How Mindshaping and Social Maintenance can Support Shared Intentions in Great Apes

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ABSTRACT

Shared intentions supporting cooperation and other social practices are often used to describe human social life but not the social lives of nonhuman animals. This difference in description is supported by a lack of evidence for rebuke or stakeholding during collaboration in nonhuman animals. We suggest that rebuke and stakeholding are just two examples of the many and varied forms of social maintenance that can support shared intentions. Drawing on insights about mindshaping in social cognition, we show how apes can be stakeholders of a different sort in joint action. Drawing on pluralistic social maintenance methods of behavior enforcement, we show ape joint action can be supported by different forms of positive and negative social pressures, and not just protest. We explain how diverse relationships, contexts, social structures, and forms of communication may play a role in forming and successfully fulfilling joint commitments for humans, great apes, and other animals.

1. Introduction

There is growing interest in the question of whether social norms exist in nonhuman animals, given the use of normative language and reference to rule-following in descriptions of animal behavior (Andrews, 2020; Danón, 2019; Fitzpatrick, 2020). Ethological and experimental studies of animal behavior describe patterns of behaviors in communities that are suggestive of social norms, such as the protests chimpanzee females make when infants are mishandled or killed by powerful alpha males (von Rohr et al., 2011, 2015).

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One objection to the possibility of social norms in animals, which we will argue against, comes from the possibility that animals lack the capacities that support social norms. However, if social norms exist to support large-scale cooperation and the execution of a joint project of living well together, then it would seem that animals also need to engage in truly cooperative actions that are grounded in shared intentionality. Otherwise, the sorts of social norms that might be available to animal communities would be far more limited than we find in human communities. Most generally, shared intention is understood as that which "enables the participants to act together intentionally, in a coordinated and cooperative fashion, and to achieve collective goals"(Schweikard & Schmid, 2020). It reflects the idea that individuals in a group are doing something together and not each acting entirely independently; for example, walking together with a friend is unlike strangers hurrying to shelter from the rain (Gilbert, 1990). Shared intentions (also called joint intentions, collective intentions, or 'we'-intentions) are presumed to play a significant role in human cultures (Searle, 1995; Tomasello et al., 2005). And, importantly, shared intentions have also been argued to be unique to humans (Tomasello, 2016; 2020; Tomasello et al., 2005). As a result, animals lack a capacity that is required for many social norms, namely, the capacity for shared intentions.

The claim that other animals cannot share intentions sits awkwardly beside the observation that great apes engage in many behaviors that, if they were human, would be taken as evidence of shared intentionality. Great apes appear to work together to achieve goals (Duguid et al., 2014; Melis & Tomasello, 2019; Suchak et al., 2014), share (Fruth & Hohmann, 2018; Nishida et al., 1992), help one another (Buttelmann et al., 2017; Greenberg et al., 2010), and have group-specific practices (van Leeuwen et al., 2021, 2014; Luncz et al., 2018; Mitani, Watts, & Amsler, 2010). But the presumption is that they are doing so without shared intentions. Like strangers running for shelter when rain starts, the apes' behavior supposedly does not reflect a joint commitment toward engaging in the same behavior together.

This mismatch invites a closer look at the capacities that are involved in shared intentionality. In this paper, we will offer a fresh look at shared intentions that supports the idea that great apes have shared intentionality, and hence dissolve one worry about the possibility that animals have social norms. While there are a number of subtly different views of shared intentionality in the literature, the view most directly related to the relationship between shared intentions and

social norms is seen in Margaret Gilbert's conception.[1] We focus on two features of this view. First, shared intentions, unlike other types of coordinated activity, include a mutually understood commitment to all participants that they will act together, which Gilbert calls "joint commitment." Second, shared intentions entail what Gilbert calls "standing to rebuke," which allows one to predict that their partner would be in a position to protest a deviation from the joint project. Skeptics of nonhuman animals' having shared intentionality worry that apes lack both of these features; they lack a joint commitment to shared action, and they lack the ability to predict that stepping outside of the shared action can result in rebuke. We will show that there is plausible evidence supporting both of these properties in nonhuman animals, leading to a new way of understanding shared intentionality, and smoothing the path for the investigation into animal social norms.

2. The skeptical worry about joint commitment

What does it take to demonstrate the existence, or lack of existence, of a joint commitment? As a mutually understood commitment to all participants that they will act together, joint commitment is hard to directly observe. To identify its presence in nonhuman animals, we need a set of behavioral criteria, or an operationalized definition. Helpfully, Shona Duguid and Alicia Melis (2020) offer behavioral criteria that they take as indicating a joint commitment: (i) continuing a joint activity until goals are obtained *for all involved*, (ii) preferential sharing of rewards with collaborators.[2] If the partners were thinking of one another as *social tools*, merely using the other as a means to achieve an individual goal, as Tomasello (2016) suggests, we should not expect individuals to even notice whether a partner achieved the goal. Skeptics of chimpanzee shared intentionality suggest that chimpanzees fail to satisfy these criteria. In this section, we will briefly review the evidence skeptics have cited as reasons to think chimpanzees lack joint commitment, and sketch their overarching argument.

[1] In this paper we will focus on models using joint commitment. For further discussion of the abstract representational capacities that might be needed on other accounts of shared intentionality see Papadopoulos (2021).

[2] Duguid and Melis (2020) also mention ongoing communication as a key indicator that great apes might fail. However, because there is ample evidence that apes engage in the sort of ongoing communication indicating joint commitment, we leave this behavioral indicator to the side. For an example of how great apes satisfy these communication demands in simple and frequent collaborative tasks like grooming, see Heesen et al. (2021a).

Let us start with the first behavioral criterion, the continuing of a joint activity. Among the evidence Duguid and Melis point to are two studies they interpret as evidence that chimpanzees lack the commitment to continue an activity until goals have been obtained for all involved. In one study, human children and chimpanzees behaved differently while playing a cooperative game with a human experimenter. When the experimenter spontaneously stopped playing, young children tended to protest, communicating their desire to continue the game, while chimpanzees offered no protest (Warneken et al., 2005). The child's protest is seen as demonstrating an expectation that they are engaged in a joint activity with the adult experimenter and that the adult partner should not stop until the goal has been reached; that is, the children were showing that they have standing to rebuke. The skeptics argue that since we do not see rebuke on the part of the chimpanzees, it is unlikely they are forming a joint commitment in the way the children are.

Duguid and Melis also refer to a study that appears to show that chimpanzees fail to preferentially help purported collaborators (Greenberg et al., 2010). In one condition, chimpanzees had the option to help others who were their partners in an ongoing collaborative activity. In another condition, the chimpanzees were able to help another not engaged in an ongoing collaboration. Chimpanzees exhibited helping behavior in both conditions, but human children tend to exhibit more helping behavior directed towards partners in an ongoing collaboration. The study authors concluded that the chimpanzees' helping behavior may not involve thinking about their coordinated behavior as sharing a goal with a collaborative partner. It is only in the human children that the authors see evidence of joint commitment via the preferential treatment toward collaborators with whom they share a stake in the outcome.

The second behavioral criterion indicating a joint commitment is that rewards will be shared amongst collaborators. An argument that chimpanzees fail to meet this criterion comes from observations that rewards are not shared and that this lack of sharing is not protested.

Purported evidence against preferential sharing is easily seen among behaviors of chimpanzees. In observations of chimpanzees distributing food after cooperative hunting, Maria John et al. (2019) found that the individual who captured the prey also monopolized the reward, and tended to share with others based on proximity, not their contribution to the hunt. This suggests the chim-

panzees, despite actively coordinating joint action, are not thinking of fellow coordinators as equal stakeholders in a joint venture, and therefore as entitled to a share of the jointly obtained reward.

Skeptics of joint commitment in great apes also point to food-sharing tasks where lack of sharing does not result in a rebuke, understood as a protest at the time of the distribution. For example, in one study pairs of chimpanzees were asked to cooperate by pulling on both ends of one rope to move a platform within reach to access food (Melis et al., 2006). The pairs who had previous experience sharing food were able to spontaneously cooperate and complete the task, sharing the food reward. However, pairs that did not regularly share food did not reliably cooperate, and when a dominant chimp monopolized a food reward, the subordinate did not protest. The authors interpret this result as suggesting that prior interpersonal relationships predict sharing, and that the behavior could be due to a tit-for-tat strategy rather than a commitment to work together with another for a shared goal. Unlike children who protest when a partner does not share the food (Warneken et al., 2011), the chimpanzees accepted their plight when the dominant individual monopolized the food resource.

Compared to children, who treat collaborators preferentially and protest deviations from joint activities, chimpanzees appear to lack these observable indicators of joint commitment, providing evidence that they lack shared intentionality. That is, while chimpanzees do not rebuke failures to share, when rebuke is understood as an immediate behavioral response, children are instead quick to react when they perceive a violation.

This brief review of the sort of evidence put forward as evidence against chimpanzee shared intentionality highlights two features that we think should be disentangled. For one, the worry is that chimpanzees lack joint commitment, which is understood in terms of individuals being stakeholders in a cooperative project in which the partners are owed a share of any reward. Second, the skeptics expect deviations from any cooperative project will be protested.

Given this understanding of the view, we are now in a position to present the skeptics' argument against great ape shared intentionality:

(1) Shared intentionality requires joint commitment, which means being a stakeholder in the behavior in the sense that each partner is owed a share of the jointly pursued reward.

(2) Joint commitment leads us to expect rebuke behavior in response to a partner's failure to follow through or share the benefits of their coordinated action.
(3) Chimpanzees demonstrate neither rebuke nor the sharing of benefits.
(4) Therefore, chimpanzees do not have shared intentionality.

Our approach to this argument is to reinterpret the evidential demands for meeting (1) and (2), then to argue that (3) is false.

This move is motivated by two sets of worries: worries about the empirical evidence and worries about the interpretation of the two conditions. The second worry will be addressed in the next two sections. In this section, we will point to some reasons not to be terribly convinced by the studies cited above. Generalizing from absence of behaviors is always a risky move, as additional search may uncover what has not yet been found (Andrews, 2020b). But, in particular, we are not convinced that the researchers in the above studies have created scenarios that would invite rebuke or sharing of benefits in the chimpanzee and chimpanzee/human dyads.

For example, in the study of commitment to re-engage in play (Warneken et al., 2005), the chimpanzees and the children might be differently motivated to play with adult humans. When a partner spontaneously stops playing some game, the other might be entirely ambivalent about continuing because the motivating reason for the play is the partner's desire to play together. Sometimes we go to a movie because we want to see the movie. Other times we go to a movie because a partner wants to see a movie. And in the best of times, we go to a movie because the partner wanting to go to the movie together makes us want to go. One's motivation for participating in the activity might say a lot about whether or not one would be motivated to rebuke. While protesting vocally or acting irritated are possible responses to others not wanting to play or go to a movie, sometimes it is not irritating at all, and we have no inclination to complain because we do not want to do the activity in the first place, or would only want to do it if the partner did.

This points to alternative reasons for the patterns outlined in the studies, which have little to do with having or lacking the capacity for joint commitment. One might fail to protest a disengagement or inequitable distribution because it would be inappropriate given the social system in play. Just as humans fail to protest unfairness in the way profits are distributed in capitalist systems and fail to rebuke superiors to their face while at work, chimpanzees, who also

live in a social system with its own dominance structures and practices of unequal distribution of resources, may not protest because it is not appropriate. Since chimpanzees live in a dominance hierarchy with entrenched unfairness, we should not expect them to act like children playing a game. Moreover, chimpanzees may not take human researchers to be proper collaborative partners but rather authority figures whose decisions are law. Chimpanzees take dominant chimpanzees as authority figures as well, so it is not surprising that social relationship rather than collaborative partnership predicts sharing behavior and inequity tolerance (Brosnan et al., 2005; Melis et al., 2006). It also is not surprising that partner choice is impacted by partners' prior behavior. Chimpanzees may rebuke later – and more quietly – the behavior of dominants, much like the lackey protests the boss's actions, but only after work. This importance of the structure of social relationships confounds the view that lack of rebuke implies a lack of shared intentionality. These considerations of the socially relative nature of shared intentionality will shape our response to the first two premises, showing how chimpanzees and other animals may have shared intentionality in terms of joint commitment even if they do not protest in the ways human children do.

3. Joint commitment and mindshaping (revising Premise 1)

In her own writing on the topic, Gilbert takes those who are jointly committed to an activity like taking a walk or a goal such as gaining food as having an understanding that they have decided to do this as a group. Deciding provides a reason for acting to which we are normatively committed. Gilbert (2020) explains:

> [O]ne is normatively committed to act in some way if one has reason to act in that way, in the sense that should one abstain from so acting, then, all else being equal, one has acted in error. [...] [A decision] excludes a number of potentially countervailing factors from consideration. Among these are the personal inclinations, desires, and self-interest of the person in question that opposes the action decided upon (Gilbert, 2020, 20).

This means that, after we decide something, we have committed to one set of reasons over possible others, and we ought to follow through unless something changes or we rescind that decision. Joint commitments are the result of deciding to act as a group. If there is a normative force behind individual decisions,

then decisions made as a group plausibly also have a normative force which applies to the group such that unless they change their mind, they ought to do what they decided – where "ought" comes from a sense of consistency.

Suppose I have decided to have a coffee; having made this decision, I now have a rationale to guide my action. That is to say, I ought either to carry out that decision or to change my mind, and I could also fail to fulfil either of these oughts. I might put on a pot of coffee but get distracted before I pour myself a mug. Sometime later, I might recognize that I failed to carry out my intention, the coffee is now burnt, and I had none. I failed to do what I ought to have done. However, this "ought" only describes what I should do to realize my decision.

Now suppose my coworkers also want coffee, and I offer to make it for us. I start making the coffee, but get distracted and return without it. There is a sense in which *we* decided to have coffee, *we* understood that my role in our having coffee was to make it and bring it to all of us, and I failed to do so. Like the individual case, the joint decision has normative force in that, having decided to do something, we have reason to follow through. In response to my returning without coffee, a coworker would be justified in saying, "weren't you getting [us] coffee?" I failed in my obligation to the group (including myself).

Importantly, the terminology of "obligation," borrowed from Gilbert, does not imply a promise that must be fulfilled. Instead, we suggest a different understanding of obligation, of the sort that mindshaping processes create. On the mindshaping view of folk psychology, in our social engagements we shape one another's minds to conform to our intersubjective predictions, and conforming to the partners' predictions constrains our future behavior (McGeer, 2007; Zawidzki, 2013). Mindshaping permits coordinated activities by simultaneously modifying the minds and behaviors of the joint actors. On a mindshaping view of joint commitment, when group members begin a cooperative project, they update their predictions, thereby facilitating future acts of coordination. Picking up a large table with a partner in order to navigate it through a door is more an initiation of a coordinated task than it is a promise traditionally understood. Still, by embarking on such a task, partners expect certain behaviors from one another.

Returning to the coffee case, once I fail to meet our expectations, we may decide as a group (a) not to have coffee after all – rescinding our prior expectations, (b) that I should go back and finish the task, or (c) that someone else should finish the task. It would seem odd for us all to maintain our expectation that we will have coffee together if no one fetches it. We might call these options

(a) ending the joint commitment, (b) rebuking failure to motivate compliance with the prior expectation, and (c) completing the task with imperfect compliance of group members.

Option (b), the "rebuke," need not be a retributive response. For example, my colleagues might draw attention to the unmet expectation, perhaps by saying, "It would be great if you did get that coffee; could you get it?" Such a request would carry a significance somewhat different from someone asking for a coffee with no prior expectation. I might respond with "Sorry, I forgot," and then I would reinitiate my part in the shared intention to have coffee. However, we can also imagine a more obvious expression of rebuke: perhaps I returned without coffee, and a colleague responded, "You're useless; you can't even make coffee!" Their behavior might be inappropriate, but I would understand what they meant. The same action would have been absurd if we had not previously decided to have coffee. Given that standing to rebuke does not imply that one must rebuke, the lack of observed rebuking behavior does not imply a lack of standing. The same mindshaping that makes rebuke (as gentle correction or direct condemnation) intelligible also makes completing the task with imperfect compliance a plausible response to expectation violation. The core of this standing is not rebuking but co-created mutually understood expectations. In the mindshaping interpretation, standing to rebuke would occur when individuals update their predictions alongside their decisions to act, such that when one's predictions do not bear fruit or one's own actions fail to result in successful coordination, the actor then has standing to rebuke.[3] If the group does not form an expectation together, or each group member has no reason to think other group members know what is expected of them, then group members do not have a good reason to insist that others meet their expectations.

Insofar as successfully sharing intentions is more common than failures to do so, when looking for evidence of shared intentions in great apes, rather than focusing on rebuke behaviors, we can also look for evidence that established expectations are followed despite interruption. When we turn to look for this sort of evidence in great apes, we find it in abundance. For example, two studies examined whether chimpanzee and bonobo grooming behavior per-

[3] One might worry that mindshaping is even more cognitively demanding than having shared intentions, because it requires a theory of mind, and that it is unlikely that other animals have this capacity. For an answer to this worry, see Andrews (2012, 2015) on how animals can update their predictions without ascribing propositional attitudes.

sisted after interruptions (Heesen et al., 2021b; 2020). The authors hypothesize that if it did, great apes likely have joint commitments. They observed chimpanzees and bonobos engaged in cooperative grooming behavior. When there was an interruption, the grooming behavior abruptly stopped, but the same cooperators usually re-engaged after a short time. Reinitiation like this is what we might expect from cooperators who have a joint commitment – they understand that they have decided to do something together. If they had instead started grooming again, but with a new partner, e.g., whoever happened to be closest, we might believe they individually wanted to participate in grooming but had no joint commitment with another specific cooperator. Having formed a joint commitment, partners had standing to re-initiate when expectations were violated, and this standing may be a substitute for standing to rebuke.

The focus on "rebuke" in Gilbert's account of joint commitment is accompanied by claims about how various partners might keep one another on track or "compliant" with expectations. Gilbert regularly suggests that jointly committed partners can "demand that I keep on track" or "rebuke for going off track." However, she explains that we only ought to rebuke others "if that has the best chance of keeping me on track with respect to future conformity" (Gilbert, 2018, 761). Rebuke is sometimes a practical solution to a problem that arises in a group's joint action, but if rebuke is not likely to encourage future compliance with a joint commitment, then we ought not exercise our standing for rebuke. Considering the grooming case, it is not intuitive that one chimp rebuking another for stopping would motivate them to be a grooming partner in the future. Scolding us for not bringing coffee could cause problems and damage relationships, and may or may not motivate us to get you coffee in the future, depending on individual variation.

This brings us to a mindshaping account of joint commitment:

> *a coordinated behavior involves a shared intention with joint commitments if individuals predict partners' behavior via mindshaping, leading to mutually understood decisions to act together*

We are now in a position to offer a revised version of premise (1) given the mindshaping account of joint commitments. Rather than the original first premise:

(1) Shared intentionality requires joint commitment, which means being a stakeholder in the behavior in the sense that each partner is owed a share of the jointly pursued reward.

We now have:

(1') Shared intentionality requires joint commitment, which can be implemented via mindshaping in the sense that individuals' joint decisions lead to predictable actions.

Our mindshaping account is cognitively undemanding, as the expectation need not be stated or explicitly acknowledged in the group. Instead, initiating a coordinated behavior modifies the often implicit expectations one has about the other's behavior. This does not require thinking about others' mental states. Rather, it only requires that individuals are able to communicate sufficiently for a decision to be made (Heesen, 2021a) and predict others' behavior in order to coordinate, and these are things animals can do without sophisticated cognitive capacities such as theory of mind or metarepresentation (Andrews, 2012; 2015; 2017).

What does joint commitment as mindshaping look like in chimpanzees? Following Heesen et al. (2021a), we can describe joint commitments in apes in three phases: entering a commitment, accomplishing some task, and leaving such a commitment. When entering a commitment, mutual gaze, body orientation, posture, and sometimes more explicit communication like vocalizations, can all help to communicate whether someone is interested in collaboration or not. Additionally, in coordinated activities like play, entry and exit patterns are distinctive in great apes prior to and after the activity. These communicative procedures show joint decisions in the form of mutual co-created expectations.

Now that we have an account of what a successful joint commitment looks like, we can turn next to consider what we should expect when joint commitments break down.

4. Standing to rebuke and social maintenance (Revising Premise 2)

Gilbert explains that regular group behavior can become something group members are jointly committed to if "after regularly engaging in the practice for one reason or another for a while, they begin to behave in ways appropriate to those who are jointly committed" (Gilbert, 2018, 759). Rebuke of nonconformity would be an indicator that there has been a shift to jointly committed behavior, but it is not the only sort possible. We might reasonably expect other mecha-

nisms that also maintain those regularities (e.g., encouragement, social affiliation, obedience in a hierarchy, etc.). The active maintenance of group behavior, including but not limited to rebuke, is a better descriptor of the behaviors we might look for to determine whether a regularity involves joint commitment.

In the skeptics' argument against shared intentionality in nonhuman animals, joint commitments create obligations that, when violated, result in a partner's being justified in rebuking the behavior. The force of the "should" is cached out in terms of punishment – verbal protest. But as Gilbert notes, verbal protest is not the only way to keep groups on track with respect to future conformity. A more comprehensive view can accommodate a wider range of responses which can maintain a joint commitment that has been taken up.

Here we appeal to the notion of social maintenance (Westra and Andrews, 2022). *Social maintenance* is a type of social pressure that supports a pattern and which can explain the ways individuals respond to one another when they follow the pattern and when they deviate from it. Social maintenance incentivizes conformity and disincentivizes nonconformity. Punishment is taken as a signature of the existence of both a shared intention and a social norm. Second-party punishment is seen in the child who protests the rule breaker in an experimental setting and the adult who blocks a Twitter follower who spews hate speech. Third-party punishment is seen when a bystander or authority figure who has not been harmed steps in to correct behavior, as when the teacher punishes a child who broke a rule, or when Twitter bans a user for engaging in hate speech.

Considering that standing to rebuke might entail punishment does not tell us what sorts of punishments to expect, as punishment "can include correcting, withholding cooperation, communicating disapproval through body language or explicit criticism, ostracizing or gossiping about norm violators, or even physical violence" (Kelly & Setman, 2020). This raises a challenge to the sort of evidence that critics draw upon in their arguments that chimpanzees do not punish, as discussed in Section 2. But worse for the critic's position, social maintenance also involves positive reinforcement – things like rewards for obedience, in terms of increased social goods such as spending time in proximity, grooming, sexual access, or the positive affect that comes from pleasing a dominant. Positive social maintenance also includes partner choice.

With a richer view of standing to rebuke that involves both positive and negative social maintenance, we can see that social tool use need not be in con-

flict with having shared intentionality. For example, in a study involving chimpanzee behavior around a juice fountain, access to the juice was only provided when another individual pushed two buttons some distance from the fountain (Schweinfurth et al., 2018). A dominant chimpanzee was observed to encourage two subordinate juveniles to push the buttons, allowing the dominant to drink the juice. The authors describe this as social tool use because the juveniles are used by the dominant. According to the skeptics, this could not also qualify as having the appropriate joint commitment or providing a standing to rebuke because the juveniles are not being treated fairly. The dominant does not understand that since they are fellow collaborators, they should be owed a fair share of the rewards for their effort.

However, we can interpret the juveniles as sharing the intention to turn the juice on for the dominant, because any number of motivations can lead to the behavior: obedience to authority, a desire to please the dominant, anticipation of future gains, internalized social norms, learned cultural behaviors, a lack of interest in a share of the juice. In many of these cases, we do not yet know the psychological mechanisms supporting individual motivations and group differences. Despite our ignorance, though, once we expand beyond looking merely for rebuke in the face of cooperation breakdown, successful instances of cooperation become candidate shared intentions.

We can interpret much of ape behavior as involving joint commitment once we have a broader understanding of standing to rebuke in terms of social maintenance. In a grooming context, social affiliation may play a role alongside internal motivations to participate in grooming because it is pleasant to do so. There might be many other forms of encouragement, such as following the examples of those you admire or participating in cooperative activities because of positive affective relationships. When we discover that chimpanzees behave differently than humans in some cooperative tasks, we need to ask how they might be motivated to comply with joint commitments differently. In the case of cooperating to obtain a shareable reward, human children were motivated by the reward and expected to receive it; chimpanzees might not expect to receive a reward if they cooperate with a more dominant partner. We should expect commitments and other behavioral regularities to be socially maintained by a variety of different means (Westra & Andrews, 2022).

With this more expansive account of standing to rebuke on the table, we can now revise our critics' second premise:

(2) Joint commitment leads us to expect rebuke behavior in response to a partner's failure to follow through or share the benefits of their coordinated action.

Focusing more broadly on social maintenance it becomes:

(2') Joint commitment leads us to expect social maintenance of the behavioral pattern.

If we accept this interpretation of standing to rebuke in terms of social maintenance, with its wide range of applicable motivations for conformity with expectation, then being a stakeholder and having standing to rebuke amounts to little more than a mutually understood expectation of what the other will do. In virtue of such predictions and plans, rebuke or another form of encouraging conformity with expectations becomes intelligible. Rebuke in the form of protest or punishment remains one way to motivate conformity, but the standing that makes rebuke sensible is present in many situations where no rebuke occurs and that same standing might be manifest in many other activities. Instead of the threat of rebuke, other forms of social maintenance, such as obedience to social hierarchy, positive feelings from acting cooperatively, social affiliation stemming from partner choice, or a desire to be helpful can motivate compliance during coordinated activities.

5. Conclusion

The puzzle we started with regarding the apparent conflict between cooperative-seeking behavior in great apes and ape failures to perform as expected in collaborative tasks gets resolved once we adopt a more expansive understanding of joint commitment and standing to rebuke. These revisions permit us to see the various ways in which humans also participate in shared intentionality, even when styles of sharing intentions differ greatly across cultures and social contexts.

With our revision of the skeptic's two premises, we end up with a very different argument regarding shared intentionality in great apes, one that looks like this:

(1') Shared intentionality requires joint commitment, which can be imple mented via mindshaping in the sense that individuals' joint decisions lead to predictable actions.

(2') Joint commitment leads us to expect social maintenance of the behavioral pattern.

(3') Chimpanzees enter into joint commitments supported by social maintenance.

(4') Chimpanzees demonstrate cognitive capacities that allow for shared intentionality.

Our defense has focused on premises first two premises, and while we have offered suggestive evidence of premise (3') throughout the paper, especially with regard to entering into joint commitments, we do think that additional research is required before we can be highly confident in the existence of social maintenance in chimpanzees (see Andrews et al., in progress). The existence of joint commitment in chimpanzees, however, enjoys strong evidence: apes understand who they can coordinate with, they can predict what others will do even in complex situations, and they know how to play their role in society (Andrews, 2012).

In this paper, we have illustrated that arguments for the human uniqueness of shared intentionality may rest on an overly narrow view of the requirements for shared intentionality. With a broader, and more empirically adequate account of shared intentionality, we can more clearly see a route forward for examining the degree to which other species, including chimpanzees, work together as shared agents. Indeed, we think that an investigation into nonhuman shared intentionality must go hand in hand with the investigation into nonhuman social norms. This development can also inform our understanding of the breadth of capacities involved in human social norms and shared intentionality.

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