The Folk Psychological Spiral: Explanation, Regulation, and Language

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In days past, when philosophers talked about folk psychology they focused on the ability to attribute propositional attitudes such as beliefs and desires. This mindreading ability that is inarguably present in most adult humans has been thought to be integral to our ability to predict and explain human behavior, and indeed, integral to our understanding of others. Further, given that propositional attitudes must be represented propositionally, and language is our best model of propositional representation, it has been common to think that mindreading, and hence folk psychology, is only available to linguistic creatures.

The view that folk psychology is mindreading has come under challenge in recent years. I have argued that we understand others in terms of individual properties such as personality traits and generalizations from past behavior, and in terms of group properties such as stereotypes and social norms (Andrews 2012). Others have also argued that propositional attitude attribution isn't necessary for predicting others' behavior, because this can be done in terms of taking Dennett's Intentional Stance (Zawidzki 2013), appealing to social structures (Maibom 2007), shared norms (McGeer 2007) or via solution based heuristics for reaching equilibrium between social partners (Morton 2003).

But it isn't only prediction that can be done without thinking about what others think; we can explain and understand people in terms of their personality traits, habitual behaviors, and social practices as well. The decentering of

propositional attitude attributions goes hand in hand with a move away from taking folk psychology to be primarily a predictive device. While experiments examining folk psychological abilities in children, infants, and other species still rest on asking subjects to predict behavior, theoretical investigations as to the evolutionary function of folk psychology have stressed the role of explanation (Andrews 2012) and regulative functions (McGeer 2007, Zawidzki 2013, Fenici 2011).

In this paper I intend to argue that an explanatory role for folk psychology is also a regulative role, and that language is not required for these regulative functions. I will start by drawing out the relationship between prediction, explanation, and regulation of behavior according to both mindreading approaches to folk psychology and the pluralistic account I defend. I will argue that social cognition does not take the form of causal reasoning so much as it does normative reasoning, and will introduce the folk psychological spiral. Then I will examine the cognitive resources necessary for participating in the folk psychological spiral, and I will argue that these cognitive resources can be had without language. There is preliminary evidence that some other species understand one another through a normative lens that, through looping effects, creates expectations that community members strive to live up to.

Prediction, explanation, and normativity

To examine the relationship between prediction, explanation, and normativity, let's start by looking at the second capacity. Why do we explain? What motivates the explanatory drive when it comes to human behavior? To answer that

question we might start by wondering why we explain at all. First, humans want to explain the physical processes of the world, things like why the rice grows, and why the sun rises in the morning. We want to explain non-agential processes, but often that desire to explain goes hand in hand with a desire to control, and the explanations take the form of causal accounts. The rice grows because the seed sprouts given water and sun; the sun rises because the earth is spinning on its axis. Knowing this allows us to plant rice efficiently, and to expect the sun will be there to nurture the seed.

The need for control may be less strong in our social environment than in our physical environment; we may have greater need to coordinate behavior. While humans use nature to construct their shelters and create their food sources, we have to cooperate with others to do so. Even though competition is often stressed in evolutionary psychology, competition only works within a background of cooperation, because the technologies, physical labor, childrearing, and cultural rituals that humans participate in are only possible through large-scale cooperation within social groups.

How is it that we succeed at coordinating with others? We might do so by developing causal models, like we do when offering physical explanations. But humans are really complex, and their behaviour is more similar to the weather or traffic patterns than to the effects of water and sun on a grain of rice. The traditional role for mindreading is that it is used to predict behavior, which assumes that we are constructing causal models of one another—that we think about others' beliefs and desires in terms of the causes of their behavior. But given the

complexity of humans, and given that any number of mental causes are consistent with a particular piece of behavior, getting the right causal model can't be what we are typically trying to do when engaged in folk psychology—because getting the causal story right is too hard and we'd likely be wrong too much of the time.

If we are not building causal models of others in order to understand them, what are we doing? I think a hint to the answer lies in the cognitive flexibility of humans. Our cognitive flexibility permits us to act differently in the same circumstances. But rather than relying on hidden mental states to close the gap between same circumstance and different behavior, folk psychologists can rely on their social knowledge about norms of behavior. In any particular situation, there is a range of acceptable and unacceptable behaviors. In a grocery store, it is acceptable to take a cart or a basket and load it up with food. It is also acceptable to not take a cart or basket. It is acceptable to walk around and look without buying. But it isn't acceptable to belt out an aria or to knock down a display of tinned tomatoes. Our expectations about how people will act in a grocery store are not specific, but they form a limited domain. If we were working with a causal model, we should be able to make more specific predictions. For example, we could predict whether someone takes a basket or a cart, and which food items they put inside. But unless we have further information about the individual (suppose she told us what she was going to buy, or what she was going to make for dinner tonight and we know the needed ingredients for the meal), we are not able to make specific predictions about how many and which specific items are going to be selected.

Rather than building causal models, we must be doing something else. An alternative hypothesis is that we are relying on norms of behavior that open us up to a range or domain of behaviors that are appropriate given the situation. We coordinate with one another by sharing societal and species norms. Some of these may be explicitly taught, some may be innate, but many of them will arise implicitly via experience with how people typically act, and how violations are responded to.

The causal model story fits well with the traditional account of folk psychology according to which we are so good at predicting and explaining behavior because we can attribute propositional attitudes. Just like in the case of causal models, according to the structure of standard folk psychology, explanation is backwards prediction. But on the pluralistic account of folk psychology that I have defended, a folk psychologist doesn't require the ability to attribute propositional attitudes; rather, a folk psychologist is someone who recognizes intentional agents and can discriminate them from non-agential movement in the world, and she has to be good enough at predicting, explaining, and interpreting agential behavior. I will argue that the normative story fits better with the pluralistic account than does the causal model. But first, let me briefly outline the pluralistic account of folk psychology.

Pluralistic folk psychology

According to pluralistic folk psychology, there are different cognitive mechanisms that are involved in fulfilling our social competences of predicting, explaining, and understanding others. Folk psychological styles reflect individual

differences in the reliance of these different methods, and make sense of the fact that different people are differently skilled in their social competences. But all folk psychologists will use a range of heuristics in their social endeavors. I have identified ten different methods folk psychologists use to understand others (Andrews 2012):

- primary intersubjectivity (Trevarthen 1979)
- self-reference (Krueger 1998)
- stereotypes or social roles (Locksley et al. 1980)
- situation (Heider 1958)
- inductive generalizations over past behavior (Kalish 2002)
- norms (Kalish 1998; Perner and Roessler 2010)
- non-propositional mental states such as moods, emotions, and goals
- teleology (Gergely and Gergely 2003)
- trait attribution (Ross and Nisbett 1991)
- mindreading (Fodor 1994)

These heuristics can be used to predict behavior, but can also be used to explain behavior. The psychologist Bertram Malle has identified three different kinds of explanations people give: reason explanation (mindreading), causal history explanation, and enabling factors explanations (Malle 1999, 2004). But we also explain people's behavior in terms of their moods and emotions, their physical sensations (such as being hot or hungry), and their personality traits (such as being selfish or distracted).

While mindreading is part of the package of heuristics used in folk psychology, it is an evolutionary late coming and smaller piece of the puzzle than it is supposed on the standard views. One reason to think that it is late coming is that mindreading for prediction is really only necessary in fairly strange situations (for a full discussion, see Andrews 2012). When knowing the individual and group

properties isn't enough to predict what someone will do next, it's because something unusual happened. But prediction of behaviour through mindreading doesn't appear out of thin air; it comes from a prior attempt to understand the situation and explain what is happening in this unusual circumstance. Thus, we shouldn't expect that one can mindread to predict behavior until after she can mindread to explain behavior. This prioritizes explanation over prediction in the domain of mindreading.

In ontogeny, our skill in folk psychology begins by forming models of individuals. Rather than beginning with a theory of behavior, as the standard folk psychology story goes, we begin by understanding individuals as persons. From our early experience with individuals we can then form generalizations about people, though we also form generalizations when we learn things about people from our mother's knee, directly through stories about normal and abnormal behavior, through statements about types of people, and indirectly by observing our caregivers' various responses to strangers, friends, and family.

Normativity in pluralistic folk psychology

The very beginning of folk psychology begins with caregiver-infant interactions. Infants nuzzle mothers' breasts to take in milk, mothers jiggle babies to invite them to resume feeding. Infants cry and mothers' milk begins to flow. This very early dynamic is the basic building block for social cognition, and after a few months includes sophisticated exchanges of eye contact, smiles, and vocalizations. In a healthy environment, the infant is able to form reliable expectations about how the

mothers will respond to her cries and coos, and here the infant is forming her first expectations about how the mother will, *and should*, react. Violations of the infant's expectation leads to abnormal development and unsecure attachment, when the caregiver doesn't do what she should do.

As the infant's social domain expands, she builds additional psychological profiles for the new individuals. These individual profiles don't just help the infant form expectations about the particular individuals, but they give her information that she can use to formulate more general knowledge about how people in general should, and will, act. When a child meets new people, she understands them first via a combination of automatic processes that let her make initial judgments about a person's traits and status, and the general principles about normal behavior that she has generated from previous individual personality profiles. As children gain more experience with people, they gain a greater array of both particular character knowledge and generalizations about normal behavior, and they start forming categories of expectations of different kinds of people—stereotypes. This developmental process gives children both individual knowledge of persons and general knowledge of character types and normal behavior.

A folk psychologist builds models of individuals as well as of groups of people. The models consist of information gained via the different methods we have for understanding people—so a model of a person might include her personality traits, typical behaviors, beliefs, goals, preferences, and social role. Using this model we can make predictions of what another individual will do not by thinking about the

causes of her behavior, but rather by thinking of how appropriate the behavior is for someone *like that*.

Fundamental to predicting the behavior of cognitively flexible creatures is a sense of what I'm calling naïve normativity, which is a normative sense rather than a descriptive sense. The sense of *shouldness* isn't explicit, isn't based on propositional understanding of rules or even the concept of should. Rather it is a sensation that some things ought to be done a certain way by certain individuals. It is also very early arising in human ontogeny, as it is already there once the infant expects the mother to give her milk when she nuzzles the breast.

The infant has an implicit grasp of both descriptive and prescriptive aspects of her world. She grasps descriptively that this person, her caregiver, is an agent. And she also grasps, prescriptively, that her caregiver should act in certain ways. An infant with an unreliable caregiver may still grasp that her caregiver is an agent, but fail to form expectations about how that caregiver should act.

Pluralistic folk psychology recognizes that the gap between observable behavior and environmental features and future behavior can be filled with normative reasoning, or expectations of what someone should do. When someone does what they should do, they can do it for various reasons, and with normative reasoning there is no need to determine the causal sequence that leads to the next behavior. Even for a small child, the response to a violation of a norm is indignation, not mere irritation at not achieving the goal. When a child wants something that she is usually permitted, an adult's refusal doesn't just cause the child to be upset that she didn't get what she wanted; the child gets mad at the adult. And when a child

comes to trust an adult, she uses that adult as a model for how she should act—she will imitate that adult even when the behaviors appears to be causally inefficient, thinking that this is how the action *should* be performed (see Nakao and Andrews 2014).

We predict, and coordinate behavior, through being sensitive to the community norms and the particularities of the individual (e.g. traits if we know her, stereotypes if we don't). Individual properties and group properties are used to form these expectations, and they are prescriptive as well as predictive. Violations of others' expectations create a prima facie burden for the actor to justify her behavior, rather than for the predictor to justify her prediction.

People offer reasons for their actions in terms of their mental states if they want to justify their behavior, or in terms of the situation if they want to distance themselves from their behavior (Malle et al. 2007). These explanations allow us to make further predictions about people's behavior, and they create further expectations that the actor needs to live up to.

Consider this example. I am late to a meeting. My colleagues were waiting for me to begin, and are irritated that I wasted their time. The expectation is that everyone will arrive to the meetings on time, and my violation of that expectation places a burden on me. I am now in a place to explain my behavior. Suppose I explain in terms of traffic—distancing myself from my behavior. By acknowledging that there is usually busy traffic at this time of day, I am taking it upon myself to plan for traffic in the future when travelling at this time. "Traffic" as an excuse only works once in a while. On the other hand, suppose I felt justified at being late, and I explain

in terms of my expectations: “I thought you wouldn’t need me for the first few agenda items since you are covering business that doesn’t involve me. So I stopped for a coffee and croissant.” If the group had different beliefs, thinking that my presence was needed for the first agenda items, we might accept there was a misunderstanding. But then again I have additional information such that the excuse wouldn’t work again, since now I know that I am needed during these agenda items. The explanatory conversation in the face of a failed prediction sets up new expectations that I am supposed to absorb. This relationship between prediction, explanation, and regulation (self and other regulation) in human society is a tight spiral, progressive rather than merely circular or symmetrical. It is a looping effect that modifies itself each time coordination breaks down and a new conversation takes place.

This sketch of a story sounds pretty fancy, but I think it’s less fancy than it sounds. The role of conversation, in particular, makes it look like this is a language heavy process. But I think that’s not the case. Later we will look at the pieces of the story in order to examine what cognitive resources are needed for each of them. But first I will elaborate on the normativity apparent in the folk psychological spiral.

The folk psychological spiral

The folk psychological spiral demonstrates the regulative nature of folk psychology by showing that our behavior creates expectations about how we will act in the future, as do our explanations for our behavior.

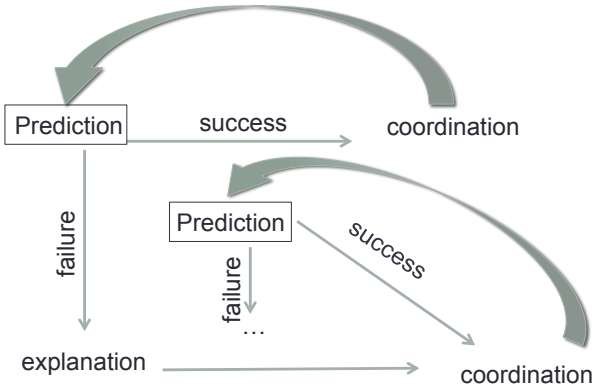

Fig. 1 The Folk Psychological Spiral. The process continues as needed. Thicker arrows indicate regulative processes by confirming a prediction via a successful coordination.

A successful prediction allows us to coordinate behavior, and thus reinforces the prediction, and makes us more deeply committed to it. It also strengthens the prescription for the actor to act as she did, given that others have a greater expectation for that behavior. A failed prediction leads us to seek an explanation for the individual's unexpected behavior, which would have allowed us to coordinate behavior. This then leads us to make a new prediction in similar future circumstances, and success in that prediction has a reinforcing power, while failure again leads to seeking an explanation to be used in a future prediction. Once we get things right, repeated successful predictions strengthen our expectations. There need not be anything moral about this normative model; we can form an expectation that Putri drinks tea every morning, which will lead us to wonder what is wrong if we see Putri refusing tea one morning. If we saw Putri drink tea only five times in the morning, this may be a rather weak worry, but if we knew Putri for a

year and she drank tea every morning until today, then we really wonder what is going on.

The folk psychology spiral works dynamically in our more complicated social interactions. Suppose Ernie and Bert are trying to decide where to go on holiday, and Ernie is lobbying for a trip to Bali. Bert is not convinced that it is a good idea, but Ernie predicts that Bert will love Bali, because he enjoys the arts and the outdoors and monkeys and tropical fruit. Bert is persuaded, but says to Ernie, "You'd better be right about this!" They arrive in Bali and Ernie's prediction is born out—Bert has a great time. That reinforces Ernie's belief in Bert's preferences, and also creates added pressure for Bert to live up to them—Ernie says, "See, I told you you'd love Bali!"

But if Ernie's prediction fails, and Bert doesn't enjoy Bali, Ernie (wanting to preserve the relationship) will seek to figure out why. Maybe Bert hates the tropical heat more than he likes the outdoors, monkeys, fruit, and arts. That explanation leads Ernie to form additional expectations about Bert's preferences, and so Ernie might book an air-conditioned hotel. Ernie would expect Bert to be happier with the air-conditioning, and this expectation creates a pressure for Bert to appreciate the air-conditioned room, to express thanks to Ernie for considering his needs, and so forth.

The folk psychological spiral shares a kinship with the self-fulfilling prophecies identified by social psychologists, and the looping effects identified by Ian Hacking (Hacking 1995). The reinforcing relationship between actions and expectations also serve to coalesce human relationships. Changing your

expectations to better match the person not only helps to coordinate behavior but also serves to create bonds between people. Failures of coordination lead to feelings of alienation, on the other hand, but changes to better facilitate coordination will often lead to feelings of appreciation. When a prediction fails because a partner changes, then it is up to the partner to explain why, which also creates an expectation to live up to the new description. If Bert comes to Bali and doesn't enjoy it because Bert decides he hates the monkeys, to preserve the relationship Bert will have to explain himself to Ernie, or else Ernie will be confused by Bert and feel alienated. But if Bert can explain his reaction—maybe his only exposures to monkeys were in Disney films, and he finds real macaques, who steal his water and climb on his head, to be terrifying. With that explanation, Ernie can understand the seeming contradiction, and they can avoid the monkeys for the rest of their trip. As Iris Murdoch said, "To understand other people is a task which does not come to an end" (Murdoch 1959, 269).

The folk psychological spiral works on a cultural level as well as an individual level. I have used the example of how the regulative nature of folk psychology permits technological improvement (Andrews 2012). Consider our ancestors who have not yet discovered fire, but jointly hunt for meat. Fire is known, but only as a destructive force. After the hunt, I predict that you will eat your share of the meat. But that prediction is a failure, because you shove all the meat in the fire. What to do? We might all be outraged at your crazy behavior, knowing that fire is destructive and meat is only hard won. But if we consider you to be an in-group member, and want to keep you as part of the group, we can seek to explain. This

might take the form of copying your behavior and eating the cooked meat. Learning that meat in fire tastes better than raw meat, we will understand something more about your motivation, and we will gain a technological innovation. Accepting an innovation leads to renewed coordination in the group, and to new predictions that are reinforced by future successful coordination.

At this point we can examine the cognitive resources needed to engage in the full spiral of pluralistic folk psychology. The examples I have given so far are all heavily linguistic, as they are examples from humans, and humans are linguistic creatures. But we shouldn't assume from that that language is a necessary part of normativity in folk psychology. We can be misled about the role for language when language is so deeply entrenched in our world.

The social cognitive practices in the story told in the last section include four main elements: the existence of social norms/expectations, reactions to violations of norms, ability to justify action, and hence communication. Let's look at each of these ingredients. I will argue that none of them requires language.

Social norms

When we speak of social norms, often the thought goes to big issues like moral norms, or to explicitly taught norms in the form of manners—placing a napkin on the lap or saying "thank you". But social norms also include many things we often don't think about, and don't explicitly teach within a community. They are often easier to see when looking at cultures different from your own. For example,

social norms dictate how close you can stand to the person you are talking to, whether you can touch someone's head, or take off your shoes while eating dinner.

Naïve normativity is an understanding of how we do things around here that doesn't rely on having personally accessible rules of action. In Hannah Ginsborg's discussion of her notion of primitive normativity, which she describes as "very roughly, normativity which does not depend on conformity to an antecedently recognized rule" (Ginsborg 2011, p. 233), she gives an example of a child sorting colored blocks. An infant can begin a sorting game, separating blue and red blocks into different piles, and become irate if an adult interferes by putting the red block in the blue pile. In this case she has a primitive sense of how to go on from here, and a corresponding emotional experience to violating and respecting the unstated rule.

The notion of belonging together that we see when children sort blocks reflects a more fundamental understanding of belonging, namely social belonging. Naïve normativity is a cultural version of Ginsborg's primitive normativity, for it includes identifying with in-group members, and a desire to imitate in-group behaviors. It not only allows one to anticipate what group members will do based on what group members should do, but it also creates a socially imposed pressure to act in the same way that group members do. A child implicitly recognizes how close to stand when talking to a stranger by adjusting her body based on her conversational partner's own bodily adjustments, and she becomes good at both following the norm and recognizing violations. By the time she explicitly recognizes the violations, she is already at a point where her behavior is being checked by the implicit social norm.

Social norms are not just had by prelinguistic infants, but there is evidence that other great apes also live a life of *oughts*. Chimpanzees have norms against infanticide, norms about group territory and ownership of food. The strong protect the weak, as demonstrated in road crossing behaviors (for a discussion of these see Andrews and Gruen 2014). Chimpanzee infants engage in neonatal imitation as do human infants, suggesting an innate drive to imitate the actions of her in-group members (Myowa-Yamakoshi et al. 2004). There is little prima facie reason to suspect that having social norms would be something only language users have, and when we see evidence of norms in other species and in prelinguistic humans, we have all the less reason for thinking language is implicated here.

Reactions to violations of norms

A participant in the folk psychological spiral reacts to other agents' norm violations, and can differentiate between agents whose behavior is to be held up to the norms, and those who are not full agents or agents at all. A child who whacks another with a branch may be violating a norm, but a tree in the wind that whacks another with a branch is doing no such thing. Being able to make this distinction requires some understanding of agency, as a creature whose behavior is normativity governed. An agent can grasp norms and modify her behavior to be in line with those norms.

A full participant in the folk psychological spiral responds to norm violations in others' behavior, perhaps with negative affect, or punishment, or an empathic attempt to understand the motive behind the violation. She can also respond to her

own violations, by attempting to better meet the norm in the future, by offering an excuse for her behavior, or by demonstrated emotional responses such as guilt.

A prelinguistic infant can protest a violation of her colored block sorting game, and act to correct the error. There is evidence that other species also react to norm violations. The psychologist Anne Russon gives the following example of a game much like the infant block sorting, this one invented by an infant orangutan named Daidai:

> Also with Daidai, I conducted a formal "do what I do" imitation experiment starting in 1994, when she was about six years old, and continuing during my 1995 and 1996 visits…In one case, I had three dish-shaped pieces of coconut shell and three jackfruit seeds (hard, but each about the size of a small elongated grape). I placed each coconut shell 'dish' on the ground and then started to place one jackfruit seed on each dish. So the game was a matching (classification) one: one seed with one dish. I had just placed two seeds on two different coconut dishes, and was in the process of placing the third seed on the third dish, when she picked up the 2nd seed and firmly put it with the 1st on the 1st coconut dish (i.e., both seeds on one shell). I moved the 2nd seed back to the 2nd dish, and she immediately and just as firmly picked it up and put it back on the 1st dish with the 1st seed. My impression was that in her mind, the seeds went together (seed with seed) and it couldn't be seed-with-dish. The point: there was a 'right' way to do it, she insisted on it, and I was simply wrong (Anne Russon, personal communication).

Like the human infant who corrects the human who placed a red block in the blue pile, Daidai corrects Russon by placing the jackfruit seeds together in a bowl.

Formal studies offer further evidence that some species react to violations of individually constructed norms. The biologist Diana Reiss gives us an example of training a bottlenose dolphin named Circe, who was newly captured. Part of the training process involves giving dolphins a "time-out" when they make errors by stepping back and silently waiting a minute or two. Circe quickly learned that the

time-out indicated an incorrect response. Circe also taught Reiss something—that she preferred to eat fish heads and bodies, but not the spiny tails, which she would spit out. Like an indulgent mother cutting the crust off bread, Reiss started trimming the tails off the fish, and Circe would happily eat. So Circe came to know these two things—time outs are used for inappropriate behavior, and fish fed to her should have tails cut off. The interesting case occurs when Reiss was the one to make an error, accidentally feeding Circe a spiny fish tail:

> One day during a feeding I accidentally gave her an untrimmed tail. She immediately looked up at me, waved her head from side to side with wide-open eyes, and spat out the fish. Then she quickly left station, swam to the other side of the pool, and positioned herself vertically in the water. She stayed there against the opposite wall and just looked at me from across the pool. This vertical position was an unusual posture for her to maintain…I could hardly believe it. I felt that Circe was giving me a time-out! (Reiss 2011, 75).

After this experience, Reiss decided to formally test Circe as part of her PhD thesis, and she found that Circe consistently engaged in this time out behavior whenever fed uncut fish (Reiss 1983). From correcting inappropriate behavior, to protesting it vocally, as when female chimpanzees and macaques scream when infants are not being treated properly, to wagging a finger at a naughty child, language is also not necessary for recognizing norm violations.

Communication

To participate in the folk psychological spiral, one must be able to communicate that another that she didn't live up to expectations. Recognizing norm violations is one thing, but communicating them is another. Communication is a

cognitive ability that is, of all those discussed so far, most closely associated with language, as linguistic communication is the most familiar sort for humans. But we also communicate through gesture, using our hands to signal someone to approach or stay away. We communicate through facial expressions, using a friendly smile to invite approach. We communicate through bodily posture, slouching over when we don't want to engage with others, and opening our chest and arms when ready to connect.

The cases presented in the last section suggested a communicative context; Circe was letting Reiss know that she wasn't feeding her the right kind of food, and Daidai was letting Russon know that she wasn't sorting the jackfruit seeds properly. However, the cognitive capacities involved in communication are hotly debated, with some suggesting that we need to mindread in order to engage in intentional communication (see Andrews 2015 for a discussion of communication without language). This opinion is often attributed to Grice, though it isn't clear that Grice himself had that requirement in mind (Moore, *forthcoming*). Communication is also often thought of as information exchange, such that a communicator has the desire to inform some naïve individual. But not all acts of communication fit this model. Two partners in the midst of a heated fight are often not transmitting any new information, but are expressing their anger at the other. Mindless chatter is also often not a good example of the communicator having the desire to inform another, especially when it involves sharing more than one intended.

Anne Russon and I have reported cases of oranguans pantomiming actions that they want performed on them, and these pantomimes often occur in contexts

when their earlier messages didn't result in the desired outcome. For example, a rehabilitant orangutan named Siti wanted a human she knew to open a coconut with a machete, saving her the hard work of prying it open herself. She gave a few half-hearted tries to open the coconut, then handed it to the human. He gave it back to her, and then she picked up a branch and started hitting the coconut, as if she was using a machete. Then she handed it back to the human, who then acquiesced and used his machete to open the coconut (Russon and Andrews 2011. We argued argued that pantomimes can be compositional, systematic, and productive, as is human language. Pantomime has a rich expressive power, but it is not itself a language. Whatever the best analysis of intentional communication turns out to be, it must include acts of pantomime, such as signalling to the barkeep that I want another drink by using my thumb and little finger to indicate drinking from a glass. Such gestures work across cultures, and don't rely on a standard set of iconic movements. In a different context, the thumb and little finger gesture can indicate the question "Call me?" or suggest a buddy to "Hang loose."

Ability to explain and justify actions

A member of the full folk psychological spiral is also going to be able to communicate explanations for her actions in order to justify them. Here again we might expect language to play a role, but here again we would be misled. In fact, it is here that many advocates of folk psychological normativity take language to be an essential cognitive ability. For example, Tad Zawidzki thinks that justifications in

terms of one's beliefs and desires, which require language, are the cornerstone to folk psychological normativity. He asks us to consider the following case:

> As an example, consider a scout returning to her hunting party to report that a large herd of prey is to the north. The hunting party proceeds north and finds no trace of the prey. The scout's reliability as a cooperation partner is now in serious jeopardy. However, she can go some way toward rehabilitating it by constructing a Brunerian narrative that appeals to certain nonobvious intentional states. Perhaps she was traveling at night, got lost, and *believed* that she had been heading north, when she had actually been heading east. The conceit that behavioral appearances might mask an exculpatory mental reality can be used to help mitigate the fallout from apparent reneging on discursive commitments (Zawidzki 2013, 220).

The Brunerian narrative is a story about how beliefs and desires caused because, and Zawidski correctly points out that this is one way of justifying behavior. However, Zawidzki says this kind of case is "a good candidate for a nonepistemic, social function of distinguishing between behavioral appearances and mental reality" (Zawidzki 2013, 224) suggesting that words are transparent in ways that behavior is not. Words bridge the gap between the externally observable situation and future action. So on his view, language is needed for real justificatory practices.

Zawidszki and I agree that the ability to repair failures to live up to societal expectations is important for the development and continuation of human culture; he writes, "Given the importance of living up to such commitments in the socioecology that I have argued characterized human prehistory, a way of repairing the damage to social status caused by failures to live up to them would have been a highly useful, nonepistemic, social function for the concept of a mental reality behind behavioral appearances" (Zawidzki 2013, 224).

However, I disagree that language is transparent in the way behavior is not, since language is just another kind of behavior. And I don't see why we need to accept that language is necessary for this kind of exculpation. A nonverbal scout could lead the hunting party back to the landmark at which point he has lost his way, and then pantomime that he thought he had turned left rather than right, through pointing and gesticulation. An innovator can explain why he put the meat in the fire by eating it and offering a bite to his companions. Pantomime can go a long way to offering sophisticated justifications of behavior.

While Anne and I didn't see evidence that orangutans offered explanations of their unusual behavior, there is a recorded case of an enculturated bonobo, Panbanesha, responding to a why question. In the video Panbanesha and Sue Savage-Rumbaugh are in an informal food context, and Panbanesa is biting on a bowl of food. Savage-Rumbaugh asks "Why are you biting your bowl?" and Panbanesa responds by opening her mouth wide and touching one of her teeth in the back of her mouth. Savage-Rumbaugh, unruffled, says, "I see, your tooth is the problem. Can I look at your tooth?" and Panbanesha allows Savage-Rumbaugh to examine her mouth (Savage-Rumbaugh, unpublished data, courtesy of Jim Benson). This exchange is significant evidence that an enculturated chimpanzee can respond appropriately to a why-question that is asked in an informal conversational context—she can explain her unusual behavior. Nonverbal communication via gesture and pantomime can answer why-questions, and can repair failures to live up to social expectations. Even here, language is not needed.

Conclusion

When one becomes a pluralist about folk psychology, the causal nature of folk psychological reasoning is set aside in favor of a normative view. The folk psychological spiral shows how social expectations permit us to predict behavior, and that when predictions go right those expectations are reinforced. The spiral helps us to coordinate and cooperate, live in large and complex societies that embrace technological innovations.

The cognitive capacities for pluralistic folk psychology in all its regulative glory are available to creatures who lack language, given that the elements of the folk psychological spiral do not rely on linguistic capacities. The emphasis placed on language even by those advocating non-standard views of folk psychology do not appear to be warranted.

Why should we care that folk psychology need not involve language? There are several consequences to this conclusion. First of all, we can look at social cognition in other species to learn about human social cognition. By doing so we might be better placed to see that abilities we thought require language can in fact be accomplished without language, and thus it helps us get a better view of human cognition. Doing research on human minds can be tricky because we might lack the distance required for it; just as it is easier to see implicit norms in other societies, it may be easier to see simpler mechanisms in other species. Findings in both domains should invite us to see implicit norms in our own society, and simpler mechanisms in our own species. C. Lloyd Morgan put it this way, in what I've been calling Morgan's Challenge: "To interpret animal behavior one must learn also to see one's

own mentality at levels of development much lower than one's top-level of reflective self-consciousness. It is not easy, and savors somewhat of paradox" (Morgan 1930, 250).

But perhaps most importantly, seeing that the folk psychological spiral can be had without language suggests a fundamental role for naïve normativity. It suggests that before mindreading, before explaining in terms of beliefs and desires, social animals think about what they, and others, *should* do. Moving from descriptive representation to normative representation is an essential step in the evolution of humans and the development of the cognitively complex social structures that we, and probably many other species, live in. Simple causal reasoning can't help predict or explain the behavior of cognitively flexible creatures, since there is a gap between the observed environment and the future action. But knowing what the other should do—as a female, as this person, and as a member of this culture—goes a long way to making other people predictable and understandable. That is normative thinking at its root.

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