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# Animal Social Norms

How does Kristin Andrews' account of naïve normativity  
fit her data?

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Monkey reaching for the moon, Zen Japanese painting

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## ABSTRACT

Kristin Andrews' theory of *naïve normativity* invites us to take a fresh look at normative behaviour. She proposes a minimal definition of social norms and underlying cognitive abilities, which does not rely on mind-reading and may be applied to humans and animals alike. The first part of this paper explains her theory. The second part addresses the question on how to assess supporting evidence. In the third part, evidence that Andrews puts forward in support of specific candidate *animal social norms*, is reviewed. Inconsistent or irrelevant evidence is laid aside; the remainder is reviewed based on the criteria established in part two. Some candidate *animal social norms* pass. Most do not. The paper concludes with recommendations for further research.

## 1 ANDREWS' THEORY OF NAÏVE NORMATIVITY

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Kristin Andrews argues that we should refocus the lens<sup>1</sup> through which we look at moral cognition. Our current lens presupposes that morality is universal across human cultures but is specific to the human species. Because we look through this lens, we do not see reality. We find little to no evidence for moral behaviour in animals. We may also overlook evidence for the evolution of human morality.

Andrews' proposal for this 'refocusing of the lens' has several parts. First, to stop looking at the wrong thing (human morality); second, to remove incorrect lenses (mind-reading and belief-attribution), third, to insert the right lens (*animal social norms*) and finally, to start looking at the right thing (the building blocks of normative and social cognition, what she calls *naïve normativity*).

### 1.1 UNPACKING MORALITY

Human morality is sophisticated and complex. To understand it, Andrews says, we need to look at its origins, examine a simpler version. By analogy: if we want to understand language, we don't start by examining lyric poetry or hip-hop.

Whatever definition you have of morality, normative cognition is a necessary (though insufficient) condition. Andrews defines *normative cognition* as a "kind of ought-thought"<sup>2</sup>. Normative cognition is further defined as a "cognitive modality much like mental time travel or counterfactual thinking"<sup>3</sup>. It means thinking about what ought to be the case, under various circumstances, which requires more cognitive effort than just thinking about the current situation.

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<sup>1</sup> Andrews, 2018, p. 16

<sup>2</sup> Andrews, forthcoming, p. 2

<sup>3</sup> Vincent, Ring, & Andrews, 2018, p. 58

Also, 'normative' does not necessarily mean 'moral'. Andrews' view is broader. For example: conforming to a fashion ideal is a kind of normative thought. This should not be taken to mean that individual preferences automatically become normative. For a preference to be normative, it should also be related to some value held by the community. Hence, normative practices are defined by "patterns of behaviour shared by members of a community that demonstrate they value certain ways of doing things as opposed to others"<sup>4</sup>.

The idea behind this broad definition of normativity, dubbed *naïve normativity*, is that traditional worries about moral development and evolution need not concern us. It does not matter whether a norm is self- or other-directed, where the motivation to conform comes from, or whether the norm is cultural or biological: "Norms, regardless of the content, are all action-guiding, aspirational ideals that individuals work toward, whether they are the norms of how best to open a coconut or the norms of how to be a reliable friend."<sup>5</sup>

Andrews does not give a definition of 'value' beyond that it is a necessary (though insufficient) condition for normative thought that must be demonstrated by the community holding the value. She does not want to get into "the quagmire that is metaethics"<sup>6</sup>; instead, she means to free normativity from the many preconceptions surrounding human ethics, thereby making room for the study of normative practices in non-human communities.

## 1.2 NORMATIVE COGNITION DOES NOT REQUIRE MIND-READING

Andrews has written extensively on what she calls the folk-psychological spiral<sup>7</sup>. It is impossible to do her justice in this paper, so I will confine myself to the main points of her argument. First, a brief sketch of the historical context.

The term *folk psychology* refers to our common-sense ability to see others as minded agents. The term was first used in English around 1900<sup>8</sup>, and became widespread in philosophy of mind during the 1980s, acquiring several distinct senses<sup>9</sup> in the process. On the common view, that of *mind-reading*, we attribute propositional attitudes such as beliefs and desires to other people. In the theory-theory variant, it is assumed that these propositional attitudes require representation, which is best done in language; and that therefore mind-reading and folk psychology is something that only humans can do<sup>10</sup>. In the simulation

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<sup>4</sup> Vincent et al., 2018, p. 59

<sup>5</sup> Vincent et al., 2018, p. 59

<sup>6</sup> Andrews, 2009, p. 444

<sup>7</sup> Andrews, 2009 ; Andrews, 2012 ; Andrews, 2015b ; Andrews, 2016

<sup>8</sup> Source: <https://books.google.com/ngrams>

<sup>9</sup> I. Ravenscroft, 2019, p. 1

<sup>10</sup> J. Ravenscroft, 2007, p. 109

variant of folk psychology, the understanding of other minds is direct, via a kind of mental simulation: we imagine to be the other person by reusing our own cognitive mechanisms. It is assumed that mental simulation is psychologically real.<sup>11</sup>

In 1978 Premack & Woodruff coined the phrase *theory of mind*, defining it as being able to impute mental states to oneself and to others, in order to predict behaviour<sup>12</sup>. They used this definition in an experiment with a 14-year-old chimpanzee, thereby sparking off a series of ever more refined belief-attribution experiments that extends until today. Most of these experiments have been on infants, as researchers concluded early that apes cannot attribute false beliefs<sup>13</sup>, i.e. do not appreciate that what may be true for you, may not be true for me.

Meanwhile, from 1988 onwards, *mind-reading* became credited with evolutionary gain. According to the *Machiavellian hypothesis of Social intelligence*<sup>14</sup>, being able to mind-read is advantageous in socially complex situations that require competition, cooperation, or coalition. Because humans are thought to be much better at mind-reading than animals, this hypothesis helps to explain the success of our species.

Andrews argues that on both accounts of *folk psychology*, we are left with two questions to answer, namely how do we:

1. attribute mental content to ourselves and others?
2. predict and explain behaviour?

She argues that the answer to the first question is not necessarily an answer to the second. The mechanisms and methods we use to predict others' behaviour need not be the same methods we use to attribute mental states<sup>15</sup>. This will be elaborated on in the description of the fourth leg of her naïve normality hypothesis: Conscious awareness of appropriateness (page 9 onwards).

She further challenges the underlying assumption that beliefs and desires drive our behaviour, on several grounds. Hume and Aristotle notwithstanding, she says, the belief-desire hypothesis is not grounded; it is just an assumption. Nor are our

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<sup>11</sup> Barlassina & Gordon, 2017, pp. 43–50 There are other mindreading accounts: the Intentional Stance theory (Dennett, 1987) and Interactionism (Gallagher 2001)

<sup>12</sup> Premack & Woodruff, 1978, p. 1

<sup>13</sup> Call & Tomasello, 2008

<sup>14</sup> This hypothesis was formulated by Byrne & Whiten in 1988 in response to a description of Frans de Waal's book *Chimpanzee Politics* (1982). Since then, it has been much quoted, elaborated, extended and somewhat revised, but still very much alive. In 2018, the *Journal of Comparative Psychology* issued a special edition on Machiavellian Intelligence. See Hopper, Waal, van der, & Caldwell, 2018

<sup>15</sup> Andrews, 2012, p. 10



mind-reading skills as good as we tend to think. To make matters worse, confirmation-bias decreases accuracy even further<sup>16</sup>.

Her main argument is that recognising or predicting behaviour does not require mind-reading. Not in animals and not in humans. She agrees that we attribute propositional attitudes to others, and that this is an important part of our social fabric. But she says that we do this in order to relieve cognitive dissonance, to explain why an expectation has not been fulfilled, to deal with the social effect of the violation of the norm. In other words, traditional folk-psychology has it backwards. We do not attribute beliefs and desires as causes for behaviour; we do it to justify what has already happened, even inventing false justifications to repair relationships. In this way, the stories we tell each other help to define and refine community norms<sup>17</sup>. Andrews calls this the *normative-regulative view of folk psychology*. It assumes that we are motivated to conform to the same behaviour pattern as our in-group members: their behaviour shapes our behaviour. It also creates expectations about how other group members should behave<sup>18</sup>.

### 1.3 ANIMAL SOCIAL NORMS

Andrews sees normative behaviour as norm-guided behaviour<sup>19</sup>, i.e. norms have a causal role in producing behaviour. Having made clear what norms are not, Andrews now needs a positive account of norms. As a starting point<sup>20</sup>, she takes Christina Bicchieri's definition of norms, then strips it of what she sees as its cognitive overload.

First, she wipes out Bicchieri's distinction between social and descriptive norms, thereby widening the scope of behaviours to which norms can be applied. Her reasoning is that there are norms which must not be violated, without the actors actually being aware of the norm's existence. These norms seem descriptive but at the same time satisfy Bicchieri's requirement for social norms. For instance, cultural norms surround human practices such as greeting, eating, privacy and hygiene. We are usually not aware of such norms until confronted by someone from another culture<sup>21</sup>.

Next, she removes from Bicchieri's account the necessity to attribute mental states to others, as in her view recognising or predicting behaviour does not require mind-reading.

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<sup>16</sup> Andrews, 2018, p. 11, quoting Wilson & LaFleur (1995)

<sup>17</sup> Andrews, 2018, p. 13

<sup>18</sup> Andrews, forthcoming, p. 10

<sup>19</sup> Monsó & Andrews, forthcoming, p. 26

<sup>20</sup> Andrews, forthcoming, p. 4, quoting Bicchieri (2017)

<sup>21</sup> Andrews, forthcoming, p. 6

She then points out that if we are aware of a norm, this does not mean we also understand it. For example, a Machupe man who prepares a traditional corn dish and adds ash because it is customary - without knowing that this combination releases niacin which prevents a fatal disease<sup>22</sup>. So, understanding a norm is not a necessary requirement for expecting others to follow it.

She leaves in the element of free choice, that is, it is up to the individual to follow the norm or not. The resulting account of norms runs as follows<sup>23</sup>:

- a) there is a pattern of behaviour [a rule] demonstrated by community members;
- b) individuals choose to conform to the pattern of behaviour;
- c) individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.

These requirements, which Andrews calls *animal social norms*, are in keeping with her *normative-regulative view of folk psychology*.

## **1.4 THE BUILDING BLOCKS OF NAÏVE NORMATIVITY**

Andrews proposes a set of four interrelated cognitive capacities that underlie both normative and social cognition: identification of agents, sensitivity to in-group/out-group differences, social learning of group traditions, and the conscious awareness of appropriateness. This set she calls *naïve normativity*<sup>24</sup>. Her claim is that it applies both to humans and to animals. For humans, she looks at data from research on infants and young children. For animals, she relies on data from chimpanzees, because this species is relatively well researched. I will describe these four cognitive capabilities below, together with the evidence that Andrews cites for them.

### **1.4.1 Identification of agents**

Andrews defines agents as potential social partners who make goal-directed individual choices. Being able to identify agents, that is, to distinguish agents from non-agents, is a fundamental cognitive ability, without which no social interaction is possible. She regards this as a non-controversial claim for which ample evidence exists from both human and chimpanzee infants<sup>25</sup>.

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<sup>22</sup> Andrews, forthcoming, p. 7, quoting Henrich (2017)

<sup>23</sup> Andrews, forthcoming, p. 8

<sup>24</sup> Andrews, forthcoming, p. 10

<sup>25</sup> Andrews, forthcoming, p. 18, quoting Gergely et al (1995) and Uller (2004)



### 1.4.2 Sensitivity to in-group/out-group differences

Group members must be able to recognise who belongs to one's own group and who does not. Without this ability it would not be possible to conform to the same behaviour as the in-group.

Human infants at three months start to prefer same-race faces, and there is much other evidence of in-group favouritism arising early in human development<sup>26</sup>. Chimpanzees are well known for their dislike of out-group members. They do not only fear and loathe them, but preferably eradicate them completely<sup>27</sup>.

Andrews does not expand<sup>28</sup> on the notion of individual motivation to conform to group behaviour, merely stating this to be part of the *normative-regulative view of folk psychology*. She does offer some evidence that supports the idea of intrinsic motivation: the model for imitation must be relevant. For example, 14-month-old infants will stop over-imitating if the model speaks a foreign language<sup>29</sup>. In diffusion studies, where one chimpanzee from a community is taught a particular behaviour and then sent back (seeded) to the community, it was found that subsequent learning by the other chimpanzees was much improved. In conditions where the role model was not a group member but some piece of technical equipment or anonymous intervention, this did not happen<sup>30</sup>.

### 1.4.3 Social learning of group traditions

If the individual agent is to conform to a recognised behavioural pattern, the behaviour must be learned first. Part of the learning process has to do with finding out when a behaviour pattern is applicable - which situations, roles, emotions are relevant. Once an individual has learned a social behaviour, conditions a) and b) of the *animal social norms* are met. Next, the social behaviour becomes internalised as a social practice, thereby forming the basis for a normative expectation: I can expect that whatever I would do, most others will do. Andrews says nothing about how this internalisation comes about.

The early learning process of infants and children is well documented: they learn culturally transmitted social behaviour almost from birth. Interestingly, around 14 months human infants start to over-imitate, i.e. imitate all elements of

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<sup>26</sup> Andrews, forthcoming, p. 12, quoting Kelly et al (2005), Oakes (2010), Kinzler et al (2007), Xiao et al (2017), Pun et al (2015), Liberman et al (2014), Mahajan & Wynn (2012), Jin & Baillargeon (2017) and Bian et al (2018)

<sup>27</sup> Andrews, forthcoming, p. 19, quoting Nishida (2012)

<sup>28</sup> That is, not explained in any of her articles cited in the bibliography of this paper.

<sup>29</sup> Andrews, forthcoming, p. 14, quoting Buttelman et al (2013)

<sup>30</sup> Andrews, forthcoming, p. 21, quoting Hopper et al (2007, 2008)

demonstrated actions even if they know them to be irrelevant. This is regarded as wanting to conform to the in-group way<sup>31</sup>.

Chimpanzees normally do not over-imitate humans, but this may be because chimpanzees regard the behaviour of unfamiliar humans as irrelevant. However, chimpanzees do imitate familiar humans<sup>32</sup>. Within a chimpanzee group, they prefer to model themselves on high-status individuals, even if the behaviour of a low-ranking chimpanzee is more efficient<sup>33</sup>. This is similar to what humans do. They also adapt their behaviour to conform to group norms: Tai Forest female chimpanzees who migrated to another community gave up their own efficient tools for nut-cracking and started using the less efficient tools of their new community, thereby sacrificing easier access to food<sup>34</sup>.

#### **1.4.4 Conscious awareness of appropriateness**

Being consciously aware of appropriate social behaviour means recognising when a behaviour is obligatory, acceptable, or permitted. This ability is necessary for the fulfilment of condition c) of *animal social norms*. Once a social behaviour has become a normative practice, consciousness awareness of its appropriateness reinforces it. This happens through repetition and through sanctions. Every time the behaviour is displayed when expected, it is reinforced<sup>35</sup>. When the expectation is violated, the transgressor typically incurs a sanction.

##### **1.4.4.1 Awareness**

Awareness of what is 'done' develops early in humans. Preschool children already have such awareness. In pretend play they follow rules that they might not be able to articulate themselves, but they do protest when these rules are violated<sup>36</sup>. Whether chimpanzee children go through a similar development is not clear. The larger problem is that in animals without language it is difficult to distinguish between preferring something for selfish reasons and approving because of a group norm. Similarly, a lack of response may indicate that a norm is routinely violated, or a bystander effect, or it may be due to lack of interest. Andrews stresses that we must not assume that chimpanzees act purely for selfish reasons; there is plenty of evidence<sup>37</sup> suggesting they are capable of empathy, expressed in helping, caring, and consoling behaviour.

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<sup>31</sup> Andrews, forthcoming, p. 13, quoting Meltzoff (1988), Henrich (2017), Tomasello (1999) and Richerson & Boyd (2005)

<sup>32</sup> Andrews, forthcoming, p. 22, quoting Myowa-Yamakoshi & Matsuzawa (2000)

<sup>33</sup> Andrews, forthcoming, p. 21, quoting Kendal (2015)

<sup>34</sup> Andrews, forthcoming, p. 20, quoting Luncz and Boesch (2014)

<sup>35</sup> Andrews, forthcoming, p. 15

<sup>36</sup> Andrews, forthcoming, p. 16, quoting Nucci & Turiel (1978) and Rakoczy et al (2008, 2009)

<sup>37</sup> Andrews, forthcoming, p. 24, quoting Yamamoto et al (2009), Kutsukake & Castles (2004), de Waal (2009) and Fraser et al (2008)

#### ***1.4.4.2 Sanctions***

A sanction is a sanction only when it is associated with violation of a community norm. That makes it difficult to determine whether a behaviour directed at a group member is in fact a sanction.

A sanction may take various forms – from direct to third-party punishment; from protesting or retaliation, to restorative practices such as apologising or explaining, to social punishment such as shunning or even ostracising to violence. The clearest form of sanction is third-party punishment because it implies that the norm is strongly held within the community. This is because third-party punishment requires access to power<sup>38</sup>, i.e. is not available to all group members all the time.

Both humans and chimpanzee use third-party punishment. With chimpanzees, the role of the alpha male is particularly important, as he decides who is a group member and who is not.<sup>39</sup> Both human children and chimpanzees enjoy seeing anti-social actors being punished, even when they do not belong to their in-group.<sup>40</sup> This goes for human adults too: Andrews reminds us of our attraction to watching public executions of criminals. In studies of captive chimpanzees, so far, no evidence for third-party punishment has been found. However, from field research and observational studies there is ample evidence of chimpanzee ‘policing’ and third-party punishment of freeloaders<sup>41</sup>, so Andrews suggests that the lack of experimental data from captive settings may be an experimental artifact, resulting from the lack of group cohesion.

#### ***1.4.4.3 Belief attribution as cultural justification***

Being able to determine the appropriateness of a behaviour supports both the spread of beneficial innovations and supports group cohesion, says Andrews. It provides a means to tolerate inappropriate behaviour<sup>42</sup>. She gives an example of how cooking meat may have become a practice: at first, destroying the meat through fire may have incurred a sanction. Presumably, the violator offered a justification, and the community accepted this after tasting the meat. This acceptance allowed the violator to stay in the community plus it allowed the beneficial practice of cooking meat to become accepted. We generally justify and explain our behaviour when we have violated a norm. Whether or not what we say is true, it allows the other party to feel better, to accept our story so that the relationship does not have to be severed. Put in another way, we resolve the

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<sup>38</sup> Monsó & Andrews, forthcoming, p. 31

<sup>39</sup> Andrews, forthcoming, p. 22, quoting Myowa-Yamakoshi & Matsuzawa (2000)

<sup>40</sup> Andrews, forthcoming, p. 25, quoting Mendes et al (2018)

<sup>41</sup> Andrews, forthcoming, p. 25, quoting de Waal (1982) and Suchak et al (2016)

<sup>42</sup> Andrews, 2018, pp. 13–14

cognitive dissonance that is caused by the violation of the norm, by constructing a causal explanation.

Andrews offers no experimental evidence for this claim for humans, presumably because she regards it as self-evident. The question is, do apes do this too? Do they attribute beliefs, experience cognitive dissonance, and construct causal explanations? Andrews thinks they do, pointing out that apes understand causal reasoning, invent new practices, and learn new behaviours. They can access puzzle boxes and process food. Nut-cracking practices vary across ape communities, varying from the use of rocks and anvils to not at all, indicating they have found different solutions to the same problem. Orangutans released into the wild began to swim and fish, likely learned from observing the humans who cared for them because such behaviours had never before been seen in the wild<sup>43</sup>. Andrews also quotes recent evidence from implicit false-belief tasks based on eye-tracking experiments with 2-year-old human children<sup>44</sup>. When these same experiments are done with chimpanzees, bonobo's, and orangutans, the results show that apes anticipate that others will act according to false beliefs<sup>45</sup>. This is an important finding because before these experiments it was assumed that apes could not attribute false beliefs.

## 2 FINDING EVIDENCE

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Andrews has given us an account of what it is for an animal to have social norms, called *animal social norms* and a set of cognitive capacities required by an individual with *animal social norms*, called *naïve normativity*. We are led to assume that the two go together, i.e. that if a community has *animal social norms*, it is comprised of individuals who are capable of naïve normative behaviour. How to go about collecting evidence? Andrews has quoted a lot of what she calls 'preliminary evidence' which supports the general plausibility of her account. She suggests that we apply her theory to identify and further research candidate *animal social norms*. How to go about this?

### 2.1 FINDING EVIDENCE FOR ANIMAL SOCIAL NORMS

The account of *animal social norms* is formulated in such a way that it describes the behaviour of a group and of individuals within that group. Behaviour can be observed by us, provided we make sure that we observe a group that regards itself as a group – not, for instance, a motley collection of animals in captivity. Even as

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<sup>43</sup> Andrews, 2018, p. 14, quoting Hanus & Call (2011), McGrew et al (1997) and Russon et al (2014)

<sup>44</sup> Southgate, Senju, & Csibra, 2007

<sup>45</sup> Krupenye, Kano, Hirata, Call, & Tomasello, 2016

out-group observers we should be able to tell if a pattern of behaviour is adhered to by all or most community members. This fulfils Andrews' condition a), that there is a pattern of behaviour [a rule] demonstrated by community members.

We have no way of knowing if every group member makes an individual choice to conform. If the behaviour observed varies across the species, there is reason to think that species can generate different behaviour patterns and hence, that there must have been a choice at some point which likely started with an individual. This fulfils condition b), that individuals choose to conform to the pattern of behaviour. We may also find that some individuals do not conform to the general rule. If we think that this is because they have made an individual choice not to conform, this will also fulfil condition b). Another situation would be when a rule is adhered to only if other (specific) group members are present, or only under a certain condition. The fact that the individual member fluctuates between conforming and not conforming suggests individual choice.

Andrews' condition c), that individuals expect [an attitude] that community members will also conform and will sanction those who do not conform, consists of two parts: (i) expectation of conformity and (ii) sanctioning.

- i. An expectation is a mental state, not a cognitive ability or a behaviour. In humans, surprise often shows on the face and in the posture. Andrews suggests that we look for surprise reactions in apes by examining facial expressions using a codified index<sup>46</sup>. However, we might do better to leave operationalisation to the cognitive psychologists, as establishing salient indicators for surprise is not entirely straightforward<sup>47</sup>.
- ii. Sanctioning is behaviour, but only recognisable as such in connection to the violation of a norm. Andrews suggests that we look for candidate social norms first and then look for evidence of sanctioning behaviour. To that end she has selected some candidate norms from an earlier research paper she co-authored.

## **2.2 FINDING EVIDENCE FOR NAÏVE NORMATIVITY**

*Naïve normativity* consists of four cognitive capacities: identification of agents, sensitivity to in-group/out-group differences, social learning of group traditions, and the conscious awareness of appropriateness.

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<sup>46</sup> Andrews, 2018, pp. 14–15, quoting Parr (2003)

<sup>47</sup> Reisenzein, Horstmann, & Schützwohl, 2019

### **2.2.1 Agent-identification, in-outgroup sensitivity and social learning**

Andrews has cited general evidence that apes, chimpanzees, are capable of *identification of agents*, have *sensitivity to in-group/out-group differences*, and are capable of *social learning of group traditions*. On this assumption, there is no need to look for evidence in specific situations, as the cognitive abilities are supposed to be generic for the species, that is, apes and humans.

Of interest is the issue of motivation. Andrews' assumes that apes are motivated to do what the group does, as do humans. This is not a controversial point – we can see it all around us. But what **is** it? Where does it come from? Is it hard-wired? Learned? There is some evidence that reinforcement through oxytocin release plays an important part, and not just in humans, but it not yet clear how<sup>48</sup>.

In evolutionary terms, the cognitive abilities for selective social learning and imitation are important, because these are “gifts that go on giving”<sup>49</sup>, allowing for the inheritance of more and more skills. Heyes offers a framework<sup>50</sup> in which the relation of different types of learning may be understood. The superordinate category is learning, encoding for long term storage of information acquired through experience. If the learning is assisted by another agent, it is called ‘social learning’. Withing ‘social learning’, there is a subset called ‘cultural learning’ specialised for cultural evolution, for instance, by ensuring the fidelity with which information is passed from one agent to the next. Imitation is an example of cultural learning. With this framework, she says, three questions need tackling: (i) What exactly, at the cognitive level, is the difference between cultural learning and social learning? (ii) What makes cultural learning, rather than just social learning, an effective mechanism for cultural inheritance? And (iii) how has generic and cultural evolution shaped or contributed to the development of cultural learning? <sup>51</sup> Answering these questions will require interdisciplinary research, but for current purposes the distinction between individual, social and cultural learning may prove useful even if we do not yet know what cognitive mechanisms are behind these behaviours.

### **2.2.2 Conscious awareness of appropriateness**

This category of is a mixed kettle of fish and needs further clarification. Here, I make a preliminary attempt at sorting mental states, behaviour, emotions, and

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<sup>48</sup> Heyes, 2018, pp. 57–60; also see Monsó & Andrews, forthcoming, p. 14 for the effects in rats.

NB: some particularly unpleasant experimental evidence

<sup>49</sup> Heyes, 2018, p. 3

<sup>50</sup> Heyes, 2018, pp. 85–87

<sup>51</sup> Heyes, 2018, p. 88

cognitive abilities, for the purpose of extracting conditions against which literature on normative behaviour may be reviewed.

As described earlier, appropriate behaviour becomes a general norm through repetition and sanction. This is straightforward reinforcement learning, which is also involved in *social learning of group norms*, i.e. not a specific cognitive ability, but one that is found across the animal kingdom. The associated behaviour is part of the *animal social norms*, condition c).

*Conscious awareness of appropriateness* is in itself a mental state, not a cognition or a behaviour. It is not clear what cognitive ability Andrews thinks is relevant here. She lists: violation of expectation, cognitive dissonance, causal understanding, and causal explanation construction.

### ***2.2.2.1 Violation of expectation***

This is not a cognitive ability but a mental state connected to Andrews' assumption that attribution of mental states is connected to justification of non-normative behaviour (rather than its prediction). The implication is that apes can compare mental states (the situation as it is, and as it is expected) and attach significance to the result which would cause them to act. This is a cognitive ability, a form of mentalising.

### ***2.2.2.2 Cognitive dissonance***

Experience of cognitive dissonance would presumably cause a negative emotion which then becomes the motivation to "do something about it". Possibly this negative emotional reaction is even stronger in chimpanzees than in humans, because of our higher social tolerance – we humans seem to have domesticated ourselves through lowering androgen activity (as is the case with bonobos)<sup>52</sup>. So, we should watch out for chimpanzee behaviour expressing negative emotions because it might indicate a social norm is being violated. It would also be interesting to see what the chimpanzee does to relieve the negative emotion – is such behaviour related to the norm violator or is, say, grooming or sex or food also fine? Also, to see if norm violators do anything to relieve the tension. Assuming the norm violator is conscious of having overstepped the mark, does he express any emotion? Fear, shame? Do chimpanzees apologise? We know they are capable of deception. Do they deceive for normative reasons?

### ***2.2.2.3 Causal reasoning***

This is something some apes sometimes do amazingly well. For instance, the floating peanut experiment, where – under the right conditions – chimpanzees can get a peanut out of a tube by adding water<sup>53</sup>. Andrews gives another example on

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<sup>52</sup> Heyes, 2018, p. 55, quoting Cieri et al (2014), Wobber et al (2013) and Wilkins et al (2014)

<sup>53</sup> Ebel, Schmelz, Herrmann, & Call, 2019



her blog<sup>54</sup>: a delightful story about monkeys cooperating with the local human community to steal from tourists, she herself a victim of this practice. The monkeys offer their stolen goods to the locals and get food in return – quite like a modern version of *Oliver Twist* in the employment of Fagin. But what cognitive mechanisms are involved? Andrews refers to a paper by Joseph Call, but this does not help us much: he distinguishes between causal knowledge, inferential reasoning, and causal inferencing, and shows how these cognitive abilities need much more research<sup>55</sup>.

#### ***2.2.2.4 Causal explanation construction***

Andrews' account of mind-reading as justification of norm violations requires apes, like humans, to go in search of **alternative** causal explanations which allows them to sanction or to tolerate the inappropriate behaviour. To do this, apes must be able to attribute beliefs, and moreover, must be able to compare these different beliefs. She has cited evidence from implicit false-belief experiments to show that apes can attribute false beliefs. However, the jury is out on what the results from these experiments mean. Tomasello says that "apes simply track the knowledge states of the other – full stop"<sup>56</sup>. They do not compare this (false) knowledge state against their own.

Cecelia Heyes has a different interpretation. She says that the actor in these implicit false-beliefs tasks is *submentalising*<sup>57</sup>: it only looks like thinking about mental states, but this is not actually the case. Behaviour interpreted as indicative of mind-reading could in fact stem from contextual cues, such as the colour block of a shirt and its relative movement in time and space; this is what is happening in these experiments. Andrews refers to this claim as arising from 'the logical problem' that occurs when trying to decide between a behaviourist and mind-reading view of experimental results<sup>58</sup>. To put it another way, in the behaviourist view it is possible to anticipate what another agent will do without knowing why or even without recognising the other as an agent.

Heyes' project with submentalising is different from Andrews' project with mind-reading. Heyes means to overturn the notion of two separate cognitive systems for mentalising<sup>59</sup>: one early developing, automatic, dedicated fast-and-efficient system-1 for implicit mentalising, and another, later developing, controlled, slow-and-flexible system-2 for explicit mentalising. Her statement is that contextual

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<sup>54</sup> Andrews, 2019

<sup>55</sup> Call, 2010

<sup>56</sup> Tomasello, 2019, p. 72

<sup>57</sup> Heyes, 2014, p. 132

<sup>58</sup> Andrews, 2015a, p. 145, quoting Hurley & Nudds (2006b)

<sup>59</sup> Heyes prefers the term 'mentalising' to 'mind-reading'; I have followed her use of that term when discussing her views.

cues are processed by a generic cognitive capacity that is not specific to thinking or to language. Heyes' position is that most of the time apes and humans do not need to mentalise: "unless one needs to discuss behaviour, or to catch a Hollywood spy, submentalising may be the smart option"<sup>60</sup>. In Heyes' view, mentalising is culturally inherited. It is not an inherited cognitive capacity; we learn it through social interaction just as we learn to read, only earlier<sup>61</sup>. If Heyes is right, then any mind-reading/mentalising ability that future research may find to be present in apes that is not due to submentalising, would be culturally inherited too, just as she supposes it to be in humans.

Andrews does not discuss this possibility, but she attacks Heyes' submentalising hypothesis on the grounds that "it would have to offer alternative explanations for chimpanzee affiliative relationships, emotion recognition, and the ability to discriminate intentional from accidental behaviour"<sup>62</sup>. Unfortunately, she misreads Heyes on this point. Heyes' argument with the implicit false-beliefs results is with the experimental design, not with the mental abilities of apes themselves. Heyes offers multiple suggestions for improvement of these experiments<sup>63</sup>, but she is open to the idea that nonhuman apes could learn to mentalise from conspecifics and/or humans. The main challenge would be to think of non-linguistic ways in which apes could acquire mental state concepts from others<sup>64</sup>. If such evidence could be found, it would provide strong support for Andrews' idea of *conscious awareness of appropriateness*.

## 2.3 HOW TO FIND EVIDENCE: TAKING STOCK

The most important conclusion to draw at this stage, is that not finding evidence is not indicative of anything at all. We may be looking in the wrong place, at the wrong thing, at the wrong time and under the wrong conditions; or any combination of these at once. Interpreting evidence of what we think goes on inside the animal is tricky. In *Philosophia*, we have no way of knowing whether a presumed cognitive ability is supported by one or more mechanisms or modules; and whether these mechanisms or modules are, for instance, material entities or processes; interrelated or solitary, genetically or culturally acquired. We also do not know what constitutes mental states or emotions, or how to distinguish between them. Evidence has to be obtained the other way around: from a model through which the expression or presence of a cognitive ability, mental state, or emotion can be predicted.

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<sup>60</sup> Heyes, 2017, p. 2

<sup>61</sup> Heyes, 2018, p. 147

<sup>62</sup> Andrews, 2018, p. 11

<sup>63</sup> Heyes, 2014, pp. 134–140

<sup>64</sup> C. Heyes, personal communication, 29 December 2019

Looking for behavioural evidence may be fruitful. If we observe regularities and can place these within a consistent philosophical framework, this may then become a basis for further interdisciplinary research, prioritising and structuring future experiments. The tables below summarise what we may look for, based on the description of Andrews' theory so far.

Animal social norms	Observable behaviour	Associated naïve normative ability
pattern of behaviour [a rule] demonstrated by community members	all or most members of the group show this behaviour	<ul style="list-style-type: none"> <li>• identification of agents</li> <li>• sensitivity to in-group/out-group differences</li> <li>• social learning of group traditions</li> </ul>
individuals choose to conform to the pattern of behaviour	some members of the group do not show this behaviour	
	(some) group members sometimes do not show this behaviour	
	some groups within the species do not show this behaviour	<ul style="list-style-type: none"> <li>• conscious awareness of appropriateness</li> </ul>
individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.	Direct punishment of norm violator by affected group member	
	Third party punishment of norm violator by group or leader	

*Table 1 Finding evidence for animal social norms*

Naïve normativity	Observable behaviour	Associated inner state/ability/module/mechanism/process <sup>65</sup>
identification of agents	None	<ul style="list-style-type: none"> <li>recognition of minded individuals</li> </ul>
sensitivity to in-group/out-group differences	Rejection (or worse) of out-group members	<ul style="list-style-type: none"> <li>discrimination between in- and out-group members</li> </ul>
social learning of group traditions	Individual group members demonstrate behaviour, teach, or correct group members	<ul style="list-style-type: none"> <li>causal reasoning</li> <li>social/cultural learning</li> </ul>
	Individual group members adopt behaviour	<ul style="list-style-type: none"> <li>intrinsic motivation to conform</li> <li>free will</li> <li>understanding of appropriate conditions for behaviour</li> <li>social/cultural learning</li> </ul>
	Individual members (over)imitate	
conscious awareness of appropriateness	guilty or apologetic behaviour by violator	<ul style="list-style-type: none"> <li>cognitive dissonance</li> <li>mind-reading</li> </ul>
	positive emotion after or during sanctioning of the violator	<ul style="list-style-type: none"> <li>emotional state, caused by resolving cognitive dissonance</li> </ul>
	negative emotion to inappropriate behaviour	<ul style="list-style-type: none"> <li>emotional state, caused by cognitive dissonance</li> </ul>
	Attempt to hide inappropriate behaviour by violator	<ul style="list-style-type: none"> <li>causal reasoning</li> <li>mind-reading</li> </ul>
	Display of explanation-seeking upon noticing inappropriate behaviour	<ul style="list-style-type: none"> <li>causal reasoning</li> <li>motivation to resolve cognitive dissonance</li> <li>mind-reading</li> <li>explanation construction</li> </ul>

*Table 2 Finding evidence for naïve normativity*

## 2.4 HOW TO DESCRIBE BEHAVIOURS

Andrews has stripped<sup>66</sup> Bicchieri's theory of norms of some fundamental concepts: belief attribution and the distinction between descriptive and social norms. Bicchieri offers a diagnostic framework<sup>67</sup> for identifying collective behaviours, but its application is dependent on these concepts, so we unfortunately cannot use it. From her entry in the Stanford Encyclopedia of Philosophy<sup>68</sup> it appears that there is also no agreed upon format to describe behavioural norms, or rules, as she calls refers to them. So, let's take a leaf from another philosophical discipline, hermeneutics, and use Aristotle's elements of

<sup>65</sup> The relative merits of these concepts are disputed within cognitive science and the emerging field of philosophy of psychology. Here, they are named as a group to avoid the unintended taking of sides in that debate.

<sup>66</sup> See: Animal social norms on page 5 of this paper

<sup>67</sup> Cristina Bicchieri, 2017, pp. 58–60

<sup>68</sup> Christina Bicchieri, Sontuoso, & Muldoon, 2018

circumstance<sup>69</sup> in its modern form (5 Ws + H) by asking the questions: who, what, when, where, why and how; and use the answers to gather information about candidate *animals social norms*. Because belief-attribution is not a part of Andrews' proposal, the "why" category will be used to note relevant information about the behaviour, such as cost to self or presumed evolutionary gain.

### 3 EVALUATING CANDIDATE SOCIAL NORMS

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Andrews suggests that we look at 'candidate animal social norms' in chimpanzees, defined as behavioural patterns that satisfy condition a) en b) of her proposed *animal social norms*<sup>70</sup>, corresponding with the first two rows of 'Table 1 Finding evidence for animal social norms' on page 17.

#### 3.1 ANDREWS' PROPOSAL FOR CANDIDATE ANIMAL SOCIAL NORMS

The norms she proposes in a forthcoming paper on *naïve normativity* are largely a subset of norms proposed for chimpanzees by Vincent, Ring and Andrews (2018)<sup>71</sup>. She does not explain why she has chosen to include these specific norms or why she has renamed some, or why she has dropped the original subcategories. In a subsequent paper by Monsó & Andrews (forthcoming) the selection is changed yet again.

In an attempt to get a better grip on her proposal, four tables have been constructed. In the first, Andrews' selection is shown in relation to the original Vincent et al. (2018) proposal: 10 out of the original 49 chimpanzee norms. See 'Table 3 Vincent et al. (2018) versus Andrews (2020) norms' on page 20. These 10 selected norms are also listed separately. See 'Table 4 Vincent et al. (2018) rebranded selection in Andrews (2020)' on page 21.

The next table lists the norms newly proposed by Andrews (forthcoming). See 'Table 5 Andrews (2020) New norms' on page 22. The last table lists new norms proposed by Monsó & Andrews (forthcoming). See 'Table 6 Monsó & Andrews (2020) Additions, Chimpanzees only', page 23.

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<sup>69</sup> "Therefore it is not a pointless endeavour to divide these circumstances by kind and number:(1) the who, (2) the what, (3) around what place or (4) in which time something happens, and sometimes (5) with what, such as an instrument, (6) for the sake of what, such as saving a life, and (7) the how, such as gently or violently". Translated by Sloan, 2010. The modern version (5W+H) is was popularised by Kipling, 1912: "I keep six honest serving-men (They taught me all I knew). Their names are What and Why and When. And How and Where and Who."

<sup>70</sup> Andrews, forthcoming, pp. 27–28

<sup>71</sup> Vincent et al., 2018, pp. 63–66

<div>Andrews (2020) norms</div> <div>Vincent et al. (2018) norms</div>	Consolation	Cooperation	Food	Helping	Inequity avoidance	Infanticide avoidance	In-group preference	Not included	Total
Care									
• Caring and consolation	1							1	2
• Emotion recognition								1	1
• Response to loss (grief)								2	2
• Targeted helping/hurting				1				5	6
Obedience									
• Authority and subversion								1	1
• Punishment								2	2
• Teaching and obedience								4	4
Reciprocity									
• Direct reciprocity, cooperation, mutualism, and proportionality		1						8	9
• Fairness and cheating					1			2	3
• Preference for individuals; discrimination								5	5
Social responsibility									
• Aversion and protesting					1	1		1	3
• Distribution of labour based on		1							1
• Indirect reciprocity; cooperation for the benefit of the group				1					1
• Loyalty/betrayal			1					1	2
Solidarity									
• Group identity							1	2	3
• Liberty/oppression								2	2
• Sanctity/degradation								1	1
• Self-sacrifice								1	1
Totals	1	2	1	2	2	1	1	39	49

Table 3 Vincent et al. (2018) versus Andrews (2020) norms

The table below shows the 10 norms Andrews' has selected from the Vincent et al. (2018) article:

Vincent et al. (2018) norms 'rebranded' by Andrews (2020)	Behaviour	Reference, see: 'Biography secondary sources'
Consolation	Console those who lose fights and reconcile after fights.	De Waal & van Roosmalen, 1979
		Kutsukake & Castles 2004
Cooperation	Cooperatively hunt monkeys in groups of four after years of training.	Boesch, 1994
		Hirata & Fuwa, 2007
	Coordinate rope pulling to access food.	Crawford, 1937 <sup>72</sup>
Food	Trust friends but not non-friends to share food.	Engelmann & Herrmann, 2016
Helping	Break hunting snares, thereby protecting group members.	Ohashi & Matsuzawa, 2011
	Males and dominants aid females and youth in road crossing.	Hockings, Anderson & Matsuzawa, 2006
Inequity avoidance	In an ultimatum game, make more equitable divisions after partner protests.	Proctor, Williamson, de Waal, & Brosnan, 2013
	Refuse to participate in tasks upon witnessing another receiving a higher-valued reward.	Brosnan, Schiff & de Waal, 2005
		Brosnan, Talbot, Ahlgren, Lambeth & Schapiro, 2010
Infanticide avoidance	Protest infanticide.	von Rohr, van Schaik, Kissling & Burkart, 2015
		von Rohr et al., 2012
In-group preference	Patrol boundaries between chimpanzee communities, sometimes invading and killing adult males and infants and stealing females.	Watts & Mitani, 2001
		Watts, Muller, Amsler, Mbabazi & Mitani, 2006

Table 4 Vincent et al. (2018) rebranded selection in Andrews (2020)

Andrews also proposes new norms which are **not** mentioned in the Vincent et al. (2018) article:

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<sup>72</sup> See: 'Biography secondary sources' on page 28. The article was published in 1938 (not 1937). To date, it has been quoted 332 times, according to [Google Scholar](#). However, recently it cannot have been studied often. It is not available online or secondhand. There are only two German universities with the hardcopy according to [World Cat](#), and only one of those has a record for this publication. Similarly, the reprint by Kraus in 1970 is only available as a hardcopy in four German universities according to [World Cat](#). Three report the reprint as available.



Andrews (2020) new norms	Behaviour	Reference, see: 'Biography secondary sources'
Arbitrary conventions	A female chimpanzee started wearing a straw-like blade of grass in her ear, and other chimpanzees began to do the same.	van Leeuwen, Cronin & Haun, 2014
	Chimpanzees prefer to open a puzzle box in the way demonstrated by higher-ranking group members	Horner, Whiten, Flynn, & de Waal, 2006
Copulation rules	Juvenile chimpanzee males who venture too close to an oestrus female risk being attacked by adult males.	de Waal, 2014
Highly respected elders	Elderly males have a special status in the community, even though they are often low ranking. Group members defer to elders when deciding which direction to travel, share meat with elders, and fight over who gets to groom an elder.	Nishida, 2012 <sup>73</sup>
Immigrant conformity	Immigrant chimpanzees modify their tool usage to conform to the practices of their new community, even though the adopted practice is less functional.	Luncz & Boesch, 2014
		Luncz, Mundry, & Boesch, 2012
Treatment of infants	Chimpanzee infants enjoy permissive parenting for the first years of life and are not punished.	de Waal, 2014
Weaning	Weaning begins around four years of age and can last for more than a year. Weanlings manipulate their mother into giving them access to milk by engaging in dangerous behaviour, such as approaching older males or human observers.	Nishida, 2012

Table 5 Andrews (2020) New norms

The subsequent Monsó & Andrews (forthcoming) paper<sup>74</sup> includes all previously suggested candidate *animal social norms*, except for two new norms: 'weaning' and 'respect for elderly'. These are dropped, again without explanation. A new norm 'mourning' is added. This norm was also present as sub-norm of care in the Vincent et al. (2018) but with different citations. There is no description of the corresponding behaviour; same for 'helping'<sup>75</sup>.

<sup>73</sup> This is a book of 357 pages. There is no specific page reference.

<sup>74</sup> Monsó & Andrews, forthcoming, pp. 32–38. This paper contains many more examples of animal social norms, some relating specifically to chimpanzees, some to other apes, and additionally to many other animal species.

<sup>75</sup> The citations for the norm categories 'helping' and 'morning' for chimpanzees have been extracted from the citations for the larger group of 'great apes' – see Monsó & Andrews, forthcoming, p. 64. Unfortunately, there is no description of relevant behaviour.

Monsó & Andrews (2020) new norms	Behaviour	Reference, see: 'Biography secondary sources'
Consolation	Chimpanzees engage in higher levels of affiliation with a social partner after a conflict. They console those who loose fights, reconcile after fights, and facilitate reconciliation between fighting parties.	de Waal, 2009 <sup>76</sup>
Food	Withholding food calls to monopolise the food resource has been observed. Violators of food call practices may be sanctioned by group members.	Hauser & Wrangham, 1987 <sup>77</sup>
Helping	Not specified	Yamamoto, Humle, & Tanaka, 2009
		Matsumoto, Itoh, Inoue, & Nakamura, 2016
		Warneken, Hare, Melis, Hanus, & Tomasello, 2007
		Warneken & Tomasello, 2006
Mourning	Not specified	Hosaka, Matsumoto-Oda, Huffman, & Kawanaka, 2000 <sup>78</sup>
		Biro et al., 2010
		Anderson, Gillies, & Lock, 2010
		van Leeuwen, Mulenga, Bodamer, & Cronin, 2016

Table 6 Monsó & Andrews (2020) Additions, Chimpanzees only

### 3.2 RE-SELECTING CANDIDATE ANIMAL SOCIAL NORMS

From the previous paragraph it should be evident that Andrews' proposal for candidate *animal social norms*, is somewhat cursory. In the course of three articles, she changes her mind as to what behaviours are the most promising candidates, what they should be called, and what research supports them. Some research articles she quotes are unavailable or do not support the claim she makes<sup>79</sup>. To make progress, let's find the common denominator of her proposal for *animal social norms* across her three articles examined here.

<sup>76</sup> This is a book of 265 pages. There is no specific page reference.

<sup>77</sup> There is no mention of sanction in this article.

<sup>78</sup> See: 'Biography secondary sources' on page 28. This article is not available in English, only in Japanese. There is an abstract in English.

<sup>79</sup> See footnotes: 72, 73, 75, 76, 78, 78. This information emerged only as a result of crosschecking Andrews' paper on *naïve normativity* with her previous and the next article; and through compiling a biography of secondary references; not all research that Andrews refers to, has been checked.

The Monsó & Andrews (forthcoming) article contains no usable new information on chimpanzee norms<sup>80</sup>. However, the omission of the proposed norms for ‘highly respected elders’ and ‘weaning’ suggests that Andrews does not currently regard these norms as promising. So, these can be dropped.

The Vincent, Ring and Andrews (2018) article contains many norms and supporting evidence not re-selected<sup>81</sup> by Andrews (forthcoming) as candidate *animal social norms*. So, let’s drop these too.

We are now left with the candidate norms proposed in ‘Table 4 Vincent et al. (2018) rebranded selection in Andrews (2020)’ on page 21 and those proposed in ‘Table 5 Andrews (2020) New norms’ on page 22; minus the norms for ‘weaning’ and ‘respect for elderly’. Taking another look at these tables, it turns out that some of the proposed *animal social norms* are in fact descriptions of cognitive abilities underlying *naïve normativity*. This is the case for: in-group preference, arbitrary conventions, and immigrant conformity. Refer to ‘Table 2 Finding evidence for naïve normativity’ on page 17:

- The described behaviour for in-group preference fits Andrews’ proposed ability for *sensitivity to in-group/out-group differences* exactly.
- The description and evidence for the successful introduction of arbitrary conventions fits Andrews’ proposed ability for *social learning of group traditions* because it illustrates how social learning works and how it allows new behaviours to be introduced.
- Immigrant conformity illustrate at least two of Andrews’ proposed abilities: *sensitivity to in-group/out-group differences*, *social learning of group traditions* and possibly also *conscious awareness of appropriateness*.

These descriptions of cognitive abilities are dropped too. We are now left with eight candidate *animal social norms*. In the next paragraphs these are discussed in relation to the research articles that Andrews quotes for them. The experimental or observational design is noted briefly. For every candidate social norm, the following is described: The behaviour itself, in terms of who, what, when, where, why and how<sup>82</sup> and the fit with Andrews’ account of *animal social norms*. This fit is indicated as yes/no/maybe in corresponding shading (green, red, yellow). If a norm does not tick at least the first two boxes of Andrews’ criteria, a) and b), the norm is rejected. This is how she herself proposes evaluation to take place.<sup>83</sup>

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<sup>80</sup> See: Table 6 Monsó & Andrews (2020) Additions on page 21.

<sup>81</sup> See: Table 3 Vincent et al. (2018) versus Andrews (2020) on page 19

<sup>82</sup> See: How to describe behaviours on page 17 for an explanation.

<sup>83</sup> Andrews, forthcoming, p. 28

### 3.3 DESCRIPTION AND REVIEW OF CANDIDATE NORMS

#### 3.3.1 Consolation

Andrews' description	Console those who lose fights and reconcile after fights.
Source	De Waal & van Roosmalen, 1979; Kutsukake & Castles, 2004
Experimental design	Aim: know more about affiliate behaviour after Subjects: social group of 20 chimpanzees at Arnhem Zoo 350 observations throughout the year using an observation protocol and standardised descriptions of conflict, reconciliation, and consolation behaviours.
Who	a. 2 group members b. Rest of the group (18 chimpanzees)
What	a. Reconciliation between inter-opponents, sometimes initiated by adult female b. Consolation of aggressed party by other group members
When	After conflict between two group members, one of which is the aggressor
Where	Social group in semi-captivity
Why	Assumed: reduce physical and social tension
How	Typical behavioural pattern: a. Reconciliation: first kiss, touch or embrace then groom b. Consolation: embrace then play and groom

Andrews also cites an article by Kutsukake & Castles (2004). They provide an overview of the evidence of post-conflict reconciliation & consolation behaviour in other captive and wild chimpanzees and other apes. It has been observed often and appears to be quite well documented. Kutsukake & Castles wanted to find out why it does not always take place. They observed 9 males and 9 females from a group of 50+chimpanzees in the wild, in the Mahale Mountains in Tanzania. Strength of the relationship was not a factor. They also observed that the pattern of reconciliation and consoling behaviour was less predictable than in the Roosmalen & de Waal (1979) study; in fact, varies between groups.

Animal social norms	Fit	Kiss & make up after a fight
pattern of behaviour [a rule] demonstrated by community members	yes	All or most members of the group show this behaviour
individuals choose to conform to the pattern of behaviour	yes	Some group members sometimes do not show this behaviour. The exact behavioural pattern varies amongst groups.
individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.	yes	The group watches the reconciliation, often offers consolation to the aggressed and sometimes a third party mediates.

#### 3.3.2 Cooperation

Andrews' description	Cooperatively hunt monkeys in groups of four after years of training.
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Source	Boesch, 1994
Experimental design	<p>Aim: find out if cooperative hunting is an evolutionary stable strategy</p> <p>Subject: two groups:</p> <ul style="list-style-type: none"> <li>• 60-70 wild chimpanzees with 7-8 adult males at Tai National Park, Côte d'Ivoire</li> <li>• 32 wild chimpanzees with 7 adult males at Gombe Stream Nationalrk, Tanzania</li> </ul> <p>Chimpanzees were followed in the wild at 20m and observed during and after hunts. Tai hunts: 162; Gombe hunts: 62.</p>
Who	Wild adult male chimpanzees, usually 3 or 4
What	Hunt together
When	95% of Tai hunts were cooperative versus 12% of Gombe hunts
Where	Social group in the wild
Why	Assumed: Get more meat than on individual hunts
How	Not specified

Animal social norms	Fit	Hunt cooperatively
pattern of behaviour [a rule] demonstrated by community members	No	Only some of the male members, some, or most of the time.
individuals choose to conform to the pattern of behaviour	Yes	Only some of the male members, some, or most of the time.
individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.	No	Most of the group does not participate, nor shows any behaviour that indicates expectations.

This study was not aimed at cooperative hunting as Andrews suggest. Nor is there any mention of “years of training”. However, it does investigate patterns of food sharing after hunting. If we regard the evidence as support for a candidate social norm for food distribution, rather than for cooperative hunting, the picture turns out quite differently:

Who	Cooperatively hunting adult male chimpanzees, usually 3 or 4; bystanders (present during hunt but not active) and latecomers.
What	Share food
When	After hunt
Where	Social group in the wild
Why	Food is distributed according to a pre-agreed pattern
How	<p>Either status (Gombe) or being a hunter (Tai) gets priority.</p> <p>Tai hunters use special calls to alert community to a successful hunt</p>

Animal social norms	Fit	Share food after hunt
pattern of behaviour [a rule] demonstrated by community members	Yes	Food is shared according to a group specific pattern
individuals choose to conform to the pattern of behaviour	Yes	The pattern is different for Tai and Gombe group, which suggests that it was socially learned
individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.	Yes	Meat is shared, begged for, and refused by group members according to the group specific distribution pattern.

### 3.3.3 Cooperation

Andrews' description	Coordinate rope pulling to access food.
Source	Hirata & Fuwa, 2007
Experimental design	Subjects: captive chimpanzees at Great Ape Research, Hayashibara, Japan; captivity Aim: can chimpanzees learn to cooperate (i.e. a cognitive ability, not an animal social norm). Testing conditions: standardised laboratory protocol. Outcome: chimpanzees learn to coordinate. Communication between partners dependent on whether the partner was human or chimpanzee.
Who	2 female chimpanzees; 1 human-1 female chimpanzee
What	Learn to coordinate
When	When the experiment required it
Where	Laboratory
Why	To get food
How	Rope pulling

Animal social norms	Fit	Cooperate
pattern of behaviour [a rule] demonstrated by community members	no	There was no group
individuals choose to conform to the pattern of behaviour	?	Both females seemed free to choose behaviour, but it is not clear how hungry they were.
individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.	no	No group, no expectations.

### 3.3.4 Copulation rules

Andrews' description	Juvenile chimpanzee males who venture too close to an oestrus female risk being attacked by adult males.
Source	de Waal, 2014
Experimental design	None.
Who	4-year-old male chimpanzee and adult male chimpanzee
What	Adult male attacks 4-year old
When	4-year-old approaches oestrus female
Where	In social, semi-captive group
Why	Assumed: copulation rules
How	Aggressive biting

This is a report of what seems to be a single observation. The corresponding photograph is from 1982<sup>84</sup>. The evidence presented then was also anecdotal: youngster Tarzan attacked by leader Nikki when he approaches a female. There also is a description of possible rules about incest and the effects of sexual jealousy between male chimpanzees.

Animal social norms	Fit	Copulation rules
pattern of behaviour [a rule] demonstrated by community members	No	No
individuals choose to conform to the pattern of behaviour	?	Unclear
individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.	?	The 4-year-old appears to be punished by the adult male, but it is unclear why or whether this happens

### 3.3.5 Food

Andrews' description	Trust friends but not non-friends to share food.
Source	Engelmann & Herrmann, 2016
Experimental design	<p>Aim: find out if chimpanzees trust their friends more than non-friends</p> <p>Subjects: 14 captive chimpanzees at Sweetwater's Chimpanzee Sanctuary, Kenya;</p> <p>Testing conditions: standardised laboratory protocol.</p> <ol style="list-style-type: none"> <li>1. Establish friendship level between chimpanzees based on behaviours such as grooming, arm's reach, contact and co-feeding.</li> <li>2. 12 pairs of friends and 12 pairs of non-friends play non-verbal variation of human trust game: first chimp pulls either no-trust rope to get less-preferred food or pulls trust-rope which allows another other chimp access to preferred food which it can decide to send a part of back to the first chimp.</li> </ol> <p>Outcome: friends were significantly more likely to pull the trust-rope.</p>
Who	14 chimpanzees, in pairs

<sup>84</sup> de Waal, 2000, chapter 4: sexual privileges



What	Trust another chimp to share food
When	The other chimp is a friend
Where	Two chimpanzees who can see each other
Why	Assumed: Friendship increases trust; trust increases willingness to take risks with food sharing.
How	Trusting gets the best food

The study reports that trust-game was repeated to find out if having received food made the chimp more likely pull the trust-rope in the next round. It did, for friends and non-friends alike. However, the procedure is unclear, so it is not clear what that finding means. It may be that previous experience of trust inclines to further trust, or there may be another explanation.

Animal social norms	Fit	Share food with friends
pattern of behaviour [a rule] demonstrated by community members	yes	Pre-established (lack of) friendship Trust other chimp to share food
individuals choose to conform to the pattern of behaviour	yes	Chimpanzees were free to trust the other chimp to share the preferred food or not
individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.	yes	Chimpanzees seemed to build an expectation of their partner food-sharing behaviour based on pre-established (lack of) friendship

### 3.3.6 Helping

Andrews' description	Break hunting snares, thereby protecting group members.	
Source	Ohashi & Matsuzawa, 2011	
Experimental design	<p>Aim: to find the reason for few snare injuries despite many snares, which is unique for the Bossou area.</p> <p>Subjects: 4 male chimpanzees from a larger wild chimpanzee group at Bossou, Guinea, living nearby community of humans.</p> <p>No experimental design. Ad-lib observation for 222 days yielded 6 cases of snare recognition.</p> <p>Outcome: Snares were deactivated in 2 of these cases. Descriptions are almost exclusively of single males' ability to find and deactivate snares, not of other chimps that were present. There is no information on how these chimpanzees may have learned to do this.</p>	
Who	Wild chimpanzees: 1 alpha male and 3 other male chimps	
What	Recognise snares and sometimes deactivate them	
When	Upon noticing a snare	
Where	Solitary or small groups of chimpanzees	
Why	Assume: Remove danger, thereby protecting the group	
How	<p>Dangerous part of the snare (loop) is never touched.</p> <p>Deactivation through breaking arched part of the snare.</p>	
Animal social norms	Fit	Protect group, remove danger from snares

pattern of behaviour [a rule] demonstrated by community members	no	A few chimpanzees demonstrate the ability to recognise and sometimes dismantle traps. There is no evidence of group behaviour.
individuals choose to conform to the pattern of behaviour	yes	As only some individuals show the behaviour it, it is assumed to be voluntary
individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.	no	There seems to be no group expectation

Andrews' description	Males and dominants aid females and youth in road crossing.
Source	Hockings, Anderson, & Matsuzawa, 2006
Experimental design	Aim: to find out if chimpanzees cooperate to reduce risk Subjects: Wild chimpanzees living near humans at Bossou, Guinea. Observation and recording of relative position of each group member when crossing. Also, of waiting time and scanning. Outcome: scanning behaviour before crossing; waiting until quiet; spatial patterning adjusted to type of road: alpha male at the back, 2 <sup>nd</sup> (plus on the busy road 3 <sup>rd</sup> ) male up front and scanning.
Who	Group of wild chimpanzees: 3 adult males, 5 adult females, 3 juveniles and 1 infant
What	Safe crossing as a group
When	Crossing the road
Where	At two crossroads, one large and busy with cars and one smaller and pedestrian
Why	Assumed: avoid danger from traffic
How	Adjust spatial patterning; move as a group; scanning is done by the first or first two chimpanzees.

This does not seem to be a case of 'helping', as Andrews suggests, but rather of a group performance played out according to a well-worn pattern, in response to a known risk. It is not clear how the spatial patterning is decided. It may be, as the experimenters say, according to rank, or there may be another reason.

Animal social norms	Fit	Stick together when in danger
pattern of behaviour [a rule] demonstrated by community members	yes	All group members keep to the spatial pattern and act according to their specific role.
individuals choose to conform to the pattern of behaviour	yes	Any group member could go his or her own way at any time.
individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.	yes	The group moves in sync. This is only possible if they are aware of each other's position and movement.

### 3.3.7 Inequity avoidance

Andrews' description	In an ultimatum game, make more equitable divisions after partner protests.
Source	Proctor, Williamson, de Waal, & Brosnan, 2013
Experimental design	<p>Aim: to find out if chimpanzees prefer fairness.</p> <p>Subjects: 6 captive chimpanzees from a social group at Yerkes National Primate Research; Georgia State University;</p> <p>Testing conditions: standardised laboratory protocol.</p> <p>Tested in pairs, in 24 sessions over 2 days. One chimpanzee was cast as the proposer of how food was shared, the other as the receiver. Food sharing and receiving was signalled via tokens that the chimpanzees had been made familiar with. Two conditions:</p> <ul style="list-style-type: none"> <li>• Ultimate game: receiver reacted to the proposed split of food</li> <li>• Dictator game: receiver could not respond</li> </ul> <p>Outcome: proposed splits were significantly more equal if the receiving chimpanzee visibly reacted to the proposed split</p>
Who	Captive chimpanzees in pairs
What	Share food equally
When	The other chimpanzee visibly responds to the proposed split
Where	Laboratory; chimpanzees can see each other.
Why	Assumed: preference for fairness
How	See experimental design

This experiment was also done with 3-5-year-old children, in a similar but different experimental set-up, which yielded similar results. The researchers admitted that it is not clear what the results mean. In terms of Andrews' theory, the 'ultimate game' setup could indicate a social situation involving both chimpanzees. The observed behaviour seems indicative of when, under laboratory conditions, in- and outgroup preferences are triggered, in combination with a pre-existing norm for food sharing. The question then becomes, where does this food-sharing norm come from? Hard wired? Culturally learned during childhood? The experiment provides no further information.

Animal social norms	Fit	Share food equally
pattern of behaviour [a rule] demonstrated by community members	?	All individuals show the pattern, but it is not clear if this is a community.
individuals choose to conform to the pattern of behaviour	Yes	Individuals can choose not to share
individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.	?	No behaviour indicating expectations was recorded

Andrews' description	Refuse to participate in tasks upon witnessing another receiving a higher-valued reward.
Source	Brosnan, Talbot, Ahlgren, Lambeth, & Schapiro, 2010
Experimental design	<p>Aim: to find mechanisms underlying inequity response in chimpanzees.</p> <p>Subjects: 16 captive chimpanzees in social housing, Keeling Centre, University of Texas;</p> <p>Controlled experiment under laboratory conditions</p> <p>Inequity test with high and low food conditions. Same-sex pairs from the same group were tested 8 x 50 times under laboratory conditions and controlled for many conditions: no previous inequity testing, partner tolerance, voluntary cooperation, food preference, living environment, sex, rank, etc.</p> <p>Testing was specifically for <b>social</b> expectations (the partner gets more) versus <b>individual</b> expectations (I was promised more but get less).</p> <p>Outcomes:</p> <ul style="list-style-type: none"> <li>• High-ranking = more likely to refuse.</li> <li>• Social and individual expectations are both significant factors. Males are affected by social expectations; females by individual expectations.</li> </ul>
Who	Captive chimpanzees in pairs
What	Show preference for fairness in food sharing
When	When the other chimp gets more or better food
Where	Laboratory, chimps can see each other.
Why	Assumed: preference for fairness for reasons being studied
How	By refusing food or further cooperation

Andrews also quotes an earlier study by Brosnan et al. (2005). However, according to Brosnan et al. (2010)<sup>85</sup> results were not confirmed in a repeat experiment, which was one of the reasons for the 2010 study.

Animal social norms	Fit	Share food equally
pattern of behaviour [a rule] demonstrated by community members	Yes	Food sharing according an equal distribution pattern by members from the same community.
individuals choose to conform to the pattern of behaviour	Yes	Individuals can choose not to share
individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.	Yes	<p>Yes, but there are influencing factors:</p> <ul style="list-style-type: none"> <li>• Rank: more extreme reaction</li> <li>• Sex: males do not want the other to get more; females do not want themselves to get less.</li> </ul>

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<sup>85</sup> Brosnan, Talbot, Ahlgren, Lambeth, & Schapiro, 2010, p. 3

### 3.3.8 Infanticide avoidance

Andrews' description	Protest infanticide
Source	von Rohr, van Schaik, Kissling, & Burkart, 2015
Experimental design	Aim: observing bystander reactions at infanticide as compared to hunting or aggression. Subjects: 24 adult and nearly adult captive chimpanzees from two social groups, from Zoological gardens at Gossau and Basil, Switzerland Controlled experiment under laboratory conditions Factors such as novelty, sex, motherhood were controlled for. Outcome: Chimpanzees looked significantly longer at videos of infanticide. There was no protesting or show of emotion.
Who	Two groups of captive chimpanzees
What	React to infanticide
When	Watching a video of infanticide in another social group
Where	Indoor housing, group members could see each other
Why	Not specified
How	Pay attention

Andrews also quotes another study by van Rohr et al. (2010). However, this study is about bystander effects in general, and does not mention infanticide.

Animal social norms	Fit	Protest infanticide
pattern of behaviour [a rule] demonstrated by community members	no	The individuals committing infanticide were not part of the community; nor were the infants.
individuals choose to conform to the pattern of behaviour	yes	All individuals were free to look or otherwise express themselves.
individuals expect [an attitude] that community members will also conform and will sanction those who do not conform.	?	No response other than looking at the infanticide significantly longer

### 3.3.9 Treatment of infants

Andrews' description	Chimpanzee infants enjoy permissive parenting for the first years of life and are not punished.
Source	de Waal, 2014

There is a very short description of rhesus infant monkeys being allowed to drink first, together with the highest-ranking males; this only changes after the third year of life<sup>86</sup>. There is nothing about the treatment of chimpanzee infants in this article.

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<sup>86</sup> de Waal, 2014, p. 189

### 3.3.10 Review summary

The following behaviours may be regarded as candidate *animal social norms* because the evidence Andrews quotes for them, supports this on her criteria:

Candidate social norm	Remarks
Kiss & make up after fighting	Different groups adopt different patterns of reconciliation and consolation behaviour. It is not yet clear what factors underlie this.
Share food according to a pre-established distribution pattern	Food sharing is demonstrated by various studies. Factors such as rank, reward/ownership, equity, friendship determine the acceptable distribution pattern. It seems to depend on the situation, with differences between groups but also between captive/wild living conditions. Unfortunately, most of the food-related research Andrews has suggested, is focussed on demonstrating a pre-conceived ideal, such as evolutionary fitness, fairness, or trust.
Stick together when in danger, by individual group members moving as one.	This may be an instance of a more general group-protection norm in the face of danger.

The other candidate *animal social norms* that Andrews has suggested, have not made it. The research papers that she herself has put forward as evidence – are either not relevant or demonstrate another norm or a cognitive ability. This is the case for cooperation, helping, copulation rules inequity avoidance, infanticide avoidance, and infant treatment. None of these tick the first two boxes of Andrews' criteria, i.e. condition a) and b).

## 4 CONCLUSION

Andrews theory of *naïve normativity* takes human morality not to be the measure of all things. On the contrary, her theory focusses on what humans and animals may have in common: social norms which are shaped by both the community and the individual community member. She views the prime function of mind-reading as a justification-after-the-fact rather than as a prediction-before-the fact. This opens up a possible narrative of how belief-attribution may have developed in evolution, cultural or otherwise. This is a very interesting possibility, but has not been the focus in this paper.

Andrews has quoted a great deal of research, both in support of her theory and as a starting point for further research in to *animal social norms*. It is this fit, between theory and data, that has been examined here. There are some other notions which Andrews needs to elaborate on and for which she has not quoted evidence. These have been pointed out in the description of Andrews' theory in the first part of this paper. Examples are: 'internalisation' of a group behaviour by an individual, 'intrinsic motivation to conform', 'recognition of agents' and the resolving of post-

norm-violation cognitive dissonance in humans by the 'construction of causal explanation'. These are not discussed further.

Nearly half this paper deals with the evaluation of the evidence Andrews proposes as evidence for the candidacy of *animal social norms*. This much work was not planned. It was assumed that Andrews had put these norms forward after careful consideration and subsequent selection of the evidence. Having reviewed each and every one of the supporting research articles, the conclusion must be that this part of the work still needs doing. However, some norms have made it through the review. In paragraph 3.3.10 'Review summary' three candidate *animal social norms* are identified: 'kiss & make up after fight', 'food-sharing according to a pre-established distribution pattern' and 'moving-as-one-group when in danger'. These would be good starting points for further research.

There are other issues.

Normative behaviour can be observed precisely because it is behaviour in a social context. However, much of the experimental evidence Andrews quotes for *animal social norms* does not distinguish between results from individual chimpanzees and chimpanzees from an enduring social group. Also, experimental focus tends to be on individuals, neglecting the effect of community response. This leads to a haphazard collection of social factors which may or may not be controlled for in experimental setups and observational studies, making it difficult to compare studies or to draw conclusions from them. It would help if some protocol were developed for the future collection of experimental data, or even for the review of such data. There would be the added advantage of not lifting anecdotes and chance observations up to the level of evidence. In this paper, a small attempt at structuring information is shown in paragraph 2 'Finding evidence', in 'Table 1 Finding evidence for animal social norms' on page 17 and the use of standard characteristics for describing experiments as described in paragraph 2.4 'How to describe behaviours' on page 18. This structure is also used for the description and review of evidence for candidate *animal social norms* in part 3 'Evaluating candidate social norms'. From a scientific point of view, this attempt at structure will seem almost childish. However, the idea is that we need to establish a practice for describing normative behaviour which may be used by philosophers, psychologists, sociologists and anthropologists alike.

Normative behaviour requires cognitive capacities, says Andrews, and she has identified four, which together make up what she calls *naïve normativity*. Intuitively appealing though these are, closer inspection yields many questions. These are described in paragraph 2.2 'Finding evidence for naïve normativity'. The main problem is that Andrews does not distinguish between cognitive abilities, processes, networks, mechanisms, and states. This is one cause for her misreading of Heyes' theory of submentalising as opposed to mind-reading in implicit false-



belief tasks: they are not talking about the same thing. In 'Table 2 Finding evidence for naïve normativity' on page 18, all elements that seem to play a cognitive part in Andrews' theory are listed. Unlike for *animal social norms*, there is no further review of the evidence, because Andrews has not proposed any, other than in a narrative sense. Much more work needs to be done to determine how to find supporting evidence for the four pillars of *naïve normativity*. Admittedly it is hard to think up experiments which do not rely on language. But even more so than with the observation of behaviour, there is a need for interdisciplinary agreement on what what to look for, and how to describe this, so that evidence can be collected by scientists and then studied in a larger context.

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These sources are quoted as a reference for the candidate *animal social norms* Andrews suggests. Some of these are reviewed in paragraph 'Description and review of candidate norms' starting on page 25 and hence also appear in the primary biography.

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