War and Peace of Neuroscience. Dehumanisation and Collateral Damage in Warfare

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ABSTRACT

Recent studies in neuroscience have demonstrated the potential for brain connections to change, in order to adapt to certain conditions and to balance neurons loss. Through training, this can occur to such a large extent that one's personal and socio-cultural boundaries can be extended. This can consequently be used for good and bad purposes. For example, mindful training can be implemented through meditation to manage stress, thus reducing unhealthy circuits in the brain such as the HPA axis response. However, neuropsychological training can also be used to ease individuals into controversial tasks, such as killing. This type of use of neuroscientific knowledge used for national security and warfare raises several ethical concerns. This article discusses how brain plasticity can be used to modify the emotional response of soldiers within war contexts through a process of dehumanisation of the enemy and how this in turn creates further neuropsychological damage in veterans in a post war context. Finally, the possibility of reversing this process and its utility in post-conflict resolution is explored, opening up to further studies on the topic.

Keywords: *brain plasticity; emotions; empathy; fear; higher functions; neuroscience; peace; soldiers; war.*

> *"We are not youth any longer. We don't want to take the world by storm. We are fleeing. We fly from ourselves. From our life. We were eighteen and had begun to love life and the world; and we had to shoot it to pieces."*
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> *(All Quiet on The Western Front by E. M. Remarque)*

BRAIN PLASTICITY AND NEUROPSYCHOLOGICAL TRAINING

A physiological asset of the brain is a certain restraint for violence due to empathy as a consequence of the functionality of the right supramarginal gyrus, a part of the cerebral cortex located approximately at the junction of the parietal, temporal and frontal lobe. This mechanism allows humans to simulate the emotional sensations of other humans, thus allowing a person to feel empathy. However, when this brain region is compromised due to illness, injury, or stress (for example when there is an extremely quick decision to make) researchers found that the ability empathise decreases dramatically. Additionally, recent studies in neuroscience have demonstrated the possibility of brain connections to change, that is to reshape its biological responses, in order to adapt to certain conditions. Known as neuroplasticity, this is a relatively new discovery within the neuroscientific field and it was gradually developed thanks to the work of William James, Karl Lashley, Norman Doidge and others. In fact, this theory was consolidated only in the 1960s. Before that, researchers believed that brain development occurred only during infancy and childhood and that by early adulthood the structure of the brain could not undergo any changes and that the creation of new neurons (neurogenesis) would no longer be possible.

The discovery of neuroplasticity as a structural feature of the nervous system was of a great importance in understanding that humans can increase their cognitive abilities and reshape their learned behaviours. While this process can be pursued for positive reasons, for example using mindful training and meditation to manage stress thus reducing unhealthy circuits in the brain such as the HPA axis response, on the other hand, neuropsychological training can also be exploited to ease individuals into controversial tasks such as killing and warfare. Through focused training, soldiers' capacity to kill, that is, to fight their own biological limits that prevent them from taking another human's life, is drastically enhanced. The possibility of using neuroscientific knowledge to push soldiers' personal and socio-cultural boundaries for national security and warfare raises several ethical concerns (Tracey & Flower, 2014). The aim of this article is to discuss the ways in which brain's emotional mechanisms are controlled and reshaped through specific training in the context of the army with some references to the United States of America's (USA) system. Additionally, the collateral effects of putting this training into practice, such as post-traumatic stress disorder PTSD and suicide, will be explored.

DEHUMANISING THE ENEMY

Humans are featured by moral prohibitions and psychological restraints that usually limit them from harming others. However, the history of humanity as a whole shows that humans are able to perpetrate extreme acts of violence, particularly across group boundaries (Staub, 1989) Social scientists researching the psychological bases of the atrocity of World War II and the Holocaust suggest that those acts were generally committed alongside the belief that the enemies, such as Jewish people,

homosexuals and Roma people, were less than human, which made 'moral disengagement' from their suffering possible (Bandura et al., 1996; Kelman, 1973). During the Holocaust, through a massively orchestrated use of propaganda, Nazis referred to Jews as rats and as 'Untermenschen' (sub-humans) (Smith, 2011), while in the USA the Germans were often portrayed in visual representations as aggressive monkeys putting populations in danger. Viewing the enemy as animals as a justification for hatred can also be seen in contemporary war contexts. American soldiers still refer to their enemies with the derogatory terms of "heinies," "nips," "krauts," "chinks," "gooks," "ragheads," "sammies" and "hajjis", as they are taught to do during their training (Kilner, 2017). Language plays a fundamental function in emphasising the animality of the enemy and it can manifest very crude tones during soldiers' lessons, demonstrated clearly in a lecture given to Marines at Parris Island, where they were told: "You want to rip (the enemy's) eyeballs out, you want to tear apart his love machine, you want to destroy him, privates. You want to send him home in a glad bag to his mommy!" (Haddock, 2006).

To create physical and emotional distance between the killer and the target, soldier training aims to foster a sense of 'us versus them', which is often reinforced by belittling different races, ethnicities or religions. Furthermore, the power of authority and peer pressure have been proven by neuroscientists to limit the response of the mid brain and to allow actions otherwise not acceptable to one's own self. This effect is shown by several social experiments within the neuroscience, such as the Stanley Milgram's experiment, which shows levels of obedience to the authority regardless of one's own morality (Wolfendale, 2007). Participants were told that they were assisting in an experiment in which they had to administer electric shocks to a subject whenever they responded with incorrect answers. The participants did not know that the electric shocks were fake and that the people that they were administering them to were actors. The experiment found that the majority of participants would obey the instructions, even if reluctantly, to gradually increase the level of the shocks, even to the point of lethal 450 volts and in presence of the actors screaming and begging them to stop.

Moreover, torturing and physical humiliation of prisoners can further foster the process of dehumanisation, thus creating a vicious cycle. Photos depicting the abuse of prisoners in the Abu Ghraib prison in Iraq exemplify the cruelty and removal of prisoners' humanity and identity that can be perpetrated by 'professional' abusers. "Like ordinary military personnel, military personnel who become torturers adopt the language and concepts of professionalism. This appeal to professionalism involves more than the belief that torturers are a legitimate part of the military profession; it involves a whole set of beliefs about the character of the good professional torturer" (Wolfendale, 2007).

However, torture and human rights violations are not formally accepted by the Association of the United States Army, who stresses the need to train soldiers not only to kill, but to kill without dehumanising the enemy, in this way accepting that their life had to be taken for the good of the community: "leaders should describe the enemy combatants as fellow human beings who—due to misinformation, coercion or

whatever other reasons—are fighting for an unjust cause that must be defeated in order to protect the lives and fundamental rights of the innocent people they threaten" (Kilner, 2017). According to this position, American soldiers suffer the scars of killing in war because they are not trained to accept that killing is right. Killing itself, while often the normality of war, is edulcorated with the use of language. Soldiers will often refer to the act of killing as "dropped them," "took care of them," "took them out" and "eliminated them" (ibidem). Killing with respect, driven by love and a need of protection of one's own country rather than driven by hatred for the enemy is formally what the army believes. This approach is at the base of condemnation for those actions perpetrated in war that go beyond the acceptable behaviour, such as rape, torture of prisoners and mutilations. Despite the claims made by military training organisations that dehumanisation is not the goal of training organisations, anecdotal evidence suggests that this process frequently occurs. To avoid these atrocities, "dehumanisation in war must be prevented by all means possible. If British philosopher Thomas Hobbes is right in regarding war as 'the natural condition of mankind', man has the responsibility to preserve his dignity. The dehumanising reduction of man to cannon fodder, dangerous beasts and anonymous numbers signifies the end of his individuality, his moral and cultural identity" (Mielke, 1987).

But can humans kill without dehumanising the enemy? Neuroscience says that unless the brain is biologically deviant (such as in the case of psychopaths) this is not possible, because of natural human (though individually and culturally shaped) limitations to kill another. According to researchers, in World War II, when U.S. soldiers where directly in front of an enemy, only about one in five actually fired (Haddock, 2006). This did not result from cowardness, as they put themselves in greater danger by refusing to fire. According to Army historian Brig. Gen. S.L.A. Marshall "fear of killing, rather than the fear of being killed, was the most common cause of battle failure in the individual" (Haddock, 2006). Furthermore, not only is the idea of killing with respect out of necessity neurologically problematic, but also paradoxically in contrast with the destructive goals of war itself. Here a romantic sense of patriotism and heroism justifies the act of killing in name of higher scopes, making killing socially acceptable or even glorified, with the goal justifying the means.

BREAKING DOWN FEAR AND EMPATHY: BETWEEN BIOLOGY AND SOCIAL CONSTRUCTIONS

To train the brain to kill, several important steps are put into practice. First of all, 'breaking' the soldier is a fundamental aspect of army training, with physical and psychological abuse considered a necessary rite of passage. Following this, the reduction of the enemy to an odious animal is still not enough. The brain needs to be trained to accept the act of killing that animal. While dehumanisation is necessary to make this process easier than if the enemy was viewed as a relatable person, brutal training is still required in order to embody the automatism of the process. Brain plasticity allows this type of training to be successful. With brain plasticity, or 'neuroplasticity', scientists refer to the capacity of the brain to change due to its malleability, creating new connections and neurons as a result of external stimuli, experiences, information, or

even as the result of physical brain damage. Plasticity involves neurons and other brain cells, such as glial and vascular cells. 'Functional plasticity' refers to the ability of the brain to transfer a specific brain function from a damaged area of the brain to a healthy one; while 'structural plasticity' indicates the ability of the brain to modify its physical structure as a consequence of learning.

The objective of soldiers' training is to suffocate their emotional response to the idea of killing by repressing the medial prefrontal cortex. It is generally not easy for a person to make moral decisions due to conflict between their feelings deriving from the empathetic area of the brain and the rational thoughts that are more logical. See for example the thought experiment known as the 'trolley problem', which demonstrates a clash between utilitarianism and deontological ethics. Reasoning requires several cognitive processes, such as access to information stored in working memory and the inhibition of inappropriate responses that are under the control of the medial prefrontal cortex (Krawczyk et al., 2008). This area of the brain is involved in emotional management and social cognition so when a human deals with another human, this area is activated, while it is not when in the presence of objects. Outgroup humans are still seen as humans, but in case of disgust for a certain category of people (for example in episodes of racism), this area can be turned off. Psychopaths, for example, do not have normal function in these brain areas to steer their behaviour and, consequently, have difficulty in understanding the sufferance of others. Additionally, empathy can be modulated by what you think of the other person, thus the emotional response can be limited dramatically. Through repetitive exercise, the functionality of this emotional areas of the brain can also be limited. As this area is connected with other logical areas of the brain that do rational thinking and reasoning, this limitation can lead to moral disengagement making the process of killing more 'simple' and naturalised.

Additionally, the role of fear in a war context makes this process even more complex. In fact, as a physiological consequence of fear, activity in the limbic regions of the basal amygdala, the sub-lenticular extended amygdala region, and the supplementary motor area increase, with the consequence of freezing human response (Sagaspe, 2011). This was a useful automatism that helped our ancestors to limit movements so as not to be seen by nearby predators. In a war context, fear has to be broken down and replaced by an automatic response to kill. Among training methods in the US army bases, there is a practice of shooting on targets made up with cabbages filled with ketchup to simulate a bullet breaking through human heads. Targets were once made with bull's-eyes, while now human-shaped targets that pop up without warning are very common. Other targets are polyurethane faces on balloon bodies inside uniforms. There are also video game simulations that reward points for every successful shot. Furthermore, the physical distance provided by bombs, rocket launchers and even night-vision goggles, which reduce humans to ghostly green silhouettes, enhance the neuropsychological possibilities of the act of killing.

"Once the bullets start flying, most combatants stop thinking with the forebrain (that portion of the brain that makes us human) and start thinking with the midbrain (the primitive portion of our brain, which is indistinguishable from that of an animal)," writes a retired U.S. Army ranger

(Grossman, 2000). When trainees fires at first instinct, they might be rewarded with extra points, badges and three-day passes. Instructors may push more hesitant students to overcome their reticence by, for example, taping a peeled orange over an actor's eye and asking students to practice sticking their thumbs into it. These are among hundreds of techniques to adapt brains to respond in a certain way. Many researchers go further to say that media exposure to violence creates an emotional anaesthesia (Grossman, 2000; Stockdale et al., 2015; Haddock, 2006).

AFTER THE WAR

Despite the fact that they enjoy the status of heroes when returned from war, veterans often suffer Post Traumatic Stress Disorder (PTSD) and experience a high rates of suicide: double that of civilians in the US. According to a recent report based on a study of records from 1979 to 2014, an average of 20 veterans die from suicide per day (U.S. Department of Veterans Affairs, 2017). After returning to their homes, they must readjust in a world that is now reminding them what humans are, what they do, and what they must not do. They are forced to realise that they must process and move on from what they have seen and done in their military service. Without the backing of the military organisation behind them, they must come to terms with their memories and experiences as an individual person. In a sense, through violence towards others, they have dehumanised themselves. Nevertheless, in the questionnaires that veterans are given to assess their psychological trauma, there is no mention of scars related to killing, and the questionnaires are vague and impersonal—as any questionnaire generally is. The main source of comfort that returnees receive is usually from their families, who also suffer mental health issues as a consequence of the sufferance of their spouses (Dekel, 2018).

While they are celebrated as role models, they face the extreme results of the psychological distress and trauma from what they have experienced. According to reports, the worst trauma comes from killing, even compared to seeing friends die. According to Jim Dooley, Mental Health Counsellor for the US Department of Veteran affairs, "the people that we've spoken to, if they have killed someone, those images in particular are the most haunting, which I thought was a little bit counterintuitive. I thought that seeing your buddy die, or seeing other horrible things that you could imagine happening [would be the most traumatic image], but it is really the act of actually taking another person's life that in the long run had the most emotional strain on them. […] I think it is a very important thing to understand that when your friends are wounded or dead, it's a real loss. It's a loss of your friend that you trusted and you loved in a very intense way. When you personally take another life and you go up to that lifeless body with a hole in it and you look down on it, and you say, "I did that. I think it is a loss of yourself at the same time." (Dooley, 2005)

According to Dooley, the military avoids the topic of killing: "the issue, the after-effects of killing (personal killing) I believe isn't understood. I don't think the military understands how to deal with it. It is the effects of personal responsibility for taking another life. How do people react to that? How do they look at the spiritual issues? How do they look at the societal issues? How do they look at their family values? […] The silence is really the damaging part, and I would strongly encourage people to talk to

people that they trust about it. And if that isn't possible, then they need to figure out who they can begin to trust with [it]. Because they shouldn't just sit on it. They shouldn't just try to make it go away. It won't go away (Dooley, 2005). Loneliness and alienation are often treated with medication such as antidepressants to forget and feel less sufferance. Veteran's groups can offer a useful context in which talking freely and feeling a sense of belonging occur, especially when families do not share those the same experiences. Relating feelings and experiences with other veterans might therefore be the best solution to fighting that sense of desperation and loneliness that can occur after military combat.

CONCLUSION

This article has discussed how brain plasticity is used to change the emotional response of soldiers within war context through a process of dehumanisation of the enemy and exercises that train the brain to respond automatically in situations of emergency and sudden response, by blocking the link between rational reasoning and emotional responses. This can in turn create further neuropsychological damage in veterans in a post war context. Showing the evident paradoxes of killing for peace, veterans become the collateral damage of war missions. When used as tools of war they often suffer the pain of those scars for the rest of their lives.

The possibility to reverse this process and its utility in post-conflict resolution are still to be explored and are urgent now more than ever. In fact, through neuroplasticity, the nervous system produces anatomical and functional modifications in response to the developmental need of the subjects with the aim of facilitating the subject's adaptation to the environment. Thanks to this approach, is now possible to understand that many health issues are the consequences of brain adaptations to environmental stimuli, such as chemical, emotional and stress pollution.

Furthermore, because of neuroplasticity it is possible to undertake the rehabilitation of patients with neurological issues and, therefore, is at the base of neuropsychological rehabilitation. However, despite these fundamental steps made by neuropsychological studies, medical studies still often tend to look at the symptoms and to treat them in isolation through the use of psychoactive substances or pathological conditions that can result in negative effects in brain functioning and behaviour. Treating the symptoms and not the cause of them can lead to additional issues. Central here is the paradox of military training wherein soldiers are expected simultaneously to have empathy for their enemies, while at the same time dehumanise them and be ready to kill at a moments notice. While the systemic problems of war are obvious, they are not the central focus here. Instead this article seeks to identify the psychological damage that occurs when soldiers are confronted with this dilemma that can be difficult to overcome, even years after military service may have ended.

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