ANIMAL BEHAVIOR

Farm animal welfare: beyond 'natural' behavior

An animal-centered view guided by what animals value could improve welfare on farms.

By **Marian Stamp Dawkins**

Globally, over 78 billion land animals are reared for human consumption each year (over 70 billion chickens, with pigs and cattle making up much of the rest)*(1).* The trend is growing, but so is public concern about the welfare of these animals, particularly in intensive farming systems. In response to public concerns about the lives of farm animals, requirements for improved animal welfare now widely appear in legislation, in farm assurance schemes, and as an important ESG (Environment, Social and Governance) goal for food producing companies, giving animal welfare a higher priority than it has ever had before. However, requirements which prioritize animals' ability to exercise 'natural behavior' are often imposed without showing that they actually improve welfare from the animals' point of view. Without evidence to inform policies and practices, industry may be wasting money and misleading the public - all without any genuine improvement in animal welfare.

Approaches to animal welfare have included the Five Freedoms (*2*), The Five Domains (*3*) and the Four Principles of the European Union's Welfare Quality Assessment. All put good physical health (particularly absence of disease, injury, hunger, and thirst) as necessary components of welfare. But they all also agree that there is more to good welfare than physical health and it is in trying to capture that extra component of welfare – what might be called the mental as well as the physical health of an animal – that the real problem lies.

The food industry has addressed this problem by placing increasing emphasis on one particular welfare metric – 'natural behavior'. 'Natural behavior' is behavior shown by animals living where their ancestors evolved or at least in man-made environments that allow them similar freedom of movement. The welfare of more confined members of the same species – such as those living in intensive farming systems – is then judged by the extent to which they, too, are able to show this natural behavior (*4*).

The critical assumption here is that natural behavior is necessary for good welfare and that therefore welfare standards on a farm can be judged by the extent to which animals living there show this natural behavior. But this assumption has been repeatedly challenged, for example on the grounds that some natural behavior, such as predation, actually reduces welfare *(5,6).* Given the priority now being given by the food industry and the public to 'natural behavior' (*4*), the objections that have been raised need to be taken more seriously by those responsible for actually introducing changes to farm animal management. Useful though natural behavior is as a starting point for assessing welfare, over-emphasizing it may mean that animal welfare is not being improved as much as it could be.

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The rise of 'natural behavior' as a welfare metric

'Natural' is an emotionally loaded word, exploited by countless advertisers wanting to present their products as desirable because they are natural as opposed to artificial. So 'natural' and 'behavior' form a combination that finds approval almost without question. It is therefore not surprising to find that public opinion supports the idea that animals should be free from the restriction of cages and able to behave naturally (*7*).

The idea of natural behavior as a necessary part of good welfare really took hold with the publication in 1979 of the Five Freedoms (*2*), five simple statements about what was necessary for good animal welfare. The first three of the Five Freedoms address the conditions necessary for physical health – freedom from hunger, physical discomfort and injury, while the last two refer to mental health – freedom from stress and, importantly, freedom "to perform most normal patterns of behavior" ('Normal' rather than 'natural' being used to allow for the fact that domesticated farm animals may behave differently from their wild ancestors but still have the same need for freedom of movement).

Natural behavior was given this prominent place in welfare assessment because it was believed by many at the time that animals had natural instinctive urges that had to be satisfied if animals were not to be frustrated. "A very large part of animal behaviour is basically determined by instinctive or innate abilities, proclivities and dispositions" wrote W.H. Thorpe in one of the key papers used in drawing up the Five Freedoms *(8).* "Suppression of these instinctive appetites can give rise to evidence of prolonged and intense emotional disturbances." Natural behavior and welfare thus seemed inextricably linked.

The Five Freedoms were subsequently taken up and used around the world as the basis for animal welfare legislation and as part of industry practice. With the current interest in animal welfare, their influence today is perhaps greater than ever, and they are increasingly found, often in their original wording, in the sustainability and ethical goals of food producers, food retailers, and outlets across the world. For example, an international food outlet gives as one of their animal welfare priorities "Providing enrichments that support natural behavior" and in applying this to chickens states: "We are working with supply chain partners to ensure housing environments that promote natural behaviors such as pecking, perching and dust-bathing." (*9*).

'Natural behavior' thus seems to be the ideal welfare metric. It is based on the animals' own behavior, it can be measured and even quantified, it has political clout around the world, and above all it has public opinion on its side. All this makes it all too easy to overlook the very real problems that there are with uncritically linking natural behavior to welfare. Natural behavior, if used on its own, may not improve animal welfare at all.

The flaws with natural behavior as a welfare metric

One obvious problem with natural behavior is that a life in the wild can be brutal. Wild animals in their natural environments are subject to constant threats to their survival. Even in populations completely unaffected by humans, death by predation, disease, malnutrition, attacks by other animals, parasites and adverse weather happens all the time and results in many wild animals having very short lives. Captive animals are often healthier and live longer than their wild counterparts (*10*). At least in captivity, an injured animal can be recognized and treated quickly, whereas a wild one can be left to a slow and lingering death or eaten while still alive. Many a natural environment would

not pass muster if judged by the standards of the Five Freedoms.

Just as living in a natural environment does not guarantee good welfare, neither does performing natural or species-typical behavior (*5,6*). Being chased by a predator, for example, is entirely natural for many wild animals but it is also something they will choose to avoid if given the opportunity. Here is the real weakness of natural behavior as a welfare criterion. It does not take into account what the animals themselves want (*5,6*). What an animal does – the behavior that it shows, simply reflects the state it is in at any moment and that could be a state of poor welfare that it was attempting to change. For example, a wild animal could be hiding from danger because it was fearful or foraging for food because it was desperately hungry. In other words, the natural behavior an animal is showing can be a sign that its current state of welfare is poor and it is attempting to rectify it.

What animals value as a welfare metric

The last forty years have seen major advances in our understanding of the behavior of animals – what stimuli are important to them, what motivates them and, crucially, what are the effects of not being able to perform certain behaviors. The current view is that most animals – including the birds and mammals that form part of modern farming – have some behavior that can be described as innate or unlearnt but they are not automata rigidly programmed to carry out a fixed repertoire of 'natural behaviors' and doomed to be frustrated if they cannot perform every single one exactly the way and in exactly the proportions shown by their wild ancestors. On the contrary, natural selection has made animals much more flexible than this by acting more on what animals value (what they find rewarding or aversive) than on the specific behaviors they might perform (*11*).

What animals have evolved to do is not to 'perform a behavior' but to be rewarded or punished by circumstances that are the usual result of such behavior, which gives them much greater range of behavioral options (*11*). For example, an animal that has been selected to find a sweet taste pleasant can learn to find food in environments that may be completely different from anything its ancestors ever experienced, just by repeating actions that lead to the reward of the sweet taste. It can learn to use entirely novel and unnatural actions to obtain this reward and will be much better at exploiting a new source of food than an animal limited to a fixed set of responses. As a practical example, cows will learn to press a button to turn on electrically driven rotating brushes, which they then stand next to, passively letting the brushes groom them. The set-up is highly unnatural and the cows do not do the 'natural' behavior of actively rubbing against trees or fences, but they clearly find being passively groomed by brushes highly rewarding as they will push open very heavy gates to get to them, repeatedly switch on the motors and choose brushes over trees if given the choice (*12*). What matters to the cows is not doing the rubbing behavior but the usual result of doing the rubbing - the 'reward' of the associated touch.

Understanding what animals find rewarding or aversive allows welfare to be defined by the animals themselves, rather than having it imposed by humans. States of positive welfare (pleasure, contentment) can be objectively defined by what animals demonstrate that they find rewarding and will work for such as by pressing buttons, pushing levers or operating computer touch screens (technology now provides many different ways of finding out what animals value). They can demonstrate what stimuli they want and what behavior they value being able to perform, which may or may not include their natural behavior. It is even possible to ask animals *how much* they value being able to do different behaviors by comparing how hard they will work for them (e.g. how many lever presses they will make, or what weights they will push) *(6).*

States of negative welfare can also be objectively defined as those produced by being forced to exist in conditions they find punishing (discomfort, pain) or in which they anticipate pain (fear) or do not obtain an expected reward (frustration). Differences between animals can be accommodated by separately investigating reward value of different outcomes to animals of different ages, breeds and sexes, thus taking into account individual welfare needs. For example, adult laying hens will choose high perches for roosting at night (*13*), growing broiler chickens with their heavier bodies prefer lower more solid platforms (*14*) while very young chicks are brooded by their mother (if present) on the ground, not on perches at all. Simply providing the same sort of perches to all breeds and ages of birds and then judging their welfare by whether or not they perch, is therefore to miss the animal's own point of view and what these different groups need and value for their welfare.

Judgements about animal welfare in different farming systems could easily include whether they provide what animals themselves value, based on what research shows they find rewarding or punishing. Knowledge of natural behavior is thus still important because it provides the most likely candidates for what animals might value but we can now do much better than constructing farm environments based only on whether animals are seen to be doing a specific set of species-typical behaviors. We have the means to look beyond what they do and to understand what they have evolved (or been selected by us) to regard as desirable environments. Understanding the nature of an animal means understanding not only what it does but what it values. Even John Webster, one of the originators of the Five Freedoms came later to believe that the key Freedom should have been "Freedom to choose" (*15*).

Of course, animals do not always choose what is good for their health so that what animals value in the short term has, as with us humans, to be balanced against what is best for long term health *(6).* We need on-farm research to find the optimum balance between these two important components of welfare.

Conclusions

Natural behavior as an animal welfare indicator gained popularity at a time when relatively little was known about what animals value. We now have much more information about what animals really want and have developed a wide range of techniques for letting them tell us.. There have also been major advances in our knowledge of how the behavior of animals is motivated, how it develops, and how it differs between individuals. We are therefore in a good position to carry out research to test the validity of any claim that animal welfare has been improved by seeing whether the animals concerned have been provided with something they demonstrably value. The current tendency of the food industry to use natural behavior uncritically as an indication of good welfare without providing such evidence therefore needs to be challenged. Specifically, claims that animal welfare standards are being improved because animals are provided with opportunities for 'natural' behavior such as access to pecking blocks requires, firstly, basic evidence that birds actually interact with and peck at these objects. Secondly and most importantly, there needs to be evidence that they value the opportunity to engage in the behavior sufficiently to be willing to work to be able to do it – that they will not only choose to do it but overcome obstacles or learn to perform unusual tasks to do so. The evidence needed is a combination of small-scale controlled studies on what animals want followed up by large scale on-farm research to ensure that results are directly relevant to conditions experienced by animals on commercial farms and take account of variation between animals of different breeds and ages. Some of this evidence is already available but not utilized. Some will need

a collaborative program of research between food producers and the research community. Either way, a more animal-centered view of welfare, replacing over-reliance on the misleading concept of natural behavior, could result in genuinely improved standards of farm animal welfare.

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