
SEQUENTIAL ANALYSIS OF BELLY NOSING OF EARLY WEANED PIGS

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Summary

The causal factors of some anomalous behaviours frequently found in early weaned piglets are not well known. A study was conducted to assess the motivation for belly nosing in piglets weaned at 12-14 days. The results showed that belly nosing is more associated with social interaction rather than eating or drinking behaviour.

Introduction

Segregated early weaning improves disease control and performance in pigs. However, it has been linked to an increased incidence of anomalous behaviours, which raises welfare concerns. A common anomalous behaviour is belly nosing, but the key causal factors of this behaviour are not clear. A study was conducted to assess the motivation for belly nosing by examining relationship of belly nosing with other behaviours of segregated early-weaned pigs.

Experimental procedures

Eight pens of 10 pigs, weaned at 12-14 days of age, were videotaped for 24 hours on day 7 post-weaning. Behavioural time budgets and partial correlations for each pig were determined by scan sampling at five minute intervals. Twenty-five belly-nosing events identified by the scan sampling were randomly selected from each of four pens. These events were analyzed by continuous observation of the nosing pig, beginning five minutes before belly nosing began and concluding five minutes after nosing ended. A sequential analysis was conducted to assess the motivation of belly nosing. Behaviours that occur in sequence, that is, one is typically followed by another, are believed to share similar motivation. A Chi-square analysis was performed for each two-event sequence to determine whether the observed frequencies of any of the sequences deviated from their expected values.

Results and discussion

On day 7 post-weaning, the piglets spent the majority of the time lying and standing (Table 1). The average time spent belly nosing was 2.4% of total time. About 80% of the pigs were belly nosing, with approximately 20% spending over an hour per day on this behaviour (Fig. 1).

Belly nosing was negatively correlated with eating ($r=-0.35$, $P<0.05$) and lying ($r=-0.58$, $P<0.05$), but positively correlated with standing ($r=0.28$, $P<0.05$). This indicates that pigs that spent more time lying and eating likely spent less time belly nosing. The average duration of the nosing segment was 538 seconds, during which the focal pig spent 65.8% of time belly nosing with a mean duration of 64 seconds for each nosing incidence. The two-event sequential analysis (Fig. 2) indicated that social interaction and belly nosing frequently occurred in sequence. On the other hand, belly nosing was not directly linked with eating or drinking. The behaviours occurring in sequence are expected to have a common causal factor, or the first stimulates the second. Sequences occurring rarely are likely to consist of behaviours with different causal factors. These results indicate that motivation for belly nosing is more closely associated with social interaction, rather than eating or drinking.

Implication

Incidence of belly nosing is higher in early-weaned piglets. Pigs spent more time eating and lying likely are less belly nosing. However, motivation of belly nosing is more associated with that of social interaction rather than that of eating or drinking. The present results indicate that methods to reduce belly nosing in early-weaned pigs may include manipulating social behaviour, as well as stimulating lying and eating.

Belly nosing is more directly linked to social behaviour rather than eating and lying.

Acknowledgements

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Table 1. Behavioral time budget of early weaned piglets on Day 7 post weaning*

Behavior	Time budget (% of time)	SE
Lying	76.9	1.36
Standing	12.7	0.73
Drinking	0.4	0.11
Eating	5.3	0.77
Belly Nosing	2.4	0.82
Being nosed	2.2	0.76

*Means of 8 pens of 10 pigs.

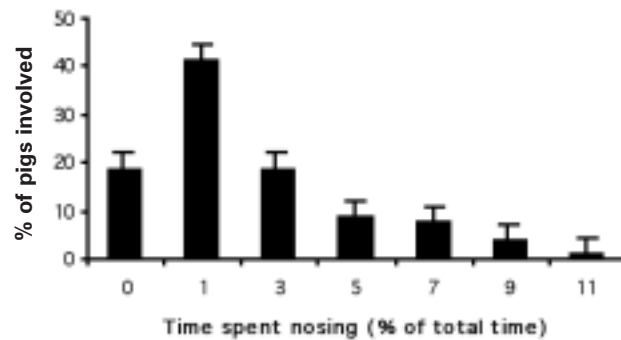


Fig.1. Distribution of belly nosing in individual piglets weaned at 14 days of age on Day 7 post weaning.

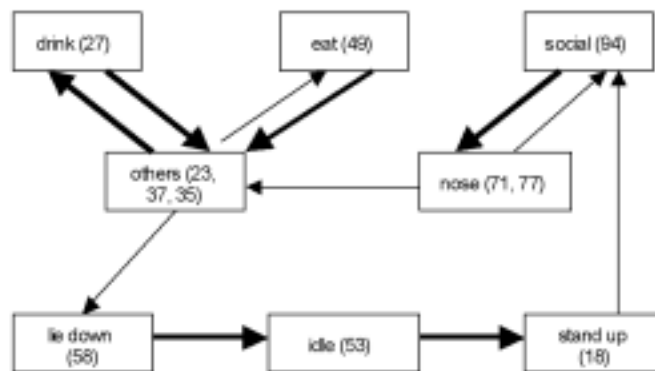


Fig.2. Chi-square analysis: Two-event sequences with observed frequencies higher than the expected means. Numbers in the bracket are the observed frequency of the first event going to the second event, dark and light arrows mean $p < 0.01$ and $p < 0.05$, respectively.