

WHAT DOMESTICATION HAS NOT CHANGED: HOW CAN WE GUARANTEE THE WELFARE OF FARM ANIMALS IN INTENSIVE PRODUCTION SYSTEMS?

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The welfare of an animal depends on its health and on the extent to what its biological needs are met. Biological needs can be roughly divided into two main groups: (1) those related to nutrition and physical and thermal comfort, and (2) those related to mental health and behaviour, including a varied and stimulus-rich environment, a perception of control and agency, and the possibility to engage in highly motivated behaviours. This paper will deal with the importance of this last need for the welfare of farm animals. The term “behavioural need” was defined a few decades ago based on motivational theory. The two main traits that define a behaviour as a “behavioural need” are that (1) its onset depends mainly or solely on internal factors, such as changes in hormone levels, and (2) its motivation only disappears when the animal has performed the behaviour and therefore it is relatively independent of its functional consequences. Several early studies on behavioural needs used the nesting behaviour of sows as an example. As behavioural needs are controlled by internal factors - as opposed to external stimuli-, their motivation is independent of the environment where the animal is kept. Furthermore, animals must perform the behaviour, as otherwise its motivation will remain high. More recently, the concept of “behavioural needs” has been criticized on the grounds that many behaviours that do not fit its definition are still important for welfare, as they contribute to the physical or mental health of animals. In this paper, the term “behavioural need” will be used in a wide sense to refer to all behaviours that, independently of their precise motivation, are important for welfare. To identify which behaviours must be considered “needs”, we must first describe the natural behaviour of the species. This can be challenging for domestic animals, as their behaviour can be severely constrained by the human-made environment in which they live and finding out what is “natural” can be very difficult. One approach to overcome this difficulty is to study the behaviour of free-ranging populations of domestic animals. Several studies have followed this approach with cattle, pigs, and chickens, among other species. Their general conclusion is that the domestication process has modified the frequency and intensity of several behaviours but has not changed the ethogram of the species – e.g., its behavioural repertoire- nor the motivation of each behaviour. Therefore, the natural behaviour of domestic animals is not substantially different from that of their wild ancestors. Once the species’ natural behaviour has been described, the following step is to identify which behaviours -among all those that make up the ethogram- are important for welfare. One way of doing this is finding out whether the impossibility to perform a given behaviour has negative consequences such as an increase in abnormal behaviours, a stress response, or an alteration in the cognitive development of the animals. Also, cognitive bias tests, preference tests or tests that measure the elasticity of demand can be used to assess the relevance of a particular behaviour. These and other, complementary approaches have yielded the conclusion that positive social interactions and foraging behaviour must be considered behavioural needs for most if not all species. Additionally, other behaviours such as nesting, perching, and dustbathing are behavioural needs for some species (nesting is a behavioural need for sows and hens, whereas perching and dustbathing

are behavioural needs for chickens). The importance of positive social interactions -including the mother-offspring bond- has been studied in dairy calves and pigs. In natural conditions, calves interact with their peers from a very early age, whereas on many dairy farms they are housed individually until 8 weeks of age. Several studies have shown that group-housing of calves has many positive effects on the development of cognitive skills, among other benefits. In pigs, weaning at 3-4 weeks disrupts the mother-offspring bond -as natural weaning would occur at a much later age- and has negative consequences for the physical and mental health of piglets. The importance of foraging behaviour has been studied in pigs, chickens, and ruminants. In pigs and laying hens, inability to perform normal foraging behaviour (rooting in pigs and pecking and scratching in hens) is one of the main risk factors of tail biting and feather pecking respectively. It is noteworthy that the appetitive phase of foraging behaviour -e.g., the exploration and manipulation of food prior its intake- appears to be particularly relevant and turns out to be important by itself and not only to acquire food. In ruminants, the importance of foraging behaviour has been assessed in dairy cows by looking at cows' motivation to graze. To a lesser extent, it has also been studied in sheep kept indoors, and it has been suggested that grazing restriction contributes to wool-pulling. In this paper, a review of the experimental evidence about the importance of natural behaviour will be given, and some practical approaches to improve welfare of farm animals in intensive production systems by providing for their behavioural needs will be discussed.