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THEORY-CONSTRUCTION IN COMPARATIVE COGNITION: ASSESSING THE CASE OF ANIMAL NORMATIVITY

Construcción de teoría en cognición comparada: evaluando el caso de la normatividad animal

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ABSTRACT: With an extensive amount of research on the social lives of primates, Frans de Waal has been a pioneering advocate for the continuity of human and non-human minds, putting forward the idea that these creatures exhibit rudimentary political and moral behaviors. One of the traits which de Waal focuses on is *animal normativity*, a set of behaviors functionally defined as adherence to social standards. Recently, some philosophers have endorsed this position, holding that animals show a psychological capacity called *normative cognition* underlying those and other social behaviors. In this paper, I assess whether advocacy for animal normativity is an exercise of theory construction in comparative cognition. To that end, I present three features of this kind of theory construction. First, the explanatory goal of building functional analyses of cognitive capacities. Second, the conceptual aid of comparative thinking for theory construction. Third, the heuristic value of theory in specifying possible roads of inquiry. Taking these features into account,

I assess whether the claims advocates make regarding animal normativity consider them. My answer is negative. First, since some advocates focus on behavioral traits and not on psychological capacities, they are not producing theory in comparative cognition, although, as I argue, they should. Second, there is a disregard for hypothesis testing and no evolutionary considerations to support their views. Finally, the claim that non-human animals exhibit normativity does not seem to have heuristic value.

Keywords: animal minds, comparative psychology, normative cognition, functional analysis, evolution.

RESUMEN: A partir de una gran cantidad de investigación respecto a las vidas sociales de los primates, Frans de Waal ha sido un pionero defensor de la continuidad mental entre animales humanos y no humanos, avanzando la idea de que tales criaturas exhibían rudimentos de comportamientos políticos y morales. Uno de los rasgos en el que se ha concentrado Frans de Waal es el de *normatividad animal*, un conjunto de comportamientos funcionalmente definidos como la adherencia a estándares socialmente. Recientemente, a su vez, algunos filósofos y filósofas han apoyado esta posición, afirmando que los animales muestran una capacidad psicológica de *cognición normativa* que subyace a aquellos y a otros comportamientos. En este artículo, evalúo si la defensa de la normatividad animal constituye un ejercicio de construcción de teoría en cognición comparada. Con ese fin, presento tres rasgos de esta clase de construcción teórica. En primer lugar, el rol explicativo de construir análisis funcionales de capacidades cognitivas. En segundo lugar, la ayuda conceptual que brinda el pensamiento comparativo a la cognición comparada. En tercer lugar, el valor heurístico de la teoría en especificar caminos posibles de indagación. Tomando en cuenta estos rasgos, evalúo si las afirmaciones de los defensores de la normatividad animal los toman en consideración. Mi respuesta es negativa. En primer lugar, dado que algunos defensores se concentran en rasgos comportamentales y no en capacidades psicológicas, no están produciendo teoría en cognición comparada, si bien, como argumento, deberían. En segundo lugar, hay una despreocupación por el testeo de hipótesis y no hay consideraciones evolutivas que apoyen la posición de los defensores. Finalmente, la afirmación de que los animales no humanos exhiben normatividad no parece tener un valor heurístico definido.

Palabras clave: mentes animales, psicología comparada, cognición normativa, análisis funcional, evolución.

1. INTRODUCTION

Research on animal cognition and the evolutionary origins of cognitive capacities put pressure on traditional claims about human uniqueness. For decades, Frans de Waal has been a pioneering advocate for the continuity of human and non-human minds, a position he has put forward in scientific work (de Waal, 1989) and writings directed to a wider audience (de Waal, 2016). His extensive research on the social lives of primates supports the idea that these creatures exhibit rudimentary political and moral behaviors, questioning the status of human beings as the only moral and political animals. Some of his findings concern quantitative analyses of post-conflict resolution (de Waal, 2007) and the design of experimental tasks -the inequity aversion behavioral paradigm (Brosnan and de Waal, 2003). Other contributions concern claims about research on non-human animals -e.g., his claim that anthropodenial is as dangerous as anthropomorphism (de Waal *et al.*, 2006).

One of the traits on which de Waal focuses is *animal normativity*, a set of behaviors functionally defined as adherence to social standards. These behaviors are evidenced by respecting social hierarchy or reconciliatory behaviors that primates exhibit to maintain and restore social harmony. Recently, some philosophers have endorsed de Waal's position, holding that animals show a psychological capacity called *normative cognition* -or ought thought- underlying those and other social behaviors. This psychological trait implies identifying and internalizing social patterns, tracking norm-compliance, and punishing non-conformers.

In this paper, I will assess whether advocacy for animal normativity is an exercise of theory construction in comparative cognition. To that end, I will first present the advocates' approach, focusing on *which* behaviors they take as evidence of animal normativity and *why* those behaviors are so considered (section 2). Then, I will present three core features of theory construction in comparative cognition (section 3). The first feature concerns the explanatory goal of building functional analyses of cognitive capacities. Second, the conceptual aid of comparative thinking for theory construction -a style of reasoning that helps to get an evolutionary profile of the creatures under analysis. Third, the heuristic value of theory in specifying possible roads of inquiry.

Finally, I will assess whether what advocates claim regarding animal normativity present the core features of theory construction in comparative cognition (section 4). My answer will be negative. First, since some advocates -like de Waal- focus on behavioral traits, they are not producing

theory in comparative cognition. Furthermore, in light of recent arguments claiming that animal normativity could work at the behavioral level (Westra and Andrews, 2022), I will argue why advocates should care about psychological capacities. Second, as long as advocates focus on psychological traits, my argument will be that their claims do not exhibit the core features of theory construction in comparative cognition. In particular, there is a disregard for hypothesis testing and no evolutionary considerations to support their views. Finally, the claim that non-human animals exhibit normativity does not appear to have heuristic value.

On a more general note, while my present concern regards the specific case of animal normativity, a broader purpose is to provide -the sketch of- a framework to assess what intellectual efforts count as contributions to the field of comparative cognition. Given that some philosophers attempt to contribute to the theory of animal cognition, this -sketch of a- framework could be valuable as a guide.

2. ADVOCATES FOR ANIMAL NORMATIVITY

Identifying social patterns of behavior, internalizing them, sanctioning and tracking norm-compliance are deeply entrenched features of what makes us human, so much so that concepts like ‘norm’ and ‘normativity’ “occur in an enormous range of research that spans the humanities and behavioral sciences” (Kelly and Setman, 2021). Furthermore, this “capacity for understanding the difference between how things are and how things ought to be” (Schlingloff and Moore, 2017, 381) is considered to be unique to humans, entitling us to the coveted status of *normative animals* (Roughley and Bayertz, 2019).

Although most research on norms in the social sciences has focused on adult humans, more recent efforts have inquired about the phylogenetic and ontogenetic origins of these capacities. Phylogenetically, researchers hypothesize that challenges regarding the evolution of cooperation in Pleistocene societies –the need for delayed returns cooperation- selected for social norms in the hominin lineage (Sterelny, 2019; 2021). Ontogenetically, children exhibit normative attitudes in social interactions -enforcing norms as third parties when others violate them in their presence- at approximately three years old (Schmidt and Rakoczy, 2019). Crucially, that capacity emerges developmentally with other social skills -e.g. over imitation.

Questions about the phylogenetic origins of normative capacities have also been pressed in the animal world, especially in trying to account for

the origins of morality¹. As with most human-like features, different attitudes permeate the approach to the answers, and a lot depends on how the target phenomenon is defined. Skeptics claim that the gulf between humans and non-humans is too deep to call normative what animals do (Schmidt and Rakoczy, 2019). However, advocates for animal normativity claim that “some non-human animals can actively respond to norms and even have some understanding of them” (Danón, 2019, 177). In this sense, empirical evidence supports “the idea that [...] normativity extends beyond the boundaries of the human species” (Monsó and Andrews, 2022, 209; for similar claims, see Andrews, 2020, 52; Fitzpatrick, 2020, 45).

Frans de Waal is one such advocate. In his studies regarding the social behavior of primates, he construes behaviors like reconciliation or respect for social hierarchies as “adherence to an ideal or standard” (de Waal, 2014, 287). Reconciliation is a friendly post-conflict behavior that occurs no more than half an hour after a fight in which one of the parties -irrespective of dominance- approaches the other and makes begging gestures like stretching an arm with an open hand. These encounters involve substantive eye contact and kissing (de Waal, 1989, 42). The function of reconciliation is to maintain social harmony, with the evolutionary-oriented rationale of

restor[ing] relationships that have been damaged by aggression but are nonetheless essential to survival. Since many animals establish cooperative relationships within which conflict occasionally arises, mechanisms of repair are essential (de Waal, 2014, 192).

These -and other- behaviors comprise a functional kind that de Waal calls animal normativity.

1. The philosophical significance of the phylogenetic origins of normative cognition is not exhausted by the emergence of morality. Empirical findings and theoretical reflections in this domain can illuminate two other subjects that interest philosophers. First, the conceptual (or metaphysical) claim that thought is normative. Understood as the claim that what a creature thinks is determined by the rules they are capable of following, findings about the origins of normative cognition would have consequences for theories about the origins of thought. Second, the philosophical use of this capacity with demarcational purposes -i.e., as a measure of cognitive complexity. According to this view, a creature endowed with normative cognition is more cognitively sophisticated -in some sense- than a creature without it. Though relevant and influential, these issues are not the focus of the present paper. My sole focus here concerns the origins of particular behaviors and psychological capacities. In that regard, the discussion is independent of claims about the nature of thought or about kinds of minds.

Building upon de Waal's pioneering work, a group of philosophers also construe some behaviors as evidence for normative capacities (Fitzpatrick, 2020; Andrews, 2020; Vincent, Ring, and Andrews, 2019). Two shifts in focus in this latter approach are worth mentioning. First, for these philosophers, the question no longer concerns morality but rather "the broader issue of whether some animals have a general capacity to act in the light of norms" (Danón, 2019, 177). Second, the focus is on a psychological rather than a behavioral trait. While de Waal held vaguely that a "preference for certain social outcomes over others" (de Waal, 2014, 201) guided normative behaviors, these latter advocates make specific claims regarding the psychological capacities that underpin them.

Vincent, Ring and Andrews, for example, claim that research about normative behavior should focus on a

basic cognitive requirement for moral agency—namely, ought-thought, which is a cognitive modality much like mental time travel or counterfactual thinking. Thinking about what ought to be the case—like thinking about what happened in the past, what might happen in the future, and what might be the case under various circumstances—is a cognitive mode that requires the thinker to do more than represent what is currently the case. (Vincent, Ring, and Andrews, 2019, 58-59)

Ought-thoughts, in this sense, are more general than moral oughts because they are applied more widely through diverse "instances of valuing, some of which are not moral" (Vincent, Ring, and Andrews 2019: 59). This capacity is expressed through normative practices, defined as "patterns of behavior shared by members of a community that demonstrate they value certain ways of doing things as opposed to others" (Vincent, Ring, and Andrews, 2019, 59).

The strategy for advocates is to look for behaviors -expanding over de Waal's list- that qualify as normative practices. Those behaviors are, for example, cultural differences between groups of chimpanzees. Different cultural traditions between groups, like tool selection for nut cracking -i.e., some groups prefer wooden tools and some groups tools made of stone (Luncz and Boesch, 2014)- indicate preferences for doing things inside the group. When females from one group migrate to another, the ranking of those females depends on their learning the new group's tradition. Another example is the alleged norms the chimpanzees follow when they hunt colobus monkeys (Vincent, Ring, and Andrews, 2019, 59). This behavior is described as a "coordinated division of labor, with some individuals driving monkeys in the direction of groupmates waiting to ambush" (Fitzpatrick,

2020, 5). Given that the hunt's rewards are typically distributed "in proportion to each individual's level of participation" (Fitzpatrick, 2020, 5), a straightforward interpretation of this behavior is that there are norms of cooperation that regulate this practice.

Furthermore, these behaviors count as normative practices because of their resemblance to human activities:

We recognize certain patterns of behavior in humans as constituting certain phenomenon (e.g., friendship, policing, babysitting, etc.). When we see similar patterns effecting similar ends in other social species, we are warranted in classifying them as instances of these same phenomena. That is what consistency requires, so long as the attribution of friendship, policing, or babysitting still seems apt after all the known and likely capacities of the species in question have been taken into account (e.g., their capacities for emotion, social learning, creative problem solving, etc.). We need to develop or embrace definitions of the phenomena in question to allow for unambiguous attribution to both humans and other animals. For instance, if we define 'friendship' in terms of developing and maintaining affiliative social bonds, then it would be an error to deny that chimpanzees have norms of friendship (Vincent, Ring, and Andrews, 2019, 75).

In a single-authored paper about ought-thought, Andrews pursues a different strategy. Taking Bicchieri's definition (Bicchieri, 2016) as a guide, Andrews identifies three conditions for social norms:

- (1) there is a pattern of behavior demonstrated by community members;
- 2) individuals choose to conform to the pattern of behavior; and
- (3) individuals expect that community members will also conform and will sanction those who do not conform (Andrews, 2020, 40).

Furthermore, primates need these four abilities to meet these conditions: being able to identify group members as agents, distinguish the behavioral patterns of their group from out-group behavior, learn their group traditions socially, and respond to inappropriate behavior through sanctions. Primates would exhibit all of these cognitive requisites: they ascribe goals to other agents, are sensitive to in-group out-group differences -as evidenced by the example of female immigration-, learn traditions socially -as evidenced by the example of cooperation and, again, female immigration- and punish non-conformers through aggressive behavior. For Andrews, all this counts as evidence of ought-thought.

Having described the approach to animal normativity from advocates, I will present the features of theory construction in comparative cognition.

3. THEORY CONSTRUCTION IN COMPARATIVE COGNITION

Two styles of reasoning are recognized as the main ones to construct theories in comparative cognition (see Papini, 2021; Vonk and Shackelford, 2012; Wasserman and Zentall, 2009)²: functional analysis and the comparative approach.

The first style of reasoning is functional analysis, that consists in

analyzing a disposition into a number of less problematic dispositions such that programmed manifestation of these analyzing dispositions amounts to a manifestation of the analyzed disposition (Cummins, 2010, 291).

These analyses are functional because their components are selected by virtue of what they “do [...] rather than in terms of their intrinsic constitutions” (Roth and Cummins, 2017, 35).

To get functional analyses, scientists need to start with behavioral *phenomena* or *effects*, behavioral regularities or dispositions of the system that needs explaining, found through behavioral tasks or paradigms. The performance of New Caledonian crows in the Aesop Fable paradigm is, for example, one of those effects. In this task, scientists present crows with a water-filled tube containing a reward floating on a cork. Under these circumstances, crows push stones into the water until they reach the food (Bird and Emery, 2009). The crows’ systematic performance in the task is the behavioral effect.

Having found effects, scientists provide a speculative answer as to what psychological capacity the system might be exercising. In the case of the Aesop Fable task, the hypothesized trait is causal understanding. After several manipulations of the conditions of the test, researchers hold that

[t]his paradigm can therefore be used as a test of causal cognition, investigating whether animals can understand or learn about various causal regularities which underlie the displacement of water (Jelbert *et al.*, 2014, 2).

Ideally, further research will analyze that capacity into sub-capacities. However, that level of detail is rare in comparative cognition, and most discussions stay at the level of traits that underlie behavioral performance.

2. Under some views that define cognition narrowly, only a subset of capacities studied by comparative psychology concern cognition (see Olmstead and Kuhlmeier, 2022). In what follows, I take it as not controversial that comparative psychology does study cognition -focusing on proximate mechanisms- through a specific focus concerning phylogeny and adaptation.

This approach to behavioral tasks and to assessing what capacity it is that they measure are consistent with what Shettleworth considers an indication of well-designed research in comparative cognition: “progress [in comparative psychology] is greater if the process under study is well defined for [the species]” (Shettleworth, 2009, 213). To be well-defined is to have a behavioral task that is relatively clear on the psychological capacity it tests. In that sense, scientists can use the Aesop Fable task to test whether a given species exhibits causal understanding.

The second style of reasoning relevant to comparative cognition is what Currie (Currie, 2021) labels comparative thinking -an approach applied widely through the spectrum of the biological sciences. The purpose of comparing traits in biology is to construct an evolutionary profile of the creature under analysis. To this aim, two processes are especially relevant: processes that “act as connecting lineages” (Currie, 2021, 5) - like sex- that create “causal and ancestral connections” (Currie, 2021, 5), and processes “creating variation within and between lineages” (Currie, 2021, 5) - like adaptation to environmental pressure. These two processes explain the similarities biologists find between traits of different species. The two most common similarities found in biology are homology and analogy, similarities explained through common ancestry and adaptation to environmental pressure, respectively.

In comparative cognition, comparisons help in theorizing about cognitive capacities across species. In that sense, Emery and Clayton have argued that convergent evolution explains why primates and crows have similar abilities for causal reasoning and prospective thought, given that both species would face

the same socioecological challenges, such as locating perishable food distributed in time and space or understanding the relationships between different individuals within large social groups. (Emery and Clayton, 2004, 1905)

Another influence of comparative thinking in comparative cognition comes from the rationale it provides to Morgan’s Canon, an application of Occam’s razor that instructs scientists to choose the simpler of two competing psychological hypotheses. Critics of this parsimony principle have pointed out that the conceptual problem is to cash out simplicity and complexity in this context (for critical discussion, see Buckner, 2013; Fitzpatrick, 2017). Comparative thinking provides a rationale for that specification: simpler processes are those more widely distributed phylogenetically. Thus, when comparative psychologists have two hypotheses –concerning basic learning processes and higher cognitive traits, for

example- to account for the same phenomena they should choose the more plausible, the more widely distributed phylogenetically. The suggestion is to read the principle not functionally -stating that simpler processes allow creatures to do 'less' than more complex ones- but evolutionarily: widely distributed traits versus particular adaptations of particular species (Currie, 2021, 38)³.

The third and final core feature of theory construction in comparative cognition concerns its heuristic value. Take, for example, Povinelli's reconstruction of Gallup's theory regarding the mirror test. For Gallup, adequate performance in this test implicates some capacity for self-awareness, and thus it predicts a capacity for introspection and social attribution (Povinelli, 1993, 497). Although that model has received several objections regarding the necessary connections between performance in the test and the underlying psychological processes mentioned above, Povinelli emphasizes that its virtue lies in "being a way of generating strong (and hence quite falsifiable) predictions" (Povinelli, 1993, 498). Evolutionary considerations can also provide this heuristic value. Function -understood broadly as ultimate or proximal (Tinbergen, 1963)- can direct questions about proximal mechanisms and, in that sense, guide specific empirical research. Thus, biological theories that assert that kinship and relatedness between organisms mediate the evolution of social behavior raise questions about how recognizing something as kin or a potential mate increases reproductive success (Sherry, 2005, 444).

From this characterization of comparative cognition as a way of studying cognition aided and permeated by comparisons, we can extract three core features of theory construction in this field:

1. Comparative cognition explains psychological capacities through functional analysis.
2. Comparative thinking aids theory construction in comparative cognition.
3. Theory in comparative cognition has a fundamental heuristic value.

3. Morgan's original formulation of the canon already suggested that we should construe "lower" and "higher" in evolutionary terms. The now standard interpretation of the principle as an application of Occam's razor is a consequence of its reception by psychologists of behavioristic leanings (see Sober, 2005; especially fn. 9), a reception that jettisons the evolutionary content of the principle.

These core features are not all-or-nothing categories but rather gradual ones. However, for a claim to be an exercise in theory construction of comparative cognition, at least the three core features must be present to some degree.

4. ADVOCATES FOR ANIMAL NORMATIVITY MEET COMPARATIVE COGNITION

Having reviewed the claims made by advocates for animal normativity and the core features of theory construction in comparative cognition, I will assess whether the theoretical claims made by advocates present those core features.

4.1. *The scope of the claim about animal normativity: behavioral or psychological trait?*

As mentioned above, some advocates of animal normativity focus on behavioral traits. Along the same line, Westra and Andrews (2022) hold that normativity can be identified as a behavioral phenomenon while remaining non-committal regarding psychological capacities. As I mentioned in section 3, one of the features of theory construction in comparative cognition is to make claims about psychological capacities. Thus, given that my present aim is to assess whether advocates make theoretical claims in comparative cognition, this position could be dismissed for not having a core feature of this domain. However, that would be too hasty. I want to explore next why this position would be unattractive to the advocates' own aims.

Two questions are especially relevant in this context. First, what kind of information is provided by the claim 'animals exhibit normativity', if we understand normativity as a behavioral phenomenon? Second, what kind of inferences are we entitled to draw from it? Regarding the first question, normative behavior -as presented by advocates- appears to be a functional construct comprising different particular behaviors. It is not a single trait but rather a set of them. When studying animal behavior, behaviors that belong to the same kind make a *domain*. Ethology, behavioral ecology, and comparative psychology organize their fields through these functional kinds -e.g., foraging, tool use, or spatial navigation. These disciplines describe domains *functionally*, in terms of what a creature can do -to get food, to use tools, or to navigate space. This taxonomic

organization allows for comparisons between different species regarding how they achieve the same thing. Normative behavior could be, under this approach, a domain: a functional kind defined as “an ability to internalize and enforce social norms” (Fitzpatrick, 2020, 1).

Regarding the second question, and while acknowledging that this theoretical choice is available for advocates, it would come at a cost. The statement “nonhuman animals exhibit normative behavior” would have to be treated very much like the statement “animals exhibit abilities for spatial navigation”. Those statements provide very little empirical information about how the animals do what they do, so it would not allow advocates the inferences about cognitive similarities between normative behavior in humans and normative behavior in animals they seem to want to make. Those inferences about *mental* similarity would not be plausible since different capacities may underwrite those two behaviors -e.g., bees and taxi drivers exhibit abilities for spatial navigation but through diverse cognitive means. However, advocates want to claim that there is a mental continuity in humans and animals concerning normative behavior. It is hard to assess in what way we are continuous⁴.

To put the contrast most starkly, consider an example from behavioral ecology. A sender-receiver model in behavioral ecology describes and predicts communicative interactions between -at least- two systems. Under this framework, both bacteria and I do the same thing: send and receive signals. In a sense, we are both communicating -the abstract functional kind- but to claim some continuity between bacteria and me regarding communication would not be to say much. That is because the sender-receiver model works only at the behavioral level and does not make claims about the internal architecture of the systems. What licenses researchers' and philosophers' inferences about mental continuity are commitments to

4. Another issue in passing: domains can be gerrymandered. Advocates collect behaviors as examples of normativity because those behaviors resemble our own. However, as mentioned above, if comparative thinking does not explain those similarities, their epistemic value of the functional kind is unclear. For example, there was a time when scientists thought they could teach animals how to use language -albeit in a rudimentary way. Handbooks in comparative cognition mirrored this tendency by defining these behaviors functionally as *language-use* (see, for example, the index in Greenberg and Haraway, 1998). This functional categorization of behavior as ‘language-use’ defined that domain through a human perspective. The lesson to extract here is that while comparative thinking constrains the interpretation of functional kinds regarding animal behavior, the absence of those constraints may lead to anthropomorphization. If we focus on the ultimate or evolutionary function of behaviors included by advocates under the tag ‘animal normativity’, we find different phylogenetic origins of those traits. That may suggest that ‘animal normativity’ is a gerrymandered functional kind.

psychological capacities. Thus, advocates for animal normativity *should* see themselves as committing to claims about psychological traits and not only behavioral ones.

4.2. *What guides advocates in their theoretical claims about psychological capacities?*

Restricting the scope of the assessment to theory-construction about psychological capacities, I believe that the core features of comparative cognition are not present. In the following subsections I will make that case.

4.2.1. *Advocates and hypothesis-testing*

As mentioned above, constructing functional analyses in comparative cognition requires testing hypotheses usually⁵ through behavioral tests. Advocates claim that there is a specific cognitive capacity called ought thought, but the evidence presented is not precise enough to discard other hypotheses about psychological traits. Crucially, the evidence presented does not exclude the possibility that the creature is acting self-interestedly rather than being aware of what she ought to do. Furthermore, there is no discussion that third-party norm enforcement is a necessary feature of normative cognition, as many researchers claim.

As we mentioned, a piece of methodological advice to see if a creature has a capacity is to apply -or to analyze performance- in the same test that another organism had passed. The advocates' approach does not consider this strategy. Schmidt and Rakoczy (Schmidt and Rakoczy, 2019, 131-134), for example, review the negative experimental evidence that shows that chimpanzees fail to punish as third parties or that apes are not sensitive to fairness in a behavioral version of the ultimatum game paradigm. The absence of discussion of this evidence on the part of advocates seems symptomatic of a disregard for hypothesis-testing.

Besides the lack of discussion of negative evidence, the claim that the kinds of evidence advocates analyze are evidence of ought thought is controversial. Disregarding the operationalization of normative cognition

5. This qualification signals that the relevant contrast is not between experimental behavioral tests and naturalistic observation but between mere description and hypothesis testing (that researchers can also perform in the wild).

for humans, advocates focus on a conceptual definition and assess whether it is suitable for the animal world⁶. By focusing only on the latter but without a behavioral way to measure it, advocates look for superficial similarities between our and the other animals' "normative" behaviors as evidence for the claim that the same cognitive capacity is at work. However, this approach to the conceptual definition would only be viable by considering the relevant behavioral task. Without that constraint, it is easier to bend what counts as 'normative' and to assume that the similarity found is explained through the same cognitive capacity. The problem with this approach is that the inferential step from similar behavior to similar psychological trait is the hypothesis to be *tested*, not to be assumed. Thus, the evidence does not support a specific claim about cognitive capacities.

In the case of Andrews's strategy to find cognitive prerequisites for ought-thought, the evidence receives a particular treatment as she analyzes the evidence for each cognitive requisite separately. For example, evidence of social learning of group traditions is exhibited in patterns like border patrols by chimpanzees. They display punishment, on the other hand, in inequity aversion and prevention of infanticide. However, Bicchieri's definition was that the behavior analyzed exhibited *all* the cognitive markers of normative cognition. Analyzing each behavior in this way gives the impression that primates meet all cognitive requisites. However, what is needed is a single behavior that presents all of them, not four different behaviors -with distinct phylogenetic origins, if I may add- that each satisfies a prerequisite.

4.2.2. Advocates and comparative thinking

As we mentioned, one of the strategies for advocates was to collect behaviors that look alike. However, the idea behind comparative thinking was that similarities could and should be explained through an evolutionary profile of the creatures compared. This feature also seems to be lacking in the advocates' approach.

6. In addition, there seems to be confusion about the meaning of *operationalization*. Vincent *et al.* say that "the operational definition should not demand more than what we typically regarded in the human case" (Vincent, Ring, and Andrews, 2019, 74). But in the next paragraph, arguing this point, they claim that "if we define friendship in terms of developing and maintaining affiliative social bonds, then it would be an error to deny that chimpanzees have norms of friendship" (Vincent, Ring, and Andrews, 2019, 75). But this is a conceptual definition, not an operational one.

On the one hand, it seems that the inferred psychological capacities are not analogous: there is no specification of socioecological problems that may have given rise to ought thoughts. We can find examples of this kind of reasoning regarding social norms in hominins. Tomasello claims that cooperation needed in group hunting requires intersubjective norms to function (Tomasello, 2016). Sterelny, on the other hand (Sterelny, 2019; 2021), claims that norms are a much more recent artifact, necessary only when cooperation becomes much more complex -i.e., delayed returns mutualism: I fix your bow today and expect a part of your hunt in the near future. The question for advocates is what kind of socioecological problem was or is present in the lives of chimpanzees for ought thoughts to emerge. A useful speculative tool in this context is thinking about contrast classes: what was life like when there was no normative cognition? (Currie, 2021, 3). This style of reasoning is not found in advocates. However, an in-principle difficulty for advocates in this sense derives from the diversity of behaviors that show the capacity. Cooperative hunting and respect for social hierarchies seem to solve two different needs for a community -the multiple evolutionary benefits of social stability versus the specific benefits of getting resources. The standards enforced by patrolling borders, furthermore, “likely reflects [...] an adaptive drive to protect scarce resources” (Schlingloff and Moore, 2017, 386). If analogical reasoning is a way of guiding theory regarding psychological capacities, these capacities may be very different -they respond to different needs- and it is not clear why they need to be normative.

Regarding homological reasoning, it is fair to say that it is hard to track cognitive homologies, given that scientists identify most homologies through morphological structure, and psychological capacities do not leave fossil records. However, two traits may share a phylogenetic origin, and that process may allow the inference that they are similar. Advocates do not seem to pay attention to this feature, so they include normative behaviors that seem phylogenetically ancient -like respect for social hierarchy- with more recent acquisitions -social learning of group traditions. Wolves and many mammals whose survival depends on social stability exhibit respect for order. However, the mechanisms underlying these behaviors may be hardwired in a way that patrolling borders and cooperative hunting are not. Since all of these behaviors seem to come at distinct phylogenetic periods, treating them as an exercise in the same cognitive capacity seems far-fetched.

The lack of evolutionary considerations shows again in Andrews’s approach to applying a conceptual definition from humans to the animal world. Andrews modifies Bicchieri’s view, so it does not require

mind-reading abilities. In this modification, we can also see the lack of comparative thinking. There is no justification regarding how there could be one without the other. All we get is

we can ask whether there are human practices that look like social norms but lack the mindreading aspect. (Andrews, 2020, 38)

The inference here seems to be that the same cognitive capacity may be present in a simple or sophisticated manner in animals and humans -with or without mind-reading abilities. What I take to be the problem here is that since this inference is not rooted in comparative thinking, there are no grounds for the speculation that there may be ought thought without mindreading. Some critics claim that such conceptual moves around normativity amount to changing the subject regarding the target phenomena (Schlingloff and Moore, 2017, 381). That may be true, but the deeper problem is that speculation becomes too unconstrained, given that what is simpler and more complex is decided on not-comparative grounds.

4.2.3. Advocates and heuristics

One of the purposes of theory construction in comparative cognition is to provide a basis for future research. For that to work, the idea of researchers in comparative cognition is that their hypotheses have heuristic value only if they are claims of necessity about phenomena. Thus, as long as they have empirical content, these claims allow us to make predictions. Povinelli's interpretation of Gallup's mirror test presented in the previous section is telling in that regard. In the specific case of normative cognition in human infants, it seems to come together developmentally with the capacity for over-imitation (Schmidt and Rakoczy, 2019, 128).

What do we find in animal normativity advocates? Instead of necessity, there is a focus on possibility in the following sense: moral agency does not require capacities for second-order reflection while following social rules does not require mind-reading abilities. The strategy is to identify a demanding characterization of human normative cognition and then offer a more deflated definition in which the phenomenon of interest is still recognizable -based on superficial similarities, as mentioned above. However, how does negating a necessity claim contribute to theory construction? What do we expect to find? The idea may be that normative capacities are not only human but that, in itself, is not of heuristic value.

Theoretical claims with potential heuristic value are not absent from the advocates' approach, although they are not fully examined. Andrews makes specific claims about ought thought as a cognitive mode that allows a creature to think of possible -as opposed to actual- situations. It is a way of thinking about possible states of affairs and reasoning with these alternatives. This cognitive mode would comprise abilities for counterfactual reasoning, prospective planning, and normative cognition. We can expect that performance in behavioral tests for counterfactual reasoning would correlate well with performance in tests for the other abilities⁷.

Theory-construction about animal normativity does not seem to provide a specific research program and thus it does not count as providing heuristic value. If, as de Waal holds, "interpretative labels are only as good as the hypothesis that they generate" (de Waal, 1991, 301), then, it seems that animal normativity, as an interpretative label, is not very good at all.

5. CONCLUSIONS

In this paper, I have assessed whether advocacy for animal normativity -a position held by Frans de Waal and several philosophers interested in animal minds- constitutes an exercise of theory-construction in comparative cognition. To make this assessment, I first offered a characterization of the claims made by advocates of animal normativity (section 2) and then the core features of theory-construction in comparative cognition (section 3). The overall argument was negative and it proceeded in steps. First, I assessed the scope of the claim: when advocates say that animals exhibit normativity, are they making claims about *behavior* or *cognition*? At that point, I argued that, if advocates want to establish a cognitive continuity between nonhuman animals and us, they should commit to a claim about psychological capacities and not only to a claim about behavioral traits. Second, I assessed whether advocates advanced their claims by focusing on hypothesis-testing. At that point, I argued that the focus was on conceptual but not operational definitions of normative cognition, an attitude that expressed disregard for hypothesis-testing. Third, I considered whether comparative thinking was a style of reasoning that advocates employed and found that they did not take on homological or

7. Remember, however, the absence of behavioral tasks that measure normative cognition and the negative evidence of existing tests mentioned in 4.2.1.

analogical reasoning. In the first case, advocates seem to lump together behaviors that have distant phylogenetic origins. In the second case, advocates do not specify socioecological challenges that may have selected for normative cognition. Finally, I considered if the claims made by advocates had any heuristic value. In this sense, I argued that advocates were more interested in negating necessity claims regarding human normativity than in establishing necessity claims regarding animal normativity. I argued that claims about animal normativity need the latter. Thus, advocates appear not to be offering hypotheses with heuristic value. The overall argument is that animal normativity as a functional kind is not an exercise of theory construction in comparative cognition.

In this sense, my assessment regarding the functional kind of normativity is consistent with the verdict of researchers that claim that the absence of third-party punishment is a strong indicator of the difference between animals and us (Schmidt and Rakoczy, 2019, 131-134, Sterelny, 2019). Even researchers that are more sympathetic to the idea of continuities between animals and humans are careful to point out that we only find *precursors* of social norms in *specific* behavioral domains rather than stating that animals exhibit normativity (Luncz et al., 2018, 69; van Schaik, 2012, R403). However, I would like to point out two caveats concerning the implications of my criticisms. First, some of my objections to the advocates' position have to do with a lack of evidence that would support the idea that animals' behaviors are normative, mainly because the evidence provided does not discard alternative hypotheses. It is crucial to notice that, as the saying goes, absence of evidence is not evidence of absence and that further empirical research may provide further behavioral tests, evolutionary considerations or claims with heuristic value that makes the advocates' position more plausible. On the other hand, my objections to the advocates' strategy focus on their attempts to establish the general idea that "normativity extends beyond the boundaries of the human species" (Monsó and Andrews, 2022, 209). However, this is a criticism about a particular functional kind that seems to be too vague –it comprises too many behaviors- to specify a single cognitive capacity that shows that normative cognition is also present in nonhuman animals. Advocates could focus on more specific functional kinds to put forward more plausible hypotheses about cognitive continuities.

As a final consideration, I believe the approach followed in this paper may be helpful in assessing other claims about animals and their similarities with humans. The advantages of the view presented here are that it establishes clear guidelines for theory construction -or core features- in

comparative cognition. These guidelines are not advanced to get philosophers to design behavioral tests of normative cognition -or any other psychological capacity. In that sense, my critical remarks do not intend to compel philosophers to start doing experimental science (contrast with Allen, 2014). But they do suggest that they should consider that evidence more seriously. The approach also emphasizes evolutionary thinking as an aid for theory construction, a style of speculative theorizing available to philosophers.

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