID-19 mandates grounded in the concept of solidarity.

many stories in the media about infections in groups of fully vaccinated people have already cast public doubt on the idea that the vaccines are preventing transmission.

My argument is that, in light of the most recent evidence regarding post-vaccination COVID-19 transmission, the harm principle does not provide a direct justification for coercive vaccination policies (e.g., those that would exclude unvaccinated people from public spaces). Some have argued that mandatory vaccination can never be justified (Kowalik 2021). I do not necessarily argue that here. Mandates might be justified, for instance, for individuals who are at highest risk of severe illness from COVID-19 (Williams 2021). But as a basis for sustainable and far-sighted public policy, coercion should be considered very carefully. Governments need to set clear goals and provide strong justifications for COVID-19 measures that differentiate between vaccinated and unvaccinated individuals (Voo et al. 2022). In the long run, coercion is often counterproductive. Coercive measures can seriously undermine trust, which is an invaluable resource in healthcare and for the longevity of vaccination policies (Gur-Arie, Jamrozik, and Kingori 2021). If the public health goal is to increase vaccine uptake, coercive measures can actually increase hesitancy and ultimately decrease uptake (Bester 2015; Haire et al. 2018). Persuasion may ultimately be a better means of promoting COVID-19 vaccination than coercion or incentivization (Pennings and Symons 2021).[59] There are also moral reasons for governments to leave room for citizens to be able to engage in altruistic behavior, especially in difficult times (Kraaijeveld 2020b). Finally, coercive measures may in and of themselves cause harm in some cases. According to Bardosh and colleagues, the COVID-19 vaccine mandates, passports, and restrictions that have been widely adopted around the world may be causing more harm than good. Their comprehensive analysis "strongly suggests that mandatory COVID-19 vaccine policies have had damaging effects on public trust, vaccine confidence, political polarization, human rights, inequities, and social wellbeing" (Bardosh et al. 2022a). These potential harms are clearly an important consideration in any ethical analysis of coercive public health measures. Healthcare unions in the U.K. have also voiced concerns that mandatory COVID-19 vaccination for healthcare workers risks worsening the current staffing crisis, and threatens to undermine healthcare provision at a time of great pressure and need (Waters 2022). Given that many healthcare workers have already been infected with SARS-CoV-2 (Gholami et al. 2021), and given that previous infection has been found to offer robust protection that can last for at least thirteen months (Kojima and Klausner 2022; Kim et al. 2021), there does not seem to be a strong ethical case for mandates that target healthcare workers—especially in light of the minimal and temporary effects of the current vaccines on reducing transmission.[60] There are in any case good reasons for policy-makers not to discriminate against natural or post-infection immunity when it comes to vaccine mandates (Pugh et al. 2022).

In conclusion, the latest evidence that the current COVID-19 vaccines have only a modest and transient effect on transmission raises important ethical questions. Perhaps most pressing for vaccination policy is that the harm principle does not appear to provide substantial grounds for coercive vaccination policies like mandates, passports, and other restrictions. Early on the pandemic, there was a call for public health agencies and governments to "do better in transparently communicating […] the justifications for restrictive interventions, and the long-

[59] While I have argued that coercive vaccination policies cannot be directly justified by the harm principle, this does not mean that governments cannot or should not employ other measures (e.g., persuasion, information campaigns, etc.) in order to encourage vaccination, for instance as proposed by Pennings and Symons (2021).

[60] In general, it seems that there is a stronger *prima facie* reason for vaccine mandates for healthcare workers than for the general public, given that the former group is more likely to be in close contact with vulnerable people. Whether such mandates are justified *all things considered* is, of course, subject to a number of additional considerations. On the other hand, if mandates for healthcare workers are not ethically justified, it is difficult to see on what grounds mandates for the general public would be justified.

term all-things-considered goals of public health policy" (Jamrozik and Heriot 2020, 1169). Some two years later, when vaccine mandates of unprecedented scope and scale have already been introduced or are on the horizon, I echo this call. Transparency about the ethical justification of coercive COVID-19 vaccination policies is all the more urgent.

CHAPTER

7

A Scalar Approach to Vaccination Ethics

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Chapter Seven
A Scalar Approach to Vaccination Ethics

"Moral quilts made of one piece are so rare! The main thing is for the colors not to contradict each other…"
—Machado de Assis, *Quincas Borba*

Introduction

Some medical interventions can have health benefits for people other than the individual recipients. Vaccination is perhaps the clearest example of this. While some vaccines only provide individual protection (e.g., tetanus shots), other vaccines (e.g., measles shots) can also protect others by preventing or reducing the transmission of disease. The prospect of extra-individual health benefits for some kinds of preventive vaccination means that one could potentially engage in other-directed or what has been termed altruistic vaccination (Kraaijeveld 2020). Important questions emerge from the possibility of other-directed vaccination. Ought people to get vaccinated for the sake of others? And what would constitute the grounds—and limits—of this normative claim?

There have been attempts to answer these questions in light of the moral duties that people may have. Two general lines of argument for vaccination duties have emerged. The first line is based on the harm to others that might be caused by not getting vaccinated. Marcel Verweij (2005), for instance, has argued that individuals have a moral obligation to take precautions against infection so as to avoid infecting others, which may include getting vaccinated. Harm-based arguments are often applied to specific situations and appear well-suited to ground vaccination duties for people who work with or who are otherwise closely engaged with populations that are particularly vulnerable to disease (e.g., Van Delden et al. 2008). Since vaccination is a way to prevent one from being both a victim and a vector of disease, one might have a moral obligation to get vaccinated (Jamrozik, Handfield, and Selgelid 2016). According to the harm principle, originally formulated by Mill (1859/2005), the prevention of harm to third parties is a necessary—if not a sufficient—condition for the restriction of individual freedoms by governments. Versions of the harm principle are often invoked to justify the argument that governments have a duty to implement policies, including coercive ones, that promote vaccination so as to prevent individuals from infecting—and thus harming—others (e.g., Upshur 2002).

The second line of argument for vaccination duties is not directly based on harm or harm prevention, but is grounded in other moral principles like fairness or solidarity. Giubilini, Douglas, and Savulescu (2018), for example, have argued that people have a moral duty to get vaccinated in order to contribute to herd immunity. The basic idea is that herd immunity against infectious diseases is a public good, particularly in paradigm cases where herd immunity alone can produce disease elimination. Given that people have a fairness-based duty to contribute to public goods, people therefore have a duty to contribute to herd immunity by getting vaccinated. Fairness has been proposed as a moral principle that grounds vaccination duties more generally (Giubilini 2019). Fairness-based approaches have also been employed to justify legal requirements, including coercive measures such as vaccine mandates (e.g., Giubilini 2019). The idea of solidarity has likewise been appealed to as a (moral) justification for vaccine mandates. It has been argued, for instance, that people ought to get vaccinated out of solidarity with others—for the sake of the wider community, but also especially for those within the community who are vulnerable to disease (Bayefsky 2018). This approach has recently been

extended to coronavirus disease 2019 (COVID-19) vaccine mandates, which some have attempted to justify on solidaristic grounds (e.g., Yeh 2022).[61]

Both kinds of duty-based approaches can, however, be limited in scope. To have a genuine moral obligation to get vaccinated—that is, when someone may legitimately demand of you that you get vaccinated—is rarer and more circumscribed than having other-regarding reasons for getting vaccinated.[62] There are often moral reasons to get vaccinated, but that there are moral reasons does not necessarily entail that one has a moral duty to get vaccinated (Rieder 2021). Focusing only on moral duties may obscure part of the moral landscape. Furthermore, fairness-based duties, to the extent that they are grounded in fair contribution to public goods, are generally restricted to pathogens against which elimination via herd immunity as a public good is possible (e.g., smallpox, measles, etc.). In cases of pathogens against which elimination via herd immunity is either impossible, or where real-world transmission dynamics make it highly unlikely, such arguments either do not directly apply or else are much less persuasive.[63] When elimination via herd immunity is unfeasible, fairness-based arguments are not well-positioned to establish vaccination duties and are unable to capture moral reasons that people may nevertheless have to get vaccinated for the sake of others. Solidaristic approaches are vulnerable to some of the same concerns, especially when they are based on assumptions about shared common goals and shared willingness and/or ability to accept costs that may not always hold (Prainsack 2022).

Harm-based approaches to vaccination duties, on the other hand, are complicated by the diffuse nature of the harms in question. Individuals may be 'causally impotent' to affect or change certain outcomes that depend on collective action (Harris and Galvin 2021). In the case of preventive vaccination, when individual actions are understood in relation to the potential achievement of a collective goal like obtaining herd immunity, the issue of causal impotence arises. One's individual contribution to herd immunity by getting vaccinated is often highly uncertain and might even be vanishingly small: group immunity may be attained or attainable without one's individual contribution (cf. Giubilini 2019). It is certainly not always clear that one will cause harm to others by not getting vaccinated. In some cases, the harm of not getting vaccinated can perhaps be more or less straightforwardly determined (e.g., for highly transmissible pathogens associated with a very high risk of severe illness). Yet this is not usually the case. If it were always certain that one would cause severe harm to others by not getting vaccinated against a particular disease—or, differently put, if it were certain that by getting vaccinated, one would always avoid severe harm to others—a general vaccination duty grounded in harm would be more compelling, as it would better cover the moral reasons to get vaccinated. This not being the case, however, one cannot simply ground an obligation to get vaccinated *as such* in a duty to avoid causing serious harm to others. We specify serious harm, because arguing for a duty to get vaccinated to avoid any kind of harm to others can quickly become an overdemanding requirement (Verweij 2005). There is a very large number of potential vaccines and other medical interventions that one could conceivably take to reduce risks to others. Furthermore, as Jason Brennan has pointed out, "[a]lmost everything a person does imposes some risk upon others" (2016, 4). There are many risks of small harm to others that people permissibly take every day (Hansson 2003). What we want is to move away from the distinction between permissible and impermissible, and to be able to determine when one

[61] But see Barbara Prainsack (2022) for a compelling criticism of COVID-19 mandates grounded in the concept of solidarity.

[62] We focus on moral rather than legal reasons/obligations to get vaccinated, although we will briefly discuss how these might be related in the last section of this paper.

[63] It has been argued that even if one's contribution to herd immunity is negligible, one still has a moral duty to get vaccinated (Giubilini, Douglas, and Savulescu 2018). Yet this argument still presupposes herd immunity as a morally desirable goal that is achievable in principle.

has reason to get vaccinated to such a degree that, and all things considered, one should get vaccinated. For even in the face of causal impotence, there may still be reason for individuals to act (Norcross 2020).

Therefore, rather than approach other-directed vaccination by establishing putative moral duties, we develop a scalar consequentialist account that recognizes the strength of moral reasons to get vaccinated in order to achieve the central moral *good* of vaccination, which is to prevent or reduce the chances of causing serious harm to others. In other words, when it comes to the morality of vaccination, harm is the chief moral principle at stake (Ivanković and Savić 2021). Our reasons-based account therefore focuses on the harm-based grounds for moral claims. Although principles like fairness or solidarity may also be able to ground vaccination duties—or provide additional moral reasons—in some contexts, we will not further discuss them in this paper.

We proceed as follows. In Section 2, we introduce and defend a reasons-based scalar approach to vaccination for the sake of others. The scalar approach that we propose is consequentialist and admits of degrees: depending on a number of factors, people can have stronger or weaker moral reasons to get vaccinated for the good of others. In Section 3, we develop the eight factors that, we argue, co-determine the strength of reasons to get vaccinated for others, all things considered, within any epidemiological context. In Section 4, we provide a case study of vaccination against COVID-19 to demonstrate the practical significance of our approach. In Section 5, before concluding, we reflect on our account by discussing some of its strengths, implications, and potential objections.

Scalar Morality and Vaccination

Within moral theory, there have been calls for philosophical ethics to move away from traditional moral categories of wrongness, permissibility, and obligation (McElwee 2010a).[64] Roger Crisp and Alastair Norcross in particular have argued, each in their own way, that we should abandon binary moral judgments in terms of the traditional moral categories. According to Crisp (2006), what really matters when it comes to morality is what we have *reason* to do, while Norcross (2006) has argued that we ought to view morality in terms of concepts like goodness or badness that are best understood in terms of *degrees* (e.g., it may be better or worse to Φ). Much of the discussion has centered on what the proper domain of moral philosophy—and the primary concern of philosophical ethics—ought to be (McElwee 2010a). As far as we know, insights from these debates have not yet been extended to vaccination ethics, even though the complexity of real-world epidemiology appears, at least intuitively, to lend itself to an analysis based on (multiple) moral reasons rather than (binary) duties. In this paper, we therefore provide a rigorous evaluation of how a reasons-based account can enlighten debates in vaccination ethics.

Building on Michael Slote's (1985) notion of scalar morality, Norcross argues that "actions should be evaluated purely in terms that admit of degrees" from the point of view of a consequentialist (Norcross 2006, 217). While goodness and badness are clearly a matter of degree, Norcross argues that rightness and wrongness should also be evaluated in terms that admit of degrees. Instead of giving an account of right action whereby an action is *demanded* by morality (e.g., because one has a moral obligation), consequentialists ought to give an account of which states of affairs are good and "which actions are better than which other possible alternatives and by how much," so that the fundamental moral fact is "how good [an action] is relative to other available alternatives" (Norcross 2016, 228). The idea is that, once a range of alternative actions has been evaluated in terms of goodness, this exhausts the morally relevant facts about the alternatives. The appeal of this approach is that it avoids the

[64] The following discussion draws heavily on McElwee's (2010a; 2010b) work.

problematic metaphysical and epistemic issue of determining the precise threshold or cutoff point that would distinguish between either having or not having a moral duty to get vaccinated.

It must be noted that reasons-based consequentialist approaches have been criticized on the grounds that they cannot replace traditional moral categories of wrongness, permissibility, and obligation (McElwee 2010a). Gerard Lang (2013), for example, has argued that utilitarians cannot easily forego deontic assessment. It may be argued that we should want to retain the notion of moral obligation, as it aligns closely with ordinary moral judgments and our everyday moral talk. However, Brian McElwee (2010b) has offered a way to address this criticism. Reasons-based approaches may still accommodate traditional moral categories. If we find that there are pervasive moral intuitions and moral judgments—that is, strong social expectations—about obligations to get vaccinated, for instance, then we may recognize this state of affairs as providing a(nother) reason for vaccination. At the same time, one must be careful not to accept social expectations or widespread moralization as inherently justified; upon careful reflection, even an issue that is commonly perceived as morally charged may be properly understood as being morally neutral (Kraaijeveld and Jamrozik 2022). Much of the criticism of reasons-based consequentialist approaches has questioned their ability to systematically ground morality or displace all of the traditional moral categories (cf. McElwee 2010b). We do not wish to argue for this, however. We are interested in showing that the application of a reasons-based consequentialist approach can provide a compelling way of addressing the question of whether and to what extent people should get vaccinated for the sake of others.

To this end, we combine Crisp's notion of what we have (moral) reason to do, with Norcross's idea of the scalar goodness of actions. That is, a person's act of getting vaccinated for the sake of others (or not) may be better (or worse). We take it that the moral good of vaccination is to prevent or reduce serious disease-related harm to others.[65] Importantly, what makes the act of getting vaccinated (or not) morally better (or worse) is constituted by 1) an agent's responsiveness to the (moral) reasons that she has, 2) the actual outcome related to the good of vaccination, and 3) the available alternative actions that might achieve that good in the same or a similar way. For instance, if an available vaccine cannot prevent harm to others (e.g., because it has no effect on transmission), then the moral good of vaccination cannot be attained by getting vaccinated. This is why both moral reasons and the particular affordances of specific kinds of vaccines and wider epidemiological circumstances are important to take into consideration. We generally maintain that it is better to get vaccinated for the sake of others the more one has moral reason to do so, and the more the good of vaccination can only be realized through vaccination. In practice, these notions will usually, but not necessarily, be related.

More specifically, we propose the following eight probabilistic and harm-based factors as co-determining the strength of (moral) reasons to get vaccinated for the sake of others:

(A) The probability that Person *P* will at some point be infected with pathogen *Z*.
(B) The probability that *P*, if infected, will infect an individual *I* (or individuals *I*s) with *Z*.
(C) The ex-ante probability that *P*, if infected, causes severe harm to *I*/*I*s through *Z*.
(D) The degree to which *I*/*I*s can reduce the risk of contracting *Z* or the risk of severe harm caused by *Z*.
(E) The probability that *I*/*I*s would be infected by people other than *P*, whether or not infected by *P*.
(F) The ex-ante probability of onward chains of transmission beyond close contacts of *P*.
(G) The probability of recovery through treatment for disease(s) caused by *Z*.

[65] We specify 'moral' good in order to differentiate it from the individual good of vaccination, which is to prevent or reduce the chances of illness for that individual. Throughout this paper, when we refer to the 'good' of vaccination, it should be understood as the 'moral' good.

(H) The sum of costs (e.g., material, risks) for *P* to vaccinate against *Z*.

We will further develop factors A-H in the following section. While each factor is important, none is sufficient on its own for an all-things-considered answer to the question of whether it is better to get vaccinated within a given context.[66] Rather, we argue that the different factors, considered together, co-determine the strength of moral reasons to get vaccinated based on the details about the specific pathogen in question, the severity of the associated disease, the shape of transmission dynamics, available vaccines, non-pharmaceutical interventions (NPIs), and other contextual factors as specified by factors A-H. Practically, the ethical discussions based on our approach will center on the moral reasons to get vaccinated against a specific disease with a particular vaccine, given that this is the tangible action at stake. It may therefore be that there are strong moral reasons for a person to get vaccinated against Disease X with Vaccine A, but that there are only weak moral reasons to get vaccinated against Disease Y with Vaccine B. There may even be more reason to get one rather than another available vaccine for the same disease (e.g., if it has a larger potential effect on reducing chances of transmission, has a better safety profile, etc.).

Our approach allows us to analyze most disease-vaccine contexts and to draw conclusions about the strength of pertinent moral reasons for vaccination. The greater the strength of the moral reasons to get vaccinated, the more one ought to do so. With this in mind, the contents of factors A-H are not presumed or even expected to be static, nor will they always apply in the same way for all people. Moral reasons for getting vaccinated may differ between individuals and change over time, depending on the way in which the eight factors are instantiated.

Factors that Co-Determine Moral Reasons to Get Vaccinated

In this section we enlarge upon the initial list of factors A-H offered in Section 2, which can provide stronger or weaker reasons to get vaccinated.

(A) The probability that Person *P* will at some point be infected with pathogen *Z*.

The probability that one will be infected with a particular pathogen in the future is one important consideration. If there is zero chance that one will become exposed to a pathogen, say, over the course of one's lifetime, then this provides no reason to get vaccinated against said pathogen for the sake of others. Perhaps, then, this factor could in some cases in itself be sufficient to settle the moral question of whether one should get vaccinated: if P(A) = 0 for pathogen Z, then one does not have a reason to get vaccinated against Z. As the probability of (A) increases, however, the reason to get vaccinated becomes stronger accordingly.

Nevertheless, P(A) = 0 is unlikely to hold for many pathogens. Practically speaking, the question of vaccination for the sake of others will arise when there is at least some probability of infection (but note factor (B)). As such, the probability of (A) will be greater than 0 for most pathogens of concern. The actual probability of infection will be contingent on local epidemiology and the likely future states of local and global epidemiology, which, in turn, often depend on the degree of herd immunity against the disease in question. It should be noted that, while some authors use the term "herd immunity" to refer to a threshold at which immunity alone may be expected to produce disease elimination, the term can also refer to the indirect protection generated by immune individuals in a population, which is proportionate to the

[66] We focus in this article on other-directed reasons for getting vaccinated. Clearly, there are also often self-directed or self-protective reasons to get vaccinated (cf. Kraaijeveld 2020). We will not, however, discuss self-directed reasons in this paper, so that when we refer to 'reasons to get vaccinated' we mean those that are other-directed.

number of immune people, their average degree of immunity, and their degree of interaction with others (rather than a threshold) (Fine, Eames, and Heymann 2011).

Herein lies the classic collective action problem of the justification of vaccination for Person *P* where vaccination rates are already high and local disease incidence is low or zero (and the chance of importation of a disease is low). Assuming *P* does not travel, their probability of infection is related to the probability of importation of infections to the local population, and the probability of exposure within the population, if importation occurs—which in turn depends on factors related to the behavior of *P* (e.g., number and frequency of close contacts). This brings us to (B).

(B) The probability that *P*, if infected, will infect an individual *I* (or individuals *I*s) with *Z*.

The probability that one, when infected, will infect others depends in particular on a person's contact patterns within a population. This is both a matter of numbers (i.e., the number of people with whom one stands to interact locally/globally), as well as a more specific matter of behavioral, social, and occupational patterns—i.e., contact with people who are more likely to become infected. For example, the extent to which one engages with different age groups or vulnerable individuals (e.g., occupational contacts for healthcare workers). When P(B) = 0, the reason to get vaccinated for the sake of others is weak. Practically, however, the probability for most pathogens of interest will exceed zero. The higher the probability for (B), the stronger the reason to get vaccinated.

The effectiveness of potential vaccines is also highly relevant here. If a vaccine can prevent infection and block transmission, then a vaccinated person will not be able to spread infection to other people. This would mean that for that vaccine, P(B) = 0 post-vaccination, thus providing a strong prima facie reason to get vaccinated for the sake of others. Different vaccines will be associated with varying levels of effectiveness. For example, the current COVID-19 vaccines do little to prevent infection and transmission—once infected, vaccinated people transmit SARS-CoV-2 at similar rates to unvaccinated people (Wilder-Smith 2021). The influenza vaccine, to provide another example, has been found to be modestly effective. Over 14 consecutive influenza seasons from 2004–2005 onward, the mean effectiveness of influenza vaccines was 41%, which "stands in sharp contrast to effectiveness rates for other commonly used vaccines in clinical practice, many of which exceed 90%" (Edmond 2019). The extent to which risks of spreading infection to others can be reduced or eliminated through vaccination will therefore importantly depend on the vaccine in question.

(C) The ex-ante probability that *P*, if infected, causes severe harm to *I* or *I*s through Z.

The probability that one, when infected, will cause severe harm to others depends first of all on the severity of the disease generally caused by the pathogen in question. Many infections might be mild (on average) and unlikely to result in severe harm in healthy populations (e.g., common cold viruses). For pathogens where P(C) is low, the reason to vaccinate for others is weak. Other pathogens might be associated with much more severe average outcomes (e.g., Ebola virus), giving one a stronger reason to get vaccinated. Aside from the potential severity of the disease associated with the pathogen, the contact patterns as described above for (B) will also play a role here. For example, increased probability of infecting others simpliciter will be associated with increased probability of causing severe harm to the extent that severe harm is a possible outcome for the disease in question; but also, more contact with those who are more vulnerable to severe harms would increase overall risk to others.

Factor (C) probably maps most closely onto what principles like the harm principle or nonmaleficence seemingly pick out when it comes to vaccination ethics: the chance that one

seriously harms another human being is clearly of high moral importance, and the probability that one, when infected, causes severe harm to others appears to demand that 1) one takes reasonable precautions against this harm coming about, and 2) governments may—and in some cases ought to—intervene to prevent harm to third parties. At the same time, if our account is correct, factor (C), as important as it is, does not cover all of the morally relevant considerations. Importantly, the probability of causing severe harm if infected also depends on facts about the people with whom one potentially comes into contact, including as specified by the following factor (D).

(D) The degree to which *I* or *I*s can reduce the risk of contracting Z or the risk of severe harm[67] caused by Z.

There are often precautions that people can take against infection. Individual precautions will be especially important and relevant to people who are most likely to suffer significant harm from a particular disease. The probability that vulnerable people can protect themselves against infection as such, or severe harm when infected, is particularly relevant. If vulnerable people can effectively protect themselves against disease, then this significantly weakens *P*'s reason to protect such vulnerable people from infection. In general, as P(A) approaches 1, the reason to get vaccinated for the sake of others is weakened.

To the extent that precautions can be taken—and can reasonably be expected to be taken[68]—such precautions fall as least partly within the realm of individual responsibility. When other people refuse to (i.e., do not *want* to) take effective precautions against infection, this is not the same situation, morally speaking, as when other people cannot (i.e., are *unable* to) take effective precautions. All things being equal, one has a stronger moral reason to get vaccinated for the sake of others when the others in question cannot (rather than choose not to) protect themselves.

Hygienic precautions will play a significant role. Perhaps most important is the possibility of direct protection against disease provided by vaccination for vulnerable people. A key factor here is the effectiveness of the available vaccines (i.e., against disease) in higher-risk groups or individuals. If available vaccines provide 1) highly effective protection for higher-risk groups, for instance, and 2) sub-optimum transmission prevention in lower-risk groups, then lower-risk groups will have less reason to get vaccinated *for the sake of* higher-risk groups. We will discuss this possibility in the case of COVID-19 in Section 5. If, on the other hand, vulnerable groups cannot adequately protect themselves through vaccination, but transmission by lower-risk groups can be effectively prevented, then there will be more reason for the latter group to get vaccinated. This is the case for measles, where infants cannot receive the live measles vaccine and thus depend on (the immunity of) others for their protection (Premenko-Lanier et al. 2004), providing a particularly strong justification for measles vaccination. This also seems to be the case for influenza, where available vaccines only moderately protect high-risk groups (e.g., the elderly), while transmission from low-risk groups (e.g., young people) can be reduced so as to protect the higher-risk group. This had led some to argue that influenza vaccination strategies ought to target children (e.g., Bambery et al. 2018), which generally fits

[67] We will not offer a precise definition of 'severe' or 'serious' harm here; we assume that the degree of harm is itself morally relevant. A proxy for severe harm will often be the need for hospitalization (although not necessarily so). Death and/or lifelong sequelae associated with the disease (and giving rise to suffering) are the severest forms of harm at stake. When, for example, only a short-lived and inconvenient rather than an incapacitating illness is at stake, this may still provide a reason to get vaccinated—but only if it has been balanced against every other factor, as with any other single consideration.

[68] The degree to which precautions can be expected to be taken is not only relevant for individuals interacting with others (and the strength of moral reasons at stake), but it is also an important factor to be taken into consideration when it comes to state regulation of vaccination.

with our analysis that there is a stronger *prima facie* reason to get vaccinated if vulnerable people cannot adequately protect themselves through vaccination.[69]

A further morally relevant consideration, however, is specified by the following factor (E).

(E) The probability that *I* or *I*s would be infected by people other than *P*, whether or not infected by *P*.

A person does not operate alone in the world as a potential vector for disease. The probability that one's close contacts would be infected by anyone else (i.e., by others apart from *P*) is morally relevant. This idea is closely linked to that of causal indeterminacy, which occurs "when one or more intervening agents actively interferes with or thwarts another agent's actions" (Hale 2022, 7). If an agent's goal is to ensure that another person does not become infected, then this goal may be more or less likely to be impeded by other agents and states of affairs. To the extent that the people whom one might infect will be infected by other people anyway, there is less reason to get vaccinated for their sake; that is, there is less reason to the extent that P(E) approaches 1. The clearest way to understand this is by imagining that Jackie specifically gets vaccinated to protect a relative, Uncle G. If, however, it turns out that Uncle G is going to become infected anyway (e.g., because he has many close contacts with infected people), then we might rightfully praise the other-regarding motive upon which Jackie decided to get vaccinated (see Section 4), but given that the reason for which she got vaccinated (i.e., to protect Uncle G) does not stand a chance of becoming actualized (i.e., harm still comes to Uncle G no matter what Jackie did), then the reason of avoiding harm to Uncle G is weaker than it would be had there been at least some chance that Jackie could *actually* avoid harm to Uncle G through her act of getting vaccinated. Jackie's intentions are good. We can and ought to praise her for having the right intentions and acting upon them, and it still might matter morally speaking that she is not the one to infect her uncle.[70] However, given a situation in which her act has no effect at all on bringing about the desired outcome (i.e., avoiding harm to Uncle G), it would not make sense to claim that Jackie had a strong moral reason to get vaccinated *in order to* avoid harm to Uncle G (given that this harm will inevitably come about through others). On the other hand, if one is in a more or less unique position to infect a person who would otherwise not be infected, then, to the extent that vaccination prevents transmission, there is more reason to get vaccinated.

These are admittedly examples on the more extreme ends of a spectrum. Nevertheless, situations where all members of a population are likely to be infected by a virus at some point during their lifetime are not unlikely to emerge (e.g., in the case of COVID-19, as discussed in Section 5), so that difficult questions about the inevitability of infection (by others) need to be confronted. Although we are sympathetic to the idea that what matters morally is having the right intentions (e.g., in a Kantian approach), when the right intentions lead to futile outcomes, and especially when the cost of doing so is not neutral (e.g., when there are costs to vaccination, as specified by factor (H)), then one might have good reason to seek to balance the different outcomes (e.g., in a Utilitarian manner) in order to determine what might, all things considered, be the morally preferred course of action.

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[69] One important caveat is that we are concerned with moral reasons; to be able to respond to moral reasons, one must arguable be a (full) moral agent. It is debatable whether children, not being fully autonomous, are in such a position. In fact, we think that children cannot fully respond to moral reasons in the way that adults can, although when it comes to, e.g., teenagers, the distinctions may be more difficult to draw. This is not a major concern for our account. Vaccinating children to protect vulnerable groups may be justified on different grounds than the presence or absence of the ability of children to respond to moral reasons (Bambery et al. 2018). We are concerned here with agents who are capable of having and responding to (moral) reasons.

[70] It might be especially important to leave room for and to encourage altruism and other-regarding motives (cf. a similar discussion in Kraaijeveld (2021)).

(F) The ex-ante probability of onward chains of transmission beyond close contacts of *P*.

The probability that one is involved or catalyzes onward chains of transmission is also important. For instance, in scenarios where one may conceivably be part of a so-called superspreading event (Lewis 2021), there may be a stronger reason to get vaccinated if doing so would prevent transmission. Responsibility for distant harms is arguably lower than for more proximal harms, especially insofar as each person in a chain of transmission could have been involved in a different chain of transmission starting with a different first infection (i.e., insofar as conditions such as those described in the section immediately above apply). In any case, one has a stronger reason to get vaccinated where (F) is higher (cf. Jamrozik, Handfield, and Selgelid 2016).

(G) The availability of treatment and probability of recovery for the disease caused by Z.

One aspect of ethical discussions surrounding vaccination that has not received much attention is whether and to what extent the disease(s) caused by the pathogen against which one could get vaccinated can be effectively treated.[71] This factor is also related to discussions surrounding scarce healthcare resources and vaccination. Avoiding overburdening healthcare systems may offer an additional reason to get vaccinated (White 2021). As such, the extent to which serious harm may be prevented to oneself and others—not only through vaccination, but also in light of available treatments—is morally relevant. If safe and effective medicines are available, so that, even if one were infected, one could be treated at home (e.g., with over-the-counter medicines) and avoid negative health outcomes and/or hospitalization, then this would give one less of a moral reason to get vaccinated. On the other hand, in the absence of effective treatment, one would have more reason to get vaccinated, given that there would be no alternative way to prevent or reduce harm caused by the disease or to avoid the prospect of using scare healthcare resources.[72]

An implication of our approach, and especially for (G), is that moral reasons to get vaccinated may weaken (or strengthen) over time. At the beginning of the emergence of a novel pathogen, there may be no treatment. Should a vaccine be developed before effective treatments, then one might have more reason to get vaccinated. However, when effective treatments become available over time, this may subsequently give one less of a reason to get vaccinated. A similar logic holds when effective treatments are available in some countries or settings but not in others.

(H) The sum of costs (e.g., material, risks) for *P* to vaccinate against Z.

Finally, the costs that are associated with vaccination are relevant to determining moral reasons to get vaccinated. After all, costs to oneself (self-regarding reasons) have to be taken into consideration alongside other-regarding reasons. The material costs for citizens to get vaccinated, for instance, will vary across countries and with different vaccines. Even for

[71] While this consideration may appear to overlap with factor C (the ex-ante probability that P, if infected, causes severe harm to I or Is through Z), we specifically aim to capture some of the complexity surrounding treatment options here, which may change over time and vary across different healthcare settings (e.g., between countries).
[72] It must be noted, however, that states have a legal obligation "to ensure access to timely, acceptable, and affordable health care of appropriate quality" (World Health Organization 2017), and that access to healthcare itself is arguably a human right (Denier 2005). This means that there are limits to the extent to which states can place responsibility for healthcare on citizens without themselves taking responsibility (e.g., by increasing investments in healthcare).

COVID-19 vaccines with high global priority, it is not the case that the material cost for people is always zero. While many countries have made vaccines free for its citizens (Glied 2021; Liu et al. 2021), not every country has done so (e.g., for India, see Bagcchi 2021). Getting vaccinated may be more costly for people in lower-middle-income countries (Makined et al. 2012). One must also take into consideration factors such as people's ability to be absent from work (without consequences) to get vaccinated or to take a sick day should any side effects occur. Ideally, governments accommodate these costs, ensuring that they are fairly distributed and not so great as to prevent people from getting vaccinated. Potential emotional and psychological costs for people who fear needles and/or other aspects of vaccination (e.g., side effects) may also be relevant here, and may at least sometimes constitute legitimate reasons against getting vaccinated for an individual.

More significantly, the risks associated with vaccines will be relevant to determining the all-things-considered strength of reasons one has to get vaccinated for the sake of others. When vaccines are associated with very rare risks of only mild side-effects, for instance, this will do little to counterbalance the strength of reasons determined by the other factors. When the costs—in this case the risks—of vaccination are negligible, there is a stronger reason to vaccinate than when the costs are high. If the risks of side-effects, however, are higher and potentially more severe, then this has to be taken into consideration and may give one less reason to get vaccinated. That is, the personal costs must be balanced, at least, against other reasons (i.e., specified by factors A-G) that one might have to get vaccinated.

In sum, we contend that the strength of moral reasons to get vaccinated depends on the preceding factors A-H in light of the good of vaccination.

The Case of COVID-19 Vaccination

Let us now examine what our approach means for the question of the extent to which one ought[73] to get vaccinated against COVID-19. In the following discussion, we rely on currently available medical and scientific data. The goal is not to develop a rigid, final account, as details are likely to change over time, differ between populations, and so on. The purpose is rather to extend the theoretical argument above to more practical and practicable conclusions. Details may change with further scientific and medical developments, which is to be expected. It is a strength of our approach that any potential epidemiological and medical changes pertaining to COVID-19 can be accommodated by our eight general factors. What do factors A-H stipulate in the case of COVID-19?

First, the probability that one will at some point be infected with SARS-CoV-2 (A) is high. The most likely outcome of the COVID-19 pandemic is that the disease will become endemic (Heriot and Jamrozik 2021). This means that, practically, almost everyone is likely to contract COVID-19 at some point, especially given that the available vaccines do not offer sterilizing immunity (Bradley et al. 2021), meaning that vaccinated people are often infected and transmit infection to others (Singanayagam et al. 2021)).

Second, the probability that a person, if infected, will infect others with SARS-CoV-2 (*B*) depends on a number of factors. At the beginning of the COVID-19 vaccine rollout, it appeared that the vaccines might significantly reduce transmission, which would give people a strong reason to get vaccinated for the sake of others. It has since become clear that the currently available vaccines provide only partial and short-lived protection against infection (although they provide longer-lasting benefits against the vaccinated individual's risk of severe disease) (Vashishtha & Kumar 2022; Swan et al. 2021). While getting vaccinated might slightly reduce chances of transmission for a limited period of time, vaccinated people routinely become

[73] Following Norcross (2008), we use the term 'ought to' here and elsewhere to mean something like 'having (moral) reason to'.

infected and spread the virus to others (Singanayagam et al. 2021). In fact, vaccinated individuals, once infected, have been found to transmit SARS-CoV-2 infection to others at similar rates to unvaccinated individuals (Wilder-Smith 2021). This means that getting vaccinated against COVID-19 by itself does not significantly decrease the probability of infecting others. This state of affairs deflates the strength of other-directed reasons for getting vaccinated against COVID-19, to the extent that doing so would have little impact on factor (*B*). Regardless of what we now know about the COVID-19 vaccines, some people may have acted, or are still acting, on the mistaken belief that by getting vaccinated, they cannot subsequently infect others. Aside from potential deleterious consequences of this mistaken belief (e.g., by relaxing vigilance one might increase chances of infecting others), this raises important questions about public health communication. People ought to be properly informed by health officials so that they can base their actions on reasons that actually track the functioning of vaccines, their effects on transmission dynamics, and so on.

Beyond vaccination, there are precautions and mitigation strategies that individuals can take to significantly reduce chances of transmission to others. If rapid tests are readily available, then being quick to get tested and in any case to effectively isolate in the case of symptoms can prevent one from infecting other people. Contextual factors pertaining to testing and isolating are important and will differ between people, such as the number of people with whom one shares a living space, whether one can isolate without fear of potential negative consequences (e.g., for employment), and so on. In general, given the relatively small role of asymptomatic spread for COVID-19 (Byambasuren et al. 2021), and assuming that one is quickly tested at the first appearance of symptoms and/or can effectively self-quarantine in response to any symptoms, it appears that the risk of an individual infecting others with SARS-CoV-2 is, or can be made, relatively small in this way. The risk can furthermore be mitigated by an individual by taking these precautions prior to engaging in activities during which one might come into close contact with 1) large groups of people or 2) particularly vulnerable people.

The ex-ante probability of onward chains of transmission beyond close contacts (*F*) is also relevant here. One way in which this idea has been formulated is in terms of R—the reproduction number (or ratio) of the virus. R represents the average number of cases that are expected to occur as a result of infection by a single individual (Aronson, Brassey, and Mahtani 2020). The reproduction number will thus be an important—but rough—indicator of the probability of onward chains of transmission from an infected individual. The reproduction number is a rough indicator in the sense that, while R may be greater than 1 for a population (e.g., within a country), this does not necessarily mean that this number will apply for *every individual*. As previously discussed, there are mitigation strategies that individuals can—and arguably should—take as soon as they experience signs of illness. When individuals respond adequately (e.g., by isolating), then they may still limit their potential onward chain of transmission.

Third, the ex-ante probability that one, if infected, causes severe harm to others by infecting them with SARS-CoV-2 (*C*) will likewise depend on a number of factors, which are also related to other *prima facie* reasons, including the preceding point about onward transmission. Assuming that not all individuals whom one might infect will suffer severe disease (that is, that the total sum of infections is higher than the sum of infections leading to serious illness), then by taking precautions to significantly reduce the probability of transmission *as such* and as previously described, one can thereby also reduce the probability of causing severe illness by spreading SARS-CoV-2. Those considerations pertain to the person who becomes infected. What about those who might be infected in turn? Can they do anything to mitigate risk of severe harm?

The extent to which would-be infected others can reduce the risk of contracting SARS-CoV-2 or the risk of severe harm caused by it (*D*) is affected both by the degree of risk that the individuals in question generally face from COVID-19, as well as the degree to which vaccination reduces their chances of severe illness. In the case of COVID-19, it appears that most people at risk can get vaccinated against COVID-19 and thereby reduce their chances of serious illness. To some extent, as related, one can also reduce the risk of infecting at-risk others by taking individual precautions (e.g., in terms of hygiene, distancing, isolating). If one has significant amounts of contact among vulnerable people, the preceding might be more difficult to attain (also depending on the nature of the interactions). By getting vaccinated, one might further reduce risk of transmission to some degree, although this indirect benefit to others quickly wanes over time (Swan et al. 2021). In any case, the fact that people at risk can protect themselves against serious illness from COVID-19 arguably weakens the reason others have to get vaccinated based on this criterion (cf. Gur-Arie, Kraaijeveld, and Jamrozik 2021). At this point, getting vaccinated against COVID-19 seems best understood as a self-protective choice (Kraaijeveld 2020).

A further consideration here is whether there are effective treatments for those who would become seriously ill (*G*). At present, there are effective drugs for early treatment of COVID-19, including fluvoxamine (Reis et al. 2021), sotrovimab (Gupta et al. 2021), and molnupiravir (Willyard 2021; Painter et al. 2021). Should safe, effective, and affordable treatments for COVID-19 become widely available, this would weaken reasons to get vaccinated for the sake of others, given that serious harm from the disease could then be effectively mitigated.

As COVID-19 is becoming globally endemic (Feldscher 2021; Lavine, Bjornstad, and Antia 2021), most people will likely be infected with SARS-CoV-2 at some point during their lifetime (and likely multiple times). Whether an individual becomes infected by Person A at Time 1 in one particular setting or by Person B at Time 2 in another setting appears, with the best of current knowledge, to be only a matter of time. The probability that an individual who is infected by Person P at a particular time would be infected anyway by a Person Z at a different time (*E*) is therefore high, thus giving people less of a reason to get vaccinated to the extent that doing so, even if it were to prevent transmission, would not entail that other people around them would avoid infection.

The sum of costs for one to get vaccinated against SARS-CoV-2 (*H*) is also relevant. Since the vaccines have been offered for free in most countries by accommodating governments, the material costs are low. The risks associated with the current COVID-19 vaccines are generally low, although there are rare known risks as well as unknown longer-term risks. Furthermore, the known risks appear to be stratified by age and gender, so that some demographics may be at relatively higher risk of adverse events, for example younger males who receive mRNA vaccines (Mevorach et al. 2021). Reasons to get vaccinated have to be sensitive to such risks. In general, the costs of getting vaccinated against COVID-19 appear to be low, with the caveat that for some groups the risks may be higher, and that there is still uncertainty regarding risks in the longer term (cf. Kraaijeveld, Gur-Arie, and Jamrozik).

All in all, then, the moral reasons to get vaccinated against COVID-19 with current covid vaccines in the present context may be more complex than they appear, and different (groups of) people in different circumstances may have stronger or weaker reasons to get vaccinated for the sake of others. Overall, though, given that the effect of current vaccines on transmission is partial and short-lived, the moral reasons to get vaccinated against COVID-19—based on the harm that might be prevented to others—are not as strong as they are or would be for vaccines that are more effective at preventing infection and transmission.

Discussion

There are several major points to consider in light of the above reflections and in relation to our account. First, it is important to be able to establish when it is appropriate to hold people morally responsible for their actions (Talbert 2019), as well as when moral emotions like blame and praise—the 'reactive attitudes' in Peter Strawson's (2008) terms—may be warranted. Regarding moral responsibility, two necessary and jointly sufficient conditions are generally posited for a person to be morally responsible for a given action: a *control* (or freedom) condition and an *epistemic* (or knowledge, cognitive, or mental) condition (Rudy-Hiller 2018). The control condition stipulates that a person must "possess an adequate degree of control or freedom in performing the action," while the epistemic condition requires that a person's "epistemic or cognitive state was such that she can properly be held accountable for the action and its consequences" (Rudy-Hiller 2018). That is, in order to be morally responsible for an action, one must both have been acting freely and also have been appropriately aware of what one was doing. For the condition of control to be met in vaccination scenarios, a person must be (or have been) free to act (or have acted) on the reasons she had to get vaccinated (or not) in order for her to be morally responsible for her actions. While the control condition appears to readily apply to vaccination—people generally appear to have control over whether or not they get vaccinated—people's control over their actions and the underlying reasons to which such action is responsive may in some cases be undermined. When people are coerced, for instance, they may not be fully in control of their actions. When people are led by others to refuse vaccination, or when people are threatened with the loss of their jobs if they do not get vaccinated (e.g., through compulsory vaccination policies), the control condition may also not—or not fully—hold. The prospect of losing one's job may constitute such a strong reason to get vaccinated that it makes other important reasons impotent. To the extent that people ought to be left at least some freedom to be able to exercise their moral responsibility and act upon self-chosen (moral) reasons (cf. Kraaijeveld 2020), governments need to ensure that people are not unduly coerced in their vaccination decisions either through the government's own policies or through social pressure, for instance via news and social media (Wilson and Wiyonge 2020).

One might assume that with the immense amount of publicization and public communication surrounding the COVID-19 pandemic, people have all the requisite epistemic tools to reason about vaccination, appropriate precautions, and so on. Nevertheless, it is still important to consider the epistemic states of individuals. Some people may have been influenced by misinformation, so that their reasons and actions may be based upon inaccurate epistemic assumptions. Particularly, in cases where significant others have undue influence over someone's beliefs about vaccination, the case may be made that the epistemic condition does not or not fully hold (e.g., when people are fully convinced of erroneous beliefs as a result of the influence of others). Not only deliberate misinformation, but also outdated medical and scientific states of affairs regarding the functioning of vaccines, for instance, are relevant—especially when the public is epistemically reliant on public health communication.[74]

What about moral blame and praise? It must be noted that blame (like praise) is appropriate only when a person is in fact blame*worthy* (or praise*worthy*) (Tognazzini and Coates 2021). In a loose sense, a person can be 'blamed' for an outcome, but this does not necessarily mean that she is, in fact, blameworthy—she may not be blameworthy when the conditions of moral responsibility (e.g., as outlined above) for her actions have not been met. In order to be morally blameworthy for Φ (or having failed to Φ), one must be morally responsible for Φ (or having failed to Φ). Importantly, while blame is often considered to be merited when one has failed to

[74] We think that it is clear that governments have a responsibility to ensure that the public is well informed of the current state of medical/scientific affairs, at least where this directly affects the public's health and wellbeing.

perform one's obligation, we contend that blameworthiness can be understood just as readily in relation to a failure to act on the strength of one's moral reasons and the factors that we have described. The stronger the moral reasons one has to get vaccinated, the more one may be held morally responsible (both backward- and forward-looking) for acting or failing to act upon the strength of those reasons. We contend that the sum of the strength of the moral reasons to get vaccinated, based on factors A-H, provides a rough answer to the appropriateness of blame or praise. The stronger the reasons to get vaccinated for the sake of others, the more appropriate blame becomes when one does not act on those reasons and does not get vaccinated. Likewise, the weaker the reasons, the less appropriate blame becomes. In fact, moralizing a person's choice in this scenario may be morally inappropriate (cf. Kraaijeveld and Jamrozik 2022). Acting on the 'right' reasons is clearly morally relevant for moral judgment. If the reason one has to get vaccinated for the sake of others is weak, but one nevertheless gets vaccinated, then praise may be an appropriate response. Our approach allows one to make sense of altruistic vaccination (Kraaijeveld 2020); even if the reason to get vaccinated for the benefit of others is weak (e.g., given some of the factors that we have described), one may still choose to act on that reason. On the other hand, should a person get vaccinated only to protect their own health (i.e., acting on a self-regarding reason), then that does not appear to merit any moral praise.

Second, the strength of reasons to get vaccinated for the sake of others can vary between individuals and within an individual over time. Regarding inter-individual variation, for example, those working with vulnerable populations (i.e., healthcare workers) may have stronger moral reasons to get vaccinated than those who do not. Those who travel extensively and come into contact with many different people may have stronger moral reasons to get vaccinated than those who remain more or less entirely at home. These are important moral considerations. It may make moral blame appropriate in some cases, where factors A-H indicate strong moral reasons to get vaccinated, but a person fails to respond to such reasons. It may also make moral blame misguided in other cases, for instance when factors A-H offer only weak reasons to get vaccinated for others, and a person responds by not getting vaccinated. Regarding intra-individual variation over time, it may be that someone has a stronger moral reason to get vaccinated at Time T than at a later Time Z. For example, if early on in a pandemic there are no available treatments against a disease but there are available vaccines that reduce transmission, then one has a stronger reason to get vaccinated than later on in the pandemic, *ceteris paribus*, if or when effective treatments have become available. This highlights the importance of carefully considering factors A-H and updating them with the latest information at any point in time when considering reasons for vaccination, and having a conception of the uniqueness with which the good of vaccination can be achieved at different times and in various circumstances.

Third, a strength of our approach is that it avoids metaphysically and epistemically vague thresholds that arise in attempts to ground moral duties. In complex epidemiological scenarios, there is no 'magical' cutoff point to separate one's either having or not having a moral duty to get vaccinated. There are moral reasons to do so, as we have argued; and this seems to match intuitions and common moral talk about whether or not one should get vaccinated. Still, something more can be said about when, practically speaking, one should get vaccinated for the sake of others. After all, this involves a binary outcome: one either does or does not get vaccinated. While the eight factors co-determine the overall strength of the moral reasons one has to get vaccinated, we have argued that the prevention of harm caused to others is the good at stake when it comes to other-directed vaccination. As such, when it is very likely that one will infect others with a disease and thereby cause serious harm, one will have strong moral reasons to take appropriate measures to avoid such harm, which includes vaccination if it can significantly reduce chances of transmission—and one should respond accordingly. Only mitigating factors like the existence of safe and effective treatments (G) or having a medical

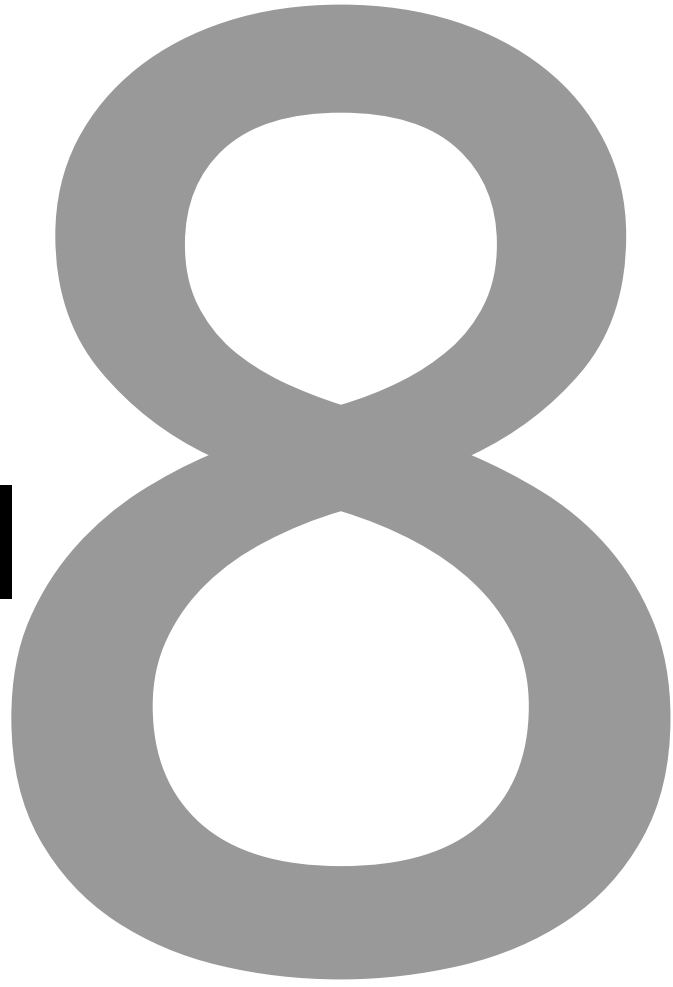
contraindication and/or belonging to a group for whom risks of harm are significantly higher than for other populations (H), weakens all-things-considered reasons for getting vaccinated in this case.

Finally, it should be noted that moral reasons for vaccination may not be commensurate with legal duties. Ideally, individuals would always act on the strength of moral reasons to get vaccinated. However, even when people do respond to the moral reasons that they have to get vaccinated, states may still seek to regulate vaccination. For example, herd immunity against a particular disease may not be achieved or maintained even when citizens appropriately respond to the strength of moral reasons to get vaccinated. Regulating vaccination for the sake of maintaining herd immunity in that case would need to appeal to grounds other than people's moral reasons. It is likely that different policymakers and/or populations will have different preferences about when such policies might be justified, but one important factor is clearly the strength of people's moral reasons. This is because, other things being equal, restrictive or coercive policies may be more justified and justifiable when individuals already have strong moral reasons to act in keeping with such policies. In a situation where most people have only weak reasons to get vaccinated for the sake of others, based on the eight factors that we have typified in this paper, mandatory vaccination is considerably more difficult to justify from a moral perspective.

Conclusion

Rather than a binary, duty-based approach where people either have or do not have a duty to get vaccinated, we argued for a scalar, reasons-based, consequentialist approach according to which moral reasons to get vaccinated for the sake of others may be weaker or stronger, in light of eight probabilistic and harm-based factors. We urged for sensitivity to real-world data about probabilities of infection transmission and risks of harm, as well as facts about available vaccines and the possibility of other means of risk reduction. Whether people ought to get vaccinated for others is best conceived as a matter of responding to moral reasons, with a view toward the good of vaccination—to prevent disease-related harms to others—that may be achieved more or less uniquely. We provided a case study of vaccination against COVID-19 in order to demonstrate the practical significance of our approach. This case study may have to be amended given future epidemiological and scientific developments. This, however, is a benefit of our approach. It captures the many potentially morally relevant factors that constitute the complex scenarios and developments surrounding patterns of disease, vaccines, and the harms that might be prevented—and the moral reasons to which they give rise.

CHAPTER



Discussion and Conclusion

Chapter Eight
Discussion and Conclusion

"As the sun and every atom of the ether is a sphere complete in itself and at the same time only an atom of a whole that is inaccessible to man in its enormity—so, too, every person bears his own purposes within himself and yet bears them in order to serve general purposes that are inaccessible to man."
—Leo Tolstoy, *War and Peace*

Discussion

It is time to discuss the major findings and arguments from this dissertation as a whole; to reflect on what has been discussed, and to link it to the questions and goals that were specified at the outset. To this end, I begin this final chapter by restating my research aims and the major questions that this dissertation sought to address. I then provide a summary of the central findings and arguments from each chapter, which I contextualize and link back to the original aims, also by means of additional evidence and reflection (given that some time has passed since many of the chapters were written and published). I subsequently discuss several theoretical as well as practical contributions of this dissertation for vaccination ethics, public health ethics, and the concept and ethics of vaccination for the sake of others. This is primarily meant to be a more general discussion of the major arguments proposed in this dissertation, with the aim of tying together lose ends and arriving at conclusions. I finally outline some policy implications and make suggestions for future research.

Summary of Research Aims

This dissertation began by recognizing the (moral) complexity of self- and other-directed effects of vaccination. Furthermore, the moral significance of the extrapersonal benefits that are often associated with preventive vaccination suggests the idea of vaccination for the sake of others. The overarching aim of this dissertation was therefore to examine and clarify this idea.

The central questions included the following:

1. How is vaccination for the sake of others best characterized and understood?

2. What are the ethical issues specific to different kinds of vaccination based on who gets vaccinated, who receives the primary benefits, and who makes the decision?

3. What do people think about altruistic vaccination? How receptive are people to getting vaccinated to benefit others, and do they consider potential coercive measure (e.g., mandates) to be acceptable?

Answers were also sought for the following basic questions:

4. To what extent should individuals get vaccinated for the sake of others? What are the moral reasons for doing so, and what are the limits?

5. To what extent are governments ethically justified in implementing coercive vaccination policies aimed at benefiting third parties, for instance in the case of COVID-19? Does the harm principle justify such policies?

The emergence of the COVID-19 prompted a question with a wider scope, pertaining to pandemic measures:

6. Can the concepts of altruistic and indirect vaccination be meaningfully extended to other areas of public health where similar tensions arise, like pandemic lockdown measures?

Finally, two vaccination-related questions arose in relation to COVID-19, which required careful consideration of the potential self- and other-directed effects of vaccination:

7. Should children get vaccinated against COVID-19? Would this be serving their own best interests? If not, then should they perhaps get vaccinated primarily for the benefit of others (e.g., higher-risk populations)? What are the ethical considerations at stake?

8. Are coercive COVID-19 mandates for the general public ethically justified? Might the harm principle, which is often invoked to justify coercive public health policies, provide a compelling ground?

By attempting to provide answers to these questions, this dissertation was able to address gaps in the literature in several ways. First, it provided a systematic overview of different kinds of vaccination—and attendant ethical considerations—based on potential self- and other-regarding motives. To the best of my knowledge, no such approach has previously been taken; yet, from the perspective of the rest of this dissertation, the value of the taxonomy is clear.

Second, it generated empirical findings about what people think about the idea of getting vaccinated to benefit others in different target groups where altruistic or indirect vaccination may be especially relevant.

Third, it mapped out in a rigorous way the moral reasons that people might have to get vaccinated for the sake of others, specifically in light of various epidemiological circumstances and the overarching moral good of vaccination (i.e., to prevent harm to others). This approach explicitly moved beyond accounts of moral vaccination duties that tend to be cast in binary terms (i.e., one either has or does not have a moral duty to get vaccinated). Instead, it provided a more wide-ranging view of vaccination ethics by first stepping back and asking the more general question: Why should people get vaccinated for the sake of others? Which became the question: What are the different moral reasons that people might have?

The emergence of the pandemic also raised unanticipated and new ethical questions—or, at least, questions for which no specialized literature was available, given the novelty of the specific disease. By tackling these urgent questions as they were raised, and by suggesting potential answers, this dissertation contributed not only to the academic literature, but also to ongoing public debates about COVID-19 vaccination and pandemic measures.

Summary and Contextualization of Central Findings and Arguments

In what follows, I provide more context to the questions that were raised and give an overview of the answers that were offered in this dissertation. I summarize the major points of each substantive chapter and, where relevant, include further discussion based on more recent literature and additional reflection.

Chapter Two: Vaccinating for Whom? Distinguishing between Self-Protective, Paternalistic, Altruistic and Indirect Vaccination

Summary

In Chapter Two, I tackled the first two research aims, namely (1) to determine how vaccination for the sake of others is best understood, and (2) to clarify different ethical issues that may be at stake when it comes to different kinds of vaccination—especially those that are primarily meant to benefit others.

Chapter Two thus presented the conceptual work that grounded much of the subsequent research in this dissertation. As indicated in the introduction, vaccination is a complex phenomenon, given that expected benefits for vaccinees tend to be probabilistic and based on future exposure to pathogens (rather than based on the immediate alleviation of illness), and because vaccination often affects not only vaccinees but also other people. The former idea was important in the moral reasons-based scalar account of vaccination ethics developed in Chapter Seven. In this chapter, the focus was on disentangling some of the different self-and other-directed effects of vaccination, and seeing how these might underlie different kinds of vaccination.

More specifically, what does 'vaccination for the sake of others' mean? Is it a singular concept? I found that these questions were best addressed by distinguishing different kinds of vaccination based on (1) the potential motives at stake, (2) the different decision-makers in question, and (3) identifying those who stand to receive the major benefits of vaccination. I ultimately found that, based on these considerations, four kinds of vaccination should be separated.

I first defined *self-protective* vaccination, which is when someone gets vaccinated to protect themselves (e.g., in the case of tetanus). I then defined *paternalistic* vaccination, which is when someone makes the decision for someone else to get vaccinated, primarily for that person's (or group's) own benefit (e.g., parents getting their children vaccinated). Paternalistic vaccination could also take the form of governments making the decision for citizens (e.g., through mandates) to get vaccinated primarily for those citizens' own benefit.

I subsequently identified two further kinds of vaccination that may be generally understood as vaccination for the sake of others. I defined *altruistic* vaccination as a case when someone, by their own volition, decides to get vaccinated primarily for the benefit of others. I defined *indirect* vaccination, in contrast with altruistic vaccination, as occurring when decision-makers other than the vaccinee (e.g., governments or parents) decide that one group should get vaccinated primarily for the benefit of some other group. The key difference between the two is that altruistic vaccination is freely chosen by individuals, whereas in the case of indirect vaccination, decisions are imposed by others and will therefore usually involve some form of coercion (e.g., through vaccination mandates). It is this tension between voluntarily chosen vaccination and imposed vaccination that makes the idea of vaccination for the sake of others best understood as a twofold rather than a singular concept. It matters, ethically speaking, by whom the decision is made.

I argued that the different kinds of vaccination are associated with a distinct set of ethical issues and require different ethical justification when it comes to vaccination policy. This is true especially for the potential justification of coercive measures by governments and public health officials—in deciding, for example, whether to leave people free to get vaccinated for the benefit of others or to regulate that decision in a top-down manner. The principle of respect for autonomy—for allowing people, as rational agents, to make their own (medical) choices—is central here. The tension between altruistic and indirect vaccination and the questions to which it gives rise will be especially important in cases where vaccination of individuals or groups primarily for the benefit of third parties is a possibility and might be regulated in some

way, thus potentially restricting people's autonomy. What means may justifiably be employed by governments to push people to get vaccinated when this would be primarily for the sake of third parties? This would be a central question behind some of the COVID-19 vaccination policies that were adopted around the world; I will say more about this later, especially in Chapters Five and Seven.

Chapter Three: Altruistic Vaccination—Insights from Two Focus Group Studies

Summary

In Chapter Three, I presented the empirical work that was conducted for the purpose of this dissertation. What do people think about vaccination (policies) for the sake of others? This research was intended to contribute to a better understanding of the potential role of altruism in people's vaccination decisions, as well as to offer additional input for reflection on ethical issues surrounding altruistic and indirect vaccination. More specifically, two focus group studies were conducted in order to examine what people think about vaccination for the sake of others in cases where the primary benefits of vaccination may primarily extend to others beyond the individual vaccinees.

Study 1 comprised three focus groups on the subject of HPV vaccination for boys and men. Study 2 included three focus groups centered on pertussis and measles vaccination for childcare workers (CCWs). In both studies, vaccination had the potential to confer significant health benefits to others. Those benefits to others (rather than to oneself) may even constitute the most compelling reason for the target groups to get vaccinated. Boys and men getting vaccinated against HPV can help protect girls and women against HPV-associated cancers (Bray et al. 2018), while CCWs getting vaccinated against pertussis and measles can help protect vulnerable children (Hope et al. 2012; Rebman et al. 2018; Kohfal et al. 2020).

Substantial evidence was found across all focus groups for the importance of altruistic motives. Even though participants did not always spontaneously arrive at other-regarding considerations, once these were pointed out to them, they were generally deemed to be pertinent. In the end, participants mostly agreed that the potentially positive effects on the health of other people constitutes an important good and a morally relevant reason to get vaccinated. It can therefore be concluded that altruistic motives are an important factor in vaccination decisions, at least for the target groups in question.

The question of indirect vaccination sparked debate among the CCWs. An area of tension was revealed that revolved around whether pertussis and measles vaccination should be mandatory. On the one hand, CCWs agreed about the importance of protecting children through vaccination. On the other hand, CCWs greatly valued the freedom to make vaccination decisions for themselves and were mostly against enforcement. The major reason that was offered was that, should vaccination become coerced through mandates, this would limit the CCWs ability to take personal responsibility for protecting the health of the children under their care, which would be to the detriment of their role. Nevertheless, CCWs would consider mandatory vaccination to be more acceptable to the extent that it (1) protected them and others, and (2) also applied to people in professions like theirs. This tension between making the choice to get vaccinated for the sake of others freely (altruistic vaccination) or having the choice enforced through coercive measures (indirect vaccination) will be important, in one way or another, for all of the subsequent chapters.

At this point in my research, the world was gripped by the outbreak of a novel coronavirus. The impact of the COVID-19 pandemic is already evident by the split focus in Chapter Three between, on the one hand, the cases that were initially selected for the target groups (HPV vaccination for boys and pertussis and measles vaccination for HCW), and, on the other hand, applying the meaning of those findings to COVID-19. The pandemic shifted the emphasis of

this dissertation; from this point onward, COVID-19 public health measures and vaccination policies took center stage.

Chapter Four: COVID-19—Against a Lockdown Approach

Summary

Even though the primary focus of this dissertation was on vaccination for the sake of others, I opted to address a very urgent matter that emerged at the beginning of the COVID-19 pandemic. Specifically, as governments around the world deliberated on and implemented different measures to try to curb the spread of a novel coronavirus, the following question presented itself: How ought governments to regulate COVID-19 measures? This question was most directly elicited by the lockdowns that were being imposed around the world, including 'hard' lockdowns that prevented people from leaving their homes for anything other than the most urgent and/or government approved activities. As important as it was to take measures to reduce the spread of the virus (e.g., quarantining when ill, physically distancing, etc.), hard lockdowns seemed to raise their own set of ethical issues.

I realized that a major tension behind some of these measures was akin to that identified between altruistic and indirect vaccination. That is, pandemic policies aimed at curbing the spread of the virus and protecting third parties (like vaccination policies toward the same end) could be adopted through more or less coercive means. In the end, the pandemic measures were not primarily aimed at protecting individuals—who, after all, could opt to stay home on their own if they wanted to—but more at reducing pressure on healthcare systems and to protect vulnerable people. Should people be forced to take certain pandemic measures, or should there be room for people to adopt them of their own accord? This is a question at the heart of Chapter Four.

I found that the taxonomy developed in Chapter Two could helpfully be extended to the ethics of different pandemic policies. Chapter Four thus applied the distinction between altruistic and indirect vaccination to a different area of public health policy and regulation, namely nonpharmaceutical interventions (NPIs) that were intended to slow the spread of COVID-19. I argued that, as in the case of other-regarding vaccination, pandemic measures to reduce the spread of the virus might be voluntarily adopted by individuals (like altruistic vaccination) or could be more strictly enforced (like indirect vaccination). The strictest enforcement—so-called hard lockdowns—happened at different times in various countries, like Italy and China. It was for this approach that I foresaw the most serious ethical issues.

More specifically, I raised a number of different ethical issues with hard lockdowns, centering on freedom and justice. Hard lockdowns encroach on citizen's freedom of movement and potentially violate people's privacy—for instance, when lockdowns are enforced by governments through the tracking of citizens' movements. Severe restrictions of freedom also likely lead to reactance (e.g., lockdown fatigue), given that they constitute a heavy burden to bear for an extended period of time. With regard to justice, the burdens were unlikely to be even roughly evenly distributed among people during lockdowns. Given that the benefits to others and to society were meant to be for everyone, it was arguably unfair that some populations would suffer much higher costs than others. I introduced two arguments to this end: the *unequal home conditions* argument, and the *unequal geographical disease burden* argument. The first argument held that home conditions were not equal among citizens who were forced to stay home during lockdowns, so that some populations—especially the poor, and those who are especially vulnerable (e.g., those in abusive relationships, those with mental health problems, etc.) would bear much severer burdens to achieve the ends of lockdowns, especially compared to those who were well-off and could afford to maintain themselves with relative ease and comfort. The second argument held that the incidence and impact of COVID-

19 was unlikely to be even roughly equally distributed across geographical regions within a given country, so that uniform lockdown measures across an entire country might be unfair and disproportionate for those regions that do not face high COVID-19-related pressures.

As an alternative to hard lockdowns, I proposed an altruistic approach that would allow, as much as possible, for people to take the necessary measures upon themselves. Such an approach would preserve important citizen freedoms, avoid potential injustices, and give people a sense of meaning in precarious times. I also argued that there are important moral reasons, both theoretical and practical, to allow space for individuals to voluntarily adopt the necessary measures. Freedom is a necessary condition for altruism, which depends on the proper kind of self-chosen motive, and for taking moral responsibility for one's actions. Freedom is important for people to enable them to express solidarity with their fellow human beings, especially during a time of crisis. Engaging in altruistic behavior is associated with a number of psychological and existential benefits, like experiencing a greater sense of meaning and purpose in life, greater psychological flourishing, an increase in well-being and vitality, greater life satisfaction, higher positive affect, and more psychological well-being (see Chapter Four for the details of these findings). In short, there are not only theoretical but also practical reasons for governments to encourage, rather than enforce, prosocial behaviors like pandemic measures.

Further Discussion

The article that comprises Chapter Four was written when there was, to the best of my knowledge, no published research on the ethics of lockdowns, and little relevant research on people's behavior during the pandemic. Since then, there has been an increasing body of research that addresses these matters, much of it providing additional support for my arguments. Before moving on to summarize the subsequent chapters of this dissertation, I therefore want to briefly reflect discuss some of these findings.

Perhaps the most important ethical consideration was the matter of justice; specifically, the potential for hard lockdowns to cause or exacerbate burdens for some individuals or groups more than for others. There is a tragic kind of irony in the fact that some vulnerable groups, whom lockdowns were meant to protect, seem to have fared particularly badly during the lockdowns. An increasing number of studies suggest that the idea of protecting vulnerable people by means of lockdowns was a double-edged sword. While COVID-19 infections were perhaps delayed, vulnerable people—like those in nursing homes—often became increasingly socially isolated, and as a result, disproportionately suffered both mentally and physically (see, e.g., Kasar and Karaman 2021; Van Jaarsveld 2020; Panteli et al. 2022; Colucci et al 2022; Cronin and Evans 2022). A very large recent scoping review of the impact of physical distancing measures on the most vulnerable in society found that "prolonged loneliness, mental distress, unemployment, income loss, food insecurity, widened inequality and disruption of access to social support and health services were unintended consequences of physical distancing that impacted these vulnerable groups," which highlights that "physical distancing measures exacerbated the vulnerabilities of different vulnerable populations" (Li 2023, 1). This, unfortunately, resonates with the argument in Chapter Four that hard lockdown measures are bound to have unequal effects on different populations, according to how different populations are able to face the associated hardships. I leave open the question of whether lockdowns were *just*, all things considered; but I think it is beyond question at this point that whatever benefits were associated with the measures, the burdens were not shared fairly.

There is a lesson to be learned here, which is that physically and socially isolating people has very serious costs, and the costs of isolation cannot simply be assumed to outweigh the costs of COVID-19 infection. At the least, this suggests that more needs to be done in the future by governments and public health officials to ensure that the most vulnerable members of

society do not become as socially isolated as so many of them have become during the pandemic. A more holistic view is needed that takes into account a wider range of risks to the quality and span of human life than COVID-19.

What about the prospect of letting people take pandemic measures upon themselves? Some might respond to this idea with a certain kind of fatalism: people cannot be trusted to take the necessary measures and must therefore be forced to comply as the situation requires. I do not argue that there is never any truth to this; I would not deny that there are cases where governments must intervene to protect public health. Nevertheless, the fatalistic judgment may be too quick in the case of the COVID-19 measures; or, at least, some evidence has emerged that people did, in fact, take the measures upon themselves even in the absence of enforcement. Not only has evidence emerged that the effect of voluntary behavior change was of the same order of magnitude as government-mandated regulations in reducing fatalities associated with COVID-19 in some places (Jamison et al. 2021), but there is also evidence that stricter lockdown measures led to counterproductive outcomes as a result of *reduced* compliance (as I argued it might in Chapter Four). A study that examined adherence to tiered restrictions in Italy from November 2020 to May 2021 found that adherence to measures decreased twice as fast during the strictest tiers than during the least stringent ones (Delussu, Tizzoni, and Gauvin 2022). This evidence of pandemic fatigue underscores the importance of understanding behavioral responses to government restrictions, and it suggests that increased severity of measures does not always (or at least not straightforwardly) result in increased behavioral compliance. It can, in reality, lead to the opposite outcome by driving people away from following strict rules. If the goal is to maximize behavioral compliance in the interest of public health, then strict enforcement of measures may come at the overall cost of reduced adherence. That is, even if there may be short-term benefits of increased compliance, the measures may not be sustainable over time and may in fact lead to diminished compliance compared to more lenient measures.

?That is aside from the moral costs associated with coercion, like the restriction of basic freedom of movement, not respecting people's autonomy, and not allowing people the chance to take responsibility for their own actions, which ought generally to be avoided in democratic societies. It may also have been a missed opportunity to allow people to reap the moral benefits of acting on the moral reasons that they have to benefit others. The parallel to vaccination ethics here should be clear: it is the major tension that I identified between altruistic and indirect vaccination. I will say more about moral reasons—and responding to them—in relation to vaccination in Chapter Seven.

To summarize, not only might people have adopted certain pandemic measures voluntarily as well as through coercion, but it also appears that enforcement resulted in high costs and, perhaps paradoxically,[75] reduced rather than increased behavioral compliance in some cases. I do not aim to provide a final moral judgment here of how these issues relate to the COVID-19 infections that were prevented or delayed in a larger moral evaluation of lockdown measures (for a defense, see Van Basshuysen and White 2021). Note that the question of whether lockdowns were, all things considered, morally justified is not the same question (albeit a related one) as that of whether the lockdowns were *just*. As I discussed earlier, I do not think that the lockdowns were just—at least not from the perspective of justice as a fair sharing of burdens. Yet this does not necessarily mean that the lockdowns could not be justified in some way—e.g., perhaps other moral considerations may be judged to be weightier than justice considerations. It is also not meant to imply that issues of (in)justice could not be ameliorated

[75] These effects may appear paradoxical to those who believe in a straightforward, linear relation between stricter government measures and increased behavioral compliance. Those with more nuanced and expansive views of human behavior and human psychology may not find these effects paradoxical or surprising.

in some way—e.g., through compensation for those who disproportionally suffered more negative consequences. These are important questions that I leave open for debate elsewhere.

Chapter Five: Against COVID-19 Vaccination of Healthy Children

Summary

In Chapter Five, I addressed the controversial question of whether children should be routinely vaccinated against COVID-19 and/or whether mandates for children are ethically justified. While the COVID-19 vaccines were first rolled out to the most vulnerable populations, the question eventually arose whether children, too, should get vaccinated. This was, and remains, the target population for which COVID-19 vaccination is most heatedly debated among experts, policymakers, and the public.

Risks of COVID-19 morbidity and mortality are highly stratified by age and the presence of co-morbidities (ECDPC 2022), so that the virus does not pose nearly as high a risk for healthy children as it does, for instance, for elderly people. The median age of COVID-19 deaths in the U.K., for example, was 83 years (ONS 2022). Whereas most childhood vaccines (e.g., measles) are intended to prevent illnesses that substantially affect pediatric populations, COVID-19 was not deemed a pediatric public health emergency (Pegden, Prasad, and Baral 2021). The benefit to children of the vaccines was therefore less clear than it was for other populations at higher risk.

The benefit-risk ratio was not self-evident, given that there were rare but potentially serious risks associated with the vaccines (e.g., blood clots, myocarditis), and given that the long-term safety profile of the vaccines was unknown due to their novelty (i.e., there were simply no longer-term safety studies available). Nevertheless, the following additional consideration emerged. Perhaps by vaccinating this population against COVID-19, the spread of the virus might be substantially reduced, and herd immunity achieved, so that the primary benefits might not so much be for children themselves but rather for adults, vulnerable groups, and society more generally? In addressing this idea, the taxonomy developed in Chapter Two again proved useful in guiding the ethical discussion.

In Chapter Five, I therefore provided an ethical analysis of vaccinating healthy children against COVID-19. Specifically, I presented three of the strongest arguments that might justify COVID-19 vaccination of children: (a) an argument from paternalism, (b) an argument from indirect protection and altruism, and (c) an argument from global eradication. I offered a series of objections to each of these arguments to show that none of them is tenable at present. Given the minimal direct benefit of COVID-19 vaccination for healthy children, the potential for rare risks to outweigh these benefits and to undermine vaccine confidence, the substantial evidence that COVID-19 vaccination confers adequate protection to risk groups whether or not healthy children are vaccinated and that current vaccines do not provide sterilizing immunity, and given that eradication of the virus is neither feasible nor a high priority for global health, I argued that routine COVID-19 vaccination of healthy children is currently ethically unjustified. Since mandates for children were already implemented in some places (e.g., California) and may be considered elsewhere in the future, I also presented two additional ethical arguments explicitly against making COVID-19 vaccination mandatory for children.

Further Discussion

It is worth briefly reflecting on how COVID-19 vaccination policy for children has developed since the article for Chapter Five was first published in March of 2022. The idea that risks of serious illness and death from COVID-19 are relatively small for children has received further

support in a large recent study, which found the infection fatality rate (IFR) of COVID-19 to be 0.0003% at 0-19 years compared to 0.506% at 60-69 years (Pezzullo et al. 2023).

A number of countries, particularly in Europe, seem to have moved in the direction of the ethical recommendation that was offered in this chapter by no longer routinely vaccinating healthy children. For instance, Sweden had already decided against recommending COVID-19 vaccines for children aged 5-11 (Ahlander 2022). Finland also chose to offer children's COVID-19 vaccines only to high-risk households (Lehto 2021). In England, children aged 5-11 will no longer be offered COVID-19 vaccines, except those in clinical risk groups or those who are living with someone at higher risk of severe illness from COVID-19 (Davis 2022).

Denmark has taken an even more stringent approach by only recommending COVID-19 vaccination for people aged 50 years and over as well as specific risk groups. According to the Danish Health Authority, because children and adolescents rarely become severely ill from the Omicron variant, it was no longer possible for children and adolescents aged under 18 to get the first injection from 1 July 2022; and, from 1 September 2022, it was no longer possible for them to get the second injection (DHA 2022). In a commendable display of openness about the assessment of public health measures, Søren Brostrøm, Director of the Danish Health Authority, has recently called the decision to vaccinate children aged 5-15 a mistake in retrospect.[76] Vaccination of children was primarily a strategy to reduce infection and transmission in society; however, since the effect of the vaccines on reducing infection and transmission turned out to be very small, especially with the Omicron variant being dominant, Brostrøm acknowledged that health authorities would not take that decision with the present state of knowledge (although this is not meant to imply that the decision was unjustified given the state of knowledge at the time). In the Netherlands, within the population of children aged 5-11, only children with underlying medical conditions that increase their risk of serious illness from COVID-19 are still offered the vaccine (RIVM 2023).

Across Europe, COVID-19 vaccination policy for children varies and continues to be a subject for debate among experts and policymakers (Smith 2022). The United States is an outlier, in that the Centers for Disease Control and Infection (CDC) recommends COVID-19 vaccines for children as young as 5 months (CDC 2022).

After an initial push for COVID-19 mandates for children in some places (e.g., California), arguments for such mandates and policies enacting them appear to have receded. Public support for COVID-19 mandates in schools was found to be low in recent study, with one-fourth of caregivers planning to remove their child from the educational system should vaccines become mandated (Baumer-Mouradian et al. 2022). In fact, California—one of the first states to implement COVID-19 mandates for children—is now planning to end those mandates (Lambert 2023).

Since the publication of Chapter Five, others have argued that COVID-19 mandates for children are unethical, given that the vaccine has been correlated with serious, though rare, side effects and hospitalizations in otherwise healthy children (Pandit, Pandit, and Goyal 2022). Where there are potentially serious risks, even if rare, it is generally accepted that people must be allowed to make an informed choice as to whether to accept that risk (Mazur 2003); in this case, it means that parents and guardians should be allowed to choose whether their children get vaccinated against COVID-19. As the virus moves toward endemicity, some have recently reiterated the recommendation, also offered in Chapter Five, that children should be carefully pre-screened for risk conditions and that guidelines for vaccinating children against COVID-19 should be individualized rather than routinized (Pandit, Pandit, and Goyal 2022). As previously discussed, this is in line with current policy in various countries in Europe (e.g.,

[76] See the newspaper article (in Danish) where Brostrøm is quoted here: https://nyheder.tv2.dk/samfund/2022-06-22-set-i-bakspejlet-fik-vi-ikke-meget-ud-af-at-vaccinere-boernene-erkender-brostroem?cid=_soco%3Atw%3A4%3Anews%3A%3A%3A

England, Denmark, and Finland), which only offer the vaccine to children who are at higher clinical risk of severe illness from COVID-19 or who live in higher-risk households.

Chapter Six: The Ethical Significance of Post-Vaccination COVID-19 Transmission Dynamics

Summary

As vaccines against COVID-19 became more widely available, many people opted to get vaccinated. However, some people chose not to get vaccinated at all or not to get the full number of recommended doses. In order to try to increase uptake, coercive policies were introduced in many countries around the world. These policies took different forms. For example, unvaccinated people were prevented from being able to work, from attending college, from using public transportation, from going to restaurants, and so on (see, e.g., Giuffrida 2022; Bardosh et al. 2022b). Vaccine passports became a reality in many places. In Italy, compulsory vaccination for people over 50 was implemented (Giuffrida 2022), and there were discussions about compulsory vaccination for the general population in other countries, like Austria (Chadwick 2022).

In Chapter Six, I therefore focused on these kinds of COVID-19 vaccination policies for the general public. In particular, I examined whether coercive policies like vaccine passports and mandates could be justified—and, if so, by which principle. Coercive policies were presumably justified by the harm principle, according to which preventing harm to third parties is a necessary, if not a sufficient, ground for coercion. If such policies were incapable of substantially preventing harm to third parties, their public health justification would be less tenable—even if coercive policies were morally neutral and even if they did not lead to collateral harms (which, as I argued, is rarely the case).

Questions surrounding the primary beneficiaries of vaccination and of decision-makers thus took center stage again. Presumably, coercive COVID-19 vaccination policies were an example of indirect vaccination, to use the concept developed in Chapter Two. As I argued in in that chapter, however, indirect vaccination policies require strong ethical justification. One justification might be the harm principle. Yet, as it became clear that COVID-19 vaccines did not block transmission, the question arose whether coercive vaccination policies could (still) be justified. The latest evidence suggested that the current vaccines only provided a modest and temporary effect on transmission (Wilder-Smith 2021), which seemed to call into question the harm principle as a direct justification of coercion.

In Chapter Six, I attempted to address these questions by examining the ethics of post-vaccination transmission dynamics for COVID-19. More specifically, I discussed recent evidence that the current COVID-19 vaccines provide only a modest and temporary effect on reducing SARS-CoV-2 transmission. I argued that this has at least four important ethical consequences. First, that getting vaccinated should be seen primarily as a self-protective choice for individuals (cf. Chapter Two). Second, that moral condemnation of unvaccinated people for causing direct harm to others is unjustified on those grounds. I have argued more extensively about the dangers of inappropriate moralization of public health behavior elsewhere (Kraaijeveld and Jamrozik 2022). Third, that the case for a harm-based moral obligation to get vaccinated is weak for COVID-19, given that harm cannot meaningfully be prevented through vaccination. And, finally, that coercive vaccination policies that exclude unvaccinated people from society cannot be directly justified by the harm principle. I urged governments and public health officials to be clearer about the ethical grounds on which potentially coercive COVID-19 vaccination policies are based.

Further Discussion

The trend has been for restrictions based on vaccination status to be removed in many countries, since the article for Chapter Six was published. Even if vaccine passports and mandates became the norm at some point, their use seems to have abated, with the notable exception of the United States, where college students are still largely required to show proof of COVID-19 vaccination (see, e.g., Bardosh et al. 2022).

It is worth further reflecting on whether coercive measures were necessary for vaccine uptake, and whether more generally they were a good public health measure. Not only do the other-directed effects of COVID-19 vaccination (now) appear to be insufficient to ethically justify large-scale and highly coercive measures, as I argued in Chapter Six, but such measures may have actually led to harmful and suboptimal outcomes. There were serious concerns that mandatory vaccination would crowd out people's intrinsic willingness to get vaccinated (Schmelz 2021). There is now evidence that this has in fact happened in Germany—especially during the third COVID-19 wave (Schmelz and Bowles 2022). An analysis by Kevin Bardosh et al. (2022) strongly suggests that mandatory COVID-19 vaccine policies have had damaging effects on public trust, vaccine confidence, political polarization, human rights, inequities, and social wellbeing. As in the case of lockdowns, it does not appear to be the case that stricter measures—more coercion—automatically lead to better public health outcomes like increased compliance or vaccine uptake.

Getting vaccinated against COVID-19 seems to be primarily a self-protective choice, in the language of Chapter Two. This is because one cannot reliably prevent harming others by getting vaccinated against COVID-19, given that there is little difference in transmission rates between vaccinated and unvaccinated people (Wilder-Smith 2021). This does not mean that altruistic vaccination motives are not relevant or important. People generally understand the importance of other-directed effects (i.e., protecting others) when it comes to making decisions to get vaccinated, as the results from Chapter Three demonstrate. Even in the absence of sterilizing immunity, there may still be more circumscribed instances where one's choice to get vaccinated against COVID-19 may offer short-term protection to others, and where moral reasons to get vaccinated may be stronger. It is partly this realization that led me to the account developed in the following and final substantive chapter.

Chapter Seven: A Scalar Approach to Vaccination Ethics

Summary

What are the moral reasons that people might have to get vaccinated for the sake of others? While chapters Four, Five, and Six focused on ethical questions of policy—respectively, on pandemic policy, on COVID-19 child vaccination policy, and on coercive COVID-19 vaccination policy for the general population—Chapter Seven more systematically investigated vaccination ethics from the perspective of individuals and the moral reasons that they might have to get vaccinated. Rather than examine other-regarding vaccination from the perspective of moral vaccination duties (as many others have done), this chapter aimed to answer the following question: What moral reasons do people have to get vaccinated for the benefit of others? Chapter Seven thus deals most directly with what I have termed altruistic vaccination, in the sense that it deals with our moral consideration of others in relation to vaccination—even before questions of policy and government regulation arise (although these will, in the end, also be relevant).

In order to get at the moral reasons for getting vaccinated, I introduced and defended a harm-based, reasons-based, scalar account of vaccination ethics. With regard to the moral primacy of harm, I argued that the moral good of vaccination is to prevent disease-caused harm to others.

The harms to others that may be prevented by getting vaccinated have long been considered morally significant (e.g., Brennan 2016). In recent years, there have also been attempts to ground vaccination duties in non-harm-based principles. To justify mandatory vaccination policies, for instance, appeals have been made to principles like fairness (Giubilini 2019) and solidarity (Bayefsky 2018; Yeh 2022), which ostensibly give rise to moral duties to get vaccinated. I argued that a harm-based account is nevertheless the most compelling starting point. While others have argued that harm-based considerations have moral primacy over some of these other kinds of considerations for vaccination ethics (Ivanković and Savić 2022), the discussion has so far remained within the framework of moral obligations. I aimed to move beyond this discussion by arguing for a reasons-based scalar account, according to which moral reasons to get vaccinated can be stronger or weaker.

In particular, I outlined eight harm-based and probabilistic factors that give people moral reasons to get vaccinated:

(A) The probability that Person *P* will at some point be infected with pathogen *Z*.
(B) The probability that *P*, if infected, will infect an individual *I* (or individuals *I*s) with *Z*.
(C) The ex-ante probability that *P*, if infected, causes severe harm to *I*/*I*s through *Z*.
(D) The degree to which *I*/*I*s can reduce the risk of contracting *Z* or the risk of severe harm caused by *Z*.
(E) The probability that *I*/*I*s would be infected by people other than *P*, whether or not infected by *P*.
(F) The ex-ante probability of onward chains of transmission beyond close contacts of *P*.
(G) The probability of recovery through treatment for disease(s) caused by *Z*.
(H) The sum of costs (e.g., material, risks) for *P* to vaccinate against *Z*.

Instead of understanding other-directed vaccination in terms of binary moral duties (i.e., where people either have or do not have a moral duty to get vaccinated), a scalar approach allows the assessment that people can have stronger or weaker moral reasons for getting vaccinated for the benefit of others in light of the unique good of vaccination (i.e., preventing harm to others).[77] One distinctive advantage of this approach is that it captures the idea that a person may have strong moral reasons to get vaccinated against Disease X with Vaccine A, for example, but that she may have only weak moral reasons to get vaccinated against Disease Y with Vaccine B. There may even be more reason for her to get one rather than another available vaccine for the same disease (e.g., if it has a larger potential effect on reducing chances of transmission, has a better safety profile, etc.). These nuances are sometimes lost in arguments about moral duties to get vaccinated *as such*. In contrast, the scalar approach developed in Chapter Seven allows for a very fine-grained ethical analysis of moral reasons to get vaccinated, which is highly sensitive to contextual factors (e.g., to epidemiological circumstances and developments).

Chapter Seven probably constitutes the most theoretical and substantive contribution of this dissertation to the field of vaccination ethics, given that it offers a relatively new approach. Rather than include further discussion in this section, I will concentrate on some major aspects of this approach in the following section, which is also meant as a more general overview of the contributions of this dissertation.

[77] Throughout this discussion, I will refer to this account simply as a or the 'scalar approach' for the sake of simplicity.

Further Reflection on Theoretical and Practical Contributions

The purpose of this section is twofold: first, to further discuss the major contributions of this dissertation to a number of issues in the vaccination and public health ethics literature, and second, to further reflect on and show the significance of what has been discussed so far. At times, I will offer additional arguments and considerations for subjects that were touched on in previous chapters. This is not meant to be exhaustive; it is primarily intended to tie together loose ends, to arrive at some conclusions, and to stimulate debate beyond this dissertation.

The Moral Primacy of Harm for Vaccination Ethics

In Chapter Seven, I argued for the moral primacy of harm prevention as constituting the overarching moral good of vaccination. Hypothetically, if vaccination could not prevent *any* form of harm from occurring to other people or society more generally, it is not clear what its *moral* good would be—or why getting vaccinated would be a distinctly *moral* choice. Without harm to others at stake, questions about how we are to treat one another, what we owe to each other, and so on, do not easily seem to get off the ground. As I argued in Chapter Seven, if the purported moral good of vaccination (i.e., preventing or reducing the chance of causing disease-related harms to others) *could not* be achieved through vaccination, then moral arguments that people should get vaccinated in light of that good—whether based on harm prevention (negatively stated) or based on the social/public good of protection against disease (positively stated)—do not appear to have much weight.

Relatedly, if there were no preventable harms to others (either direct or indirect) at stake in particular vaccination scenarios, it is unclear how non-harm-based principles like fairness or solidarity would be able to ground moral arguments that people should get vaccinated. Fair contribution to which good? Solidarity how and with whom? As Ivanković and Savić put it in the case of fairness considerations, these are "either merely complementary to considerations of harm, or merely secondary to them" (2022, 29). I do not argue that non-harm-based considerations are never relevant to vaccination or that they cannot offer additional moral reasons to get vaccinated, but I question their application when no harm is at stake. Or, differently put, harm considerations have moral primacy over non-harm-based considerations for vaccination ethics.

Of course, for most real-world vaccines against infectious diseases, there are various harms at stake. Most vaccines against infectious disease will reduce the chances of individual harms from disease—and the chances of spreading disease to others—at least to some degree. That is, after all, the raison d'être of vaccines and immunization. It is why people get vaccinated in the first place, and it is what clinical trials are meant to demonstrate—efficacy as well as safety—before a vaccine is brought to market. But this is what I want to highlight. It seems that only when and once harms and the reduction of harms are at stake that vaccination *ethics*[78] opens up—rather than, say, the question of *prudence* from the perspective of an individual's health. Without the prospect of harm to others, discussions appear to be more circumscribed to the realm of prudence and individual medical advice. That is, without interpersonal harms at stake, this seems to bring us closer to the case of getting vaccinated against a noncommunicable disease like tetanus, where self-protection—one's own health and wellbeing—is primarily at stake (cf. the idea of self-protective vaccination in Chapter Two).

Are there any moral reasons to get vaccinated that are not based on preventing harm to others? Perhaps there are. I do not mean to settle that question here. I do want to offer some additional deliberations. Let us assume that a particular vaccine has zero effect on transmission

[78] I understand ethics here from a modern philosophical perspective that tends to stress the moral relevance of other (human) beings and how to treat them—i.e., focused on the *right*—rather than from other perspectives that are more concerned with individual wellbeing and how to live well (e.g., more Ancient philosophical perspectives as in Plato and Aristotle)—i.e., focused on the *good* (Nadler 2022).

rates, so that a direct way of preventing harm to others (i.e., by preventing transmission) is not feasible by getting vaccinated. Let us now also assume that vaccination would not affect one's chances of getting hospitalized, thus again cutting off a potentially important harm-based moral consideration (i.e., of taking up potentially scarce healthcare resources).

Perhaps even without these possibilities, getting vaccinated might reduce one's chance of illness—even if the disease would not have made the person ill to the point of requiring hospitalization. This puts us in the position, I think, to ask whether other considerations might be relevant here—perhaps even unrelated to harm. For example, consider a person who is a caregiver to others (let us say a single parent). Maybe this parent has a moral reason to do everything he can to be able to be in the best position to provide the required care for his children, which would include getting vaccinated to avoid or reduce illness. What kind of a moral consideration is this? My inclination would be to view this, too, as a case of harm prevention providing a moral reason. In the end, what is at stake here seems to be yet again the prevention of some harmful outcome—that is, of doing what one can to avoid becoming limited in one's ability to take care of others. The single parent's children, presumably, would suffer if their parent took ill and was therefore less able to take good care of them.

One might think of other, related cases, where minimizing illness—even if not potentially severe—would affect others or society in general. Perhaps one might reduce the number of sick days one has to take at one's job. This is probably not likely to be a central consideration for vaccination ethics, but might it be a non-harm-based reason to get vaccinated? Again, considering the purpose for which this would be done from the perspective of others (rather than one's own good), it appears that the reason would be not to cause difficulties to one's employers, colleagues, the economy, and so on, by being unable to work. Perhaps preventing harm is too strong of a way of characterizing these considerations, but it still seems most aptly described as something like *not wanting to cause trouble or inconvenience or a negative situation* to others. Whether this is simply a less acute form of harm prevention, or whether it constitutes another kind of consideration, I leave as an open question (even if I am disposed to think the first).

I have raised these issues primarily to bring to light some of the advantages of the scalar approach developed in Chapter Seven. By being grounded in the moral good of vaccination—that is, the prevention of disease-caused harms to others—it gets very close to the heart of the moral significance of vaccination. It can in principle accommodate all of the potentially relevant harm-based aspects of different vaccination and epidemiological scenarios that may arise in the real world. It can even potentially accommodate non-harm-based considerations, by providing additional moral reasons, as I'll discuss in more detail in the following section.

This is why the approach defended in Chapter Seven is well-placed to offer a rigorous account of vaccination ethics from the ground up. I will now discuss three potential criticisms of this approach and offer responses to them.

Benefits of a Scalar Approach to Vaccination Ethics

I have argued for the moral primacy of harm for vaccination ethics, but this, of course, does not yet answer the question of what harm *means* for the morality of vaccination—or, more specifically, what kind of account we should adopt. While Ivanković and Savić (2022) have, I think rightfully, pointed to the moral primacy of potential harm, their account focuses on how this gives rise to moral obligations to get vaccinated. I offered an alternative account in Chapter Seven, arguing for an approach based on a number of probabilistic, harm-based factors (A-H), which give people moral reasons to get vaccinated for the sake of others in light of the unique moral good of vaccination. I will not repeat those arguments here. Instead, I want to discuss—and respond to—three potential criticisms of this account.

Criticism 1: It Does Not Accommodate Principles like Fairness and Solidarity

One may imagine a critic who believes very strongly in the importance of moral principles like fairness and solidarity (which I would certainly not deny) and who objects to the apparent exclusion of these principles in my discussion so far. If my account condemns to obsolescence fair-contribution and solidaristic approaches to vaccination ethics, then this—the critic may argue—would be to the detriment of my account. Put more straightforwardly, my account may be criticized for the absence of non-harm-based principles.

In response to this particular critic and criticism, the following may be said. While I am unsure that, if all the relevant harm-based aspects of vaccination ethics have been fully recognized and mapped out, a meaningful role is left for non-harm-based principles like fairness or solidarity, I have not argued that they are not or cannot be relevant. In fact, I take it that non-harm-based principles are likely still important for discussions surrounding social and political obligations. Furthermore, while I have focused on the moral primacy of harm for vaccination ethics, non-harm-based considerations could still play a role in a scalar account. Such considerations could simply provide *additional* moral reasons—beyond harm—that a person might have to get vaccinated for the sake of others. While I have not taken up this task, I nevertheless invite attempts to articulate precisely how, say, reasons based on solidarity or fairness can be uniquely compelling for vaccination ethics—whether in relation to harm-based reasons in general, or specifically in light of the scalar account developed in Chapter Seven.

In conclusion, my account can accommodate non-harm-based principles like fairness or solidarity.

Criticism 2. It Can Still Accommodate Moral Duties

Some have argued that we should retain the notion of moral duties, or at least that reasons-based approaches cannot replace traditional moral categories of wrongness, permissibility, and obligation (cf. McElwee 2010a). This criticism could be extended to the case of vaccination; and, in fact, I have discussed this criticism at greater length in Chapter Seven. Nevertheless, it is worth responding to it once more here.

While I have argued that a reasons-based approach has several distinctive advantages to a duty-based approach to vaccination ethics, those who wish to retain the notion of moral duties in discussions about vaccination may still do so in relation to the scalar account. For instance, one might argue that when the strength of the moral reason to get vaccinated reaches a certain point—in plain terms, when one has a sufficiently strong reason to get vaccinated for the sake of others—then this provides an overriding reason and may even, at that point, give rise to a moral duty. One might also argue that one specific factor in the list of moral considerations surrounding vaccination is sufficiently weighty to gives rise to a moral duty, and in this way retain the notion. In this way, one may examine the moral reasons for vaccination according to the scalar account; and, while not all of the reasons will lead to something like a moral duty, one may still argue for the existence of moral duties when a moral reason based on one of the factors A-H, say, is especially compelling. My approach does not necessarily preclude this, even if it does not argue for it. I do not think that one needs to speak of moral duties when all the moral reasons and the strength of such reasons are carefully catalogued and properly understood. Yet, in light of this particular criticism—that we should not wish to abandon traditional moral categories of wrongness, obligation, and so on—it is to the credit of the scalar account that it is at least not in principle impervious to such considerations, even if it is not directly concerned with them.

In conclusion, my account can still accommodate moral duties.

Criticism 3: It Cannot Accommodate the Reactive Attitudes

A related objection that has been levelled against reasons-based accounts is that it not only does not accord well with our commonsense moral talk, which often involves talk about duties and obligations, but that it also potentially obfuscates the way we normally engage in moral judgments, attribute moral blame and praise to others, and so on (McElwee 2020a). To put it in Peter Strawson's (2008) terms, the worry is that a focus on moral reasons rather than duties in our moral theorizing can make it difficult to accommodate the so-called 'reactive attitudes' that people experience and express within interpersonal human relationships.[79] Participant reactive attitudes, according to Strawson, are "attitudes and reactions of people directly involved in transactions with each other," and involve "the attitudes and reactions of offended parties and beneficiaries; […] such things as gratitude, resentment, forgiveness, love, and hurt feelings" (Strawson 2008, 5).

It has been argued that any moral theory must accommodate such attitudes, and I would agree. For vaccination ethics, any account of why one should (or should not) get vaccinated for the benefit of others must not be incongruent with the ways in which we human beings engage and interact with each other. Concepts like blame and praise are etched deeply in our discourse and in the way we conceive of and relate to one another. It might appear that duty-based accounts are better positioned to match commonsense morality, and it has been argued that reason-based accounts fare comparatively more poorly (McElwee 2020b). Can a scalar account accommodate the reactive attitudes?

I do not see any reason why not. Consider a typical way in which Person A might ask Person B, "Why didn't you get vaccinated?" Assume that there is the implication, which may find expression, that according to Person A, Person B *should* have gotten vaccinated. The normative *should*, here, is not uniquely or even best explained by an appeal to moral duties or obligations. It can just as well be explained in light of moral reasons. We can as well imagine that Person A tells Person B that Person B, at least according to Person A, had *a moral duty* to get vaccinated as that Person B had *a moral reason* to get vaccinated. In fact, what the COVID-19 pandemic has revealed is that people do not so much argue in terms of moral duties as exchange moral reasons for behavior. I do not know of any studies that provide specific evidence for this claim, but at least observationally, it seems that people are more likely to clothe moral judgments regarding COVID-19 vaccination in terms of specific reasons, such as *to protect other people* or *to relieve pressure on healthcare systems*. It is these sorts of moral reasons that appear to form the locus of the participant reactive attitudes that arise out of interactions between people on these issues. Whether or not reactive attitudes are best understood as supported by talk of reasons rather than duties, we can at least conclude that it is not the case that a reasons-based approach fails in principle to capture reactive attitudes.

I want to provide two more detailed examples of how a reasons-based account might capture the reactive attitudes. First, let us consider the potential for moral blame. Let us assume that Lucie has very strong moral reasons to get vaccinated (i.e., according to factors A-H). There is a vaccine that prevents transmission of an endemic disease that has an impeccable safety profile. Moreover, Lucie lives with a friend, Susie, who cannot get vaccinated for medical reasons. Susie is particularly vulnerable to disease and mostly stays at home with Lucie. Despite very strong moral reasons, Lucie decides not to get vaccinated. She ends up infecting Susan. Could we blame Lucie for not having gotten vaccinated? Could Susie? I do not want to get into the business of casting blame, even onto a hypothetical character. My point is simply that an account based on moral reasons in light of the unique good of vaccination can account very well for when moral blame might be appropriate—at least as well as accounts

[79] Although one of Strawson's main aims was to explore what the truth of determinism would mean for the reactive attitudes, I do not take a stance on that question here.

that are based on moral duties. Generally stated, the stronger the moral reasons that people have in light of criteria A-H, the more appropriate moral blame becomes when people do not act in correspondence with those reasons.

Now, let us consider the potential for moral praise. A similar logic holds for moral praise and the determination of when it might be appropriate, which is closely related to the earlier discussion of the concept of altruistic vaccination. If Jason has very weak moral reasons to get vaccinated, but if Jason nevertheless responds to those moral reasons—weak as they may be—by getting vaccinated, then moral praise appears to be an appropriate response. It is certainly an understandable response, in line with our commonsense morality. Generally stated, the weaker the moral reasons that people have in light of criteria A-H, the more appropriate moral praise becomes when people still act in correspondence with those reasons.

In conclusion, my account can accommodate the reactive attitudes.

Policy Implications

The following policy implications emerge based on the findings and arguments throughout this dissertation.

First, governments and public health officials should have a good sense of the (moral) reasons for vaccination that they wish to encourage, and how these relate to the vaccines in question. It is crucial to have a good understanding of the different affordances of particular vaccines, given that not every vaccine will meaningfully lend itself to the idea that it might be taken primarily or even partly for the sake of others. As we have learned, for example, the current COVID-19 vaccines do not block transmission and do not prevent infection, which means that other-directed reasons for vaccination are weak at best. Launching a vaccination campaign on the idea of 'protecting others' in this case—and similar ones—is not warranted and likely to backfire in the long run. Other vaccines, however, may be associated with greater benefits to third parties, and may be associated with stronger moral reasons to protect others. Getting vaccinated against HPV, for instance, might be done primarily to protect women—especially in the case of boys and men, because the relative HPV-related disease burden is much larger for women.

Second, governments and public health officials ought to communicate (moral) reasons to get vaccinated for the sake of others as clearly as possible and in light of the best and latest scientific and medical knowledge. When stressing the potential of getting vaccinated to protect others, this must be a real and tangible possibility, and should be communicated accordingly. To the extent that people may respond to moral reasons to get vaccinated, such reasons should be made accessible and transparent to the public. I have not explicitly addressed the specific circumstances under which—or to what extent—governments and public health authorities should express the motive 'to protect others' through vaccination in positive moral terms—for example, as something that is the 'right' choice, or what a 'virtuous' or 'responsible' person should do. On the one hand, using moral terms seems to do justice to the moral reasons that are at stake. Vaccination is rarely a morally neutral choice (i.e., self-protective vaccination, which I have argued primarily concerns the self, is a relatively more circumscribed kind of vaccination). On the other hand, explicit moral language may not be the most effective form of communication; it may even be counterproductive in the long run and therefore might not lead to optimal outcomes in terms of vaccine coverage. Further research in communication science might explore under which conditions positive moral language is (most) effective.

Third, even though, as mentioned above, vaccination is rarely a morally neutral choice, governments and public health officials should avoid vaccination decisions becoming unduly moralized. That is, while the prospect of using positive moral language to encourage vaccination remains open, negative moral language (e.g., the language of blame, anger, disgust, etc.) ought to be avoided. Vaccination can be a great public good, especially when it leads to

reduced transmission of a virus, community protection, and herd immunity. At the same time, there are other and potentially competing public goods and values that are also important (e.g., respect for other people's autonomy). When vaccination debates become acrimonious and moralized, when groups of people are pitted against each other, this often leads to social strife and a breakdown of public trust, which are clearly detrimental to society—especially in the longer term. Avoiding stigmatization is also important. I have argued for these considerations at greater length elsewhere (Kraaijeveld and Jamrozik 2022). Governments have a responsibility not to engage in or foster inappropriate moralization of public health issues, which must be taken into consideration in any attempt to achieve public health goals like increasing vaccine uptake. At the same time, governments also have a responsibility for public health, so that governments cannot simply opt for a default *laissez-faire* policy that is (morally) neutral towards people's decisions about immunization—especially not when, for instance, it concerns protecting the health of children who cannot decide for themselves (Pierik and Verweij Forthcoming). This tension further adds to the complexities of communication strategies to promote vaccine uptake.

Fourth, governments must generally avoid coercion and leave people free to act on moral reasons to get vaccinated (or to take other public health measures) and thus exercise their moral agency. A good society has ample room for people to engage in altruistic behavior and to act on altruistic motives, so that the following general principle may be formulated here:

> *General Endorsement of Potentially Altruistic Agency*: In regulating potentially altruistic public health behavior, governments ought to broadly endorse (i.e., encourage when appropriate but leave free as much as possible) people's altruistic inclinations so that they may exercise their moral agency.

As I have argued, particularly in Chapter Four, there are important theoretical and practical reasons to leave people free to engage in altruism. Freedom is important for altruism to be able to emerge in the first place. Altruism presupposes a certain amount of freedom of choice. In the most extreme case, if a person is not at all free to act (e.g., is forced to act in some way), then that person having acted a certain way—even if it was some benevolent act for the sake of others—cannot be deemed altruistic. A child who is made to give their only piece of candy to a sibling, under the looming threat of punishment by a parent, can hardly be said to have behaved altruistically. It is only when the child freely chooses to give her candy to her sibling that we may call her action altruistic. These acts are clearly important for societies and how we relate to one other.

Freedom is also important for people to take moral responsibility. Moral responsibility requires having control over one's actions, which coercion may undermine to some extent. Of course, to what extent coercion has *de facto* undermined control will be tied to concrete situations and is probably best determined on a case-by-case basis. The point is that, at least in principle, moral responsibility requires meaningful control over one's actions. If we want to be able to genuinely hold people responsible for having acted or failed to act in response to moral reasons, undue coercion must be avoided.

There are also practical reasons to encourage altruism, like the sense of meaning and well-being that it can give people, examples of which I discussed in Chapter Four. Attempts to enforce civic duties and altruistic behavior can be counterproductive and ultimately do more harm than good. For instance, coercion of civic behavior can undermine solidarity, trust, reciprocity, communal values, and other important social goods (Savulescu 2021). It should be a last resort and not a starting point for policy.

Future Research

The following questions that are raised by this dissertation should be addressed in future research.

First, while there is evidence that people largely voluntarily took upon themselves the required measures to reduce the spread of COVID-19, a similar study that compares vaccination rates on a large scale *and* that examines motivations for doing so has, to the best of my knowledge, not been conducted. A better understanding of other-regarding motives would help to address the question of 'priors' regarding altruistic vaccination—that is, to what extent (and how many people? in a given society) people are willing to get vaccinated for the sake of others. Of course, this question is complicated by the understanding that we now have regarding the available COVID-19 vaccines, which do not easily lend themselves to a straightforwardly altruistic kind of vaccination from the perspective of individuals, but primarily appear to be self-protective. Regardless, there was a time when the other-protective effects of the vaccines appeared to be stronger and thus constituted more of a ground for protecting others; it will be good to know the degree to which this knowledge persuaded people at the time (e.g., in getting their first dose). Even if most people have by now gotten vaccinated against COVID-19, and even if the other-protective aspects of vaccination are no longer as acute, such research could help to inform potential future outbreaks of disease and associated vaccination behaviors.

Second, such social sciences research might also help address the issue raised at the end of the previous section, namely: can government communication about vaccination employ positive moral language or appeal to moral considerations in such a way that it does not lead to inappropriate moralization and does ultimately contribute to vaccine uptake? This topic would require interdisciplinary work in social sciences and ethics, given that it not only involves exploring the psychological and behavioral effects of communication strategies, but that it also requires evaluating what the right balance should be between offering moral guidance and promoting freedom of choice within the context of vaccination.

Third, in light of the reasons-based scalar account introduced and defended in this dissertation, empirical research that examines the (weight) of moral reasons for vaccination, and couples this with whether people actually—that is, in making such decisions—consider (the weight of) those reasons and respond to them, will help us better understand the role of moral reasons in practice. The case of HPV vaccination appears to be a particularly good one to further explore those reasons beyond the altruism considerations that were reported in Chapter 3.

Fourth, given that the scalar account developed in Chapter Seven has, as far as I know, not been applied to other issues in public health, it would be good to examine whether it could be meaningfully applied to subjects beyond vaccination. The most obvious example, partly touched on in the discussion, is that of pandemic measures.

Conclusion

This chapter opened with a quotation from Tolstoy's great novel *War and Peace*. Tolstoy offers an assessment of the state of human existence that we can modify in the following way. While every person bears her own purposes within herself, and bears them also, at times, to serve more general purposes, those purposes are not always inaccessible to us. One general purpose for human beings is to live without unduly causing harm to others. Many people, if not most, recognize this. As should be clear from this dissertation, preventive vaccination can be an important means not only to protect one's own health, but also the health of others. To the extent that getting vaccinated can uniquely prevent or significantly reduce the chances of causing harm to others, this provides us with moral reasons to get vaccinated. Especially when the moral good of vaccination—to prevent the spread of disease and disease-related harms—

can be achieved singularly and reliably through the act of vaccination, at relatively little cost to oneself, this gives us a strong moral reason to get vaccinated. While there is clearly a place for enforcement of public health behavior in some cases, I have argued for the general importance of leaving space for people to respond to the moral reasons that they may have in light of the wellbeing of others. While governments have a role to play in identifying and communicating these reasons, it is up to all of us to recognize their moral weight. And, once recognized, it is up to us to decide how to act in light of them. Having the freedom to achieve this is an important good, which should be carefully considered against others.

The emergence of the COVID-19 pandemic changed the focus of my research, which gradually became more centered on addressing major ethical challenges surrounding COVID-19. In the end, I believe that this was to the benefit of the dissertation. For not only did the research have immediately relevance to academic and public debates about ethics and policy, but the ethical issues that were raised by COVID-19 and that were covered in these chapters are likely to remain with us for some time. Hopefully, we can learn from the experience; carrying over into future policies what went well, and leaving behind what could and should have been done better.

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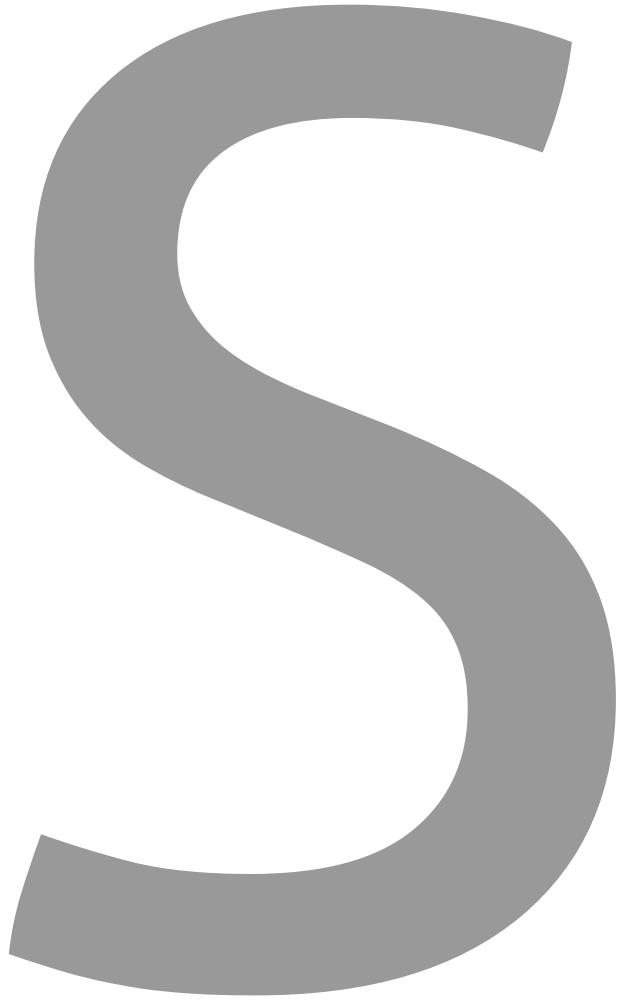

Summary

Summary

This dissertation examines the concept and ethics of vaccination for the sake of others by addressing different self- and other-directed effects of vaccination. In Chapter Two, the first substantive chapter, I set out (1) to determine how vaccination for the sake of others is best understood, and (2) to clarify different ethical issues that may be at stake when it comes to different kinds of vaccination—especially those that are primarily meant to benefit others. Chapter Two thus presents the conceptual work that grounded much of the research in this dissertation. Vaccination is a complex phenomenon, given that expected benefits for vaccinees tend to be probabilistic and based on future exposure to pathogens (rather than based on the immediate alleviation of illness), and because vaccination often affects not only vaccinees but also other people. In this chapter, I focus on disentangling some of the different self-and other-directed effects of vaccination, and seeing how these might underlie different kinds of vaccination.

More specifically, what does 'vaccination for the sake of others' mean? Is it a singular concept? I find that these questions are best addressed by distinguishing different kinds of vaccination based on (1) the potential motives at stake, (2) the different decision-makers in question, and (3) identifying those who stand to receive the major benefits of vaccination. I ultimately find that, based on these considerations, four kinds of vaccination should be separated.

I first define *self-protective* vaccination, which is when someone gets vaccinated to protect themselves (e.g., in the case of tetanus). I then define *paternalistic* vaccination, which is when someone makes the decision for someone else to get vaccinated, primarily for that person's (or group's) own benefit (e.g., parents getting their children vaccinated). Paternalistic vaccination could also take the form of governments making the decision for citizens (e.g., through mandates) to get vaccinated primarily for those citizens' own benefit.

I subsequently identify two further kinds of vaccination that may be generally understood as vaccination for the sake of others. I define *altruistic* vaccination as a case when someone, by their own volition, decides to get vaccinated primarily for the benefit of others. I define *indirect* vaccination, in contrast with altruistic vaccination, as occurring when decision-makers other than the vaccinee (e.g., governments or parents) decide that one group should get vaccinated primarily for the benefit of some other group. The key difference between the two is that altruistic vaccination is freely chosen by individuals, whereas in the case of indirect vaccination, decisions are imposed by others and will therefore usually involve some form of coercion (e.g., through vaccination mandates). It is this tension between voluntarily chosen vaccination and imposed vaccination that makes the idea of vaccination for the sake of others best understood as a twofold rather than a singular concept. It matters, ethically speaking, by whom the decision is ultimately made.

I argue that the different kinds of vaccination are associated with a distinct set of ethical issues and require different ethical justification when it comes to vaccination policy. This is true especially for the potential justification of coercive measures by governments and public health officials—in deciding, for example, whether to leave people free to get vaccinated for the benefit of others or to regulate that decision in a top-down manner. The principle of respect for autonomy—for allowing people, as rational agents, to make their own (medical) choices—is central here. The tension between altruistic and indirect vaccination and the questions to which it gives rise will be especially important in cases where vaccination of individuals or groups primarily for the benefit of third parties is a possibility and might be regulated in some way, thus potentially restricting people's autonomy. What means may justifiably be employed by governments to push people to get vaccinated when this would be primarily for the sake of third parties? This is a central question behind some of the COVID-19 vaccination policies that were adopted around the world.

In Chapter Three, I present the empirical work that was conducted for the purpose of this dissertation. What do people think about vaccination (policies) for the sake of others? This research aims to contribute to a better understanding of the potential role of altruism in people's vaccination decisions, as well as offer additional input for reflection on ethical issues surrounding altruistic and indirect vaccination. More specifically, two focus group studies were conducted to examine what people think about vaccination for the sake of others in cases where the primary benefits of vaccination may primarily extend to others beyond the individual vaccinees.

Study 1 comprises three focus groups on the subject of HPV vaccination for boys and men. Study 2 includes three focus groups centered on pertussis and measles vaccination for childcare workers (CCWs). In both studies, vaccination has the potential to confer significant health benefits to others. Those benefits to others (rather than to oneself) may even constitute the most compelling reason for the target groups to get vaccinated. Boys and men getting vaccinated against HPV can help protect girls and women against HPV-associated cancers (Bray et al. 2018), while CCWs getting vaccinated against pertussis and measles can help protect vulnerable children (Hope et al. 2012; Rebman et al. 2018; Kohfal et al. 2020).

Substantial evidence was found across all focus groups for the importance of altruistic motives. Even though participants did not always spontaneously arrive at other-regarding considerations, once these were pointed out to them, they were generally deemed to be pertinent. In the end, participants mostly agreed that the potentially positive effects on the health of other people constitutes an important good and a morally relevant reason to get vaccinated. It can therefore be concluded that altruistic motives are an important factor in vaccination decisions, at least for the target groups in question.

The question of indirect vaccination sparked debate among the CCWs. An area of tension was revealed that revolved around whether pertussis and measles vaccination should be mandatory. On the one hand, CCWs agreed about the importance of protecting children through vaccination. On the other hand, CCWs greatly valued the freedom to make vaccination decisions for themselves and were mostly against enforcement. The major reason that was offered was that, should vaccination become coerced through mandates, this would limit the CCWs ability to take personal responsibility for protecting the health of the children under their care, which would be to the detriment of their role. Nevertheless, CCWs would consider mandatory vaccination to be more acceptable to the extent that it (1) protected them and others, and (2) also applied to people in professions like theirs. This tension between making the choice to get vaccinated for the sake of others freely (altruistic vaccination) or having the choice enforced through coercive measures (indirect vaccination) is important, in one way or another, for all of the subsequent chapters of this dissertation.

At this point in my research, the world was marked by the outbreak of a novel coronavirus. The impact of the COVID-19 pandemic is already evident by the split focus in Chapter Three between, on the one hand, the cases that were initially selected for the target groups (HPV vaccination for boys and pertussis and measles vaccination for HCW), and, on the other hand, applying the meaning of those findings to COVID-19. The pandemic shifted the emphasis of this dissertation; from this point onward, COVID-19 public health measures and vaccination policies took center stage.

Even though the primary focus of this dissertation was on vaccination for the sake of others, I chose to address a very urgent matter that emerged at the beginning of the COVID-19 pandemic. Specifically, as governments around the world deliberated on and implemented different measures to try to curb the spread of a novel coronavirus, the following question presented itself: How ought governments to regulate COVID-19 measures? This question was most directly elicited by the lockdowns that were being imposed around the world, including 'hard' lockdowns that prevented people from leaving their homes for anything other

than the most urgent and/or government approved activities. As important as it was to take measures to reduce the spread of the virus (e.g., quarantining when ill, physically distancing, etc.), hard lockdowns seemed to raise their own set of ethical issues.

I realized that a major tension behind some of these measures was akin to that identified between altruistic and indirect vaccination. That is, pandemic policies aimed at curbing the spread of the virus and protecting third parties (like vaccination policies toward the same end) could be adopted through more or less coercive means. In the end, the pandemic measures were not primarily aimed at protecting individuals—who, after all, could opt to stay home on their own if they wanted to—but more at reducing pressure on healthcare systems and to protect vulnerable people. Should people be forced to take certain pandemic measures, or should there be room for people to adopt them of their own accord? This is a question at the heart of Chapter Four.

I found that the taxonomy developed in Chapter Two could helpfully be extended to the ethics of different pandemic policies. Chapter Four thus applied the distinction between altruistic and indirect vaccination to a different area of public health policy and regulation, namely nonpharmaceutical interventions (NPIs) that were intended to slow the spread of COVID-19. I argue that, as in the case of other-regarding vaccination, pandemic measures to reduce the spread of the virus might be voluntarily adopted by individuals (like altruistic vaccination) or could be more strictly enforced (like indirect vaccination). The strictest enforcement—so-called hard lockdowns—happened at different times in various countries, like Italy and China. It was for this approach that I foresaw the most serious ethical issues.

More specifically, I raise a number of different ethical issues with hard lockdowns, centering on freedom and justice. Hard lockdowns encroach on citizen's freedom of movement and potentially violate people's privacy—for instance, when lockdowns are enforced by governments through the tracking of citizens' movements. Severe restrictions of freedom also likely lead to reactance (e.g., lockdown fatigue), given that they constitute a heavy burden to bear for an extended period of time. With regard to justice, the burdens were unlikely to be even roughly evenly distributed among people during lockdowns. Given that the benefits to others and to society were meant to be for everyone, it was arguably unfair that some populations would suffer much higher costs than others. I introduced two arguments to this end: the *unequal home conditions* argument, and the *unequal geographical disease burden* argument. The first argument held that home conditions were not equal among citizens who were forced to stay home during lockdowns, so that some populations—especially the poor, and those who are especially vulnerable (e.g., those in abusive relationships, those with mental health problems, etc.) would bear much severer burdens to achieve the ends of lockdowns, especially compared to those who were well-off and could afford to maintain themselves with relative ease and comfort. The second argument held that the incidence and impact of COVID-19 was unlikely to be even roughly equally distributed across geographical regions within a given country, so that uniform lockdown measures across an entire country might be unfair and disproportionate for those regions that do not face high COVID-19-related pressures.

As an alternative to hard lockdowns, I propose an altruistic approach that would allow, as much as possible, for people to take the necessary measures upon themselves. Such an approach would preserve important citizen freedoms, avoid potential injustices, and give people a sense of meaning in precarious times. I also argued that there are important moral reasons, both theoretical and practical, to allow space for individuals to voluntarily adopt the necessary measures. Freedom is a necessary condition for altruism, which depends on the proper kind of self-chosen motive, and for taking moral responsibility for one's actions. Freedom is important for people to enable them to express solidarity with their fellow human beings, especially during a time of crisis. Engaging in altruistic behavior is associated with a

number of psychological and existential benefits, like experiencing a greater sense of meaning and purpose in life, greater psychological flourishing, an increase in well-being and vitality, greater life satisfaction, higher positive affect, and more psychological well-being. In short, there are not only theoretical but also practical reasons for governments to encourage, rather than enforce, prosocial behaviors like pandemic measures.

In Chapter Five, I address the controversial question of whether children should be routinely vaccinated against COVID-19 and/or whether mandates for children are ethically justified. While the COVID-19 vaccines were first rolled out to the most vulnerable populations, the question eventually arose whether children, too, should get vaccinated. This was, and remains, the target population for which COVID-19 vaccination is most heatedly debated among experts, policymakers, and the public.

Risks of COVID-19 morbidity and mortality are highly stratified by age and the presence of co-morbidities (ECDPC 2022), so that the virus does not pose nearly as high a risk for healthy children as it does, for instance, for elderly people. The median age of COVID-19 deaths in the U.K., for example, was 83 years (ONS 2022). Whereas most childhood vaccines (e.g., measles) are intended to prevent illnesses that substantially affect pediatric populations, COVID-19 was not deemed a pediatric public health emergency (Pegden, Prasad, and Baral 2021). The benefit to children of the vaccines was therefore less clear than it was for other populations at higher risk.

The benefit-risk ratio was not self-evident, given that there were rare but potentially serious risks associated with the vaccines (e.g., blood clots, myocarditis), and given that the long-term safety profile of the vaccines was unknown due to their novelty (i.e., there were simply no longer-term safety studies available). Nevertheless, the following additional consideration emerged. Perhaps by vaccinating this population against COVID-19, the spread of the virus might be substantially reduced, and herd immunity achieved, so that the primary benefits might not so much be for children themselves but rather for adults, vulnerable groups, and society more generally? In addressing this idea, the taxonomy developed in Chapter Two again proved useful in guiding the ethical discussion.

In Chapter Five, I therefore provide an ethical analysis of vaccinating healthy children against COVID-19. Specifically, I present three of the strongest arguments that might justify COVID-19 vaccination of children: (a) an argument from paternalism, (b) an argument from indirect protection and altruism, and (c) an argument from global eradication. I offer a series of objections to each of these arguments to show that none of them is tenable at present. Given the minimal direct benefit of COVID-19 vaccination for healthy children, the potential for rare risks to outweigh these benefits and to undermine vaccine confidence, the substantial evidence that COVID-19 vaccination confers adequate protection to risk groups whether or not healthy children are vaccinated and that current vaccines do not provide sterilizing immunity, and given that eradication of the virus is neither feasible nor a high priority for global health, I argue that routine COVID-19 vaccination of healthy children is currently ethically unjustified. Since mandates for children were already implemented in some places (e.g., California) and may be considered elsewhere in the future, I also present two additional ethical arguments explicitly against making COVID-19 vaccination mandatory for children.

As vaccines against COVID-19 became more widely available, many people opted to get vaccinated. However, some people chose not to get vaccinated at all or not to get the full number of recommended doses. In order to try to increase uptake, coercive policies were introduced in many countries around the world. These policies took different forms. For example, unvaccinated people were prevented from being able to work, from attending college, from using public transportation, from going to restaurants, and so on (see, e.g., Giuffrida 2022; Bardosh et al. 2022b). Vaccine passports became a reality in many places. In Italy, compulsory vaccination for people over 50 was implemented (Giuffrida 2022), and

there were discussions about compulsory vaccination for the general population in other countries, like Austria (Chadwick 2022).

In Chapter Six, I therefore focus on these kinds of COVID-19 vaccination policies for the general public. In particular, I examine whether coercive policies like vaccine passports and mandates could be justified—and, if so, by which principle. Coercive policies were presumably justified by the harm principle, according to which preventing harm to third parties is a necessary, if not a sufficient, ground for coercion. If such policies are incapable of substantially preventing harm to third parties, their public health justification would be less tenable—even if coercive policies were morally neutral and even if they did not lead to collateral harms (which, I argue, is rarely the case).

Questions surrounding the primary beneficiaries of vaccination and of decision-makers thus took center stage again. Presumably, coercive COVID-19 vaccination policies were an example of indirect vaccination, to use the concept developed in Chapter Two. As I argued in in that chapter, however, indirect vaccination policies require strong ethical justification. One justification might be the harm principle. Yet, as it became clear that COVID-19 vaccines did not block transmission, the question arose whether coercive vaccination policies could (still) be justified. The latest evidence suggested that the current vaccines only provided a modest and temporary effect on transmission (Wilder-Smith 2021), which seemed to call into question the harm principle as a direct justification of coercion.

In Chapter Six, I attempt to address these questions by examining the ethics of post-vaccination transmission dynamics for COVID-19. More specifically, I discuss recent evidence that the current COVID-19 vaccines provide only a modest and temporary effect on reducing SARS-CoV-2 transmission. I argue that this has at least four important ethical consequences. First, that getting vaccinated should be seen primarily as a self-protective choice for individuals (cf. Chapter Two). Second, that moral condemnation of unvaccinated people for causing direct harm to others is unjustified on those grounds. I have argued more extensively about the dangers of inappropriate moralization of public health behavior elsewhere (Kraaijeveld and Jamrozik 2022). Third, that the case for a harm-based moral obligation to get vaccinated is weak for COVID-19, given that harm cannot meaningfully be prevented through vaccination. And, finally, that coercive vaccination policies that exclude unvaccinated people from society cannot be directly justified by the harm principle. I urged governments and public health officials to be clearer about the ethical grounds on which potentially coercive COVID-19 vaccination policies are based.

What are the moral reasons that people might have to get vaccinated for the sake of others? While chapters Four, Five, and Six focused on ethical questions of policy—respectively, on pandemic policy, on COVID-19 child vaccination policy, and on coercive COVID-19 vaccination policy for the general population—Chapter Seven more systematically investigates vaccination ethics from the perspective of individuals and the moral reasons that they might have to get vaccinated. Rather than examine other-regarding vaccination from the perspective of moral vaccination duties (as many others have done), this chapter aims to answer the following question: What moral reasons do people have to get vaccinated for the benefit of others? Chapter Seven thus deals most directly with what I have termed altruistic vaccination, in the sense that it deals with our moral consideration of others in relation to vaccination—even before questions of policy and government regulation arise (although these will, in the end, also be relevant).

In order to get at the moral reasons for getting vaccinated, I introduce and defend a harm-based, reasons-based, scalar account of vaccination ethics. With regard to the moral primacy of harm, I argue that the moral good of vaccination is to prevent disease-caused harm to others. The harms to others that may be prevented by getting vaccinated have long been considered morally significant (e.g., Brennan 2016). In recent years, there have also been

attempts to ground vaccination duties in non-harm-based principles. To justify mandatory vaccination policies, for instance, appeals have been made to principles like fairness (Giubilini 2019) and solidarity (Bayefsky 2018; Yeh 2022), which ostensibly give rise to moral duties to get vaccinated. I argued that a harm-based account is nevertheless the most compelling starting point. While others have argued that harm-based considerations have moral primacy over some of these other kinds of considerations for vaccination ethics (Ivanković and Savić 2022), the discussion has so far remained within the framework of moral obligations. I aimed to move beyond this discussion by arguing for a reasons-based scalar account, according to which moral reasons to get vaccinated can be stronger or weaker.

In particular, I outlined eight harm-based and probabilistic factors that give people moral reasons to get vaccinated:

(A) The probability that Person *P* will at some point be infected with pathogen *Z*.
(B) The probability that *P*, if infected, will infect an individual *I* (or individuals *I*s) with *Z*.
(C) The ex-ante probability that *P*, if infected, causes severe harm to *I*/*I*s through *Z*.
(D) The degree to which *I*/*I*s can reduce the risk of contracting *Z* or the risk of severe harm caused by *Z*.
(E) The probability that *I*/*I*s would be infected by people other than *P*, whether or not infected by *P*.
(F) The ex-ante probability of onward chains of transmission beyond close contacts of *P*.
(G) The probability of recovery through treatment for disease(s) caused by *Z*.
(H) The sum of costs (e.g., material, risks) for *P* to vaccinate against *Z*.

Instead of understanding other-directed vaccination in terms of binary moral duties (i.e., where people either have or do not have a moral duty to get vaccinated), a scalar approach allows the assessment that people can have stronger or weaker moral reasons for getting vaccinated for the benefit of others in light of the unique good of vaccination (i.e., preventing harm to others). One advantage of this approach is that it captures the idea that a person may have strong moral reasons to get vaccinated against Disease X with Vaccine A, for example, but that she may have only weak moral reasons to get vaccinated against Disease Y with Vaccine B. There may even be more reason for her to get one rather than another available vaccine for the same disease (e.g., if it has a larger potential effect on reducing chances of transmission, has a better safety profile, etc.). These nuances are sometimes lost in arguments about moral duties to get vaccinated as such. In contrast, the scalar approach developed in Chapter Seven allows for a very fine-grained ethical analysis of moral reasons to get vaccinated, which is highly sensitive to contextual factors (e.g., to epidemiological circumstances and developments).

The scalar account developed in the last chapter ties together many of the themes in this dissertation by rigorously examining different other-related reasons that people may have to get vaccinated. In the final chapter, Chapter Eight, I further explore and discuss the significance of this account for vaccination ethics, as well as some of the implications of this dissertation as a whole.

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Steven R. Kraaijeveld
Wageningen School of Social Sciences (WASS)
Completed Training and Supervision Plan

Wageningen School of Social Sciences

Name of the learning activity	Department/Institute	Year	ECTS*
A) Project related competences			
A1 Managing a research project			
WASS Introduction Course	WASS	2021	1
Writing PhD proposal	WUR	2019	6
4TU Ethics Annual Writing retreat	4TU Centre for Ethics & Technology Graduate School	2020, 2021	5
"Scalar Approach to Vaccination Duties"	4TU.Ethics Biannual Conference, Ede	2021	1
"Epistemic Medical Technology and Epistemic (In)Justice"	16th World Congress of Bioethics, Basel	2022	1
A2 Integrating research in the corresponding discipline			
Technology and the Good Society	4TU Centre for Ethics & Technology Graduate School	2019	5
Philosophies of Technology	4TU Centre for Ethics & Technology Graduate School	2020	5
Philosophy of Risk	Onderzoekschool Wijsbegeerte / 4TU Centre for Ethics & Technology Graduate School	2018	5
B) General research related competences			
B1 Placing research in a broader scientific context			
Philosophy of Responsible Innovation	Onderzoekschool Wijsbegeerte / 4TU Centre for Ethics & Technology Graduate School	2022	5
Participation in Book Manuscript Symposium & Presenting Review "Inducing Immunity"	Paul Scholten Centre for Jurisprudence	2021	2
B2 Placing research in a societal context			
4TU.Ethics Blog Editor	4TU Centre for Ethics & Technology	2021-2022	2
C) Career related competences/personal development			
C1 Employing transferable skills in different domains/careers			
Teaching assistant "Ethics, Health & Society"	Philosophy chair group	2018-2022	4
Total			**42**

*One credit according to ECTS is on average equivalent to 28 hours of study load

Colophon

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