

Bachelor Degree Project



DEHUMANIZATION IN THE BRAIN

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Abstract

Dehumanization is a process whereby people fail to view others as human beings. Instead, the others are perceived as nonhuman animals or objects, unworthy of the same moral treatment. Dehumanization has previously been studied in a variety of different scholarly domains without adhering to a uniform theoretical framework. This literature review contrasts research on fully humanized perception, with research on dehumanized perception, and proposes neural areas which are likely to be involved. Not every aspect of dehumanization can be understood at the neurological level. To understand what factors lead up to, and modulates dehumanization, other perspectives might also be necessary. Dehumanized perception is coupled with reduced activity in the social cognitive brain network, a wide network which encompasses several cortical and subcortical areas. This disengages prosocial abilities and allows for other people to be treated like objects and means to an end. One area of special interest is the medial prefrontal cortex (MPFC). It functions as an integration center in the person perception network and is also active when we make moral judgments, empathize, or take the perspective of someone else. For this reason, the MPFC is sometimes used as an index of dehumanized perception.

Keywords: dehumanization, social cognition, medial prefrontal cortex, blatant dehumanization

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1. Introduction

People often attribute human-like qualities to objects and animals. We can infer the will of supernatural agents like death and saving angels, and in the morning we may talk to our car, urging it to start as if it had a mind of its own. This attribution of human emotions, intentions, or traits, to non-human entities, is called anthropomorphism and is a common psychological feature (Epley, Waytz, & Cacioppo, 2007). We readily attribute human qualities to objects as simple as geometric shapes (Heider & Simmel, 1944). The anthropomorphization of nonhumans can have a huge impact on how they are treated. It can decide if they are respected as agents and treated with care or if they are morally excluded and treated like objects. It also affects our interpretation of the agents' behaviors as well as our expectation for their future behaviors (Epley et al., 2007).

Anthropomorphism can be contrasted with dehumanization, a phenomenon characterized by the opposite. Instead of being excessively attributed, the human qualities are being excessively denied, even to other humans. It is a process whereby people fail to view others as human beings, and instead perceive them as nonhuman animals or objects, unworthy of the same moral treatment (Opatow, 1990; Waytz, Epley, & Cacioppo, 2010). Dehumanization of groups of people has been a key feature of some of the biggest atrocities in human history because when the moral principles no longer apply to a group of people, the moral restraints against torturing and killing them is much easier to overcome (Kelman, 1973). There are plenty of examples of this happening on a large scale, such as with Bosnians in the Balkan wars, and Jewish people in the Holocaust (Haslam, 2006), but also on a much smaller scale, as demonstrated by the Stanford prison experiment (Haney, Banks, & Zimbardo, 1973) and Stanley Milgram's (1974) experiments on obedience and authority.

1.1 Previous research on dehumanization

Dehumanization has been studied in a variety of scholarly domains, and research has often emphasized different aspects of the concept without adhering to a uniform theoretical framework. One account of dehumanization comes from Leyens and colleagues (Leyens et al., 2003, 2001) work on infrahumanization. When comparing groups, we tend to attribute uniquely human emotions (e.g., hope, love, shame, contempt) to ingroup members while denying those same emotions to outgroup members. In a sense, we ascribe more human essence to ingroup members and consider outgroup members to be less human. This process of infrahumanization occurs outside of peoples' awareness (Leyens et al., 2003).

Another account of dehumanization comes from Bar-tal (2000) who speaks of the concept in terms of delegitimizing beliefs about outgroups. The outgroup members are attributed with extremely negative beliefs and are often described as subhumans or demons. This serves the function of explaining and legitimizing aggression towards an outgroup while making the ingroups seem superior.

In his work, Kelman (1973) emphasizes how others are deindividuated as a result of being denied agency, community, and personal identity. He further argues that this deindividuation leads to moral exclusion and failure to elicit compassion. This, in turn, makes it possible to treat the dehumanized others as means to an end. A similar account is presented by Opatow (1990) who depicts dehumanization as one of several forms of moral exclusion, resulting from unconnectedness and conflict. These morally excluded others are often subjugated to harm and exploitation, which may be legitimized and deemed as just.

Bandura (2002) describes dehumanization as a product of selective removal of moral self-sanctions. This is facilitated through cognitive and affective restructuring and stems from a complex interplay of social and personal factors.

1.2 Models of dehumanization

In an attempt to reconcile previous research, Haslam (2006) developed a model of dehumanization consisting of two aspects, the denying of human nature (HN) in others, and the denying of uniquely human (UH) attributes in others. When others are denied HN, they are denied some fundamental aspects of what it's like to be human, such as interpersonal warmth and emotional responsiveness. Instead, they are seen as cold and robotlike and are often represented as automatons or objects. Meanwhile, when others are denied UH attributes they are represented as childlike and irrational. They are denied things like civility and moral sensibility and are often portrayed as being animalistic, rather than fully human.

Haslam's model shows similarities to the stereotype content model (SCM) developed by Fiske, Cuddy, Glick, and Xu (2002). The SCM consists of two primary dimensions that explain the systematic principles underlying different stereotypes. The first dimension is warmth, which captures how warm and sincere another group or individual is perceived to be, if they are friendly or if they mean to do harm. The second dimension is competence, which captures the perceived capability of a group or individual, if they are able to enact their intentions. Classification along these two dimensions allows for four distinct categories of stereotypes, each of which invokes distinct emotions and discriminatory behavioral tendencies. The level of perceived warmth will determine if the stereotyped group is actively supported or harmed (e.g., helped or harassed) while the perceived competence will determine how the stereotyped group is passively treated (e.g., neglected, tolerated, cooperated with; Cuddy, Fiske, & Glick, 2007).

At the high end of both competence and warmth is the ingroup. Ingroup members are considered to be allies and are generally viewed with a sense of pride and admiration. People in this group are not only tolerated but actively supported, they are both liked and respected (Fiske, Xu, Cuddy, & Glick, 1999).

The group at the high end of warmth but the low end of competence is liked but not respected (Fiske et al., 1999). This group often contains older people and people with disabilities. They are viewed as being nice but incapable, and often elicits a sense of pity (Cuddy et al., 2007). They are actively cared for and protected but are also met with a form of passive neglect, which includes exclusion and disregard. In this sense, they can be seen as passively dehumanized.

The group at the high end of competence but the low end of warmth is respected but disliked (Cuddy et al., 2007). This group often includes the rich and highly educated and often invoke feelings of envy. They are seen as competent and of high status but may also be seen as cold and undeserving of their status (Cuddy et al., 2007; Feather & Nairn, 2005). This form of dehumanization shows some resemblance to the mechanistic dehumanization proposed by Haslam (2006) in that the group is seen as cold, unemotional, and unrelatable. A study by Cikara and Fiske (2012) has indicated that viewing the misfortune of an envied outgroup member results in feelings of *schadenfreude*, pleasure in others' misfortune. The perceived group identity of the other made the misfortune seem deserved.

The last group in the SCM is at the low end of both warmth and competence. People in this group are neither liked nor respected and often invoke feelings of disgust and contempt (Fiske et al., 2002). This group usually includes poor people, drug addicts, and different groups of immigrants (Cuddy et al., 2007). They are the most exposed, as they are actively harmed while

also being passively neglected. According to Harris and Fiske (2006), members of this group are subjugated to extreme forms of prejudice and are often perceived as less than human.

In summary, dehumanization has been a topic of research for several decades in a variety of scholarly fields. Different accounts of dehumanization have often emphasized different aspects of the phenomenon without adhering to a uniform theoretical framework. In the latter decades, different frameworks have emerged which have captured and synthesized common features of previous research. Despite these systematic accounts of dehumanization the phenomenon by its nature is complex and remain somewhat elusive.

1.3 Aim & structure

For this thesis, I will look at dehumanization from a neuroscientific perspective. The question that I have set out to answer is how the brain facilitates dehumanization. What neural mechanisms are responsible for the process of dehumanization? A neural perspective can hopefully provide insights which can further our understanding of the phenomenon as a whole. This is important given the fact that dehumanization is a real issue with implications for many different aspects of human life and society. It is also a key feature of atrocities such as war and genocide.

When I began writing my thesis, my first step was to search for articles using relevant databases such as Google Scholar and Thomson Reuters' Web of Science. I used keywords such as "dehumanization", "moral exclusion", and "social cognition". I selected the articles based on their relevance to the topic of cognitive neuroscience, and their overall relevance to the topic of dehumanization. My goal was to explore the subject from a neural perspective, while still including frameworks and perspectives that are not neuroscientific, but nevertheless important for a general understanding of dehumanization as a phenomenon. To the extent that it was

possible, I selected review articles and meta-analyses. My next step was to read and analyze the articles to create an overview and to assess convergencies and general trends. I also discarded articles (or sorted them as a second choice) based their quality and/or relevance to my original question of what mechanisms in the brain facilitates dehumanization. The remaining articles were deemed to be of high quality and were used to lay the groundwork for my thesis. This process of reading and selecting articles based on relevance and quality was repeated several times throughout the writing process.

To clearly define dehumanization requires some definition of what makes us human and what it means to treat someone as human. Any such definition may be the subject of philosophical scrutiny. For this thesis, I will go by the definition that humans have an internal life with feelings and thoughts which guides our behaviors and which makes us worthy of a certain moral consideration (Harris & Fiske, 2009). Dehumanized perception is, therefore, any perception that fails to take into account that inner mental life and the moral inclusion that follow from that. Going by this definition, dehumanization may not be a distinct neural process in and of itself, but rather a label which can be ascribed to a variety of different processes when they result in the dehumanization of others.

To treat another person as fully human requires a complex interplay between several affective and cognitive mechanisms. These mechanisms may best be assessed by studying how the brain facilitates person perception and social cognition (Harris & Fiske, 2009). For this thesis, I will contrast research on fully-humanized perception, with research on dehumanized perception. More specifically I will look at social cognitive processes which are likely to behave differently when we dehumanize compared to when we humanize, such as empathy, moral judgment, mentalising, (attributing dispositions, perceiving close others), and social learning

(Harris & Fiske, 2009). Based on this, I will propose neural networks which are likely to be involved when people dehumanize. I will also look at more specific forms of dehumanization, as well as preceding and modulating factors. Since dehumanization is social-psychological in nature, other perspectives than the purely neurological can be important in order to understand what factors lead up to, and modulates dehumanization. This will also allow for neuroscientific accounts of dehumanization to be contextualized and connected existing frameworks, which can result in a more nuanced assessment of the phenomenon as a whole. The thesis will end with a discussion which contains limitations and suggestions for future research.

2. Social cognition

Social cognition refers to a variety of cognitive processes used in social interactions. It concerns the way people store and use information about others and the self, as well as interpersonal norms and scripts underlying social situations (Van Overwalle, 2009).

2.1 Person perception

When we perceive other people we engage in a process called person perception. This includes perception of the physical appearance of others as well as inferences about others state of mind (Harris, Lee, & Capestany, 2014a). There are several areas in the brain that have been implicated in person perception. Forming impressions from descriptions of other people as opposed to inanimate objects, engages the medial prefrontal cortex (MPFC), underscoring the importance of this region for social-cognitive impression formation (Mitchell, Macrae, & Banaji, 2005).

Previous research has shown that the MPFC is important for self-referential mental activity and emotional processing (Gusnard, Akbudak, Shulman, & Raichle, 2001). The MPFC also works as an integration center in the person perception brain network (Harris & Fiske, 2009). It receives complex information from a variety of brain areas. These areas include the superior temporal

sulcus (STS) which is important for detecting biological motion, and the fusiform gyrus of the temporal cortex (FFA), which is a part of the visual system that specializes in recognizing faces. The MPFC also receives information from affective areas such as the insula and amygdala, and areas involved in direct attention such as the precuneus in the superior parietal lobe (Haxby, Gobbini, & Montgomery, 2004). Besides the areas already mentioned other areas have also been implicated in person perception, these include the anterior cingulate cortex (ACC; Eisenberger, Lieberman, & Williams, 2003), the posterior cingulate cortex (PCC; Schiller, Freeman, Mitchell, Uleman, & Phelps, 2009), and the right temporal-parietal junction (rTPJ; Harris & Fiske, 2009). These areas have other functions as well. The ACC is involved in regulating both cognitive and emotional processing (Bush, Luu, & Posner). It also plays a general role during cognitive control and conflict resolution (Botvinick, Braver, Barch, Carter, & Cohen, 2001). The PCC is activated when we engage in internally directed thoughts, and when we plan for the future or retrieve autobiographical memories (Leech & Sharp, 2014). The rTPJ is involved in redirecting attention to salient stimuli (Chang et al., 2013). It is also involved in integrating multisensory information about one's own body (i.e., tactile, proprioceptive, visual, and vestibular information; Blanke & Arzy, 2005).

2.2 Mentalising

One aspect of social cognition is the ability to mentalise (Frith & Frith, 2001). Mentalising involves the ability to consider someone else's thoughts and beliefs, something that's often denied in dehumanization (Harris & Fiske, 2009). A distinction is sometimes made between mentalising and theory of mind (ToM), where the former is a reflection of affective mental states, while the latter is a reflection of epistemic states such as beliefs (Wyl, 2014). However, the terms are often used interchangeably (e.g., Van Overwalle, 2009).

A common way to test ToM is through a false belief task. In a typical false belief task, subjects are shown a series of sketches in which a protagonist hides an item in location x. The protagonist then leaves the scene, and another character comes by and moves the item from location x to location y. Since this transfer happens when the protagonist is away, the subjects will have to assume that he still believes that the item is in location x. This requires the subjects to take the perspective of the protagonist, separating their own beliefs from those of the other person (Wimmer & Perner, 1983). Children with autism often have difficulties with this (Baron-Cohen, Leslie, & Frith, 1985).

Mentalising consists of two major aspects. One is to take the perspective of another person by thinking of her mind. The other one is to make dispositional inferences about the person (attributing the person's behaviors to stable traits). These processes both recruit the same neural architecture, namely the MPFC, STS, and rTPJ (Harris & Fiske, 2009; Frith & Frith, 2001).

Thinking about other people in terms of dispositions and stable traits can help us make predictions about their behaviors. We tend to favor this mode of prediction above, for example, shared social norms (Harris, Todorov, & Fiske, 2005). Dispositional attributions play a big part in social perception, and we readily infer behavioral tendencies from just small slices of behavior (Ambady & Rosenthal, 1993). Furthermore, this initial impression can affect our whole global judgment about the other person. The dispositions we ascribe to others decide how we interact with them. It activates certain mental scripts and behavioral repertoires and also influences the way we interpret the actions of the other person (Harris & Fiske, 2009). There are some dangers to this. Perspective-taking and attributing dispositions are heavily influenced by both the target's external features (e.g., facial appearance; Willis & Todorov, 2006) as well as prejudices and

stereotypes about certain groups (Fiske, 1998). This is especially true if the person is unfamiliar to us.

Stereotyped groups are more likely to be perceived negatively, and ambiguous behaviors are more readily interpreted in a way that conforms to our scripts about how certain groups are supposed to behave. In this way, we systematically confirm our own biases. Furthermore, if we perceive someone as being part of a stereotyped group, this can affect how we treat them. Which, in turn, can confirm stereotypes and expectations held by that person. The fact that we tend to explain the behaviors of others in terms of personal traits rather than circumstances may also lead to unfair assessments and feed into negative stereotypes, as it places a disproportionate burden of responsibility on individuals for multifaceted phenomena such as addiction, poverty or homelessness. Biases in our dispositional attribution mechanism may thus consolidate existing divisions between ingroups and outgroups. This may potentially escalate existing conflicts and lead to violent behaviors (Kteily & Bruneau, 2017a).

Mentalising can be viewed as a cognitive process, correlating with affective states. Cognitive appraisal of another person simultaneously engages subcortical (structures located deep in the brain below the cortex) affective structures, necessary for processing basic emotions and to make swift judgments of others trustworthiness (Engell, Haxby, & Todorov, 2007). Trustworthiness assesses whether someone has good or bad intentions. Throughout evolution, this quick assessment of others intentions may have been essential for survival (Barkow, Cosmides, & Tooby, 1995). Research by Willis and Todorov (2006) has demonstrated that we reliably make judgments about the trustworthiness of a face after being presented with an image for only 100ms. We also make quick judgments of other traits such as attractiveness, competence, aggressiveness, and likeability, based solely on appearance (Willis & Todorov,

2006). These affective judgments are fast, intuitive and may operate outside of cognitive control (Hassin & Trope, 2000; Willis & Todorov, 2006).

The appraisal of trustworthiness relies on the amygdala, which also underlies the detection of potentially dangerous stimuli and approach-avoid judgments related to fear (Engell et al., 2007). The amygdala can activate before information has reached the cortical structures responsible for higher-level cognitive assessments (LeDoux, 1998), this allows for a quick and primitive assessment to be made about the intentions of the other person.

To summarize, thinking about another person activates both cognitive and affective processes which can be roughly separated into a cortical and a subcortical brain network. The cognitive cortical network includes the MPFC, STS, and rTPJ, while the affective subcortical network involves the amygdala, which is important for processing basic emotions and quickly appraising others intentions. These networks may operate differently when we perceive objects, animals, or dehumanized individuals, as opposed to fully humanized individuals (Harris & Fiske, 2009).

2.3 The reward system and social cognition

Humans are social creatures, and interacting with others is often its own reward. We generally perceive both others and ourselves in positive ways (Sears, 1983; Taylor & Brown, 1988). Brain areas involved in tracking and valuing punishment and rewards are especially activated by social stimuli (Harris & Fiske, 2009). The social reward network includes the MPFC, amygdala, insula, orbitofrontal cortex (OFC), and corpus striatum (Delgado, 2007). The OFC has been proposed to regulate the affective value of reinforcers and to link rewards (e.g., food) to hedonic experiences. It has also been implied in a variety of other functions, such as sensory integration, decision making, and expectation (Kringelbach, 2005). Aside from being a critical component of the

reward system, the corpus striatum is involved in refining and controlling motor movements. It is also involved in decision making, including action selection and initiation (Balleine, Delgado, & Hikosaka, 2007).

The MPFC show differences in activation patterns depending on whether the reward comes from another human or a computer (McClure, Laibson, Loewenstein, & Cohen, 2004). Harris, McClure, Van den Bos, Cohen, and Fiske (2007) conducted a study using functional magnetic resonance imaging (fMRI), a noninvasive technique which measures changes in localized blood oxygen levels. Differences in local blood oxygen levels can be correlated with activity in nearby brain regions, which allows us to use fMRI to map brain functions. Harris et al. (2007) had participants view positively and negatively valued pictures of people and objects. They found that an area in the anterior rostral part of the MPFC (arMPFC) reacted more strongly to positively valued people as opposed to negatively valued people. The same valence effect was not found for objects. This indicates that the arMPFC is specially tuned toward affective evaluations of social information. We are in a sense programmed to find social interactions rewarding and to perceive others positively.

One group we tend to like more than others is those who are familiar to us. Zajonc (1968) has demonstrated that repeated exposure to a certain stimulus often leads to an increased liking of said stimulus, this principle applies to other people as well (Harris & Fiske, 2009). Familiarity can be linked to positive affect (Harris & Fiske, 2009) and the formation of ingroups (Zebrowitz, Bronstad, & Lee, 2007), and we generally have an increased empathic accuracy toward friends (Stinson & Ickes, 1992). These are prosocial phenomena which are largely absent when we dehumanize (Harris & Fiske, 2009), as such it makes sense to contrast familiarity with dehumanization.

Brain imaging studies have demonstrated that viewing familiar people as well as engaging in positive social interactions triggers activation in the MPFC. Leibenluft, Gobbini, Harrison, and Haxby (2004) had mothers look at pictures of their own children, familiar children, and unfamiliar children. Looking at familiar children activated the MPFC to a greater extent than looking at unfamiliar children. Most activity occurred when watching one's own child. This was coupled with activity in the amygdala and insula, as well as in the posterior STS and anterior paracingulate cortex, areas which are recruited in ToM.

From an evolutionary perspective, it sometimes makes sense to prefer the familiar. Familiar people are people whom you have survived previous encounters with, they are deemed safe and may even provide protection and other benefits (Baumeister & Leary, 1995). Strangers, on the other hand, has never been tested in the same way and you cannot be sure of whether they mean to do harm or good. They could be dangerous or compete for resources. As such it makes sense to be wary.

There are however some dangers to this. Since the brain dispositionally rewards social interactions with familiar people there are more incentives to engage with familiar people, and by comparison, fewer incentives to engage with strangers. This may contribute to the formation of ingroups and outgroups which can lead to ingroup favoritism and negative stereotypes about the outgroup (Zebrowitz et al., 2007).

2.4 Moral judgement

Moral judgment and exclusion from moral treatment is another key feature of dehumanization (Harris & Fiske, 2009). Viewing people breaking moral codes will often invoke feelings of disgust (Haidt, Rozin, McCauley, & Imada, 1997), and the moral transgressors are often viewed as less human (Opatow, 1990). Greene, Sommerville, Nystrom, Darley, and Cohen (2001)

conducted an fMRI study in which they assessed the neural correlates of moral judgment, stemming from the presentation of two ethical dilemmas. The dilemmas were variations of the footbridge trolley paradigm, in which participants are forced to choose between the lives of different people, and are given the choice to kill someone in order to save others (Thomson, 1986). Greene et al. (2001) concluded that two different neural systems are underlying moral judgment. One of the systems is more cognitive, it includes the bilateral parietal lobes and middle frontal gyrus. The parietal lobes are involved in language and calculations as well as the integration of different types of sensory information (Simon, Mangin, Cohen, Le Bihan, & Dehaene, 2002; Wolpert, Goodbody, & Husain, 1998) while the middle frontal gyrus is involved in both the storing and processing components of working memory (Leung, Gore, & Goldman-Rakic, 2002). The other system is more affective and includes the MPFC as well as the bilateral angular, and posterior cingulate gyri. These areas are involved in a variety of other processes as well. The posterior cingulate gyrus is activated in emotion and pain processing (Vogt, 2005), and some of the angular gyrus' functions includes attention, memory retrieval, reading and understanding words, number processing, and spatial cognition (Seghier, 2013). The engagement of these two systems varies in a systematic manner depending on the specific characteristics of a scenario (Greene et al., 2001).

The principles behind moral judgments were further explored by Cikara, Farnsworth, Harris, and Fiske (2010). They constructed different ethical dilemmas based on the SCM (Fiske et al., 2002) and the footbridge trolley paradigm. Cikara et al. (2010) found that the SCM strongly predicted whether or not someone is killed in the trolley dilemma. Ingroup members deemed as warm and competent were the most likely to be saved and the least likely to be

sacrificed, while extreme outgroup members who are viewed as low in warmth and competence were the least likely to be saved and the most likely to be sacrificed.

2.5 Empathy

Empathy can be broadly defined as a process whereby people share the emotions and feelings of someone else, without any direct emotional stimulation to themselves (Singer, 2006). Feelings of empathy may often elicit altruistic motivation which benefits the person for whom the empathy is felt (Batson & Shaw, 1991).

Galinsky and Moskowitz (2000) conducted a series of experiments in which they assessed the effects of perspective-taking on stereotypes about outgroups. Perspective-taking is used as a method to induce empathy (Cialdini, Brown, Lewis, Luce, & Neuberg, 1997). They found that when participants took the perspective of a stereotyped group member, this led to reduced expressions of stereotypic content about that group. This was tested by using a lexical decision task, which measures how fast people can classify stimuli as words or nonwords. Participants who had empathized with a stereotyped group member (e.g., an elderly man) were slower at recognizing stereotype-consistent words (e.g., stubborn or forgetful) compared to participants in control groups. They also expressed more positive evaluations about the target. This implies that empathy can reduce prejudice, which is a key feature of the SCM and dehumanization in general (Fiske et al., 2002; Haslam, 2006). A lack of empathy is also one of the defining characteristics of psychopaths who can harm others without experiencing remorse or guilt (Blair, 2003). As such it makes sense to contrast dehumanization with empathy.

Neuroscientific findings suggest that observing affective and emotional states in others activates similar neural architecture in the perceiver. This effectively simulates the experience of the other person and allows for shared perspectives and empathy (Preston & de Waal, 2002;

Singer & Fehr, 2005). The simulation underlying empathy can include several different sensory modalities, each of which activates different neural areas. Research by Singer et al. (2004) indicates that perceiving pain in others invokes an empathic reaction and activates an affective pain region consisting of the ACC and anterior insula (AI). Other areas have also been implicated in tasks involving empathy, including the amygdala, STS, MPFC, and precuneus (Decety & Jackson, 2004, 2006; Ruby & Decety, 2004). The precuneus is involved in a variety of other functions as well, such as self-processing, retrieval of episodic memories, first-person perspective-taking, and visuospatial mental imagery (Cavanna & Trimble, 2006).

Empathic reactions do not require active commitment. Rather, the response seems to be automatically engaged when viewing or imagining emotional states in others (Ruby & Decety, 2004). Empathy is not only shown toward ingroup members but can be extended to strangers as well (Singer & Fehr, 2005). However, not everyone is shown empathy to the same extent. Research indicates that empathic reactions are modulated by a variety of factors, including personal experience with pain, the understanding of one's own emotions, perceived group membership, perceived fairness, and the context of the situation (Bernhardt & Singer, 2012).

Hein, Silani, Preuschhoff, Batson, and Singer (2010) conducted an fMRI study in which participants were shown an ingroup member and an outgroup member experiencing pain, which they had a choice to alleviate by enduring some pain themselves. The participants were soccer fans and the ingroup member was a fan of the same team while the outgroup member was a fan of a rival team. Witnessing the ingroup member feeling pain activated the AI, indicating an empathic reaction. It also predicted increased levels of helping. This differed from seeing the outgroup member experiencing pain, which decreased activation in the empathy-related AI and reduced levels of helping. Furthermore, seeing the outgroup member suffer activated the nucleus

accumbens (NAcc), an area associated with reward processing. This pattern of activity indicates that perceived group membership not only mediates empathic responses and helping behavior but also predicts enjoyment in the suffering of others. Similar results were found in a study by Singer et al. (2006). They had participants play a game of monetary exchange against two confederates who played either fairly or unfairly. The participants then observed the confederates receive pain. When the fair player received pain this triggered activation in the ACC and AI, suggesting an empathic response, but when the unfair player received pain this was instead followed by activity in the NAcc, indicating a sense of revenge rather than feelings of empathy. This reaction towards unfair players was significantly stronger in male participants, demonstrating a difference between the sexes.

Studies like these support the notion that two antagonistic motivational systems compete with each other and that a variety of factors may tilt the brain into favoring one over the other. This converges with historical accounts of how ethnic and racial others has been represented leading up to genocidal conflicts (Jahoda, 1999; Kelman, 1973). The systematic portrayal of others as immoral and subhuman makes it more difficult to empathize with them, and may even make it rewarding to see them suffer. This can incentivize violence and other aggressive behaviors directed towards the outgroup (Kelman, 1973).

2.6 Summary

To summarize, perceiving someone as fully human requires one to engage in social cognition. Social cognition refers to a variety of cognitive processes used in social interactions. The social-cognitive network requires several cortical areas, including the MPFC, OFC, ACC, PCC, precuneus, rTPJ, STS, FFA, and insula (Eisenberger et al., 2003; Frith & Frith, 2001; Haxby et al., 2004; Van Overwalle, 2009). It also includes subcortical structures like the amygdala, and

areas in the corpus striatum such as the NAcc (Delgado, 2007; Harris & Fiske, 2009). These are not purely social brain regions. However, when they act together in synchrony it suggests that social cognition is occurring (Harris & Fiske, 2009).

Social cognition is not a single process that requires all of these structures. Rather, it refers to several different processes, each of which engages a subset of the aforementioned areas. Which structures are activated depends on the task at hand. However, some of these areas are activated more often than others. The MPFC is involved in a variety of social cognitive tasks. It integrates cognitive and affective information and is reliably involved in moral judgment, social learning, person perception, mentalising, and empathy. According to Harris and Fiske (2009), this makes it a useful index of humanized perception.

3. Dehumanization and social cognition

Harris and Fiske (2006) conducted an fMRI study in which participants were shown people from the different quadrants of the SCM. Looking at members of the different groups reliably activated the MPFC. An exception was when participants were shown people in the low warmth, low competence group, which often includes drug addicts, homeless people, and different groups of immigrants (Cuddy et al., 2007). Looking at these people did not activate the MPFC, instead, it activated the amygdala and insula in a manner that would indicate disgust (Harris & Fiske, 2006). This is in line with the predictions made by the SCM (Fiske et al., 2002). These results provide a neural explanation for dehumanization. The MPFC is not activated when perceiving extreme outgroup members, which suggests that they are withheld social cognition and to some extent seen as less human (Harris & Fiske, 2006).

Similar results have been found when using electroencephalography (EEG) to record participants neural activity in response to pictures of people in the different SCM groups (Harris

& Fiske, 2009). When different parts of the brain are activated this produces electrical activity. EEG records this electrical activity through the use of electrodes which are placed on the scalp surface. The spatial resolution of EEG is poor compared to fMRI, but the temporal resolution is good. This means that it can be used to measure when specific activity occurs in the brain (Teplan, 2002). Harris and Fiske (2009) found that the electrodes over the frontal cortex responded differently when the participants viewed members of an extreme outgroup. This difference was observed at about 100 ms after the onset of the picture.

3.1 Dimensions of dehumanized perception

Harris and Fiske (2011) conducted a study in which participants were asked to describe a day in the life of a dehumanized target (as identified by the SCM). This was done through writing, and each participant had 15 lines to write on. The descriptions were then coded and tested for their level of abstraction. Different sorts of verbs and adjectives carry different levels of abstraction (Semin & Fiedler, 1988). At the most abstract levels, there are adjectives (describe words; e.g., hungry) and at the least abstract levels there are descriptive action verbs which simply describes an action (e.g., eat).

The study revealed that when the participants described a day in the life of an extreme outgroup member, they used fewer words related to the mental state of the target, seemingly failing to infer the mind of the other person. According to Harris and Fiske (2011), this can be taken as indirect evidence of dehumanization. The participants were also asked to rate the target on a number of dimensions. Compared to all the other groups in the SCM, the dehumanized target was rated significantly lower in warmth, competence, familiarity, similarity, intelligence, and articulateness. The participants also rated it as more difficult to mentalise, and attribute

dispositions to the target. There was also a tendency to view the target as less typically human (Harris & Fiske, 2011).

Harris and Fiske (2011) followed up these findings in another study. Participants were shown pictures of targets from the different quadrants of the SCM while lying in an fMRI scanner, the targets were then rated on the same dimensions as in the previous study. This was done to assess which brain areas underlies the dimensions of human perception that differ between humanized and dehumanized targets.

They found ratings of warmth to be reversely correlated with activity in the right AI. The right AI has previously been implicated in a variety of other processes, such as interoception (Craig, 2009), disgust (Wicker et al., 2003), and punishment (Seymour, Singer, & Dolan, 2007). According to Harris and Fiske (2011), the fact that the AI is involved in these processes while also being negatively correlated with the warmth dimension suggests that it plays a role in facilitating dehumanization and harmful behaviors.

Another reverse correlation was found between activity in the ACC and ratings of typical humanity, the lack of which composes one of Haslam's (2006) two types of dehumanization. The lower someone was rated as typically human, the more activity was found in the ACC (Harris & Fiske, 2011). The ACC has previously been shown to activate when making tradeoffs during the trolley paradigm as a way to override a default response in order to make a sacrifice of a dehumanized target (Cikara et al., 2010). The ACC also plays a more general role during cognitive control and conflict resolution (Botvinick et al., 2001). Harris and Fiske (2011) argue that the ACC might activate as a way to resolve the conflict between the dehumanization of others, and the fact that we still know that the other person is human.

Ratings of familiarity, similarity, and ease of inferring the target's mind showed a positive correlation with activity in the bilateral STS, which is part of the social cognition network. This suggests that the social-cognition network underlies these ratings (Harris & Fiske, 2011).

3.2 Reduced social cognition during violence

Mathiak and Weber (2006) conducted an fMRI study in which participants played a violent first-person shooter game (a computer game played from a self-perspective). When participant shot at an enemy, this was preceded by a significantly reduced activity in areas involved in social cognition, including the MPFC and temporal regions. Engaging in virtual violence was also related to a decreased activity in the amygdala and rostral ACC (rACC), and increased activation of the dorsal ACC (dACC). This converges with previous research which has shown that the ACC can be divided into a rostral-affective and a dorsal-cognitive subdivision (Bush, Luu, & Posner, 2000).

Pietrini, Guazzelli, Basso, Jaffe, and Grafman (2000) had participants fantasize about committing unrestrained but justified violent acts toward others. The neural correlates of this were assessed using positron emission tomography (PET). When using PET, participants are injected with a small amount of a radioactive tracer. The radioactivity emitted from the tracer tracks with rates of glucose consumption in different areas of the brain. High glucose consumption is indicative of brain activity in that region. In this way, the technique can be used to map brain functions (Berger, 2003). Pietrini et al. (2000) found that when the subjects fantasized about violent acts, they showed reduced brain activity in affective areas like the rACC and amygdala and increased activity in the more cognitive dACC.

The fact that areas like the MPFC, rACC, and amygdala are inhibited during violent acts suggests that prosocial abilities relying on these structures are disengaged as well (e.g., empathy

and ToM; Decety & Jackson, 2006; Frith & Frith, 2001). Instead, there is increased activation in areas involved in cognitive operations. This could indicate that in the absence of personhood, others are treated more like objects and means to an end. A finding which is in line with previous models of dehumanization (e.g., Kelman, 1973).

3.3 Dehumanization and sexism

Dehumanization and failure to engage in social cognition is not a unique response to extreme outgroups. The SCM predicts that different groups invoke distinct emotions and discriminatory behavioral tendencies (Cuddy et al., 2007).

A study by Cikara, Eberhardt, and Fiske (2011) assessed how the attribution of agency towards women varies as a function of sexist attitudes. This was done using the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) which measures the relative strength of one pair of associations in comparison to another pair of associations. In this case third-person verbs/sexualized pictures, first-person verbs/neutral pictures were contrasted with first-person verbs/sexualized pictures, third-person verbs/neutral pictures.

The results revealed that men who scored high on measures of hostile sexism (HS) were quick to pair sexualized women with first-person action verbs, suggesting that the sexualized women were perceived as being objects rather than agents. Men with low scores of HS did not show this pattern of associations. Neither did female participants, regardless of HS scores.

Cikara et al. (2011) also did a follow-up study to assess the neural correlates behind the objectification (the reduction of other people to the level of an object). This was done by letting participants look at neutral and sexualized pictures of women while lying in an fMRI scanner. Looking at sexualized women was negatively correlated with activity in the MPFC, PCC, and the temporal poles. Areas which are known to be involved in the attribution of mental states

(Fletcher et al., 1995; Frith & Frith, 2001). The temporal poles have also been implied in semantic memory (Pobric, Jefferies, & Ralph, 2007). The sexualized women in the study were to some extent objectified and denied a mind. However, unlike other dehumanized groups (e.g., homeless people; Harris & Fiske, 2006) they did not elicit disgust or contempt. Instead, they were subjugated to a more subtle form of dehumanization. This adds to the notion of dehumanization being a multifaceted phenomenon which can be expressed in a range of different ways.

4. Different forms of dehumanization

The previous chapters outline dehumanization as an everyday phenomenon whereby social cognition is disengaged, affecting the way we perceive others and our spontaneous behaviors towards them (Harris & Fiske, 2009). It is a subtle process that happens outside of our awareness (Leyens, Demoulin, Vaes, Gaunt, & Paladino, 2007).

However, many atrocities throughout history have not been limited to some subtle inability to engage empathically or to take the perspective of other people. Rather, people have been explicitly dehumanized and have had violence incited upon them. This has often been coupled with overt animalistic descriptions about the others. Often portraying them like rats and vermins that deserves to be exterminated by any means necessary (Bar-Tal, 2000; Harris & Fiske, 2011). Furthermore, people have actively engaged in extermination and genocide. Not as a spontaneous failure to engage in social cognition, but in a targeted and systematic manner rooted in ideology (Staub & Ervin, 2003).

If we view dehumanization simply as an everyday social cognitive bias that makes us overlook the fact that another person is human. Would this be enough to explain some of the atrocities that have occurred throughout history? After all, people still realize intellectually that

other people are human, and that violent acts conducted towards them have real effects (Harris & Fiske, 2009).

4.1 Blatant dehumanization

Kteily, Bruneau, Waytz, and Cotterill (2015) suggests that a distinction should be made between the more subtle form of dehumanization and blatant dehumanization. They argue that the subtle form is useful for everyday dehumanizing situations, but that it might be insufficient to describe some of the more overt forms of dehumanization. They introduce an instrument to measure blatant dehumanization, which they subsequently validate in a series of studies (Kteily et al., 2015).

The measure uses the ascent of man. A graphical description which delineates the evolution of the human species through a series of five silhouettes. The leftmost silhouette is an early ancestor, similar to the apes of today. But as we progress further to the right the silhouettes become more physiologically and culturally evolved. This is demonstrated by a gradually more upright posture, and by the use of tools (a silhouette depicted as holding a spear). Furthest to the right is the silhouette of a fully evolved modern human. The fact that the silhouettes are arranged along a continuum allows for the ascent of man to be used as a scale. Several different groups (e.g., Americans and Muslims) are listed below the silhouettes. The participants are asked to indicate, using continuous sliders, how evolved they perceive the different groups to be (see Figure 1). This is then translated into a score ranging from 0-100, which is used as an index of blatant dehumanization. A lower score indicates more blatant dehumanization of that particular group. The ascent of man captures several features related to blatant dehumanization. Being fully human is contrasted with being an unevolved animal. This comparison is central to animalistic dehumanization, and has been a key feature in many interethnic conflicts throughout history

(Haslam, 2006; Jahoda, 1999). The ascent measure is also a very direct measurement and provides a clear hierarchy based on of the level of perceived humanness. Furthermore, it is intuitive while still providing both a cultural and physiological gradient.

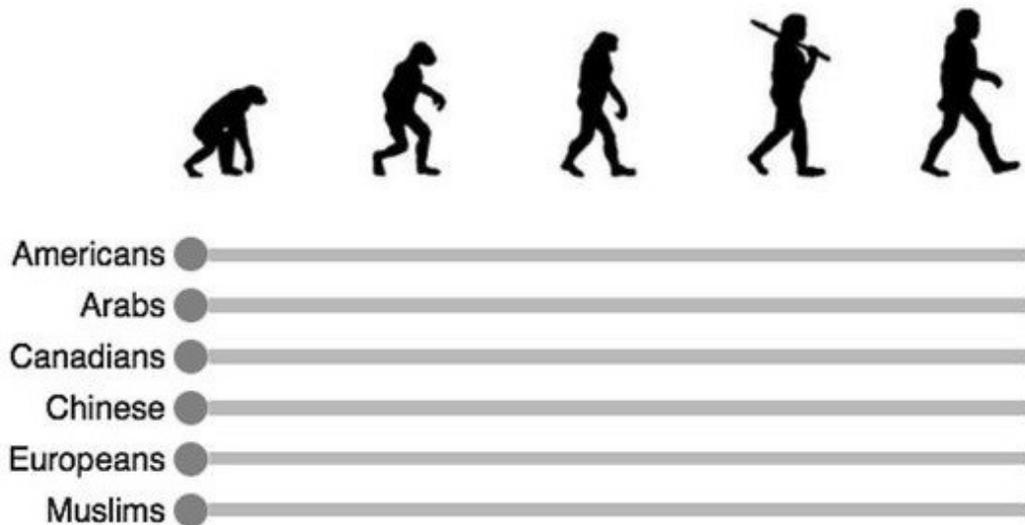


Figure 1. The Ascent measure of blatant dehumanization. Participants used sliders next to each group to rate their perceived level of humanness. The order in which the groups appeared were randomized across participants. Adapted from “The ascent of man: Theoretical and empirical evidence for blatant dehumanization,” by N. Kteily., E. Bruneau., A. Waytz., and S. Cotterill, 2015, *Journal of Personality and Social Psychology*, 109, p. 904. Copyright 2015 by the American Psychological Association. Adapted with permission.

Kteily et al. (2015) have demonstrated that individual differences in blatant dehumanization can be linked to a number of behaviors and attitudes toward outgroup targets, including overt attitudes about their level of evolvedness. Blatant dehumanization can be linked to support of social hierarchies, as measured by social dominance orientation (SDO; Pratto, Sidanius, Stallworth, & Malle, 1994). It can also be linked to a preference for right-wing authoritarianism (RWA; Jackson, & Gaertner, 2010). RWA is characterized by an adherence to social conventions as well as an idealization of the norms and traditions of the own group. This may suggest that dehumanization arises partly from the perception that some outgroup members

are defying the social norms of the ingroup (Jackson, & Gaertner, 2010). The ascent scale also predicts support for extreme outcome measures against outgroup members, such as drone strikes, torture, support for discriminatory programs (e.g., anti-Roma), and retaliatory violence. This is the case even when prejudice, and outgroup negativity has been controlled for (Kteily et al., 2015). The ascent measure of blatant dehumanization is reliable over time but can change in reaction to instances of real intergroup violence. This can be demonstrated by the fact that blatant dehumanization spikes in the aftermath of terrorist attacks.

4.2 Neural correlates of blatant dehumanization

Bruneau, Jacoby, Kteily, and Saxe (2018a) conducted an fMRI study in which they compared the neural correlates of blatant dehumanization (as assessed by the ascent scale) with the correlates of three conceptually similar processes. Namely, perceived dissimilarity, dislike, and how homogenous outgroup members are perceived to be. Participants were asked to rate a number of different groups on the previously mentioned dimensions. The groups included humans with high status (e.g., surgeons, Americans) and humans with low status (e.g., Muslims, homeless) as well as liked animals (e.g., puppies) and disliked animals (e.g., rats). Bruneau et al. (2018a) found that when ratings on the other dimensions had been controlled for, blatant dehumanization was uniquely correlated with an increased activity in the dorsomedial precuneus, as well as with an area in left inferior frontal cortex (IFC), and two areas in the left inferior parietal cortex (IPC). The left IFC has previously been shown to activate when we make perceptual judgments about the actions of other people (Pobric & Hamilton, 2006). The IPC is a structure involved in integrating spatiotemporal information about perceived objects and has also been connected to arithmetic reasoning (Assmus et al., 2003; Rivera, Reiss, Eckert, & Menon, 2005).

Previous research has found a robust and consistent correlation between blatant dehumanization and dislike ($r_s .5-.6$) across a range of cultural contexts, suggesting that scales of blatant dehumanization and dislike might capture a common psychological process (Kteily & Bruneau, 2017b; Kteily et al., 2015). Bruneau et al. (2018a) found that judgments of liking were parametrically modulated by an area in the PCC, even when all the other scales had been controlled for. This shows that even though blatant dehumanization and dislike are often correlated the constructs can be neurally distinguished. The constructs refer to different phenomena while also being underpinned by different neural structures. This addresses previous concerns about whether or not dehumanization can be separated from general antipathy (Haslam & Loughnan, 2014). Bruneau et al. (2018a) argue that dehumanization and dislike are meaningfully separate constructs, and that dehumanization does not require one to dislike the target. This can be supported by the fact that despite being liked, dogs and children are often attributed with less agency and are in a way denied a full mind (Gray, Gray, & Wegner, 2007).

Bruneau et al. (2018a) also found a correlation between MPFC activity and ratings of similarity to self, but only at a more lenient threshold. This pattern of activity is similar to the one found by Harris and Fiske (2006) when participants viewed people in the different SCM quadrants. The MPFC did not track with ratings of blatant dehumanization, which may suggest that the activity observed by Harris and Fiske (2006) is different from the activity underlying blatant dehumanization. While blatant dehumanization can be linked to overt attitudes about other people being less than human, the activity patterns found by Harris and Fiske (2006) may instead reflect a perceived dissimilarity which results in a failure to attribute a mind to the target.

The distinction between blatant dehumanization and subtle dehumanization may thus be

meaningful. Given the fact that the terms address different phenomena while also being underpinned by different neural structures.

5. Reasons for dehumanizing

Being kind and loving towards other people is a central tenet in many religions, and the Golden Rule tells us to treat others the same way we ourselves would like to be treated. We find inhumane acts towards others to be appalling and tend to view the perpetrator with disgust (Haidt et al., 1997). Perceiving others positively seems to be the default for most people (Sears, 1983; Taylor & Brown, 1988). Despite all this, we readily engage in dehumanized perception without even being aware. This seems contradictory and raises the question, why do we dehumanize?

Past theories have often emphasized the functionality of dehumanization. How it arises as a predictable response to certain social environments (Haslam, 2006). Dehumanization denies fundamental human attributes and can lead to moral exclusion and failure to elicit compassion (Kelman, 1973; Opatow, 1990). This moral exclusion is often coupled with negative attitudes towards outgroup members. They are ascribed negative epithets and characteristics and are often depicted as animalistic or unevolved (Haslam, 2006). The negative beliefs about the outgroup serve as a way of explaining and legitimize aggression while simultaneously making the ingroups seem superior by comparison (Bandura, 2002; Bar-tal, 2000). It also allows for other people to be treated as means to an end (Kelman, 1973).

5.1 Dehumanization and goal pursuing behavior

Harris (2017) argues that dehumanization can be modulated by social contexts and goals.

Whether social cognition is extended or withheld can be partly determined by how profitable it is to dehumanize, and how costly it is to humanize. Social cognition can be tuned down at the cost of civility, dignity, and human decency, which can allow for exploitative acts such as slavery and

human trafficking to take place. Acts which are morally abhorrent, but also very profitable. These acts would be incompatible with social cognitive features such as empathy and perspective-taking. To make a profit, it might, therefore, be necessary to disengage social cognition, as this would remove the obstacle of having to treat others with moral consideration, and instead make it possible to treat them as resources to be used. In this way, dehumanization enables us to engage in behaviors which would otherwise be inhibited by the social cognition network.

Colonialism was of immense benefit to the colonizers although it left many people suffering. The colonized people were systematically depicted as unevolved, animalistic, and subhuman (Jahoda, 1999), and thus not worthy of the same moral treatment (Bandura, 2002). Yet, the enslavement of Africans was often portrayed as a noble effort to get rid of their demonic religions and to make them more civilized (Harris, 2017). In this way, the exploitative treatment was framed as being morally justified (Bar-tal, 2000).

A similar rationale can be found for many other exploitative and immoral acts throughout history. The systemic removal of indigenous Australian children from their families was often framed as being for the greater good of both the children and society at large (Van Krieken, 1999). Similarly, forced sterilization programs around the world have regularly been justified as a necessity to avoid overpopulation and to stop people who were considered a 'burden to society' from reproducing (Amy & Rowlands, 2018). Indeed, it seems as though most acts throughout history which we now consider to be morally abhorrent were justified by the perpetrators at the time they were committed.

5.2 Dehumanization and cognitive dissonance

Cognitive dissonance theory postulates that when a person is faced with two opposing beliefs, this results in a state of internal conflict. To resolve this conflict, the person commits to one of

the beliefs while simultaneously downgrading the other. This reduces the internal conflict and leads to a state of cognitive balance (Festinger, 1957). Cognitive dissonance theory can provide a useful explanation as to why we dehumanize.

In the context of war, a soldier can be ordered to kill people. Refusal to partake in the killing could lead to ostracization from comrades and punishment from superiors. This way, the soldier is more or less coerced to obey the order. However, the act of killing other people is likely to violate personally held beliefs and break moral codes (i.e., thou shalt not kill). On the one hand, the soldier has the self-image of being a moral person who does not kill others, but on the other hand, the soldier has killed people. These two beliefs are incompatible with each other and are likely to result in an internal conflict. A solution to this conflict could be to dehumanize the enemy. If the enemy is no longer viewed as being fully human the act of killing them would not conflict with the soldier's self-image of being a moral person. In essence, if we have done something immoral, dehumanizing the victims could protect our self-image. It would allow us to reconcile our conflicting beliefs and maintain a state of cognitive balance. This is not limited to the context of war but could include more mundane situations as well.

5.3 Dehumanization as a social psychological process

Fiske, Harris, and Cuddy (2004) emphasize the role of everyday social-psychological mechanisms in dehumanization. They argue that the right social context can make almost anyone dehumanize and engage in hostile behaviors towards others. A prime example of this comes from the Stanford prison experiment (Haney et al., 1973). Participants were randomly assigned into roles of prisoners and guards in a mock prison facility for a period of two weeks. Several measures were taken to strip the prisoner participants of their individuality, such as the guards wearing dark shades to avoid eye contact, and the prisoners being referred to by numbers rather

than names. The experiment had to be ended after only six days due to the prison guards becoming increasingly hostile towards the prisoners, with many of them engaging in sadistic behaviors and psychological torture. According to Haney et al. (1973), the assignment of roles may have resulted in a sense of detachment and loss of responsibility as well as a loss of self-awareness for the prison guards. Instead, it made them more susceptible to group thinking and mob mentality while also providing them with a sense of anonymity.

Another example of how social psychological mechanisms can lead to dehumanization comes from Stanley Milgram's (1974) experiments on obedience and authority. The subjects were led to believe that the experiment was about the effects of punishment on learning. Each participant was instructed to act as a teacher. Their job was to present questions to a student who was strapped to a chair in another room and to administer an electrical shock each time the answer was wrong. For every wrong answer, the electrical shocks became more powerful while the student became increasingly more discomforted. After a while, the student would be screaming in pain and declare that he no longer wanted to participate. He would yell that he had heart problems and would beg for mercy. An experimenter would stand in the same room as the participants and urge them to continue despite the objections of the student. Telling them that it is vital for the experiment and that they must continue. The electric shocks were increased until they reached 450 volts. By that time the student had gone silent. A majority of the participants continued to administer shocks until the end of the experiment. Milgram's experiments demonstrate that people have a general tendency to submit to authority figures and that this tendency towards obedience often prevails even when it conflicts with our moral conscience.

A well-studied phenomenon within social psychology is our tendency to conform to our peers (Bond & Smith, 1996). This tendency can have implications in the context of

dehumanization. Once some morally transgressive behaviors have been established within a group, other group members are more likely to adopt similar attitudes and behaviors. This can have the effect of upholding the norm and allowing for the dehumanizing behaviors to continue (Fiske et al., 2004).

Fiske et al. (2004) argue that the previously mentioned principles of conformity, obedience, and role fulfillment, combined with an active portrayal of others as being less human was partly what led to the torture of prisoners that were committed by British and American troops in Abu Ghraib. Being in a threatening environment under a chain of command that expects subordination makes it very costly to engage in social cognition and increases the risk of dehumanization.

5.4 Dehumanization as a coping strategy

When people are dehumanized they are to some extent denied agency and can be treated as means to an end (Kelman, 1973). In certain social situations, this can have extreme consequences and result in violence and atrocities. However, this is not always the case, and a lesser degree of dehumanization can sometimes have positive effects.

Many people working in palliative care often feel uncomfortable working around dying people (Schulman-Green, 2003). This discomfort can negatively affect the interactions they have with their patient. It can lead to feelings of guilt and inadequacy and result in considerable emotional distress (Wu, Folkman, McPhee, & Lo, 1993). Cameron, Harris, and Payne (2016) argue that dehumanization can prevent emotional exhaustion in demanding situations involving other people suffering. This is supported by research on health care workers, which shows a positive correlation between the act of humanizing suffering patients, and symptoms of burnout (Vaes & Muratore, 2013). Dehumanization could thus be a functional coping strategy. By turning

down the social cognitive network we turn down abilities such as perspective-taking and empathy (Harris & Fiske, 2009). These are abilities that would otherwise be turned towards the emotional needs of the other people, needs that might overwhelm us and lead to emotional exhaustion and burnout.

5.5 Dehumanization on the labor market

Our model of economy incentivizes the exploitation of commodities to maximize profit. On the labor market, other people are treated as resources to be used and are in a sense objectified. This requires a type of thinking that is different from everyday social interactions since social cognitive features such as empathy and perspective-taking lead us to perceive the other person as an agent, worthy of moral consideration.

Harris, Lee, Capestany, and Cohen (2014b) conducted a study in which they created a labor market. In the first phase of the experiment, participants were asked to play a game in which the objective was to guess how much time had passed from a given setpoint (e.g., 6,5 seconds). After the game was ended, individual player profiles were created for all of the participants. The profiles each contained a player identification number (e.g., player 4) along with a picture of that participants face. The profiles also contained some physical information about the player (e.g., age, height) and a detailed account of their performance. Based on their accuracy, each player profile was assigned a monetary value (e.g., \$3.50).

In the next phase of the experiment, new participants were brought in and given some money. They were shown the player profiles and were told that they could buy five people to form a team which would later compete on their behalf. They were also told that they could keep any leftover money. After they had purchased their players, they were informed that they could earn bonus money if those players performed well. This served to further mimic real-life labor

markets. The new participants were put into an fMRI scanner and shown pictures of the five players they had brought along with five other randomly selected players. They were shown the time estimation outcomes of each player and were asked to evaluate whether the price of the player was fair or if it should be changed, and if so, by what percentage their price should be increased or decreased (e.g., 30% decrease).

The scanning revealed that when participants looked at people they had purchased, they had a decreased activity in a variety of frontal and temporal regions involved in social cognition, including the MPFC, STS, precuneus, and the right temporal pole, which indicates a dehumanizing effect. This social cognition brain activity reduction could predict the value which would later be assigned to the players. A different effect was found when participants viewed players they had not bought. Instead of a reduction in social cognitive areas, the assigned value of these players was best predicted by increased activity in the medial OFC, an area which has previously been implied as important for making decisions about economic transactions (Plassmann, O'Doherty, & Rangel, 2007). Social cognition can thus be reduced in order for people to perform rational decisions about the value of other people.

These findings highlight the functionality of dehumanization. Not only does dehumanization protect against empathic exhaustion and burnout, but it may, in fact, be necessary in order to treat other people as resources, a key feature of the labor market.

6. Discussion

Dehumanization can be seen as a failure to engage in social cognition when perceiving a target. Social cognition refers to a variety of processes involved in social interactions (e.g., empathy and perspective-taking). These processes all recruit different parts of the social cognition brain network. A wide network which encompasses several cortical and subcortical areas, including the

MPFC, OFC , ACC, PCC, precuneus, rTPJ, STS, FFA, insula amygdala, and areas in the corpus striatum (Delgado, 2007; Eisenberger et al., 2003; Frith & Frith, 2001; Harris & Fiske, 2009; Haxby et al., 2004; Van Overwalle, 2009).

The MPFC seems to be necessary to treat others as fully human. It is reliably activated when we perceive other people, make moral judgments, empathize, or take the perspective of someone else (Harris & Fiske, 2009). Because of this, the structure has sometimes been used as an index of humanized perception (e.g., Harris & Fiske, 2006, 2009, 2011). Reduced MPFC activity can be found in a variety of dehumanizing contexts, such as when sexist men look at pictures of scantily clad women (Cikara et al., 2011), when people shoot an enemy in a violent first-person shooter game (Mathiak & Weber, 2006), or when people view members of an extreme outgroup (Harris & Fiske, 2006).

Dehumanization can be extremely negative, as it allows for the harm and exploitation of others, and in the worst-case scenario even atrocities such as torture and genocide (Harris & Fiske, 2011). However, dehumanization can sometimes have positive effects as well. It allows us to make more rational economic decisions about others (Harris et al., 2014b), and it can help prevent empathic exhaustion and burnout in health professionals (Vaes & Muratore, 2013). In some professions (e.g., surgeons) dehumanization might be necessary to be able to work (Haque, & Waytz, 2012).

In recent years there has been an increased focus on blatant dehumanization, which can be separated from more subtle forms of dehumanization. Blatant dehumanization is expressed through overt attitudes about others level of evolvedness and can be linked to support for extreme measures against outgroups, such as torture, drone strikes, discriminatory programs (e.g., anti-Roma), and retaliatory violence, as well as support for social hierarchies and RWA

(Kteily et al., 2015). Ratings of blatant dehumanization are correlated with increased activity in the dorsomedial precuneus, as well as with an area in the left IFC, and two areas in the left IPC (Bruneau et al., 2018a). This pattern of activity does not map on to the previous model of dehumanization as a reduction of social cognition (e.g., Harris & Fiske, 2011). Instead, it indicates that there are two different types of dehumanization with different neural underpinnings.

6.1 Dehumanization today

Dehumanization is not a thing of the past. Both subtle and blatant dehumanization are phenomena that still exists today and which can be linked to a variety of negative outcomes in contemporary society. Throughout history, black people have often been portrayed as less evolved and has been compared to apes (Haslam, 2006). This implicit association remains and can be linked to negative real-life outcomes. Research by Goff, Eberhardt, Williams, and Jackson (2008) has shown that when the media reports about black criminal suspects using terms with animalistic connotations (e.g., concrete jungle) there is an increased likelihood of the person receiving the death penalty. White people who blatantly dehumanize black people more readily support punitive criminal justice legislation which disproportionately affects black people. This correlation remains even when factors such as racial resentment, racial stereotyping, and conservatism has been accounted for (Kteily & Bruneau, 2017b).

Bruneau, Kteily, and Laustsen (2018b) conducted a series of studies during Europe's 'refugee crisis'. They found that blatant dehumanization uniquely predicts hostile attitudes towards Muslim refugees and support for anti-refugee policies. Dehumanization of refugees was particularly prominent in Eastern European countries (samples from Hungary and the Czech Republic).

Czech respondents rated Muslim refugees 39 points lower on the Ascent scale than they did their own group. This is among the lowest levels ever measured on the Ascent scale. Even lower than ratings of ISIS terrorists made by American samples (~37 points; Kteily et al., 2015).

In Hungary, dehumanization can be reflected in some of the policies and legislation made by the government, which has taken a hardline anti-refugee stance. Among the more drastic measures includes the building of razor-wire electric fences along the southern border to keep refugees out (Jamieson, 2018) and the passing of laws which would make it criminal to aid migrants and refugees (Gardos, 2018). This has been coupled with an overtly dehumanizing anti-immigrant rhetoric. Hungary's Prime Minister, Viktor Orbán has notably referred to refugees as Muslim invaders (Agerholm, 2018) and a "poison" that his country "won't swallow" (Levy Gale, 2016).

Studies conducted during the American presidential primary elections have indicated that blatant dehumanization of Mexicans and Muslims were a good predictor of supporting Donald Trump (Kteily & Bruneau, 2017a). This was true even when controlling for factors such as conservatism and racial prejudice against said groups. This fits neatly with many of the drastic policies and proposals made by the Trump administration, such as building a wall to keep Mexicans out (Rodgers & Bailey, 2019), banning Muslims from entering the United States (Wang, 2017), and actively supporting Guantanamo Bay (Beaumont & Austin, 2019). It can also be reflected in the rhetoric used by Trump. Referring to Mexicans as rapists and undocumented immigrants as animals (Korte & Gomez, 2018) while suggesting drastic countermeasures.

Blatant dehumanization can be linked to hostile attitudes and behaviors which can create a lot of suffering for the people being dehumanized. This might result in retaliatory acts. If Group A dehumanizes and makes Group B a target of aggression. This can, in turn, lead to

dehumanization and counteraggressions towards Group A, and so on. Creating a vicious cycle of violence (Kteily & Bruneau, 2017a). If we have learned anything from history, this is something that we want to avoid at all costs.

6.2 Limitations

A problem with the concept of dehumanization is that it lacks a uniform definition. In this thesis, I have defined dehumanization as any perception that fails to take into account the inner mental life of another person and the moral inclusion that follow from that. This definition is quite broad and can refer to a wide array of different phenomena. There are some possible downsides to this. If the definition of dehumanization is made too inclusive it will become more unclear what the different types of dehumanization have in common. This may result in the concept being less interesting and useful. It can also lead to semantic issues regarding the nature of the phenomenon and how the concept is used. Some of the accounts of dehumanization are so different in the real-life effects that they might intuitively fall under different categories (e.g., dehumanization during genocide versus dehumanization as a feature of the labor market). At the same time, if the definition of dehumanization is made too narrow it risks losing some of its utility and relation to social life.

This thesis is a literature review and not a systematic review. With this comes several limitations. I selected the articles for my thesis based on their relevance to the topic of cognitive neuroscience, and their overall relevance to the topic of dehumanization. This selection process was based on my judgment and to some extent my interests and curiosity. These inclusion criteria are less strict than those applied in a systematic review. Subsequently, there is a bigger risk of my own biases coming into play. Nevertheless, I think that a literature review has been a suitable format for covering dehumanization. I aimed to cover several aspects of the topic and to present

the reader with a broad overview of both the neuroscientific components of dehumanization and the phenomenon as a whole. This broadness comes at the cost of specificity. Lastly, I want to add that my literature review is not an exhaustive account of the phenomenon and that more nuances and perspectives exist.

6.3 Future directions

Much of the work that has linked blatant dehumanization to behavioral outcomes has been correlational in nature. More research will be needed in order to demonstrate a causal connection between blatant dehumanization and aggression. This could be done via longitudinal and experimental studies. If a causal link is established between dehumanization and aggression, this would open up for more research to be made about moderating factors and ways to reduce violence.

Haslam (2006) differentiates between animalistic dehumanization and mechanistic dehumanization. Blatant dehumanization can be seen as a type of animalistic dehumanization. Given the usefulness of the ascent scale, future research could assess if there could be a similar scale but for mechanistic dehumanization instead of animalistic.

Genocides and other atrocities in human history have often been preceded by propaganda and overt dehumanization of the victims, often through some grand narrative which justifies their treatment. An idea for future research is to investigate if this type of propaganda leads to increased dehumanization as measured by the Ascent scale. This type of research could be of importance given the dehumanizing rhetoric used by some contemporary political leaders.

I would be interested in conducting research about dehumanization as a function of ideology. Particularly in the context of online cultures. Research by Lewis (2018) has looked into how political influencers have used YouTube and other social media platforms to perpetuate far-

right ideology and rebranded versions of white nationalism. According to Lewis (2018), Youtube content creators have employed strategies used by brand influencers, together with social networking, to create alternative media outlets which produce and promotes extremist content. These findings match with my own experiences. People spend an increasing amount of time online, interacting with each other in different social media. I think that it would be very important to study the relationship between different online cultures and dehumanization. To what extent can people be radicalized into holding more extreme and dehumanizing beliefs about others? I think that this question is important. It also connects to the broader question of how culture and propaganda affect dehumanization.

6.4 Conclusion

Dehumanization is a process whereby people fail to view others as human beings. Instead, perceiving them as nonhuman animals or objects, unworthy of the same moral consideration. The process of dehumanizing is reliably coupled with reduced activity in the social cognition brain network. A wide network which encompasses several cortical areas, including the MPFC, OFC, ACC, PCC, precuneus, rTPJ, STS, FFA, and insula. The network also includes subcortical structures like the amygdala and areas in the corpus striatum. One area of special interest is the MPFC. The MPFC functions as an integration center in the person perception network and is also engaged when we empathize, make moral judgments, or take the perspective of someone else. For this reason, the MPFC is sometimes used as an index of dehumanized perception.

Another type of dehumanization which has gained traction in recent years is blatant dehumanization, which is expressed through overt attitudes about others level of evolvedness. Blatant dehumanization is correlated with increased activity in the dorsomedial precuneus, as well as with an area in left IFC, and two areas in the left IPC. This pattern of activity does not

map on to the previous model of dehumanization as a reduction of social cognition. Instead, it indicates that there are two different types of dehumanization, each with different neural underpinnings. However, the concept of blatant dehumanization is fairly new, and in order to establish nomenclature and fully understand how these concepts are related to each other. More research will be needed.

To return to my original question, how does the brain facilitate dehumanization? In summary, the brain facilitates dehumanization by tuning down activity in areas related to social cognition. This inhibits prosocial abilities such as empathy and perspective-taking and allows us to treat other people like objects, rather than agents deserving moral treatment.

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