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When Enhancements need Therapy: disenhancements, Iatrogenesis, and the responsibility of Military Institutions

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Recent developments in a range of brain stimulation technologies suggest that we might be able to enhance soldiers through direct manipulation of their brains. The electric stimulation of the dorsal frontoparietal network has been explored as a way to increase and improve threat detection (Parasuraman & Galster, 2013). Deep brain stimulation "in which stimulation electrodes are stereotactically implanted into specific brain targets under local or general anesthesia" has been shown to enhance cognition (Hescham et al., 2020, p. 3). Likewise, transcranial direct current stimulation has been shown to improve cognition and learning (Looi et al., 2016; Simonsmeier et al., 2018). Given the interest in using these sorts of technologies to enhance soldier performance, consider this scenario: Ned is a soldier. His commanding officer, Amy, has requested that he undergo a technological intervention that will enhance his capacity to perceive and respond rapidly to threats.

This enhancement will be achieved by a largely permanent neurological implant.[1] Ned asks why he should receive this implant and Amy says they have been shown to increase an operation's likelihood of success – as Ned can perceive and respond to threats more quickly, it will reduce the risk that Ned's teammates will face from enemy combatants. Moreover, due to the implant's enhancement of Ned's capacities in conflict, in receiving this implant, Ned will be granted permission to go on more important missions. Amy also points out that these implants do not have any noticeable impact on the recipient's capacity to follow the laws of armed conflict; there is no noticeable risk of Ned committing any violations of the *jus in bello* principles, and may in fact increase Ned's capacity to follow the *in bello* principles. When viewed

[1] While the implant can be removed, this is a costly and painful process, and removing it carries with it some risk of causing a brain haemorrhage. As such, recipients of the implants are largely expected to retain the implant for the remainder of their life.

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this way, the implant enhances the prospects of military success, for Ned, for his team, and for the military overall.

Ned is still a little unsure, but recognises that his commanding officer has asked for this. Moreover, he realises that if he receives the implant, he will be sent on more combat missions and this will ultimately increase his chances of promotion, so he accepts the implant. It works as described, and Ned's military missions are successful. However, like all soldiers, he returns to civilian life, but now things are different. As a result of the implant, he sees threats in normal life; his body is constantly on the lookout for potential threats to him and his family, and he is more likely to react rapidly to stimuli like they are threats. Talking with a psychologist, Ned realises that he is displaying the symptoms of hypervigilance, a symptom commonly associated with Post Traumatic Stress Disorder (PTSD). In short, the implant is a disenhancement for civilian life.

The ethical challenge here is whether Ned qualifies for special care from the military as a result of the hypervigilance caused by the implant. Normally, the military would have an institutional duty of care to provide ongoing support for members and ex-members dealing with conditions like PTSD. However, in Ned's case, his conditions are the result of the implant, not his exposure to conflict. This is relevant as Ned not only consented to receive this implant, but he was also informed of the potential long-term outcomes of the implant. As such, it seems like Ned has taken on the special risks of the implant, much like he takes on the special risks of joining a military. Moreover, the intervention that Ned received is an *enhancement*. By definition, Ned has benefited from the implant. As such it may seem strange to demand that Ned receive extra care because of something that benefits him.

The point here is that, given that Ned has consented to receive the implant, benefited from it, and the ongoing effects are not the result of conflict but from the enhancement, we need to ask who should bear responsibility for the ongoing effects when Ned returns to civilian life? On the one hand, this was as part of his military service, so perhaps it is the military's responsibility. One the other hand, not only did Ned consent to receive the implant, this implant is an enhancement; he benefited from it. Moreover, the negative aspects are experienced when Ned is no longer serving, so perhaps the responsibility is Ned's.

The argument of this paper is that the military does in fact have a responsibility to Ned's ongoing care as a result of him receiving the implant. The argument will develop in this way – first, I will show how Ned's implant can be thought of both as an enhancement and as a *dis*enhancement; that our assessment of these technologies depends on the context in which the implant is assessed. Second, I look at some of the ethical issues that arise with military enhancements. I then introduce the notion of iatrogenic illnesses, which are 'doctor caused illnesses' to show that particular professionals and institutions have an ongoing duty of care for recipients of interventions, even if those interventions are justifiable and the recipients have consented to them. I next look three counter-arguments to this claim, and in doing so, I give details on institutional moral responsibility for interventions like Ned's military enhancement. The this leads to the ultimate conclusion that some enhancements require therapy, and in particular contexts, particular institutions have a duty of care to provide that therapy.

1 On Enhancement And Disenhancement[2]

Enhancement is a complex and contested concept, with numerous descriptions of what an enhancement is. Rather than enter into a discussion of its meaning, for the purpose of this paper, I mean enhancement to refer to *some deliberate biotechnological intervention that adapts the subject to their environment in some significant way, that is costly or effortful to maintain or reverse*.[3] For this paper, what is relevant is that an enhancement adapts the subject of the enhancement to their environment in some significant way. Simply put, Ned's implant enhances Ned's capacity to identify and respond to threats, and generally increases the likelihood that particular military missions will be successful and/or that Ned and his team members will be at lower risk of enemy attacks.

For this paper, I want to be quite explicit – the implant that Ned receives is stipulated to be uncontroversially an effective military enhancement. That is, the implant enhances particular attributes in the recipient, in ways that increase the success of the military missions. In Ned's case, the implant means that Ned's ability to perceive threats is increased, and his responses are more rapid than he would normally be without the implant. Further, it means that the risks faced by Ned's teammates from threats in the conflict zone are also decreased. It thus increases the success of the missions that Ned is on. It is thus a 'successful' intervention. Moreover, for the purposes of this paper, the implant works as expected. The mission success is increased, but importantly, this implant does not have any unwanted effects on the missions. Ned, for instance, is at no increased risk whatsoever of violating the laws of armed conflict. The implant will not cause Ned to use force unnecessarily, will not increase the chances of Ned targeting non-combatants, nor will it skew his proportionality calculations. These stipulations are important as I do not want there to be any concern that the implant is problematic in the military context, either in a practical or ethical sense. A key theoretical point of this paper is that even if interventions work exactly as we would like, and enhance recipients in the ways that we want them enhanced, there are still ethical concerns with such interventions.

The reason for this is that when Ned returns to civilian life, the military have considerable evidence to anticipate that the implant will become a *dis*enhancement. The functionality of the implant remains constant, and this is the problem. Now, in the civilian context, Ned is constantly on the lookout for threats. If he goes to a shopping centre, a sports event, picks his children up from school, he is constantly looking for threats to him and his family. These changes are not just experienced by Ned either. His family and friends note that he is on edge, quick to snap at small events, and this puts all of them under stress as well. While Ned is not about to cause physical harm to anyone, when back in the civilian context, his quality of life and the quality of life of those around him is noticeably reduced. As before, I want to stress that this is the intended and expected outcome of the implant – it is working exactly as it

[2] This section draws from another paper, that looks in detail at the notions of enhancement, disenhancement, and context. See (Henschke, n.d.).

[3] I discuss the specific reasons for adopting this meaning here (Henschke, n.d.).

should. But now that he is back at home, I argue that the implant has now become a disenhancement.

The notion of a disenhancement is concerned with certain biotechnological interventions that negatively adapt the subject to their environment. This idea and terminology comes from debates about the ethical permissibility of breeding blind chickens for high intensity food production (Ferrari, 2012; Hadley, 2012; Henschke, 2012; Hongladarom, 2012; Thompson, 2008) In these debates, people have speculated that chickens that are naturally blind experience less stress when grown in high density chicken farms (Thompson, 2008). Normally, such high density conditions are bad for the welfare of the chickens, but in chickens that are blind, their cortisol levels are lower than sighted chickens. Cortisol is thought to be present in higher levels in animals that are stressed. In the case of the blind chickens, the speculation is that because they are blind, these chickens suffer less, a claim supported by lower cortisol levels in these blind chickens. And so the debate is whether it is permissible to disenhance chickens, such that the high density can be maintained, whilst having less overall suffering in those disenhanced chickens. My point here is not to enter into discussions about the ethical permissibility of disenhancements,[4] but to focus attention to the concept of disenhancement.

My suggestion is that, if we accept that interventions can be disenhancements, for certain interventions, we ought also recognise that some interventions can be *both* an enhancement *and* a disenhancement. What matters is the context or environment in which we are assessing the intervention. To demonstrate this point, consider an intervention in which Barbara has her lungs radically altered, such that they become gills.[5] In this example, Barbara is now able to breathe underwater. On any sensible account of enhancement, including that provided above, this would count as an enhancement. However, Barbara's gills only work underwater, and if she returns to land, she will suffocate and die. When she is on land, her gills are now disenhancements. My point here is that the same intervention can be seen as both an enhancement and a disenhancement. The context plays a necessary role in helping determine which way we assess the intervention.

The important point here is that what makes the difference is not simply how the intervention itself changes the recipient, but how that intervention adapts the recipient to their particular environment. Further to this, as the environment changes, an intervention can shift from being an enhancement, like a human having gills underwater, to being a disenhancement, like suffocating on dry land. Thus, any ethical assessment of an intervention needs to include the environment or context that the intervention is, or will be, operating in. Given that enhanced soldiers will have to return to civilian life, this capacity of an intervention to be both an enhancement and disenhancement is particularly relevant when considering military enhancements.

[4] I also note here that being blind is not necessarily negative. As advocates for the differently abled have argued, such conditions are negative in part due to wider social factors. But for the purposes of this paper, I am going to retain the language and example of disenhancements and blind chickens to keep the discussion tied to the relevant literature.

[5] I describe this example in more detail in (Henschke, n.d.).

2 Ethics of Military Enhancement/Disenhancement

Having recognised that an intervention might be both an enhancement or disenhancement, depending on the environment, we are in a better position to assess Ned's implant. When in the context of military conflict where one must be attentive for, and able to rapidly respond to, enemy threats, Ned's implant is an enhancement. Not only does it decrease his vulnerability to enemy threats, it increases his unit's overall safety and likelihood of success. As such, when assessing the implant in a context of conflict, it is an enhancement.

Further to this, Ned might actually have a moral responsibility to receive the intervention. As described, the implant enhances Ned's military performance, and poses no ethical hazard. This argument is similar to that proposed by Bradley Strawser. When looking at uninhabited aerial vehicles (UAVs) Strawser argues that.

> if an agent is pursuing a morally justified yet inherently risky action, then there is a moral imperative to protect this agent if it possible to do so, unless there exists a countervailing good that outweighs the protection of the agent. Thus, I will contend that, as a technology that better protects (presumably) justified warriors, UAV use is ethically obligatory, not suspicious (Strawser, 2010, p. 343).

On an analogous line of reasoning, if the implant can protect an agent like Ned, and/or his team mates, then implant use may be ethically obligatory. If Ned cares about his own survival, the safety of his team mates, and/or the success of his missions, he may in fact have a moral responsibility to receive be enhanced.

On Strawser's account though, we must take into account potential countervailing goods that might outweigh the protection of the agent. And this is where recognising and assessing the intervention in the civilian context becomes important. When Ned returns to civilian life, the same attributes of the implant that make it an enhancement now give Ned the symptoms of hypervigilance. Such symptoms are likely to negatively impact Ned's life and the life of those around him. As such, when assessing the implant in a civilian environment, it is a disenhancement. Importantly, as specified, none of the implant's affects have changed. Instead, what has changed is the environment that the intervention is operating in, and our assessment shifts with that environmental shift.

The ethical assessment of the implant becomes more complicated though. Generally, it would be unethical to knowingly cause someone to experience psychological distress such as hypervigilance. We thus have to make a decision – do the arguments in favour of the intervention outweigh the arguments against it? That is, do we weigh the military context as more or less important than the civilian context? Furthermore, we may need to recognise the complicating factor when this sort of intervention is a potentially 'transformative experience'. Lauri Paul describes such experiences as

> choices involving dramatically new, life-changing experiences, [where] we are often confronted by the brute fact that before we undergo the experience, we know very little about outcomes will be like from our own first-personal per-

> spective. Our imaginative and other epistemic capacities are correspondingly limited, with serious implications for decision-making. If we are to make life choices in a way we naturally and intuitively want to—by considering what we care about, and imagining the results of our choice for our future selves and future lived experiences—we only learn what we really need to know after we have already committed ourselves (Paul, 2015, pp. 760–761)

.So, Ned at the time of consenting to the implant might not even be the best judge of the effects of this decision. Ned in the civilian context enduring the hypervigilance might subsequently consider that the decision to receive the implant was not worth it. However, if he had not received the implant, and either had been injured, or had members of his team injured or killed during conflict, he might subsequently regret not receiving the implant. And of course, if he died during conflict, that would complicate the risk/benefit calculations even more. This personal identity angle of the discussion is beyond the scope of this paper;[6] the point is that the ethical assessment of the implant is not just complicated, but changes through time – something that the enhancement/disenhancement discussion seeks to capture.

There are three ways to approach this. First is to say that the purposes of the military are so important that they outweigh any of Ned's concerns, and so Ned should accept the enhancement. Another is to simply say that the risks to Ned's quality of life as a civilian are simply too great, and so the intervention should not be allowed. This essentially runs up against the first approach - One of the known features of military service is that those serving put themselves at risk. Not only do they put their lives on the line, given that we accept that veterans may have psychological and emotional stress and trauma as a result of their service, this seems like part of the burden that warfighters take on as part of their role.

> Members of the military sacrifice significant amounts of autonomy as an integral part of their service. Among the elements of autonomy that they lose is the freedom to avoid the risk of personal harm when ordered to face a threat. This impairment of autonomy limits the ability to decline medical interventions that are ordered through the chain of command, such as vaccination. (Field & Caplan, 2008, p. 118).

The point here is that we already accept that the reasons in favour of military service and going into conflict outweigh the risks posed to individuals. So interventions like Ned's implant seem no different. That is, there is a *prima facie* case to reject the second approach in favour of the first. However, it is likely that people's intuitions here might simply differ on how they value the purposes of the military, and military service that goes along with that. I think here that positing a stark binary is going to be an open question.

A third, more nuanced approach, rejects the stark binary. Instead, it seeks to accept but mitigate the risks of the intervention. Looking at the standard situation with vet-

[6] For more on personal identity, see (Butler 2008; Henschke 2017; Korsgaard, 1989; Parfit, 1971b, 1971a; Perry 1978).

erans, we recognise that there are costs to military service, including psychological costs.[7] In order to allow military service to occur, there has been a developing recognition of the need to train or prepare soldiers in ways that will reduce the likelihood and severity of conditions like PTSD (Riggs & Sermanian, 2012) and, increasingly, moral injury (Frame 2015). Militaries are devoting more resources to ensure that soldiers and veterans receive ongoing support and care following deployment, such that the effects of PTSD and so on are minimised (National Center For PTSD, 2009). However, in Ned's case, recall that the conditions of concern are not a result of his exposure to conflict, rather they are the desired outcomes of the implant. What I suggest here is that, insofar as Ned may have a moral responsibility to receive the implant, a new story needs to be told as to who bares moral responsibility to mitigate those burdens of the implant when Ned returns to civilian life. To tell this story, we can look to medical interventions, iatrogenic illnesses, and responsibility.

3 Iatrogenic Illnesses And Responsibility

One way of thinking about how we assign moral responsibility for disenhancements is to see a disenhancement as a form of iatrogenic illness. The basic idea of an iatrogenic illness is that it is a negative health condition brought about by a medical intervention.[8] In simple terms, iatrogenic illnesses can be thought of as 'doctor caused illnesses'. Iatrogenic illnesses are important as they give us a way to understand how and why medical professionals might be morally responsible to mitigate the unwanted effects of a given medical intervention or treatment. I suggest here that a similar professional responsibility obtains in the case of military interventions that become disenhancements in the civilian context.

To give an example of an iatrogenic illness, consider that certain COVID-19 vaccines have been shown to cause a particular form of blood clot in a small number of vaccine recipients (Mahase, 2021). Here, we can say two things. First, that the blood clots were caused by the vaccine – in a simple cause-and-effect sense, the medical intervention or treatment is causally responsible for the unwanted outcome. Second, as a medical professional was the one who administered the vaccine, they are causally responsible as an agent. The important aspect here is that the COVID-19 vaccine is not simply good, but might be morally required. Vaccines not only provide significant protection to the recipient, but also play a significant role in herd immunity, they provide protection to the community (Field & Caplan, 2008; Fielding et al. 2021; Giubilini, 2021). This is relevantly analogous to the intervention that Ned receives – it is not simply good, but there are reasons suggesting that he has a moral responsibility to receive the intervention. And, like the vaccine, the intervention comes with particular risks, and those who played a necessary causal role in bringing those risks about may bear some moral responsibility for those risks.

[7] Given that suicide affects many ex-military service members (Reger et al., 2015), the need for ongoing psychological veteran care and support is arguably one of the greatest issues facing modern militaries.

[8] See, for instance, (Carson-Stevens et al., 2015; Panesar et al., 2016; Parry et al., 2016; Weiner & Roth, 2006)

However, simply because someone is a causal agent, it does not necessarily follow that they ought to be held *morally* responsible.[9] In the case of the medical professional and vaccine recipient, we would obviously have to ask if the vaccine recipient had requested the vaccination and had given informed consent to that treatment. This is relevant as the recipient might instead be the agent held morally responsible for the unwanted outcome: While the medical professional administered the vaccine, given that they are doing this at the request of the recipient, the recipient is the point of origin for the vaccination, which led to the blood clots. The medical professional is effectively a tool or aid in bringing about the end result. Informed consent can be thought of not only as "an individual's autonomous authorization of a medical intervention" but also a "legal undertaking aimed at reducing a physician's liability" (Whitney et al., 2004, p. 54). Assuming that the recipient has been fully informed of the risks, it would seem that the recipient is the relevant moral agent here.

The moral responsibility for iatrogenic illnesses arising from the COVID-19 vaccination becomes analogous to Ned's case if there is a legal mandate or professional requirement for people to receive the vaccination. For instance, people in particular professional roles that make others vulnerable to their potential infectiousness might have additional responsibility to accept a vaccine. "Health care workers, it can be argued, voluntarily accept certain medical risks in choosing their occupation and thereby consent to restrictions on their autonomy in this regard. Possible hazards of a vaccination that is required to prevent the spread of a disease to patients are among these risks" (Field & Caplan, 2008, p. 118). Given that the recipient is being compelled by an external force, we may now want to say that neither the recipient nor even the medical professional bear moral responsibility for the unwanted effects of the vaccine. Here, the relevant government institutions that require people to be vaccinated may bear the responsibility for the outcomes of the vaccination.

The similarity with Ned's case draws on the recognition that particular professions accept risk as part of that job. As mentioned, military service is an inherently risky profession, and those serving in the military take on that risk as part of the job. Like the medical professional, Ned voluntarily accepts certain military "risks in choosing their occupation and thereby consent to restrictions on their autonomy in this regard. Possible hazards of [an intervention] that is required to [enhance military success] are among these risks" (Field & Caplan, 2008, p. 118). Here, if we accept the institutions compelling vaccination are morally responsible for the outcomes of the vaccination, then by analogy, the military institution that is compelling Ned to receive an implant is morally responsible.

Adding complexity to the ethical analysis of iatrogenic illnesses is that the medical intervention or treatment is desirable and might in fact be necessary. As such we meet a similar issue discussed above, where it seems like the reasons in favour of the medical intervention or treatment, like a COVID-19 vaccine, outweigh the risks. But, as above, this does not end the ethical analysis. We need to consider the notion of moral responsibility here. Moral responsibility is not necessarily just about apportioning

[9] Nicole Vincent, for instance, offers a six part taxonomy of responsibility concepts that separates causal from moral responsibility (Vincent).

blame for the unwanted effects, but may instead refer to the medical professional's duty of care to watch for and mitigate those unwanted effects.

> In the process of [informed consent], after information on the interventional process is given to the patient, the patient's Face appears: this Face demands support and protection and limits patient's autonomy. Consequently, the doctor is asked by the patient to take responsibility for the Other. This responsibility will not only justify her actions, but also implies the duty of caring for others, given the state of vulnerability in which the patient finds himself (Benito & García, 2016).

If a person is at some risk of blood clots from the COVID-19 vaccine, then like any vaccination and meaningful informed consent process, the relevant medical institutions have a moral responsibility to alert them to this risk (Nihlén Fahlquist, 2018; Warren & Lofstedt, 2021). In this case, medical professionals need to be particularly active in monitoring for potential blood clots, and to have relevant therapeutic resources available and accessible to the vaccine recipient should symptoms of blood clotting occur. Here, responsibility is not concerned with finding who is fault for causing the problem, but instead, responsibility is concerned with identifying and specifying who has particular duties to prevent or mitigate the negative outcomes of the medical intervention or treatment.

Consider an alternative scenario, where a vaccine recipient is required to be vaccinated – they have limited capacity to say no without incurring significant costs – but they must seek out and pay for any therapy needed to treat the unwanted effects of the treatment. This would be a failure of justice on behalf of those mandating vaccination to discharge the moral responsibility to care for the vaccine recipient. Note that this is a special duty of care, that can be generated in the absence of a general right to health care. Given that the particular condition is iatrogenic – the vaccine recipient would not have had the blood clots but for the medical treatment – the moral responsibility to provide treatment and therapeutic support to that person is owed by medical and larger social institutions that required the treatment or intervention in the first place. Ned's case is again analogous. If his role requires him to receive the implant, and it is known that this implant will become a disenhancement when in the civilian context, then it follows that those who have compelled him to receive the implant owe a duty of care to Ned when he returns home. As with iatrogenic illnesses, if there is a strong case for an intervention, but that intervention will become a disenhancement, such interventions may require therapy.

Having recognised the dynamic nature of enhancement/disenhancement, we know that the environment is fundamental to assessing whether a particular intervention is positive or negative. The dynamic nature of our assessment is also a vital point, as we need to recognise that particular interventions are an enhancement in the conflict environment. However, by focussing only on the positive assessment of the intervention, we are at risk of overlooking the perils of disenhancement. Further, we may be at risk of overlooking who has moral responsibility for the disenhancement. If Ned complains about the effects of his implant in civilian life, Amy might say "But the implant worked, and it is good, and you consented to it, so how can you complain

about it now? Further, because of all of these reasons, you are morally responsible for any negative effects."

Combining the dynamic nature of enhancement/disenhancements with the notion of iatrogenic illnesses is highly useful. Amy is perhaps right to challenge Ned, because on first glance, it does seem like Ned ought to bear moral responsibility for his decisions. However, the outcomes and conditions for Ned in the civilian context are not mere side-effects, they are the deliberate and intended outcome of the implant. What causes problems, that makes his implant into a disenhancement, is the result of the intervention in combination with the changed environment. Recognising that an intervention can be both an enhancement and a disenhancement explains how a justified, and willingly consented to procedure, is morally problematic. It also explains how we can be morally concerned about a particular intervention, even if we accept that the intervention is an enhancement. Comparing these situations to iatrogenic illness also allows us to develop an argument by analogy, where if a typical therapeutic intervention requires additional therapy to deal with the changes brought about by that therapy, the same should hold for an intervention that becomes a disenhancement when in the civilian context.

In short, bringing together the dynamic nature of interventions with the principles revealed by iatrogenic illnesses explains who ought to be held morally responsible. When considering a doctor caused illnesses, the doctor played a fundamental causal role, and so bear some moral responsibility. When thinking of mandated vaccinations, we saw that this moral responsibility can extend more broadly to include a duty of care to watch for and mitigate those unwanted effects. In short, we now have a case that argues that therapy may be morally required for enhancements.

The value of adding iatrogenic illnesses to this analysis is that, just like in the case of receiving a medical intervention or treatment like a vaccination, we can justify Ned receiving, and perhaps being compelled to receive, the technological intervention. This is not so much a case of whether he should accept the intervention, but more about the responsibilities that arise from the intervention. Where things are different to the medical case are that the negative outcomes and conditions for the recipient in the civilian context are not merely side-effects, but a result of the intervention in combination with the changed environment. However, by seeing analogies between military interventions, and iatrogenic illnesses, we can see how a justified, and willingly consented to procedure, generates institutional responsibilities. Moreover, the iatrogenic analogy explains how we can be morally concerned about a particular intervention, even if that intervention is justifiable. Comparing military interventions like Ned's to medical ones helps clarify the potential elements of moral responsibility. If a therapeutic intervention requires additional therapy to deal with the changes brought about by that therapy, the same should hold for an intervention that is both an enhancement and a disenhancement. Iatrogenic illnesses provide a useful guide about who ought to be held morally responsible, and what that moral responsibility entails. With doctor caused illnesses, the doctor played a fundamental causal role, and so bear some moral responsibility. When that medical intervention is mandated, in cases like pandemics and vaccinations, the responsibility is borne by the larger medical and political institutions that require people to receive the treatment. Looking at iatrogenic illnesses illuminates how and why the military institutions owe a duty care to

someone like Ned. In short, we are now in a better situation to see why the military institution has a responsibility to provide ongoing therapy for interventions that count as military enhancements.

4 Military Disenhancement And The Responsibility To Provide Therapy

Having made the case that ongoing therapy may be required for interventions that are both enhancements/disenhancements, we need to identify who is responsible to discharge the duty of care to recipients like Ned. Given that Amy played a significant, and necessary causal role in Ned's subsequent disenhancement, then Amy may bear some moral responsibility for this. However, this claim needs more work. As it is currently stands, it is vulnerable to three objections. Importantly, these objections help us define and determine what the responsibility for Ned's disenhancement entails. The first objection is that, perhaps Amy did not know that the context that Ned is in could shift the intervention from an enhancement to a disenhancement. Second, as described, Ned consented to the intervention, and so he alone bears responsibility for any of the negative outcomes. Finally, given that it is for a good purpose, the special nature of military enhancements may outweigh the reasons Ned has against receiving the implant.

4.1 Professional Responsibilities To Know And Communicate Risks

This objection works from the premise that Amy does not know that Ned's implant will cause him PTSD like symptoms when he returns to civilian life. This goes to an issue in informed consent, of whether Ned has been properly informed. If Amy was a doctor, and prescribes particular treatments or interventions etc., it is her professional responsibility to know the negative outcomes of those treatments or interventions. Moreover, she has a professional responsibility to inform her patients of these risks (Eyal 2019).

The same principle holds for military enhancements.[10] Those requesting, or simply offering (see below), that members of the military receive interventions to enhance military success need to know not just the side effects of the enhancements or basic safety issues around the interventions, but also that there is risk of them becoming disenhancements when back in a civilian environment. And, like the medical example, Amy has a professional responsibility to communicate those risks effectively to the potential recipient. That is, Amy needs to know that the given intervention, while it might be great in the military environment, will cause Ned to become hypervigilant in the civilian environment, and that this hypervigilance is bad, and needs to let Ned know about negative impacts in the civilian environment.

The important thing to recognise here is that, like the case of mandatory vaccinations, placing all that responsibility on Amy is problematic. That is, in order for Amy

[10] That said, informed consent does differ in the military context (McManus et al., 2005). I cover some of these differences below.

to discharge her professional responsibility, the military institution that she works for itself has an *institutional* responsibility to ensure that Amy herself knows these risks, and is given training and support such that she can communicate those risks properly to potential recipients like Ned. Thus, any responsibility needs to not only include the military institution, but to place them at the centre of any assignment of responsibility.

4.2 Responsibility In The Military Context

This issue turns on how the military context can impact Ned's capacity to say no to a particular intervention. This is the consent part of informed consent. The basic problem here is that in the military context, it can be hard for people to say no to requests (Latheef & Henschke, 2020; McManus et al., 2005). This is for four related reasons. First, given the command structure in the military, when a superior asks someone to do something, it may not be a standard request, but a command. If Amy commands Ned to receive the implant, then he has significantly less capacity to reject that than in a normal context of employment. Now, Amy may not have officially commanded Ned to receive the implant, she might simply request that he receives it. Here, however, there are cultural aspects that impact consent. Members of the military are trained to follow commands, and so it is culturally harder for Ned to say no to Amy than in a normal context of employment. Third is the professional pressure that Ned may be under. Here, it is possible that Ned may not get promoted if he doesn't accept particular missions. And, as described, if his participation in particular missions is contingent on him having the implant, then he has additional pressure to accept the implant. Finally, while Ned need not feel an explicit pressure to conform to what his team are doing. He might feel so bonded with his teammates that he is willing to sacrifice his own long well-being for that of the team. Such heroic sacrifices are common to serving in military, and we would expect that Ned might see accepting a risky implant as a heroic sacrifice he is willing to make for his team.[11]

This shows that there is a series of conditions around enhancements in the military that mean that the causal and moral responsibility for the negative outcomes of an intervention are dispersed. By that I mean that Ned's condition of disenhancement is not just Ned's responsibility. While we might still want to preserve Ned's agency and say that ultimately he consented to the particular intervention, there are more people than just Ned who are morally responsible for this. And, just like in iatrogenic illnesses, Ned's condition of disenhancement is, in some significant way, the military's responsibility. As we saw, however, responsibility here is not meant to finger point and blame Amy or the larger military institution she and Ned both serve. Instead, responsibility means that the military as an institution has an ongoing duty of care to Ned, to attend to, and mitigate where possible, the effects of disenhancement.

[11] See Shannon French's *The Code Of The Warrior* for more on discussions of character traits and heroic sacrifice (French 2003).

4.3 Enhancements Are Good

A final objection draws from the recognition that by definition, these interventions are still enhancements in the conflict environment. That is, they are good. One of the hard conceptual issues with arguing that there may be a duty of care to those who are recipients of particular interventions is that these interventions do enhance the recipients. To claim that something bad has happened because someone has been enhanced seems ungrateful. Ned, like all those who serve in the military, receive training, education, and a set of life experiences that make them not simply unique but also a highly valued asset. A nation will typically invest significantly in each service member.[12] An intervention like that proposed for Ned is not going to be cheap. The reason for such investment is to ultimately improve the recipient in a host of areas. In receiving the implant, Ned has not only increased his chances of surviving conflict, but has likely received promotion and better pay as a result. The point here is that we need to keep in mind that Ned benefits from the intervention. And so it may seem that he has to bear the costs of those opportunities.

Moreover, as we have discussed, these interventions increase the chances of military success. Just as there are utilitarian reasons in favour of vaccine mandates (Field & Caplan, 2008, pp. 114–115), there are collective goods that arise from Ned accepting the intervention. In the immediate sense, the intervention means that Ned's team is safer. So, if we take a utilitarian calculus, the good of the majority of the members of Ned's team outweigh the costs to him as an individual. However, this might be a false equation – if all members of Ned's team suffer from PTSD like conditions in the civilian context, then perhaps the goods do not outweigh the harms. Instead, however, we might want to look at the larger community that Ned and his teammates serve. Assuming that they are engaged in conflict that meets the just war criteria, in which those who they are fighting pose significant risks of armed attack to Ned's community, or some other community that Ned and his team are protecting, the overall good is significant, and so outweighs the costs to Ned and his teammates bear on receiving the implants. It thus seems wrongheaded to criticise the use of these interventions. These are two sides of the same coin – on one side, the recipients are enhanced. And on the other side, even if it there is some cost, it is in pursuit of a greater good.

Further to this point, the just war *in bello* criteria of discrimination and perhaps also proportionality may in fact require Ned and his team to receive implants and take on increased costs of conflict. Doing the right thing at times requires some cost or sacrifice on behalf of the individual seeking to do the right thing, and military conflict is one such situation. If an implant, as described, increases Ned's capacity to rapidly identify and respond to military threats, this may increase his adherence to discrimination and perhaps proportionality, there is an argument that he ought to receive the implant. Ingmar Persson and Julian Savulescu have advanced a more general argument about the need for moral enhancement (Persson & Savulescu, 2008, 2011, 2012), which may also apply in Ned's case.

[12] The costs of training do differ significantly - Basic training in the UK is estimated to cost around £38,000 per solider (Sables, n.d.), while a US special forces soldier, however, is estimated to cost around US$1,000,000–1,500,000 (Haberman 2017).

The response to these objections is to draw together the discussions about disenhancement and iatrogenesis. First, while we need to recognise the good that such interventions bring through enhancing personal and military success, we need to also recognise that they have the potential to become disenhancements. The context matters, and any assessment of these interventions needs to take into account both military and civilian contexts. Second, like iatrogenic illnesses, even if there is a strong case in favour of a particular intervention, these interventions carry risks and costs. Even if a medication might save a life, or promote a collective good like herd immunity, if there is a risk like a blood clot, then we need to warn recipients of these risks, and do what is possible to mitigate those risks. This is particularly the case when something like a vaccine is mandated or required. Likewise, we may accept that Ned's intervention is worth the risk, but that does not absolve the military from both communicating that risk to Ned, and also to take what measures it can to mitigate and reduce those risks. Thus, though we need to recognise that, by definition, military enhancements may be good, we need also recognise they can become disenhancements and like with iatrogenic illnesses, the military has a set of responsibilities to Ned and other recipients to recognise and mitigate the negative effects of the intervention.

5 Enhancements Require An Institutional Commitment To Therapy

This leads us to the conclusion – that particular military enhancements require an ongoing commitment to therapy. Put simply, if the good of enhancements outweighs the problems of disenhancement, and if ongoing care is also good, then enhancements plus ongoing care is even better. The military, and/or the wider government that the military is linked to, have an ongoing duty of care to enhanced soldiers who are at risk of becoming disenhanced veterans. This is an issue of institutional responsibility, where the institution that brought about the risks of disenhancement have a duty to ongoing care for those veterans. In a situation like Ned's, such care would involve therapy that could reduce the negative impacts of his hypervigilance. Other military enhancements would require different sorts of therapy, depending on how they manifest as disenhancements. However, the same principles hold – any commanders and related military members who play a significant role in promoting and commanding that warfighters receive enhancements need to both know, and to communicate to recipients, that these interventions might become disenhancements when in the civilian context. Given the special nature of military service, recipients might find it hard to say no, particularly in the case of obvious enhancements that increase the chances of survival and overall military success.

The point is not to argue against such interventions being developed or offered. Instead, the point of this paper has been to argue that, like iatrogenic illnesses, if a particular deliberate biotechnological intervention is likely to become a disenhancement in a civilian context, then the institution of the military has an ongoing duty of care to those recipients. In the conceptual discussions about enhancement, people have often discussed the enhancement/therapy distinction. What I am arguing here is that particular military enhancements may in fact themselves require an ongoing commitment to therapy.

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