

FACTORS AFFECTING THE OCCURRENCE OF STEREOTYPES
IN STALL-HOUSED DRY SOWS

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A stereotypy is a relatively invariable sequence of movements occurring so frequently in a particular context that it could not be considered to form part of one of the normal functional systems of the animal, feeding, body maintenance, reproduction, etc. (Broom 1983). Since stereotypies are shown by animals trying to cope with adverse conditions they are useful as welfare indicators. Stereotypies shown by confined sows include barbiting, nose-rubbing, head waving, drinker-pressing, sham-chewing etc. Their incidence is greater among animals confined by tether or in stalls and there is some evidence that they are shown more by animals which have been confined for long periods (Jensen 1980). If straw (Fraser 1975, Vestergaard 1981) or earth (Wood-Gush & Beilharz 1983) is present in the pen, these activities are less frequent but the consumption of chopped straw has little effect.

Rushen (in press) and Dantzer & Mormède (1982) have both reported that barbiting and various rooting movements are much commoner just before feeding whereas sham chewing etc. are commonest at other times of day. Dantzer & Mormède suggest that it is useful to distinguish "terminal" activities which occur just before food delivery from "interim" activities which occur predominantly at other times. We have investigated the occurrence of stereotypies during the day, the effect of a high bulk diet on behaviour and the effects of an observer, who was a stranger, standing in front of the pen.

Methods

Sows were housed in individual pens, separated by bars from their neighbours, in a 100 sow house at the National Institute for Research in Dairying, Shinfield, Reading. They were fed simultaneously, very soon after the lights were switched on in the morning, by moving a lever which emptied food hoppers filled the previous afternoon. Water was supplied from push button drinkers. In Experiment 1, 12 animals were fed the normal diet and then a diet whose weight was increased by 100 % using largely non-nutritive oat hulls. Behaviour was recorded from the commencement of feeding until lights out 8 h later using a slow motion video-cassette recorder. In Experiment 2 the behaviour of 7 sows was videotaped at normal speed from 12.00 - 15.00 h on two successive days. On one day the animal was undisturbed and on the other day a stranger stood quietly in front of the pen from 12.30 - 13.00 h.

Results

The commonest stereotypies were sham-chewing with the mouth empty, drinker-pressing, bar-biting and rubbing the nose on the bar. Body-rubbing, pawing, head-shaking and head-waving occurred infrequently. Rooting movements were frequent but were variable in their patterning. Counts of time spent on each stereotypy and detailed analysis of the sequences of movements involved in the stereotypies showed that there was much variation amongst individuals in their behaviour. An example of the pattern of sham chewing was an animal which would lie, mouth stretch, and then chew at 1 bite s^{-1} with tongue extrusions or nose wrinkling at intervals, usually of 4 s, and with pauses of 2 - 18 s, for a mean duration of 17.5 minutes. Drinker-pressing was very frequent, much more so than would be needed for water ingestion, and water was constantly present below the drinker of many animals. An example of the sequence of movements was a series of presses with the end of the snout for 5 - 8 s followed by a pause of 1 - 2 s and then further presses and pauses for the same durations for 55 - 120 s, all ending with the head being swung down and to the left so that the nose was in the neighbour's pen.

All animals stood and ate or rooted in the trough for at least 24 mins and there was little lying in the first two hours (mdn 5 $min.h^{-1}$) but from 2 - 8 h after feeding, lying ranged from 8 - 54 $min.h^{-1}$. The mdn time lying 0 - 8 h was 270 min on the normal diet and 315 min. on the high bulk diet ($p < 0.02$). There were no differences according to diet in the total durations of stereotypies but Table 1 shows that whilst drinker-pressing occurs equally frequently in 0 - 2 h and in 2 - 8 h, the other stereotypies were more frequent in the 1 - 8 h period (Wilcoxon Test $p < 0.01$). Sham-chewing, which was most frequent during lying, could not be recognised from the slow motion videorecording in Experiment 1 so an extrapolation from data from the 12.00 - 15.00 h period from Experiment 2 is included.

Table 1: Stereotypies shown by stall-housed dry sows during 8 h

	mdn.min. h^{-1} standing		mdn. total in 8 h	range (min.)
	0 - 2 h	2 - 8 h		
drinker-pressing	5.3	4.5	10.3	2.3 - 74.3
bar-biting	0.0	1.9	2.5	0.1 - 10.4
rub nose on bar	1.2	2.7	4.2	0 - 25.5
sham-chewing	-	-	26.4	0 - 89.5
others	0.0	0.8	0.8	0.1 - 5.0
Total stereotypies			51.0	33.3 - 114.4

In the few min. after lights on and before the food was provided bar-biting was high. This and other stereotypies occurred at a high level whilst the food hoppers were being filled. In Experiment 2 no effect on the occurrence of stereotypies of a stranger standing in front of the sow could be detected.

Summary and Conclusions

1. Since some stereotypies occur frequently just before feeding, the presentation of food simultaneously just after lights-on as in the sow house studied, minimises this occurrence.
2. Drinker-pressing occurred throughout the day whilst sows were standing but all other stereotypies were less frequent during the 2 h after feeding. Some of these may occur more frequently when sows detect the food trolley or the staff who feed them but the incidence of stereotypies was not affected by the presence of a stranger. Sows differ in which stereotypies they show. The decision as to what are "terminal" and what are "interim" activities is clearly not straightforward.
3. A high bulk diet had no effect on the occurrence of stereotypies.
4. The sows in this study showed a median of 51 minutes per 8 h day engaging in stereotypies.

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