Self-Awareness and Personhood in Non-Human Animals

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Introduction

The problem of animal suffering, as a special version of the problem of evil, constitutes a difficult challenge for theologians and philosophers of religion. Rather than address this problem directly, our goal in this chapter is to investigate how the presence or absence of self-awareness and personhood in animals may alter our views on whether animals suffer or how this may influence or worsen their suffering. Even for those who accept that animals are sentient, capable of feeling pain, it is a common view that a lack of self-awareness or personhood renders their suffering less important than that of humans. This could thus, in principle, offer a way out for theologians grappling with the problem of animal suffering to weaken its hold.

Indeed, Thomas Aquinas—perhaps the most influential theologian—was influenced by Aristotle's distinction between the 'sensitive soul' and the 'rational soul'. The first relates to the capacity to experience feelings, such as pain, and is shared by both animals and humans, and the second relates to a capacity for more abstract reflection that is typically considered unique to humans. We might think of the former as coextensive with sentience, or consciousness, while the latter requires self-awareness or personhood, as we will explore. This

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then provided a way to explain away animal suffering as less important than that of humans (Wiertel 2017, pp. 666–7). As Wiertel describes it, 'such suffering is not a real problem because it is not rationally experienced' (Wiertel 2017, p. 667). On this view, sentience would be sufficient for suffering but insufficient to take that suffering to matter, while self-awareness or personhood might be additionally required. However, such an argument requires an understanding of what it means for animals to have self-awareness and personhood, the evidence for (or against) these capacities in non-human animals, and how they may influence the experience of suffering or the moral status of animals. The goal of this chapter is then to provide the conceptual and empirical grounding required for this discussion, alongside an analysis of where it takes us in the consideration of the importance of animal suffering.

This chapter is structured as follows. In the second section, 'Conceptual Clarifications and Connections', we lay out some key definitions regarding consciousness, self-awareness, and personhood and draw out the important connections between these concepts. In the third section, 'Evidence for Personhood and Self-awareness in Non-Human Animals', we will use these distinctions to explore the current empirical evidence indicating to what extent we can find self-awareness and personhood throughout the animal kingdom. In the fourth section, 'The Moral Relevance of Self-Awareness and Personhood', we will explore how animal self-awareness and personhood are relevant to questions of animal suffering, both in terms of determining moral status and expanding the range of ways in which non-human animals can suffer. Finally, the fifth section will conclude the discussion and offer some thoughts for further investigations into the topic.

Conceptual Clarifications and Connections

To examine the evidence for and relevance of animal self-awareness and personhood, it is first important to be clear on what these concepts mean. While these capacities are closely linked, they are distinct, so while much of our discussion will cover both, at times we will emphasise the relevant differences. Here we will clarify the terms consciousness, suffering, self-awareness, and personhood.

Consciousness and Suffering

To begin with, we will discuss what is possibly the most controversial of these: the general term 'consciousness'. Above, we alluded to the possibility that animals may be capable of suffering while having no self-awareness, which some might think reduces or eliminates the moral relevance of this suffering. However, this might seem strange to those who take suffering to necessarily require consciousness, where consciousness is thought of as necessarily including self-awareness. This view on consciousness is relatively widespread in common language, where consciousness is often taken as a special and complex

kind of subjective experience that involves the ability to reflect on one's own mental states and is potentially unique to humans. This is reflected in the fact that tests for self-awareness, such as the mirror-mark test (which we will discuss in the third section), are often cited as evidence for consciousness.

This potential for confusion arising from different uses of the term is why many researchers use the term 'sentience' to distinguish a more basic form of experiencing. However, within philosophy, it is most common for 'consciousness' to be used when referring to any kind of subjective experience, including minimal low-level experience without the involvement of self-awareness (often referred to as 'phenomenal consciousness', following Block 1995). This is a difficult concept to pin down descriptively, and it is typical to instead point to descriptions of the types of phenomenological experiences characteristic of consciousness, such as seeing a brightly coloured flower, smelling fresh bread, or feeling the rain on one's skin, contrasted with those states that have no conscious experiential component (e.g., growth of hair and nails, release of insulin from the pancreas). Consciousness is a capacity that enables mental states for which there is 'something that it is like' (Nagel 1974) to experience them. Here we will follow this convention and define the term as follows:

> **Consciousness:** the capacity for subjective experience. This can be understood as any form of phenomenological experience, for example, the experience of the colour blue or the experience of pain. It can but need not involve the experience of a self.

Here we take consciousness to be synonymous with sentience, which also refers to the basic capacity for subjective experience. Browning and Birch (2022) distinguish the broad and narrow senses of sentience, where the former includes all forms of experience, while the latter includes only those positively and negatively valenced states typically associated with pleasure and suffering (e.g., pain, fear, hunger, comfort, joy). While we use the broader sense here, it is obviously the states within the narrower form of valenced experience that are relevant to questions of suffering and moral status. Alongside this, we will define 'suffering' in a way consistent with common use in animal ethics and animal welfare science (Singer 2023; Dawkins 1980) in terms of the negative conscious experiences animals can undergo in their lives.

> **Suffering:** the severe or prolonged experience of negative mental states (such as pain, fear, or distress).

Self-Awareness

What, then, is the relationship between consciousness and self-awareness? We have established that the two need not be synonymous, even if they have sometimes been treated that way. Instead, we think it is more promising to follow the recent 'dimensional' approaches to consciousness that present

self-awareness as one of the dimensions along which consciousness can vary. Birch et al. (2020) proposed a framework for understanding consciousness as ranging across five different dimensions. These are: perceptual richness, evaluative richness, temporality, unity, and selfhood. Perceptual richness can be understood in terms of sensory experiences. Evaluative richness refers to the valenced affective states mentioned above. Temporality refers to the integration of experience across time, including the resolution of perceptual experience (such as the way we see the progression of still pictures in a film as continuous motion) and the capacities of memory and future planning. Unity refers to the integration of experience at a time—the degree to which different experiences are presented in a common field rather than as completely distinct sensations. Finally, and most importantly for our purposes here, selfhood refers to an 'awareness of oneself as distinct from the world outside' and an 'awareness of oneself as the persisting subject of a stream of experiences, distinct from other such subjects' (Birch et al. 2020, p. 797).

Self-awareness can therefore be seen as one dimension of consciousness or one type of mental ability linked to consciousness. Elsewhere, one of us has described this dimension as the 'the experience of a self' (Veit 2023, p. 27) to capture the unique features of self-awareness separated from the broader association with all types of conscious experience. However, we continue to use 'self-awareness' here due to the widespread use of the term and define it as follows:

> **Self-awareness:** the experience by a subject of a self, existing as an agent in space and time. The most minimal forms involve distinguishing internal from external sensory experiences, and its richer forms involve capacities to recognise other subjects with an awareness of their mental states.

Importantly, self-awareness is not a binary 'all-or-nothing' state but should rather be understood as a gradient, potentially with different dimensions of its own. An animal may be more or less self-aware, or self-aware in different ways. It is therefore more useful to think about to what degree an animal is self-aware, or in which ways they manifest self-awareness, rather than simply whether or not they have the capacity. For instance, David DeGrazia (2009) distinguishes three types of self-awareness of increasing complexity: bodily self-awareness, social self-awareness, and introspective awareness. Different animals may have greater or lesser capacities along any of these dimensions. We will discuss each of these further in the third section, along with the types of evidence that accompany them.

Personhood

Finally, there is the concept of 'personhood'. This is a stricter criterion and requires the most sophisticated cognitive capacities. Some of the usage can be confusing here since moral philosophers often use the term 'personhood' as a

synonym for possession of 'full moral status' (Koplin et al. 2024, p. 15), though this of course doesn't tell us what the conditions for having personhood are. Traditionally, personhood was simply considered to correspond with being a member of the human species. However, philosophers have developed discussions of personhood as a specific role—a 'person' is an individual who holds a particular moral or legal status, often one who is granted moral consideration or rights for their own sake (Taylor 1985; Dennett 1988; Radin 1982). This opens up the possibility that some non-human animals are also persons, if they have the right capacities. Alongside this has been a scientific analysis, looking to identify the psychological capacities that accompany or ground this role. The list of proposed capacities is long but includes self-awareness as well as the ability to construct a narrative sense of self—to have a sense of oneself as a cohesive whole over time, with interests, preferences, and goals, the capacity for autonomous and intentional agency. For instance, Dennett (1988) set out what he took to be conditions for personhood, including intentionality (i.e., goal-directed behaviours) and recognition of other intentional agents.

Andrews (2020a, 2016) refers to personhood as a 'cluster concept' where, rather than a set of necessary and sufficient conditions, one is a person if they have a sufficient number of the properties in the cluster. Here we align with this type of capacities approach. To state it briefly:

> **Personhood:** a complex set of cognitive capacities that construct a persisting sense of self with goals across time and can come in degrees.

If an animal is a person, they have (some subset of) the required higher-level cognitive capacities and (as we shall argue in the fourth section) should enjoy the same moral and legal status as human persons: their suffering should be considered equally as important. Degrees of personhood may change this and ground different levels of moral status, but only insofar as we would be willing to use the same differentiations for humans with different levels of personhood (e.g., infants vs adults).

With these conceptual clarifications out of the way, let us turn to the substance of this chapter—an overview of the evidence for self-awareness and personhood within the animal kingdom.

EVIDENCE FOR SELF-AWARENESS AND PERSONHOOD IN NON-HUMAN ANIMALS

As we have discussed, self-awareness and personhood can refer to a range of different capacities that some non-human animals may possess. In this section, we will briefly review some of the research that has aimed to find self-awareness in animals, and what it might tell us about their level of awareness or personhood. In the fourth section, we will look more closely at the implications of these capacities for considerations of moral status and suffering.

From the discussion in the previous section, it should be apparent that self-awareness will be less widespread than simple consciousness. As selfhood is merely one of the dimensions along which consciousness can vary, not all conscious animals will be self-aware (but all self-aware animals will be conscious). This means one should expect fewer animals to be self-aware, and to therefore be more sceptical about claims of self-awareness in any species. However, this should not imply that one should never accept such claims. A revival of research into animal minds has been largely triggered by cognitive ethologist Donald Griffin with his 1976 book *The Question of Animal Awareness: Evolutionary Continuity of Mental Experience*, in which he argued that animals have the capacity for self-awareness. It is now widely accepted that many animals have at least a minimal sense of self-awareness, arising from what are perhaps the evolutionary origins of self-awareness in the ability to distinguish external from internal stimuli. Let us therefore turn first to this form of awareness: bodily self-awareness.

Bodily Self-Awareness

Bodily self-awareness refers to the recognition of one's body as a distinct entity from the environment surrounding it. In its most basic form, this may just involve proprioceptive sensation (e.g., an awareness of the position and movements of the body) and may be present in any sentient animal. This form of self-awareness is closely tied to the evolution of *reafference*, that is, the ability to recognise sensory inputs generated by one's own actions as opposed to those generated by changes in the environment (Jékely et al. 2021). DeGrazia (2009) argues that most animals have at least bodily self-awareness of this type. The influential primatologist, Frans de Waal (2019), holds a similar view, extending to the suggestion that this capacity is present in all animals. While this may be the case for sensing in mobile animals—relating to the evolutionary function in distinguishing self-created sensation from that coming from the environment—it is less clear that such reasoning would apply to sessile animals living lives much more akin to those of plants (e.g., sea anemones). Certainly, when thinking about the question of whether or how self-awareness is relevant to animal suffering, this very basic kind of self-awareness is unlikely to be of much interest.

Typically, people are interested in a more sophisticated level of bodily self-awareness, which is an explicit conscious recognition of one's own body as a distinct object. One of the most common tests for self-awareness of this type has been the mirror self-recognition test. These tests have been popularised to the point where mirror self-recognition is often publicly associated as the key test for determining the presence or absence of consciousness in animals and human infants. Of course, this is largely due to the confusion we have already discussed, that between the more formal or academic use of the term consciousness to refer generally to any form of subjective experience and the common public use to refer to more complex forms of self-awareness. While mirror

self-recognition tests may not be good indicators of consciousness, they are typically used to test for self-awareness. However, as we will discuss, these tests also have many limitations that have given rise to criticisms of the method and the conclusions that can be drawn from observed results.

Mirror self-recognition tests aim to investigate whether animals are capable of recognising themselves in the mirror, which must (the thought goes) indicate that they have a conception of themselves as embodied individuals, with their bodies represented in the mirror. Many animals, when presented with a mirror, will respond as though they are facing another member of their species and react accordingly—with curiosity or aggression. However, behaviours that indicate the animal is recognising the image as themselves are thought to demonstrate a more sophisticated self-conception. This interpretation has been challenged (e.g., Suddendorf and Butler 2013), and the evidence provided by mirror self-recognition tests is often not considered to be conclusive. Nevertheless, it has remained quite popular as a test of bodily self-awareness.

When the test was first proposed by Gallup (1977), mirror self-recognition was a phenomenon that had been studied in human children and in chimpanzees. Researchers were struck by the way in which some animals would use mirrors to investigate parts of themselves they typically cannot see, such as their eyes, backs, and the inside of their mouths. Gallup, therefore, wanted an experimental protocol that could confirm the significance of these observations. The most common method for testing mirror self-recognition is the 'mirror mark test'. In this test, an animal is allowed to familiarise themselves with a mirror so that they are able to learn that the reflection is not another individual (as almost all animals will initially treat it as such) and learn how to engage with it. They are then anaesthetised, and a mark is placed on a location of their body visible only through the use of the mirror (e.g., the forehead). This mark is typically odourless with no tactile feel. When the animal re-awakens, they are first monitored to see whether they spend any time touching the area where the mark is located. They are then given access to the mirror and their behaviour observed. If they use the reflection to examine themselves and show interest in the mark on their *own* body (and not that on the mirror reflection), such as touching or rubbing at the spot, they are taken to have passed the test.

This test has been applied to a range of species. Many have passed, including chimpanzees (*Pan troglodytes*) (Suarez and Gallup 1981), orangutans (*Pongo* spp.) (Suarez and Gallup 1981), bonobos (*Pan paniscus*) (Westergaard and Hyatt 1994), dolphins (*Tursiops truncatus*) (Herman 2012; Loth et al. 2022), elephants (*Elephas maximus*) (Plotnik et al. 2006), Eurasian magpies (*Pica pica*) (Prior et al. 2008), and—surprisingly and controversially—a small fish known as the cleaner wrasse (*Labroides dimidiatus*) (Kohda et al. 2019, 2022, 2023). Many other species have been tested and failed, including gorillas (*Gorilla gorilla*) (Suarez and Gallup 1981), gibbons (*Hylobates lar*) (Hyatt 1998), macaques (*Macaca mulatta*) (Chang et al. 2017), pigs (*Sus scrofa*) (Broom et al. 2009), sea lions (*Zalophus californianus*) (Delfour and Marten 2001), African grey parrots (*Psittacus erithacus*) (Pepperberg et al. 1995), and

octopuses (*Octopus vulgaris*) (Amodio and Fiorito 2022). These are highly mixed results, showing no clear taxonomic or ecological patterns, and have sparked wide discussion regarding the test and its interpretation (Waal 2019; Veit 2023; Anderson and Gallup 2015).

Criticisms of the test are twofold. Some question whether it is sensitive enough, that is, whether it really picks up all instances of self-recognition. It is not clear that animals who fail to pass the test lack self-recognition—perhaps the test setup is just not appropriate for picking it up in all species, lacking ecological validity. For instance, primates who largely avoid eye contact with others—such as gorillas (*G. gorilla*) (Shillito et al. 1999)—may never learn how to use the mirror. This has led to changes in the way the test is administered for different species. While primates have hands they can use to investigate and groom the mark, other species do not. For instance, when applied to cleaner fish (*L. dimidiatus*), they would go and scrape the marked part of their body on an object in their tank (Kohda et al. 2019, 2022, 2023). For some species who do not primarily navigate the world through vision, such as wolves (*Canis lupus*) and dogs (*Canis familiaris*), the test has been performed using self-recognition of urine (Cazzolla Gatti et al. 2021; Cazzolla Gatti 2015; Horowitz 2017; Hulick 2015). Recently, an olfactory version of the test has even been developed for snakes—of which one species (*Thamnophis sirtalis sirtalis*) passed and the other (*Python regius*) did not (Freiburger et al. 2024). However, it is even less clear how to interpret the results of these modified tests in terms of what they say about self-awareness.

On the other side, some are concerned that the test may not be specific enough, that is, that it may be picking up too much, and animals passing for reasons other than possession of self-awareness. Particularly with the recent admission of cleaner fish into the 'self-recognition' club, some have questioned the validity of the test at all (see Vonk 2020). Other controversial studies have included work on roosters (*Gallus gallus domesticus*) (Hillemacher et al. 2023) and octopuses (*O. vulgaris*) (Amodio and Fiorito 2022), where it is hard to interpret the data. Sceptics argue that these tests are much more likely to be detecting a basic self-other discrimination than a proper rich self-recognition. Tests that can differentiate these capacities (such as the flexible bodily exploration behaviour seen by many great apes in front of a mirror) are more likely to stand up to scrutiny.

Bodily self-awareness is thus still difficult to determine empirically. While some animals have passed the mirror self-recognition test and are widely considered to be self-aware, others are still in the 'possibly' category until more work is done and especially new forms of tests developed that fit to the species. It is likely that many of these tests are detecting the more basic and widespread form of bodily self-awareness related to distinguishing self from environment, rather than the more complex form that may be considered more relevant for questions of moral status.

Social Self-Awareness

More complex than bodily self-awareness is the second of DeGrazia's categories: social self-awareness. This involves the awareness of others as distinct subjects, separate from oneself. This capacity has previously been described as 'Theory of Mind', referring to the presumed ability of an individual to develop a representation of the minds of others. Recently, it has more often been called 'mindreading' to refer to the (perhaps more basic) ability of an individual to think about what is happening in the mind of another (Birch et al. 2020; Veit 2023). An animal may infer the beliefs, desires, thoughts, and feelings of another animal in order to better understand and predict its behaviour. This may be particularly useful for social animals, who need to understand their own position within a social group and the associated expectations and potential interactions. Mindreading is considered to be quite cognitively complex, and young humans don't seem to be able to do this reliably until around the age of four (Rubio-Fernández and Geurts 2013).

Like bodily self-awareness, mindreading has also been difficult to test for. There have been a range of tests looking for the ability to infer the mental states of others, including goals (Premack and Woodruff 1978; Buttelmann et al. 2007), perceptual perspective, and knowledge. Perhaps most common have been 'false belief' tests that investigate whether a subject can attribute false beliefs to others. False-belief testing is often based on a paradigm developed for use in children, known as the 'Sally-Anne' test (Baron-Cohen et al. 1985). Here, children are presented with a story describing two people—Sally and Anne—who are playing with a basket, a box, and a marble. Sally places the marble in the basket and walks away. Anne then switches the marble into the box. When Anne returns, the children are asked where Sally will look to find her marble—the basket or the box. Children with the mindreading capacity should answer that Sally will look in the basket where she left her marble, as that is where she still (falsely) believes it to be. Children who lack the capacity should answer that Sally will look in the box that actually contains the marble because they are unable to understand that Sally's knowledge differs from their own.

For young, non-verbal children, the test is conducted by observing actors playing the roles and their expectations inferred by observing the direction of their gaze (i.e., which box they look at in expectation of 'Anne' searching there) and their level of surprise at the actions of the actors (i.e., if they find it unexpected that 'Anne' looks in the location she does). This latter method has been adapted for use with great apes (e.g., Call and Tomasello 1999; Kano et al. 2019; Krupenye et al. 2016; Krachun et al. 2009). These tests have been performed almost exclusively on great apes, and even for these animals—so closely related to us—the results are controversial. Often, animals show at least some success in these tasks, rather than complete failure. This is why one of us has elsewhere argued that the 'partial success in false-belief tasks may be indicative that many animals have a more rudimentary capacity to use their own

experience to extrapolate to that of others' (Veit 2023, p. 27). We require more fine-grained tests to determine the degrees of this capacity in other animals. Birch et al. (2020) suggest that 'experience projection' may be a better term than mindreading, and the ability to understand the point of view of another is often referred to in research as 'perspective taking'.

Tests of perspective taking examine whether an animal can consider the perceptual point of view of another animal. For example, research has found that scrub jays (*Aphelocoma californica*) will alter their caching behaviour when they can be seen by other birds, suggesting they are aware of what others can perceive (Emery and Clayton 2001). Baboons (*Papio hamadryas*) (Kummer 1982), chimpanzees (*P. troglodytes*) (Hare et al. 2001), rhesus monkeys (*M. mulatta*) (Santos et al. 2006), and capuchin monkeys (*Cebus apella*) (Wheeler and Hammerschmidt 2013) have similarly shown capacities for perspective taking as evidenced through activities relating to hiding or deception.

However, all these tests are also controversial. While many take them to show evidence of mindreading (Premack and Woodruff 1978; Krupenye et al. 2016), critics counter that all that has really been shown is behaviour reading or associative reasoning between behaviours (Tomasello and Call 1997; Fletcher and Carruthers 2013). They claim animals are merely making inferences based on previously observed patterns and links between behaviours. This type of associative learning is taken to be a simpler cognitive ability, and, therefore, it is argued this should be preferred to the more complex interpretation. However, proponents of the tests counter that a single mindreading ability would be a simpler explanation of the range of observed results than a large number of individually learned behavioural associations. It has so far proven extremely difficult to develop experiments that differentiate between the two hypotheses to the satisfaction of all parties. Andrews (2020b) argues that rather than seeing any single test as fully confirming or denying the mindreading hypothesis, it would be more useful to look at which hypothesis best captures the *overall* body of data, including background theory about the evolution of mindreading and its adaptive function. It is thus still unclear which non-human animals have the ability to mindread and have the capacity for social self-awareness, but a wider review based on the principles suggested by Andrews may in future provide a clearer picture.

Introspective Awareness

The last of DeGrazia's categories is introspective awareness. Here, beyond representing the thoughts of others, as seen with social self-awareness, an individual can explicitly represent and reflect on their own mental states—their own beliefs, desires, or feelings. Beyond just having these mental states, this requires a higher-order cognitive process of recognising and reflecting on them. It involves thinking about one's own thoughts, a process known as 'metacognition', which is a thriving area of research not only in humans but also in many animal studies (Beran 2019; Carruthers and Ritchie 2012; Crystal

and Foote 2009; Foote and Crystal 2012; Jozefowiez et al. 2009; Kornell 2014, 2009; Smith 2009; Smith and Washburn 2005; Smith et al. 2014).

Tests for metacognition look for cases in which an animal's behaviour is best explained through the type of cognitive processes just described, a reflection on one's own mental states. While in humans these tests can use verbal self-report, for non-human animals, other methods must be devised (Browning and Veit 2023). Often this is done through testing for 'uncertainty monitoring'—whether an animal is aware of their own uncertainty regarding their knowledge. In one type of test, rhesus monkeys (*M. mulatta*) were tested on their discrimination of visual patterns using computers, receiving food rewards for correct answers and punishments (time delays before proceeding) for incorrect answers. When given an option for 'pass', which held neither a reward nor a punishment, they would use this option more often as the tests got more difficult, suggesting they were aware of when they did and didn't know the answers (Smith and Washburn 2005). Comparable tests using dolphins (*T. truncatus*) showed the same pattern of 'opting out' when the test got more difficult, with a similar response pattern to human participants (Smith et al. 1995).

However, sceptics have noted that the data may also be explicable in terms of simpler non-metacognitive models (see discussion in Crystal and Foote 2009; and Beran 2019). For this reason, more complex tests have been introduced to try and rule out simpler cognitive explanations. These seem to have challenged some early conclusions—for instance, while rats (*Rattus norvegicus*) showed success at initial 'opt out' tests (Foote and Crystal 2007), they failed more complex metacognitive testing (Foote and Crystal 2012). By contrast, great apes and macaques have done well at all tests attempted (Smith 2009). It therefore seems there is some evidence that at least some non-human primates have a metacognitive capacity and thus potentially a more complex form of self-awareness associated with an understanding of oneself as a distinct subject.

Personhood

Finally, we have the most demanding category: personhood. We defined 'personhood' above as a complex set of cognitive capacities that construct a persisting sense of self with goals across time. This then includes some of the capacities for self-awareness that we have already discussed. Although some discussion of personhood focuses on rationality (i.e., the ability to intelligently think through problems and to assess one's own beliefs and desires), we do not consider this to be of central importance and so will not discuss it here. What we take to be relevant aspects of rationality are captured by metacognition, which we have already covered above. Other work on personhood has relied on other features and capacities, such as neurological complexity and communication skills, such as Paola Cavalieri's (2016) case that whales should count as persons. The two key traits we will discuss here are the sense of self that persists across time and

the formation and enaction of goals, which are also sometimes called autonomy, or agency.

Personhood is often associated with the awareness of oneself as a subject persisting over time. More complex forms of this temporal sense of self may also include a richer narrative sense of oneself as a being with a past, present, and future that are linked by a cohesive purpose or story. While this more complex capacity is difficult to test for in nonverbal individuals, there can be evidence for the capacity for a simpler sense of persisting self—sometimes known as 'mental time travel'. Mental time travel can include having rich memories of events of the past (episodic memory) or the ability to imagine and plan possible futures.

When thinking about memory, it is important to distinguish episodic from semantic memory. Semantic memory is simply memory of facts—for example, Sydney is the capital of Australia; Melbourne hosted the Olympics in 1956. Episodic memory includes a first-person element, a sort of reliving of events that plays in the mind. Most often, this is characterised as having *what-where-when* components (i.e., who performed the action, where it was performed, and when) (Templer and Hampton 2013). These elements can then be tested for and are typically described as 'episodic-like' memory since we can test whether an animal remembers the what-where-when components, but we are not sure whether this information storage is also conscious.

Perhaps unsurprisingly, due to their status as a commonly used model organism, there has been a lot of evidence for episodic memory in rats (*R. norvegicus*) (Allen et al. 2014; Basile 2015; Kart-Teke et al. 2006; Panoz-Brown et al. 2016; Veyrac et al. 2015). A particularly interesting case for studies are animals that engage in hiding food for the future, such as scrub jays (*A. californica*) (Emery and Clayton 2001; Kort et al. 2005), who have been shown to remember the what, where, and when of their caching episodes, that is, what they have hidden, where they have hidden it, and when they have done so. Other groups of animals that seem to demonstrate episodic memory include cuttlefish (*Sepia officinalis*) (Schnell et al. 2021b) and dolphins (Davies et al. 2022).

Mental time-travel ability is thought to involve self-awareness as it requires a representation of oneself throughout time, both as the subject of past memories and the agent of future actions. This could possibly even form something like a bridge between self-awareness and personhood, as the foundation for a stronger narrative sense of self. It is therefore interesting to see that this ability is present in animals, such as rats and birds, who are not closely related to humans, possibly suggesting that self-awareness is similarly widely distributed.

Another form of mental time-travel is future planning, in which an animal can make flexible plans for itself in the future. This is then linked to the second capacity we have highlighted in our definition of 'personhood': the formation of goals (particularly longer-term goals), which are also associated with concepts of autonomy, or agency. Goal-directed behaviour is relatively easy to find—all living systems are in some sense acting toward the goal of fitness maximisation through the action of natural selection, but these organisms need not

be aware of their goals. However, there is a richer sense of agency that is more cognitively demanding: the ability to flexibly and intentionally set goals to promote one's own preferred ends. This is related to mental time travel, where an individual can consciously represent their own future and thus explicitly plan for it. The more sophisticated form of this (and arguably the one more relevant for personhood) is the capacity for autonomy, or self-determination, where an individual can set goals relevant to their values and desires and choose when and how to act upon them. This ability has long been thought of as uniquely human, with animals only living in the 'here and now', but some evidence is challenging this view.

Looking at evidence for future planning requires distinguishing what could be innate or instinctive behaviours (such as squirrels burying nuts during the autumn to dig up in the winter), or those that could result from mere reinforcement learning, from those that require a more flexible conception of the future (Birch et al. 2020, p. 798). One possible example of future planning comes again from work on corvids, due to their caching behaviour. Eurasian jays (*Garrulus glandarius*), for instance, have been shown to anticipate and plan for their future needs even in the face of current temptations by caching food that they are likely to need later (Cheke and Clayton 2012). Many other animals show the ability for delayed gratification, passing up a visible current reward for a larger future reward—observed in New Caledonian crows (*Corvus moneduloides*) (Miller et al. 2020), capuchin monkeys (*C. apella*) (Judge and Essler 2013), cleaner fish (*L. dimidiatus*) (Aellen et al. 2021), and cuttlefish (*S. officinalis*) (Schnell et al. 2021a) (see Flessert and Beran 2022 for an overview). This means that future planning is potentially much more widespread in the animal kingdom than we might have anticipated, and possibly, therefore, in this rudimentary form, not linked to personhood.

It has been difficult to demonstrate the more complex and sophisticated forms of goal-setting and future planning in non-human animals. The most convincing examples come from our closest relatives, the great apes. Chimpanzees (*P. troglodytes*) have been frequently found to use tools in the wild (Biro et al. 2003; Boesch 1993, 2013; Byrne et al. 2013; Watts 2008). They will also collect and carry their best tools with them for use in future foraging activities (Musgrave et al. 2023), which implies at least a rudimentary capacity for future planning. Sumatran orangutans (*Pongo abelii*) plan and communicate their travel plans at least a day in advance via long calls (Schaik et al. 2013). Other animals with a high degree of cognitive complexity, strong memories, and rich emotional and social lives—such as cetaceans and elephants—have also been suggested as possible autonomous individuals in this sense, but again, there is currently no well-established evidence for related abilities. However, we can see a continuum of abilities in mental time-travel and goal-directed behaviour across different animals, human and non-human, which is suggestive of personhood as more of a scale than a strict binary. This makes it more likely that some non-human animals will possess some subset of the capacities necessary for at least minimal personhood.

Overall, the empirical evidence regarding self-awareness and personhood is complex and difficult to interpret. In most cases, there is a problem of underdetermination, where the current evidence is insufficient to decide between competing theories, such as the presence of self-awareness or explanation via a simpler cognitive capacity. This means that it is difficult to draw any strong conclusions regarding the distribution of self-awareness and personhood throughout the animal kingdom. As per Andrews (2020b), it is likely to be most useful to look at the balance of evidence for any species of interest, alongside considerations of their evolution and ecology, to determine whether some form of self-awareness or personhood is the best explanation for the observed patterns, remaining open to the possibility of different levels or degrees of personhood. This is a larger project than can be undertaken here, but we hope to have shown that there is promising evidence for at least some of these capacities in some non-human animals. It is therefore reasonable to conclude that self-awareness, and probably personhood, are not unique to humans.

The Moral Relevance of Self-Awareness and Personhood

We have discussed the concepts of self-awareness and personhood and looked at some of the evidence for these capacities in non-human animals. The question that now remains is: what should we do with this? What is the moral relevance of self-awareness and personhood, and how will it shape the way we think about the occurrence of and importance of non-human suffering?

Often, animal personhood is invoked in a legal context—that is, whether animals have sufficient capacities to be considered 'persons' in the eyes of the law. Most legal systems distinguish between persons as individuals who possess rights and protections in and of themselves and objects that are protected only insofar as they are the possessions of persons. In almost all cases, animals are categorised as objects rather than persons. While they typically have some protection against their suffering, ultimately, their treatment depends on those people who own or control them, and there is no legal recourse against their use.

Some recent high-profile legal cases in the USA have tried to make the case that some animals are persons and, thus, deserving of the same legal protections as humans. Perhaps the most famous has been 'Happy' the elephant, who was taken from the wild in Thailand in 1977 when still young and has spent most of her life in the Bronx Zoo (NhRP n.d.). Since 2005, when her last companion died, she has lived alone, though with fenced access to another elephant. Her treatment has been controversial since she was involved in a variety of show activities, such as giving rides (NhRP n.d.). The Bronx Zoo counters that she is well cared for, with close bonds to her keepers and a naturalistically furnished, one-acre enclosure including trees, grass, and a swimming pond. In the mirror mark study on elephants cited before (Plotnik et al. 2006), it was actually Happy that was the first member of her species to succeed (NhRP n.d.). In 2018, the Nonhuman Rights Project filed a writ of *habeas corpus* with

the New York Supreme Court, arguing that Happy's confinement was unlawful and that she should be released to a sanctuary. *Habeas corpus* can typically be obtained by (or on behalf of) a person who has been unlawfully detained. The case, therefore, hinged on whether Happy could be recognised as a person under the law. The Nonhuman Rights Project argued that Happy is autonomous and cognitively complex and, therefore, should be granted this legal recognition with the corresponding right to liberty. Representatives of the zoo countered that she is 'respected as the magnificent creature she is' ('Happy the Elephant' 2022)—an elephant, not a person.

Ultimately the court agreed, ruling 5-2 against the case. While not disputing the facts of the case—conceding that 'elephants are intelligent beings deserving of proper care and compassion' ('Happy the Elephant' 2022)—they maintained that *habeas corpus* is intended to apply only to human beings. In particular, they were concerned about setting a precedent that could then be extended to other animals, including other zoo animals, service animals, or even pets. However, not all judges agreed. One commented that '[Happy's] captivity is inherently unjust and inhumane. It is an affront to a civilized society, and every day she remains a captive—a spectacle for humans—we, too, are diminished' ('Happy the Elephant' 2022). It therefore seems likely that similar cases in the future may be successful. Indeed, in Argentina, an orangutan named Sandra won a similar legal battle to have her personhood recognised, which led to her being moved from Buenos Aires Zoo to a sanctuary (David 2021).

However, while the question of legal status is important for determining treatment and protection of non-human animals, it can be separated from that of moral status. When thinking about the question of non-human suffering, perhaps the most important aspect to consider is whether such suffering matters morally—that is, whether the animals have moral status and should have their interests taken into account. Particularly for our purposes: does self-awareness or personhood matter for moral status?

There are many different accounts of what it takes for an individual to have moral status, some of which have been surveyed in this volume. Perhaps the most influential view on animal moral status has been that advocated by philosophers such as Jeremy Bentham (1780) and Peter Singer (2023), which takes animal sentience (i.e., the capacity for felt suffering) as the key feature grounding moral status. In this view, which we also endorse, animal suffering matters morally whenever it occurs. The very fact that an animal is capable of experiencing negatively (or positively) valenced mental states is what grants it moral status. All suffering matters because it matters to the animal that is experiencing it.

As discussed in the introduction, this view is sometimes rejected from an Aristotelian perspective that takes the distinction between the 'sensitive' and 'rational' souls to be a key part of determining moral status. Similarly, we noted that some ethicists use the term 'personhood' to simply mean an individual with full moral status, which would mean that any deviation from the level of

full personhood we would expect from a normal adult human would imply a reduced moral status. However, we take these views not to be convincing—and even potentially quite objectionable—as they also rule out some members of the human population who we would typically take to possess moral status. If we take as a baseline assumption that all human suffering matters, at least to some degree, then it must follow that animal suffering also counts.

This means that self-awareness or personhood is not directly relevant to moral status. The suffering of any sentient individual should matter morally, regardless of whether they are also self-aware. Insofar as sentience is a precondition for self-awareness or personhood, this means that all self-aware animals and all animal persons will have moral status by default, but so too will animals who are sentient but not self-aware.

However, self-awareness and personhood may influence the level of moral status granted. That is, while the suffering of all sentient animals should matter, perhaps the suffering of self-aware animals, or non-human persons, should be given greater consideration. This would explain the focus on personhood within animal activism, including but also going beyond, the potential of legal recognition of rights we explored above. Beyond just the experience of suffering, the capacities associated with self-awareness and personhood may place those individuals into a different tier of consideration. As Koplin et al. point out: 'persons presumably have some welfare interests that non-persons lack, and arguably deserve a specific type of respect' (2024, p. 16). According to this view, while the suffering of all sentient animals would be morally relevant, we should pay even more attention to the suffering of animals with capacities for self-awareness or personhood (such as some of the examples discussed in the third section). McMahan (2002) is perhaps the most prominent defender of such a hybrid view where sentient creatures have their welfare interests protected, but persons are given special rights. Notably, this would not be an answer to the problem of animal suffering since the suffering of sentient creatures still matters, even if not as much.

One additional way in which self-awareness can influence the moral relevance of animal suffering is that it can alter the range of ways in which animals can suffer. An animal with self-awareness can experience a range of negative (and positive) mental states and emotions that a more cognitively simple animal cannot. Any sentient animal can experience the basic sources of suffering, such as pain, fear, hunger, and discomfort. However, there are many more emotions that we are familiar with as humans that are likely to only occur in animals that are self-aware, such as boredom, loneliness, shame, guilt, and hopelessness. For instance, the capacity for social-self-awareness with the recognition and understanding of the mental states of others may alter an animal's experience of suffering through a capacity for empathy. If an individual can recognise the suffering of others and respond to it, this can cause them to also suffer. Possible empathetic responses have been documented in chimpanzees, macaques, and rats (reviewed in de Waal 2004). Animals with capacities for empathy will therefore suffer in more ways than animals who lack it.

One final way in which personhood may matter is that persons may be harmed by their deaths in a way that non-persons are not. Some still claim that death is not a welfare harm for animals, as it does not entail any suffering (see discussion in Jensen 2017), but this perspective is getting rarer. Now, more commonly, a *deprivation* account is used to explain the harm of death for sentient animals—that is, that premature death deprives an animal of the future positive experiences they could have had (Yeates 2010; Browning 2018). On this view, animals are still harmed by their deaths, coming from the fact that their overall lifetime welfare would have been higher had they stayed alive longer.

Personhood adds an additional layer of harm to death. As we have discussed, part of what it means to be a person is to have a sense of oneself as a subject persisting over time, with plans and goals for the future. This means that persons have an additional interest in their future lives—not just that it is instrumentally necessary for them to have things that are good for them, but that they have a desire for a future in and of itself. They can conceive of their future selves, make long-term plans, and, thus, these interests will also be thwarted by their premature deaths (McMahan 2002). So, while personhood may not be a useful criterion for moral status itself, it is useful in assessing the relative harm of death for different types of animals.

We have made the case here that self-awareness and personhood are relevant for assessing the question of animal suffering. While these capacities are not necessary for moral status—the suffering of any sentient animal should matter to us—they may grant a higher level of moral consideration, expand the range of ways in which animals can suffer, and increase the harm incurred through death. Understanding self-awareness and personhood in non-human animals is thus a significant part of the analysis of the importance of non-human suffering.

Conclusion

Self-awareness and personhood in non-human animals have important links both to animals' capacities for suffering and the moral relevance of their suffering. There is a range of evidence for self-awareness in non-human animals, ranging from the almost universal presence of a minimal bodily self-recognition, discriminating between internal and external stimuli in mobile animals, to mental time-travel and the surprising abilities of many species to recognise themselves in a mirror. While such evidence is still controversial, the growing weight of the body of research suggests that a range of non-human animals are self-aware in at least some ways, and some—such as great apes, cetaceans, and elephants—are potentially even persons. Instead of treating these capacities as binaries that animals either have or lack, we should recognise a broad continuum along which animals can differ. Indeed, a future science of animal minds will likely map out several such dimensions along which we can break down these capacities further.

While the mere capacity for suffering (i.e., sentience) should be sufficient to ground moral status and the moral importance of suffering, degrees of

self-awareness could provide an enhanced moral status in which the interests of that individual matter more. Self-awareness can also increase the range of positive and negative emotions an individual experiences and therefore broaden the types of possible suffering they can undergo. Personhood, understood as a persisting sense of self with goals across time, is also relevant to the degree of harm of death.

Overall, while the self-awareness or personhood of animals is not an essential feature of the moral importance of their suffering, it is a significant part of considering what type of moral status they are awarded and the scope of their interests that need to be considered. Ongoing research into the relevant capacities, alongside analysis and synthesis of the current body of research to draw conclusions about the likelihood of self-awareness and personhood of different non-human species, will be important for determining how to assess the relevance of non-human suffering across the animal kingdom. Thus, while self-awareness and personhood cannot provide an answer for the problem of suffering, they allow us to recognise that suffering may look very different across different species. In thinking about how to best avoid animal suffering, there is therefore a great need for further investigations into these capacities.

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