

4 Me, My (Moral) Self, and I

Jim A. C. Everett, Joshua August Skorburg, and Jordan L. Livingston

4.1 Introduction

What makes you the same person you were five years ago? Will you be the same person that will exist in five years' time? Would you be the same person if, by some fantastical freak of nature, you woke up in someone else's body? These questions have fascinated humans for thousands of years, and with the specter of new technological advances such as human-machine cyborgs looming, they will continue to do so. They will continue to do so because they get at a fundamental human question: What makes you *you*?

In this chapter, we outline the interdisciplinary contributions that philosophy, psychology, and neuroscience have provided in the understanding of the self and identity, focusing on one specific line of burgeoning research: the importance of morality to perceptions of self and identity.¹ Of course, this rather limited focus will exclude much of what psychologists and neuroscientists take to be important to the study of self and identity (that plethora of self-hyphenated terms seen in psychology and neuroscience: self-regulation, self-esteem, self-knowledge, self-concept, self-perception, and more; Katzko, 2003; Klein, 2012). We will likewise not engage with many canonical philosophical treatments of self and identity. But we will lay out a body of research that brings together classic themes in philosophy, psychology, and neuroscience to raise empirically tractable philosophical questions, and philosophically rigorous empirical questions about self and identity.

More specifically, in section 4.2, we will review some recent research that has treated traditional philosophical questions about self and identity as empirical questions. Within this body of work, we will be primarily concerned with the finding that morality (more so than memory) is

perceived to be at the core of self and identity. Then, in section 4.3, we raise and respond to a variety of questions and criticisms: first, about the operationalization of identity concepts in the empirical literature; second, about the generalizability of the moral self effect; third, about the direction of change; fourth, about connections with recent work in neuroscience; and fifth, about the target of evaluation. Finally, in section 4.4, we consider a variety of implications and applications of this work on the moral self. Throughout, we aim to highlight connections between classical themes in philosophy, psychology, and neuroscience, while also suggesting new directions for interdisciplinary collaboration.

4.2 From the Armchair to the Lab

Given our limited focus, we follow Shoemaker (2019) in dividing contemporary philosophical approaches to morality and personal identity into four broad categories: psychological views, biological views, narrative views, and anthropological views. For present purposes, much of the research we describe below is situated within the domain of psychological views. This family of views about personal identity generally holds that person X at Time 1 is the same person as Y at Time 2 if and only if X is in some sense psychologically continuous with Y (henceforth, psychological continuity views). Of course, there is much debate about what such psychological continuity consists of, but following Locke (1975), memory is traditionally thought to be central in this regard. So, X at Time 1 is the same person as Y at Time 2 if X can, at one time, remember an experience Y had at another time. This vague formulation is subject to a number of objections (see Olson, 2019, for an overview), but our concern here is not to vindicate or impugn any particular version of a psychological theory of personal identity. Instead, we want to focus on the ways in which such philosophical theorizing might be informed by work in psychology and neuroscience—and also how work in psychology and neuroscience can shape philosophical theorizing.

As Shoemaker and Tobia (forthcoming) point out, if a psychological continuity view depends on a certain view of memory or consciousness, then experimental methods might eventually be able to clarify the precise mechanisms that support the relevant kinds of memory or consciousness. But by and large, this is not the preferred strategy in the literature. Instead, much

of the relevant interdisciplinary work has focused on judgments of identity change and the psychological processes that underlie such judgments, and our work is a contribution to this trend.

In this vein, some of the early work in experimental philosophy took psychological continuity views as testable hypotheses. For example, Blok, Newman, and Rips (2005) asked participants to imagine that a team of doctors removed a patient's brain (call him "Jim") and destroyed his body. Then, in one version of the vignette, participants were told that the doctors successfully transplanted Jim's brain into a new body, such that the memories in Jim's brain are preserved in the new body. In another version of the vignette, participants were told that the memories were not preserved during the transplant.

In these kinds of scenarios, psychological continuity theories predict that in cases where *memories* were preserved, participants should judge that the brain recipient is "still Jim," but in cases where the memories are not preserved, participants should disagree that the brain recipient is "still Jim." And indeed, this is precisely what Blok and colleagues (2005) found, and it was also replicated by Nichols and Bruno (2010). There are, as we will see below, concerns about the adequacy of this methodology. Still, these studies helped to spark a line of research in which armchair philosophical speculation about self and identity formed the basis of empirical inquiry. In turn, this methodology opened a range of new questions about specific components of psychological continuity views. Is there something special or unique about memory? Or might other psychological features be important for understanding judgments about self and identity?

4.2.1 The Unbearably Moral Nature of the Self

Even in the earliest accounts of psychological continuity, morality has played an important role. After all, for Locke, personal identity could also be understood as a "forensic" concept: it is tied to memories, but it is also crucial for moral concepts such as responsibility, praise, and blame.

In recent years, an influential line of work has suggested that morals, more so than memories, are actually perceived to be at the heart of self and identity. Sparking this line of research, Prinz and Nichols (2017), Strohminger and Nichols (2014), and others presented participants with a wide variety of traits and asked them to imagine how much a change to a specific

trait would influence whether someone is perceived to be the same person (e.g., “Jim can no longer remember anything that happened before the accident. Aside from this, he thinks and acts the same way as before the accident. Is Jim still the same person as before the accident?”).

To test the importance of different kinds of psychological traits, Strohminger and Nichols (2014) used a variety of items that detailed different changes that a person could go through. Some were moral changes (e.g., now Jim is a psychopath or pedophile); others were personality changes (e.g., now Jim is shy, or absentminded); others were a loss of memories (e.g., now Jim cannot remember time spent with parents, or cannot remember how to ride a bike); others were changes to desires and preferences (e.g., now Jim desires to eat healthily or wants to quit smoking); and yet others were perceptual (e.g., now Jim has lost his ability to feel pain or see color).

According to classic psychological continuity views that prioritize memories, one should expect changes to memories to be more impactful on perceived identity persistence than other kinds of changes. Instead, across the various studies and specific items, results have consistently supported a moral self effect: when someone changes in terms of moral traits such as honesty, empathy, or virtuousness, they are rated as more of a different person than when they change in terms of memories, preferences, or desires. Thus, “moral traits are considered more important to personal identity than any other part of the mind” (Strohminger & Nichols, 2014, p. 168).

This finding is not a one-off. The moral self effect holds across a wide variety of scenarios (Strohminger, Knobe, & Newman, 2017; Prinz & Nichols, 2017) and has been replicated across contexts. For example, the effect has been replicated across age groups, such that eight- to ten-year-olds rate moral changes as most core to identity (Heiphetz, Strohminger, Gelman, et al., 2018), as well as across cultures, such that Buddhist monks in India also rate moral changes as most core to identity (Garfield et al., 2015). The moral self effect has even been replicated in real-world contexts such that family members of patients with neurodegenerative diseases tend to rate changes to moral faculties as more disruptive to identity than changes to memories (as in Alzheimer’s disease) or changes to physical motor functions (as in amyotrophic lateral sclerosis; Strohminger & Nichols, 2015). In fact, we know of only one group of individuals in whom the moral self effect does *not* appear to replicate—in psychopaths (Strohminger, 2018).

4.3 Some Questions and Criticisms from Philosophy, Psychology, and Neuroscience

Having reviewed some of the relevant work on the moral self effect, we now turn to in-depth considerations of some questions and criticisms of this research program. First, we will consider prominent criticisms about the operationalization of identity concepts in the moral self literature, and we will detail some responses based on our recent work. Next, we raise questions about the applicability and generalizability of the moral self effect. Then, we will consider questions about the direction of change and connections with related research on the “true self.” Finally, we draw novel connections with recent work in neuroscience. Throughout, given the interdisciplinary nature of the topic, we argue that philosophy, psychology, and neuroscience can each contribute to addressing these questions, albeit to varying degrees. In the section that follows, we review the ways in which each discipline has contributed to addressing these questions, noting the strength and weaknesses of each approach, and incorporating a review of our own interdisciplinary work along the way.

4.3.1 Is Identity Quantitative, Qualitative, or Both?

A prominent question that has been raised in response to the findings canvassed above is whether, when faced with these thought experiments, participants are really reporting that someone has become a *different person* or if instead they are just reporting *dissimilarity*. (Berniūnas & Dranseika, 2016; Dranseika, 2017; Starmans & Bloom, 2018). In the philosophical literature, something like this idea has been variously conceptualized as the difference between quantitative identity, on the one hand, and qualitative identity, on the other (Parfit, 1984; Schechtman, 1996).

When faced with a question such as “Is *X* the same as before?” Schechtman (1996) notes that there are two different approaches. The first concerns re-identification: What are the necessary and sufficient conditions under which *X* at Time 1 is identical to *Y* at Time 2? These kinds of questions are about the logical relation of identity, and are often discussed in terms of quantitative or numerical identity. The second concerns characterization: What makes *X* the person that they are? These questions are about which actions, beliefs, values, desires, and traits are properly attributable to a person, and are often discussed under the heading of qualitative identity.

Similarly, Parfit (1984) highlights the importance of distinguishing qualitative versus numerical identity:

There are two kinds of sameness, or identity. I and my Replica are qualitatively identical, or exactly alike. But we may not be numerically identical, or one and the same person. Similarly, two white billiard balls are not numerically but may be qualitatively identical. If I paint one of these balls red, it will cease to be qualitatively identical with itself as it was. But the red ball that I later see and the white ball that I painted red are [numerically] identical. They are one and the same ball. (p. 201)

When it comes to people, twins, for example, can be qualitatively identical but still numerically distinct people. You might not be able to tell them apart, but they still need two passports to travel abroad. Variants of this distinction have been used to criticize the early studies on the importance of memories to identity persistence (e.g., Blok et al., 2005; Blok, Newman, & Rips, 2007; Nichols & Bruno, 2010).

As Berniūnas and Dranseika (2016) argue, these experimental designs potentially conflate qualitative and numerical concepts of identity. When Nichols and Bruno (2010) ask participants, “What is required for some person in the future to be the same person as you?” it is possible that participants are interpreting this question in a qualitative not numerical sense. To illustrate this, Berniūnas and Dranseika draw on a convenient pair of Lithuanian phrases that disambiguate the two: *tas pats* and *toks pats*.² When explicitly disambiguating these two senses to their Lithuanian participants, they found that participants were significantly more likely to agree that someone was the “same person” after losing their memories, suggesting that “retention of memory may not be so critical to the preservation of individual numerical identity” (Berniūnas & Dranseika, 2016, p. 115).

In the context of work on the moral self effect, Starmans and Bloom (2018) similarly leverage this distinction between quantitative and qualitative identity. They claim that while Strohminger and colleagues have sought to make claims about quantitative identity (“After changing morally, can I identify *X* as the same person?”), they are actually obtaining participants’ intuitions about qualitative identity (“After changing morally, is *X* dissimilar to how they were before?”). While it makes sense, they argue, that if Jim lost his moral conscience after an accident, he would seem like a qualitatively different person, it wouldn’t make sense to suggest that post-accident Jim is numerically distinct from pre-accident Jim, such that pre-accident Jim’s debts are now forgiven or that post-accident Jim must now

get a new passport. Jim is still the same person; he's just dissimilar from before. The worry is that the measures typically used in the moral self effect studies cannot clearly differentiate between these different senses of identity. Starmans and Bloom (2018) thus suggest that "we cannot tell whether these data reflect people's intuitions about similarity or about numerical identity . . . but we think that the most natural reading of these questions leads participants to answer in terms of similarity, not personal identity. In the real world, nobody sees moral changes as influencing identity" (p. 567).

Here, we want to consider a few potential responses to these criticisms.³ First, we are not sure that it is entirely possible to separate qualitative from quantitative identity in the way Starmans and Bloom's criticism seems to require. Second, we are not convinced that morality is unimportant to identity in either folk psychology or philosophy.

More recent psychological continuity accounts have tended to focus on the *degree* of psychological connectedness. According to Parfit (1984), such psychological connectedness does include memories but also psychological dispositions, attitudes, personality, preferences, and so on. This has elements of qualitative identity (a greater degree of psychological connectedness means that someone is more similar) but also numerical identity because it is the degree of psychological connectedness that allows us to identify a person at different times as the same. Both of these points suggest that a strict division between qualitative and quantitative identity may be untenable.

There is also an empirical response to the criticisms raised above. One might think that judgments of identity change should have concomitant practical consequences. Presumably, if you judge someone to be a different person now than they were before, you would also judge that they are likely to behave differently than before. In the context of the moral self effect, a person's loss of morals should then lead participants to expect more, or worse, practical consequences for that person than with equivalent losses of memories, preferences, desires, and so on. Indeed, in some of our work, we have shown that compared to memories, moral changes not only affected perceptions of identity persistence (as in previous studies) but, crucially, such changes also led participants to infer a range of practical consequences subsequently, including changes in behavior, evaluations by third parties, and reductions in relationship quality (Everett, Skorburg, Livingston, et al., unpublished manuscript).

To address this question of whether moral changes are affecting judgments of (in Starmans & Bloom's terms) quantitative identity or mere similarity, we

drew on the idea of special obligations: the duties we have to someone simply because of who they are. One might think, for example, that someone has obligations to their mother that they don't have to a stranger, and these special obligations toward their mother do not change, even if she were to suffer a severe debilitating illness that changed her personality. Someone's obligations and duties to her are the same because she herself *is* the same person, however dissimilar she is now to how she was in her prime. If participants judge that their own special moral obligations toward a loved one are more affected when their loved one loses their morality (compared to losing their memories), this might suggest that participants are not thinking *solely* in terms of similarity. In fact, our results do suggest that something like this is the case (Everett, Skorburg, & Savulescu, 2020).

In our studies, we presented participants with a classic “body switch” thought experiment in which a loved one undergoes a brain transplant with a stranger and, as a consequence, experiences no psychological change (the control condition), loses all their memories, or completely loses their moral conscience. After assessing perceptions of identity persistence, we presented a moral dilemma, asking participants to imagine that one of the patients must die (Study 1) or be left alone in a care home for the rest of their life (Study 2). In our studies, participants were made to decide who they would save or care for: the patient with their partner's brain and the stranger's body, or the patient with the stranger's brain and the patient's body.

This enabled us to test two things. First, it enabled us to replicate and extend previous empirical studies looking at whether people see psychological continuity as more important than physical continuity. Indeed, in line with previous work, in our control condition, we found that participants were much more likely both to judge that the person with their partner's brain and the stranger's body was the “real” partner, and to think that their moral duties toward this person were stronger than to the person with the stranger's brain and their partner's body. More importantly, though, by also including two conditions, one where, after the patient either lost all their memories or completely lost their moral conscience, we could also see whether changes to morals would be more disruptive than changes to memories for participants' perceived moral duties toward the patient.

If Starmans and Bloom's criticism (i.e., that previous studies on the moral self effect are *only* about similarity, not identity) is on the right track, then we should see no change to perceptions of moral duties, depending on

whether someone lost their memories or morals. The partners described in the vignettes might be perceived as more dissimilar if they lost their morals (i.e., qualitatively different), but they would still be judged as the same person (i.e., numerically identifiable as the same person), and so presumably the special obligations would remain intact.

Indeed, we found some evidence that participants thought their moral duties toward the partner were, in fact, decreased when their partner experienced changes to their morality compared to when they experienced changes to memories or experienced no psychological (but only physical) change. These results suggest that participants, to some extent, do perceive a person's identity to be disrupted by their loss of memories or morality, and that previous results are not only about perceived similarity (Everett, Skorb, & Savulescu, 2020).

Taken together, the conceptual and empirical responses to challenges about the operationalization of identity concepts in the moral self literature suggests that folk intuitions about self and identity likely involve (again, using Starmans & Bloom's terms) both identity and similarity, and these are likely flexibly activated and focused on both qualitative and quantitative identity in different contexts, depending on the task at hand. We address the philosophical implications of this suggestion in section 4.3 below.

4.3.2 Is the Moral Self Effect Generalizable? Is It Only Applicable to Fantastical Thought Experiments?

For all the work that philosophers and psychologists have done on the experimental philosophy of self and identity, one might still wonder whether this is meaningful. Much of the literature (our contributions included) tends to use vignette-based studies employing far-fetched, science-fiction-like examples involving, for example, brain transplants, body switches, magic pills, time machines, and reincarnation. While these scenarios might be helpful to clarify intuitions about philosophical thought experiments, it is also important to explore whether and to what extent the moral self effect holds in more common everyday cases. Here, again, our work has focused on the practical consequences of judgments about self and identity.

One way of testing the generalizability of the moral self effect outside the realm of thought experiments is to look at real-life cases characterized by changes to morals and memories. In this vein, Strohminger and Nichols (2015) looked at ratings of identity persistence by family members of

patients with different neurodegenerative diseases. By including patients with different kinds of diseases and different symptoms, they could look at how family members judged that someone was the same person after they experienced changes to moral faculties (as in some cases of frontotemporal dementia) compared to changes to memories (as in Alzheimer's disease) or changes to physical motor functions (as in amyotrophic lateral sclerosis). Mirroring the findings from thought experiments, their results show that family members of patients with frontotemporal dementia, which was associated with moral changes, rated the patient as more of a different person than did family members of patients with other kinds of diseases. Of course, while such studies provide evidence of how the moral self effect emerges in real-world contexts, their high ecological validity does come with less control: these patients will all have different presentations of symptoms, will differ in severity, and so on.

In a recent paper, we extended this line of work by taking a blended approach using an experimental philosophy method with tightly controlled vignettes but focusing on real-life cases of addiction (Earp et al., 2019). Why addiction? A common refrain from family members and friends of addicts is that the person they knew before is not the same as the addict now. As one mother put it, "Six years have passed since I discovered that my son was using drugs. I [was] devastated, not to mention how worried I was about his well-being. My son *was not the same person anymore*" (Urzia, 2014, emphasis added).

As Tobia (2017) notes, such stories are all too common: "Many have witnessed someone they loved change so profoundly that the person remaining seems an entirely different one." Moreover, addiction is highly moralized in a way that, say, dementia is not. As a result, we hypothesized that the processes at play in the moral self effect might also arise in the context of addiction. That is, if an agent's becoming addicted to drugs leads to the perception that they are a "different person," this may be due to a presumed diminishment in moral character that such addiction stereotypically brings about. Across six studies, we found that participants judged an agent who became addicted to drugs as being closer to "a completely different person" than "completely the same person" and that these judgments of identity change are indeed driven by perceived negative changes in the moral character of drug users (Earp et al., 2019).

We take these results (along with others discussed below) as evidence that the moral self effect does indeed generalize to various contexts beyond the tightly controlled and sometimes far-fetched realm of philosophical

thought experiments. We discuss some implications and potential applications in section 4.4.

4.3.3 Does the Direction of Moral Change Matter?

An important question has been looming in the background so far. The moral self effect assumes that morality is at the heart of self and identity, such that changes to morals are more disruptive than other kinds of changes. This conclusion has almost exclusively been drawn from studies focusing on perceived identity persistence following either a *loss* a morals or a *loss* of memories. But what if certain features are *gained* instead?

Work on the “true self” suggests that the direction of moral change could matter. A number of studies have suggested that people typically regard others’ true selves as being fundamentally good (Newman, Bloom, & Knobe, 2014; De Freitas et al., 2018; Newman, De Freitas, & Knobe, 2015; Bench et al., 2015). As people become more moral, they are perceived to become closer to their true self or their “essence,” whereas when they become less moral, they are perceived to move further away from their true self (Bench et al., 2015; Tobia, 2016, 2017).

Tobia (2015) draws on the well-worn (if potentially apocryphal) case study of Phineas Gage, a railroad worker who experienced brain damage in a horrific accident, after which he was reported to have become cruel and impulsive—so much so that “he was no longer Gage.” In his work, Tobia gave participants one of two versions of this story. In one condition, participants saw the “standard” case of Phineas Gage, where he was kind before the accident but cruel afterwards—that is, where Gage morally *deteriorated*. In another condition, holding the magnitude of the change constant, participants saw a vignette where Gage was described as cruel before the accident but kind afterward—that is, where Gage morally *improved*. In both conditions, Tobia asked participants to judge whether Phineas Gage was the same person as before the accident. He found that Gage was less likely to be judged as identical to his pre-accident self when the change was in a “bad” direction (deteriorating from kind to cruel) than when the change was in a “good” direction (improving from cruel to kind), even when the magnitude of the change was held constant.

These findings were further substantiated by a study demonstrating that moral enhancement is less disruptive to perceptions of identity than moral degradation and that moral degradation is especially disruptive to

perceptions of identity when people expect moral enhancement (Molouki & Bartels, 2017). That said, Prinz and Nichols (2017) also report findings suggesting that whether moral changes were in a positive or negative direction did not matter—that “moral changes are regarded as threats to identity, regardless of whether those changes are good or bad” (p. 454). While somewhat mixed, these findings at least raise the interesting suggestion that judgments of identity change are not solely a function of the magnitude of the change but could be importantly related to the direction of the change. When people are perceived as deteriorating (and especially when they are perceived to deteriorate morally), they might be judged to be more of a different person than when they improve or change in a positive direction.

While this work suggests that the direction of moral change could play an important role in the moral self effect (in line with what would be predicted based on the true self literature), more work is necessary on how direction and the type of change interact—and how both of these interact depending on the target of the judgment. Perhaps, for example, gaining new memories is more disruptive than both losing memories *and* losing morals, or perhaps all of this depends on whether participants are thinking about themselves, a friend, a stranger, or an enemy. In the same study mentioned above, Prinz and Nichols (2017) focus on judgments of the self and others, and found that the pattern for others replicated when thinking of the self: that it mattered more when the changes were moral, but it didn’t matter which direction the change were in. This, of course, goes against the suggestion in other work (e.g., Tobia, 2015; Molouki & Bartels, 2017). Perhaps different results would be obtained with a within-subjects “one change” paradigm used by Strohminger and Nichols (2014), and perhaps it matters who specifically the target is (see next section).

In recent work, we sought to shed more light on how the direction of change and target might interact. We asked participants to imagine someone changing in a variety of ways (morality, memories, warmth, and competence), where some participants read that someone increased the trait (i.e., became more moral or gained new memories), while others, as in other studies, read that someone deteriorated (i.e., becomes less moral or lost memories). Our results showed that changes to morality were most disruptive to perceived identity but that the direction of change mattered too: a friend became more of a different person when they became *less* moral, but a foe became more of a different person when they became *more* moral.

Together, all these results suggest that the direction of change does matter—that even if morals tend to be more disruptive for identity than memories, losing morals can be more impactful than gaining morals. Intriguingly, though, this also seems sensitive to the target of the thought experiment: who are we thinking of?

4.3.4 Does the Target Matter?

From a philosophical perspective, one might think that the primacy of morality or memories (or whatever else) for identity should be insensitive to who we're thinking about. If memories are at the core of psychological continuity, then this finding should hold not only for judgments about the self, but also for strangers, friends, or even enemies. Indeed, much of the work we discussed in the previous sections has found that the moral self effect does not tend to depend on the target of evaluation (e.g., first- vs. third-person judgments). Yet, these findings are somewhat surprising in light of traditional findings in social psychology that show pervasive effects of target, such that perceptions of self are often biased in certain ways in comparison to perceptions of another (and vice versa). For example, people typically think of themselves differently from others with a strong actor-observer bias (e.g., Ross, Amabile, & Steinmetz, 1977) and think of those close to them differently from others (e.g., Alves, Koch, & Unkelbach, 2016; Simon, 1992), and tend to rate morality as being more important for the self and people close to them than for strangers or people they dislike (e.g., Brown, 1986; Epley & Dunning, 2000; Leach, Ellemers, & Barreto, 2007).

Given that these first- and third-person asymmetries are so pervasive in the field of psychology, similar findings would be expected within the subfield of empirical approaches to self and identity.⁴ However, to date, first- and third-person asymmetries have not been observed for studies investigating identity change. One of the first studies to consider the role of target showed that a body-switching paradigm yielded similar results regardless of target (Nichols & Bruno, 2010), and some of the earliest work on the moral self effect demonstrated that moral change was more important than memories whether it was presented in a first- or third-person perspective (Prinz & Nichols, 2017). More recently, no difference was observed in a series of studies directly comparing the moral self effect for self and a hypothetical other ("Chris"), albeit showing stronger effects of changes in certain moral traits on other compared to self (Heiphetz, Strohminger,

& Young, 2017). Moreover, our work examining the effect of target across many different categories showed that the moral self effect holds across self, known friend, and unknown stranger, but not for a known foe (although the self and friend condition were not compared directly), again showing a small to negligible effect of target for self and (most) others (Everett, Skorburg, Livingston, et al., unpublished manuscript).

It is possible that the lack of asymmetry between self and other reflects the implicit positive nature of the moral self across most targets (Strohinger et al., 2017). Indeed, the “true self” literature has demonstrated that although our own true selves are deemed to be inherently good, so are the true selves of others (Bench et al., 2015). This lack of the actor–observer bias for moral traits may be one reason that the effect is not observed in the studies reviewed above. However, there are other plausible avenues of explanation. Although there are well-known asymmetries for perceiving self and other, there are also asymmetries and biases for perceiving the self in the past, present, and the future (Ersner-Hersfield, Wimmer, & Knutson, 2008; Quoidbach, Gilbert, & Wilson, 2013; Bartels & Urminsky, 2011), such that thinking about the self in a hypothetical thought experiment may not be the same as thinking about the self in the here and now. Moreover, many of the moral self studies to date have not used specified targets, and using a more concrete, known target might influence the results (see Everett, Skorburg, & Savulescu, 2020; Everett, Skorburg, Livingston, et al., unpublished manuscript). Regardless of whether the judgments change in different circumstances, the mechanisms driving the effects, or lack thereof, remain to be explored in the future.

4.3.5 What Are the Neural Mechanisms of the Target of the Moral Self Effect?

Neuroimaging can potentially help to clarify some of the questions posed above. For example, neuroimaging studies investigating self-referential processing (in the traditional psychological sense) have found that when individuals are asked to indicate whether a series of trait words describe themselves or another individual, this processing tends to recruit the cortical midline structures of the brain (precuneus and medial prefrontal cortex [mPFC]), with self-referential activity recruiting activity in more ventral regions of the mPFC and other-referential processing recruiting activity in more dorsal regions of the mPFC (Denny et al., 2012; Wagner, Haxby, & Heatherton, 2012).

It is not entirely clear why this pattern of activity exists, and it is unlikely that the differential activity is entirely a result of the target of investigation (self or other). For example, information about the self tends to be inherently more positive than information about other individuals, and this difference is also reflected at the neural level, with self-referential neural activity sharing highly overlapping patterns with both positively valenced information (Chavez, Heatherton, & Wagner, 2016) and value-based processing (Berkman, Livingston, & Kahn, 2017; Yarkoni et al., 2011). Information about the self, by its very nature, is also more familiar than information about other individuals, and brain regions tracking self-relevant information may be tied not only to value but also to familiarity (Lin, Horner, & Burgess, 2016).

Regardless of what is being tracked in these regions, the constellation of activity can be informative, particularly along the ventral-to-dorsal gradient. Indeed, studies have shown that the closeness of a target to the self can be tracked such that targets closer to the self activate more ventral regions of the mPFC, whereas targets less close to the self activate more dorsal regions of the mPFC (Mitchell, Banaji, & Macrae, 2006), with very close targets demonstrating overlapping activity (Zhu et al., 2007).

Moreover, the activity within these regions varies, to some extent, with elements of hypothetical thought. Counterfactual thinking for self and for other has demonstrated a similar ventral-to-dorsal gradient in the brain (De Brigard et al., 2015). Thinking about the self in the future, too, tends to recruit regions of the cortical midline structures as part of the default mode network (Buckner & Carroll, 2007; Buckner, Andrews-Hanna, & Schacter, 2008). Whereas some studies have found that thinking about the self in the future activates more dorsal (compared to ventral) regions of the mPFC (Packer & Cunningham, 2009), others have found that thinking about the self in the future compared to the present simply recruits the ventromedial prefrontal cortex (vmPFC) to a lesser degree (Ersner-Hersfield et al., 2008; Tamir & Mitchell, 2011; D'Argembeau et al., 2010).

This body of research offers a number of potential resources for generating hypotheses about the neural mechanisms underlying the moral self effect. At a general level, given that thinking about identity is very person centered, activation in cortical midline structures of the brain is likely still expected. More specifically, if self–other asymmetries are absent from the moral self literature because thinking about a hypothetical self is akin to

thinking about another person, overlapping activity in dorsal regions of the mPFC might be expected.

Alternatively, if self–other asymmetries are absent from the empirical literature on self and identity because thinking about another individual changing on a moral dimension is valuable to the self, overlapping activity in ventral regions of the mPFC might be expected. In any case, identifying the neural processes underlying the moral self effect could help to clarify why the primacy of morality in identity does not seem to depend on the target.

4.3.6 What Are the Neural Mechanisms of Values and Traits?

Identifying the neural mechanisms underlying the moral self effect could also help to clarify questions concerning why morality, above and beyond other personality traits, appears to be so essential to identity.

Among other things, morality can be understood as sets of norms within a society that are distinguished because they are somehow more important or more valued (see, e.g., Copp, 2001), and the social nature of morality helps to highlight its value. For example, a person is likely to care about a change to her friend because she may no longer receive the benefits of being socially tied to her friend. However, the same person is also likely to care about her own morality, given that it impacts her own social reputation. In both scenarios, the social features of morality ensure that changes to friends or changes to self are quite important, or valuable, to the self, and recent work supports the idea that perceived importance to self mediates judgments of identity change (Heiphetz, Strohminger, & Young, 2017).

Incorporating evidence from neuroscience can help to assess whether the moral self effect is indeed driven by value-based processing (see May et al., this volume, for an overview of the value-based mechanisms posited by much recent work in the moral judgment and moral learning literature). Broadly, evidence increasingly suggests that moral cognition is best understood not as a unique and modular set of capacities, but rather in terms of more domain-general processes of reasoning, value integration, reward processing, and decision making.

For example, Shenhav and Greene (2010, 2014) have argued that value-based processing is crucial for understanding moral judgment such that when participants are asked to imagine classic sacrificial dilemmas in which they can either do nothing and risk the death of a large group of people or do something at the expense of a single individual, value-based subregions

of the brain are largely involved in making these types of calculations. A related set of studies have implicated value-based computation in the vmPFC during charitable giving (Hare et al., 2010; Hutcherson, Bushong, & Rangel, 2015), and yet another found that moral transgressions disrupt neural representations of value in this same region (Crockett et al., 2017). Based on this body of evidence, it seems likely that some sort of value-based processing also underpins the moral self effect such that moral traits might elicit activity in value-based regions of the brain, either selectively or more strongly than other nonmoral (e.g., personality traits).

Although a value-based mechanism for the moral self effect would not be entirely surprising, it could help to push forward the field in two important ways. First, a mechanistic understanding of the moral self effect could help to elucidate the broader relationship between morality and identity. One recent commentary called into question whether morality is as important to identity as identity is to morality (Strohmingner, 2018). We propose that the relationship between the two may be best clarified by assessing their common mechanisms.

Identity, like morality, relies on value-based processing. Recent studies note a strong overlap between neural activity associated with thinking about identity and value (Kim & Johnson, 2015; Northoff & Hayes, 2011), and a meta-analysis of neuroimaging studies on self and value reveals a large cluster of overlapping activation in the vmPFC (Berkman et al., 2017). Morality and identity, then, are likely intimately related via their value-based processing, and evaluating morality and identity in terms of their value-based processing may provide another currency with which to assess the nature of their relationship.

In addition to clarifying the nature of the relationship between morality and identity, a value-based approach to understanding the moral self effect could help to push forward the field of neuroscience itself. Within the vast set of neuroscience studies that have taken up issues of self and identity, most have utilized a task that prompts participants to rate the extent to which different personality trait words describe themselves (Denny et al., 2012; Wagner et al., 2012)—an approach that remains the gold standard.

However, despite the task's popularity, very few studies⁵ have reported any neural differences in assessing the effect of trait type. One of the reasons why differences across traits are not reported is because most effects of traits may not become evident when using traditional univariate analysis.

In contrast, more nuanced multivariate techniques are revealing neural differences in, for example, the types of information we use to organize our representations of other people (Tamir et al., 2016). Insights from the moral self effect highlighting the privileged status of moral (vs. nonmoral) trait words and their distinct neural mechanisms (e.g., value-based processing) could motivate future neuroscience studies to continue in this tradition, using more advanced techniques to pay attention to differences between trait words.

In this sense, not only can neuroscience help to clarify mechanisms underlying the moral self effect, but insights from the moral self literature that stem from philosophy and psychology can make important contributions to the ongoing work on the neuroscience of self and identity.

4.4 Practical and Philosophical Implications

In this final section, we will consider a few implications and applications for the moral self research program. In particular, we attempt to contextualize how the nuanced questions and concerns outlined in the previous section might have bearing on a broader range of practical issues.

4.4.1 Behavior Change and Self-Regulation

One way that clarifying the psychological and neural processes involved in judgments about self and identity is important is that this research might have the potential to provide insights into translational work in domains such as self-regulation.⁶

One example comes from the intriguing possibility that identity judgments could be leveraged as a tool for behavior change. For instance, the identity-value model of self-regulation holds that identity serves as a salient value input for facilitating successful self-regulation and that stable value-laden sources of identity are strongest (Berkman et al., 2017). If morality is, as the foregoing results suggest, core to identity and is driven by value-based processing, it may be a candidate target for interventions seeking to promote behavior change. Of course, given that morality is so essential to identity, it may also be tougher to manipulate than other aspects of identity. To this effect, one recent paper found that people do not desire to be more moral, in part because they already perceive themselves to be quite moral (Sun & Goodwin, 2019). However, just because people do not desire

to be *more* moral does not mean that moral identity cannot be used as an effective motivator.

Indeed, identity has often been used as a source of moral motivation (e.g., Hardy & Carlo, 2005, 2011), and appealing to moral reasoning has been shown to motivate compliance on certain behaviors such as paying taxes (e.g., Blumenthal et al., 2001; Ariel, 2012) and environmental conservation (Bolderdijk et al., 2013; Hopper & Nielson, 1991). Given that many self-regulatory failures are often moralized (Rozin & Singh, 1999; Frank & Nagel, 2017), appealing to moral identities and values may be an effective strategy for motivating successful self-regulation as well.

Moreover, counterfactual thought experiments, such as those traditionally used by philosophers, might also play a key role in motivating self-regulation. Many effective self-regulation techniques already draw upon hypothetical and imaginative cognitive techniques encouraging individuals to think about themselves in new and alternative ways (Kross et al., 2014; White et al., 2016). Encouraging participants to imagine the degree to which they would become a new person if they were to achieve a goal (e.g., “become a whole new you!”) could provide an avenue for examining ways in which identity and value facilitate self-regulation. Exploring the mechanisms underlying the traditional moral self effect, although not directly related to translational applications, may be able to help motivate work in this direction.

4.4.2 Punishment and Responsibility

It is evident that, philosophically, identity has long been thought to be connected to moral concepts of blame, punishment, and responsibility. Practically, the research discussed in this chapter highlights how judgments about blame and responsibility are affected by perceptions of identity continuity—or disruption. We have already discussed work showing how someone’s becoming addicted to drugs leads to the perception that they are a “different person,” seemingly caused by perceived negative changes in the moral character of drug users (Earp et al., 2019). As another example, Gomez-Lavin and Prinz (2019) have examined the moral self effect in the context of parole decisions, finding that participants were significantly more likely to grant parole to offenders who underwent changes in their moral values compared to mere behavioral changes. It will be interesting for future work to consider in more depth the way that appeals to identity

are used in both legal and forensic settings to justify responsibility and punishment.

4.4.3 Bioethics and New Technologies

Another example which has garnered much attention as of late involves patients undergoing neurostimulation, such as deep brain stimulation (DBS) treatments for Parkinson's disease. In one case report, after eighteen months of DBS, a patient's motor symptoms were improved, but it was reported that "she was no longer able to work, had a loss of inspiration and a taste for her work and for life in general," and she said, "Now I feel like a machine, I've lost my passion. I don't recognize myself anymore" (Schüpbach et al., 2006, p. 1812). In light of this story (and many others like it), Skorburg and Sinnott-Armstrong (forthcoming) have suggested that because people tend to see moral traits as especially identity conferring, measuring changes to moral functioning pre and post DBS should be a priority for neuroethicists concerned with identity changes brought about by DBS and other forms of neurostimulation.

4.4.4 Philosophical Implications

So far, most of our discussion has centered on experimental approaches to questions about self and identity. Here, we want to consider the extent to which such empirical work has a bearing on more traditional philosophical theorizing about personal identity. Consider the following argument, adapted from Berniūnas and Dranseika (2016) and Nichols and Bruno (2010):

1. If it is appropriate to consider folk intuitions in assessing theories of personal identity, then, *ceteris paribus*, folk intuitions that are more robust ought to be given more weight in assessing theories of personal identity.
2. Folk intuitions favoring psychological continuity accounts of personal identity are especially robust.
3. Therefore, if it is appropriate to rely on folk intuitions in assessing theories of personal identity, then, *ceteris paribus*, folk intuitions favoring psychological continuity accounts of personal identity ought to be given special weight in assessing theories of personal identity

Of course, one important question here is whether it is indeed appropriate to rely on folk intuitions about personal identity. After all, one might

reasonably hold that what laypersons think is irrelevant to the fundamental metaphysical questions about personal identity. Perhaps the fact that ordinary people perceive morality as important to personal identity simply misses the point. What *really* matters is some metaphysical account of continuity. But this can only hold if we assume a “deep” metaphysical notion of identity, which need not be the only game in town (Prinz & Nichols, 2017). There is surely a sense in which some philosophical problems of identity are deeply metaphysical in this way. But as Prinz and Nichols (2017) point out, other questions about personal identity are not deep in the sense that they don’t “depend on some hidden fact about the structure of reality.” Instead, they argue, “It depends on us.” We classify, label, and apply various notions of identity:

If we are right that questions of personal identity are settled by how we do, in fact, classify, then this is a case where experimental philosophy can actually contribute to metaphysical debates. Surveys, in this case, do not just tell us what ordinary people think; they reveal the actual correlates of identity, because ordinary practices of classification determine conditions of identity. (Prinz & Nichols, 2017, p. 450)

If all of this is on the right track and it is indeed appropriate to rely on the robust folk intuitions for philosophical debates, then we need to be clear on *which* folk intuitions are robust. In this chapter, we have considered numerous challenges and criticisms of the moral self effect, along with a wide range of replications and extensions. We think there is ample evidence to support the claim that the moral self effect is robust. As a result, we contend that within psychological continuity views of personal identity, theories that emphasize the importance of morality ought to be given pride of place. Similarly, insofar as the results we have described are robust, then this could also entail that the prominent position afforded to memories within psychological continuity views may need to be revised and reconsidered. In any case, by drawing on the philosophical, psychological, and neuroscientific work on the moral self, we hope to have shown that a topic as complex and important as the moral self will surely require collaborations among philosophers, psychologists, and neuroscientists, among others.

Notes

1. In this chapter, we use “self and identity” as a catchall for these various approaches. However, when quoting other research or engaging with specific criticisms, terms such as “personal identity,” “identity persistence,” etc. will inevitably crop up as well.

But unless otherwise noted, we take ourselves to be primarily engaging with the (relatively narrow) literature described in more detail below, which examines folk judgments of identity change.

2. When contrasted with *toks pats*, *tas pats* means “the same” in the sense of numerical identity, while *toks pats* means “the same” in the sense of qualitative identity. As they reminded their participants in the studies, “If we have two white billiard balls, we can say that they are *toks pats*, but they are not *tas pats* billiard ball. If we paint one of the balls red, it is not *toks pats* billiard ball as before, but it is still *tas pats*, only painted” (Berniūnas & Dranseika, 2016, p. 114).

3. This section draws from and expands upon Everett, Skorburg, and Savulescu (2020).

4. This section (4.3.4) and the section on neural mechanisms of target (4.3.5) are drawn from and expand upon Jordan Livingston’s doctoral dissertation.

5. Aside from studies that successfully investigate differences in positive and negative trait information (e.g., Glisky, & Marquine, 2009; Fossati et al., 2004).

6. Sections 4.4.1 and 4.3.6 are drawn from Jordan Livingston’s doctoral dissertation.

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This is a section of [doi:10.7551/mitpress/12611.001.0001](https://doi.org/10.7551/mitpress/12611.001.0001)

Neuroscience and Philosophy

Edited by: Felipe De Brigard, Walter Sinnott-Armstrong

Citation:

Neuroscience and Philosophy

Edited by: Felipe De Brigard, Walter Sinnott-Armstrong

DOI: 10.7551/mitpress/12611.001.0001

ISBN (electronic): 9780262367332

Publisher: The MIT Press

Published: 2022

The open access edition of this book was made possible by generous funding and support from MIT Press Direct to Open



The MIT Press

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The MIT Press would like to thank the anonymous peer reviewers who provided comments on drafts of this book. The generous work of academic experts is essential for establishing the authority and quality of our publications. We acknowledge with gratitude the contributions of these otherwise uncredited readers.

This book was set in Stone Serif by Westchester Publishing Services. .

Library of Congress Cataloging-in-Publication Data

Names: Brigard, Felipe de, editor. | Sinnott-Armstrong, Walter, 1955– editor.

Title: Neuroscience and philosophy / edited by Felipe De Brigard and
Walter Sinnott-Armstrong.

Description: Cambridge, Massachusetts : The MIT Press, [2022] |

Includes bibliographical references and index.

Identifiers: LCCN 2021000758 | ISBN 9780262045438 (paperback)

Subjects: LCSH: Cognitive neuroscience—Philosophy.

Classification: LCC QP360.5 .N4973 2022 | DDC 612.8/233—dc23

LC record available at <https://lccn.loc.gov/2021000758>