Identity and Parkinson's disease: Exploring personal identity though the theories of Locke and Parfit in neurodegeneration

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Introduction

This research paper explores personal identity in relation to Parkinson's disease. I define personal identity as a singular yet changeable set of characteristics that one relates to, which tends to prevail over a set period. Some of those characteristics which are key to our identity, such as our skin color, race, and ethnicity are usually unchangeable. However, other characteristics, such as our favorite color, political beliefs, and religious ideologies, may change over time. The majority of the scientific literature argues that changes in personal identity are due to the moral faculty as well as the loss of memories. However, I argue that personal identity is not only determined by those two factors (moral faculty and memories) but one can also undergo changes in their personal identity by the alteration of motor functions; more specifically, the dysfunction of motor abilities as in the case of Parkinson Disease. In this paper, I will be using Parfit theory of personal identity as well as relevant scientific literature, which I will be exploring shortly, to support my argument and explain how believing that memories are the sole driver of change in personal identity, which is supported by John Locke's perspective on personal identity, is not enough to cover the complexity of identity. To avoid confusion, throughout this paper I will be using the word "identity" interchangeably with the term "personal identity" to avoid repetitions and overstatements.

Theory Summaries

John Locke believed in a continuous sense of self where one's identity is rooted in the continuity of the memories and awareness of the experiences one has gone through. Locke believes there needs to be either some sufficient or necessary relation between the same person across time in order to maintain personal identity. A change in one's consciousness or memories would distort this relation, and thus, would lead to a change in their identity (Locke, 1948). His view was mainly influenced by his search on moral responsibility and fairness in the justice system, which he argued are only achievable if people maintain their sameness, which is only attainable with a consistent understanding of personal identity.

On the other hand, Derek Parfit argued that memories do not reflect personal identity. But rather that personal identity is a matter of degree of change in physical continuity and psychological connectedness; or what he described as "to what extent" those two factors were altered (Parfit, 2007). Physical continuity refers to maintaining the same physical brain and body overtime while memories and personality are open to change. In addition, psychological connectedness is the idea of having overlapping experiences, memories, and personality traits to the different versions of oneself. Thus, for him, personal identity is a convection that we use to refer to those changes and, in fact, humanity is better off without it especially when making ethical and moral choices as each decision would, ultimately, be impacting a future person that does not have to be the same as the current one. Those ideas will be further elaborated on later in the paper.

Parkinson's Disease and Neurodegeneration

How do these theories play a role in understanding the changes caused by Parkinson's Disease? Would Parkinson's disease, as a motor neurodegenerative disease, alter morality? As mentioned earlier, Parkinson's Disease is a chronic and progressive neurodegenerative disease that alters the functionality of motor-related regions in the brain through the death of neurons in the basal ganglia (DeMaagd et al., 2021). The death of neurons in the basal ganglia ultimately decreases the amount of dopamine in the brain, a neurotransmitter that plays a vital role in the production of movement. These impairments lead to the inability to conduct precise movements, shaking, and difficulty maintaining balance and coordination (NIA, 2022). For example, the case of one of the greatest Boxers of all time, Mohammed Ali. Ali was diagnosed with Parkinson's disease in 1984 after witnessing intense changes to his behavior and gameplay. Did his identity change as he became progressively weaker and unable to practice a sport he longed for his whole life, even if his memories are intact?

To explore the relation between neurodegeneration and identity, Strohminger and Nichols (2015) conducted a study on the influence of Alzheimer's Disease (AD), a neurodegenerative disease that leads to the loss of memory, and potentially consciousness, on patients' identities. They hypothesized that identity would be highly impacted by AD and patients would not be perceived the same by their caregivers due to changes in their moral code. In order to examine this hypothesis, the researchers anonymously surveyed the caretakers of patients diagnosed with Alzheimer's disease on the identity change of the patients. The researchers found that moral faculty was indeed the greatest reported factor for identity change. In other words, caregivers thought that patients' identities were different after their PD diagnoses because of changes in their moral code. These findings place a vital importance on morality to be a key factor in maintaining a continuous identity. They also indicate that personal identity changes when personality and memories change.

Discussion

These findings go hand in hand with John Locke's arguments of the self and identity. Locke argued, as mentioned earlier, that identities are constructed through the experiences, consciousness, and memories one has. Therefore, the loss of either one of those factors, such as in the case of Alzheimer's patients in Strohminger and Nichols (2015) study, would indicate that the person is no longer themself. However, with such logic, aren't we always changing and, therefore, never ourselves? I say this because we are either creating false memories about events that never happened to us or forgetting events that did happen to us in the past (Dechterenko and Lukavsky, 2022).

This on-going alterations in our memory creates a dilemma that Locke explains in his *Prince and Cobbler* thought experiment. Locke used this thought experiment to illustrate how individuals' identity is rooted in their memories, which then give rise to their moral code and personality. The thought experiment revolved around the question of "who does the new creation represent?" when the prince's body gets replaced by the cobbler's body while maintaining the prince's mind (which includes his memories and consciousness) untouched. Therefore, this leaves us with a new creature that has the cobbler's body and the prince's mind. John Locke would argue that this creature is not a new one but rather the same prince in another physical body.

The view that as long as the mind is constant, the person stays the same and maintains their identity is problematic. Keeping with the same example of the Prince and the Cobbler; if the person with the cobbler's body and the prince's mind commits a crime, would the law enforcement officers look for the prince or the cobbler to take responsibility? I think that by taking the value of personal identity out of the question, the answer becomes clearer; law enforcement officers should be looking for neither the prince nor the cobbler but rather for the new creation. The person who committed the crime is a new individual with a new sense of personal identity that is based on a new combination of a physical body and a psychological component. Besides, this individual would also have a different sense of morality than the other two as they are based on the experiences created with the cobbler's body and the memories of the prince. For example, if the cobbler was a black person and the prince was a white person, the new individual with the black person's body and the white person's mind would have a completely different sense of reality and experiences, based on this new combination, in comparison with either the prince or the cobbler separately. These new experiences would lead to an alteration in the moral code and the generation of a new personal identity that is unique for the "created" person. This perception of the Prince and Cobbler's dilemma can be applied to the case of Parkinson's disease, where individuals experience the world with a different set of physical traits while maintaining their memories mostly intact. For example, as Parfit explained, even though Parkinson's disease does not cause dementia, it alters the physical brain and thus creates physical discontinuity. However, I believe that identity change occurs when the patient suffering from Parkinson's can no longer feel connected to their past selves due to the inability to relate back to themselves rather than because their mind has changed. In addition to this psychological disconnectedness, the lack of action and the physical discontinuity can develop a different set of moral beliefs, which can introduce a change onto one's personal identity (Roger et al., 2010).

Organizational behavior ethics researchers have been looking more

into the moral self as a key factor in understanding human identity and morality (Jennings et al., 2014). Jennings and other moral-self researchers refer to Aristotle and his understanding of the moral self when defining identity, which states that morality is a characteristic of a person and not a result of abstract moral reasoning (Jennings et al., 2014). In other words, morality is changed when identity is changed and not the other way around. In this paper, I follow the steps of both Baumeister (1987) and Solomon (1992) in defining the concept of the moral self as a reflection of a person's sense of self based on their behaviors, actions, and characteristics as well as their concerns and attachments, which altogether make up one's identity. Essentially, both the physical appearance as well as the internal psychological processes of individuals shape their morality and, therefore, their personal identity (Baumeister, 1987; Solomon, 1992). Thus, morality is a construct that changes with disturbances to the physical continuity and/or the psychological connectedness over time, which then leads to changes in identity.

The *Essential Moral Hypothesis* states that morality is the most essential aspect for determining personal identity (Strohminger and Nichols, 2013). In order to investigate this hypothesis, Strohminger and Nichols (2015) recruited 248 participants who were diagnosed with one of three types of neurodegenerative diseases: Alzheimer's disease (AD), frontotemporal dementia (FTD), or amyotrophic lateral sclerosis (ALS), which all feature a set of relatively unique cognitive and behavioral changes. For instance, ALS primarily affects motor functions but not memory and cognition, whereas both AD and FTD lead to cognitive dysfunction and memory loss. It is important to note that Alzheimer's tends to be more associated with impacting cognitive functions such as memory, consciousness, and IQ, while frontotemporal dementia tends to be associated with changes in moral traits (Strohminger and Nichols, 2015). As described at the beginning of the paper, the caregivers were instructed to indicate the level of change their loved ones had gone through since the diagnosis based on a set of questions on categories that represent either personality traits or morality traits. The researchers found that caregivers linked the greatest change in patients' identities when they observed changes in the patients' moral traits, not memories. Therefore, Strohminger and Nichols (2015) research supports the idea of the *Essential Moral Hypothesis*, which indicates that morality is the driver for the construction of personal identity, without the loss of memory.

Even though Strohminger and Nichols (2015) revealed that motor neurodegenerative diseases had no significant change on perceived identity, Poletti and Bonuccelli (2011) reviewed empirical evidence on the relationship between Parkinson's disease and changes in one's identity through looking at personality trait alterations. Their study revolved around understanding patients' own understanding of identity rather than caregivers indicating the perceived identity change on behalf of the participants. They found that participants diagnosed with Parkinson's disease showed low novelty seeking attitudes and high harm avoidance profile in comparison to healthy individuals. Meaning, in comparison to healthy individuals, patients suffering from PD were less likely to try out new things in addition to being more likely to avoid risky situations. Essentially, a person diagnosed with PD would progressively become less likely to engage in new social gatherings and more likely to avoid engaging in the act of smoking cigarettes (Poletti and Bonuccelli, 2011). Therefore, once again, the loss of memories was not the driver of identity change but rather the psychological disconnectedness of one's personality traits before and after Parkinson's disease. Furthermore, the impact of Parkinson's disease on personal identity was supported in a twin pairs study that assessed 15 twin pairs and 17 unrelated healthy twin pairs on their personality traits (Heberlein et al., 1998). Heberlein et al. (1998) also found that twins who were diagnosed with Parkinson's Disease were less likely to score highly on achievement orientated and extraverted personalities in comparison to healthy ones. They also found that twin pairs with PD scored higher on traits reflecting inflexibility, rigidity, and emotionality (high emotional reactivity to stimuli) in comparison to healthy individuals. These findings were consistent with Menza (2000), who argued and found that those identity changes reported above are detected after the clinical motor symptoms appear (Menza, 2000). Therefore, the existence of debates in the scientific literature regarding whether we can trace back identity change to either physical or mental alterations creates a further gap in the application of Locke's Psychological View. However, it introduces another medium to embrace Parfit's theory.

Unlike John Locke's theory, David Parfit's Psychological View, which states the need for a physical discontinuity and/or psychological disconnectedness in order to elicit a change in identity, can also be applied in the case of Parkinson's Disease. Besides, Parfit's theory erases the pressure on forcing personal identity onto the ever-changing events in life by declaring personal identity as a convection rather than the base of change. As Parfit described in *Reasons and Persons* (1984), there is still a difference between our lives and the lives of other people even without giving a value to personal identity. For example, after our death, there will be no one living who will be us. Even though there will later be many experiences, none of them will be connected to our present experiences by direct connections, like those we remember living through, and some memories will later be made about our lives that we did not experience.Thus, our death will break the more direct relations between our present experiences and future experiences, but it will not break various other relations made around us. Thus, at the end, all there is to identity is that there will never be any one living who will be us in the present; not us from the past nor us from the future (Parfit, 2007).

Conclusions

Identity, therefore, besides being a tool we use to describe psychological changes, is influenced by the functionality of the brain and the physical well-being of the person. One's identity can be altered by brain injuries and neurodegenerative diseases as long as those injuries elicit psychological and/or physical discontinuity. Thus, John Locke's views on personal identity are partially applicable for when neurodegenerative diseases impact one's memories and consciousness (Nimbalkar, 2011), as the lack of consciousness and the loss of memories would lead to a discontinuity, which is the only way to change personal identity in Locke's perspective (Locke, 1948). Nonetheless, as explored above, this view is both limiting and easily falsifiable as it discounts both the psychological changes one may go through and the physical changes one can go through without memory loss, as well as the possibility of generating false memories that never happened before that can still alter moral or personality traits (Skvortsova et al., 2017).

For patients suffering from Parkinson's disease, the literature indicates a potential change in the moral judgement as well as personality traits that make up one's identity. Thus, identity is a reflection of the complexity of the thoughts, behaviors, and experiences of a person, which are all stored as continuous memories in the physical body and the psychological mind. In the case of Parkinson's Disease, alterations to the dopaminergic pathways and circuits, creates discontinuity in the physical body by causing dysfunction of motor movements; which may be reflected onto the psychological footprint, as we saw in the studies showing different behavioral attitudes in patients with Parkinson's (Heberlein et al., 1998; Menza, 2000; Poletti and Bonuccelli, 2011). However, the question of directionality of those findings still stands. As we are still unsure whether motor dysfunctions cause psychological attitudes differences or the other way around with the loss of dopamine modulating such relationships. In other words, even though I argue that Parfit's psychological view on personal identity is superior to explaining Parkinson's' Disease (and ultimately neurodegenerative diseases) influence on identity, I am still unsure of the directionality Parkinson's Disease takes on changing identity. Is it the changes in motor functions that changes one's morality and later on personal identity? Or does it take the direction in which the lack of novelty and risk-taking (psychological attitudes) alters motor functions and later on personal identity?

I believe that this paper presented a thorough exploration of the downsides of the psychological view of Locke as well as the limitations that arise from following it, even though both the scientific literature and justice system are highly influenced by John Locke's theory of personal identity. In this paper, I argued that the use of Parfit's theory, that is encompassed in the perspective of the psychological continuity, covers to a greater extent the complexity of identities as well as the scope of changes that one can undergo and maintain the same identity. Personally, I believe that arguing in the continuity of the self in personal identity is key to reaching a more just world. More specifically, I believe individuals should be held accountable for actions they have done regardless if they recall them or not. I believe that the reliance on memory as a key aspect in determining the self is unreliable for multiple factors, such as false memories and our brain's ability to forget details and lots of events around us. However, I think that is a topic of exploration in another paper. For this paper's aim, which was to illustrate that personal identity is changeable beyond memory loss or lack of consciousness by examining the case of Parkinson's Ddisease patients, I think that the Parfit's view on personal identity provided the best explanation of

how complex identities are as well as how identity alterations are shaped by the extent of discontinuity from past selves rather than the loss of memory of past selves, because one can forget a memory from their past and still be connected to it emotionally (i.e.: feelings) or physically (i.e.: a scar), thus keeping it as part of their identity, but cannot be disconnected from a past identity and still identifies with it.

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