

Characterisation of performers and receivers of manipulative behavior in pigs

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There are indications that tail biting, which is supposed to be redirected exploration behaviour, might have the same motivational background as other manipulative behaviours in pigs. It is known that individual differences regarding performed manipulative behaviour exist, but the individual piglet contributions to tail biting outbreaks remains unclear. We characterised piglets based on performed and received manipulative behaviour prior to a scored tail biting outbreak. Therefore, 60 piglets (respective 12 piglets per pen) were individually marked and monitored by video during the rearing period. Video records were analysed using data of four days prior to a scored tail-biting outbreak and on the day of an outbreak itself. Behaviour was sampled in intervals, i.e. the first 20 min of every other hour between 06:00 and 18:00. Instantaneous scan sampling (every 2 min) was applied for lying, standing, feeding, manipulation of enrichment and pen, whereas continuous observation was applied to record performers and receivers of tail exploration (TE), belly nosing (BN) and nosing (NO). Based on the frequencies, scores were established for each piglet in order to characterise it as performer_P, receiver_R or neutral_N of the respective manipulative behaviour. Scores ranged between -1 (absolute receiver) and +1 (absolute performer). In order to analyse relations between pig-directed behaviour and other behavioural patterns Wilcoxon rank sum tests were used.

TE and BN were performed to a similar extent (median [Q25 | Q75] = 13.0 [10.0 | 21.5] vs. 10.5 [3.5 | 19.0]), whereas NO was performed more often by the piglets during the five days observed (36.0 [21.5 | 53.0]). Compared to TE, frequencies for BN and NO differed stronger between the pens and both behaviours were most frequently performed in the pen that was observed closest to weaning (BN: 41.0 [33.0 | 114.0], NO: 71.0 [37.0 | 79.0]), which indicates redirected suckling behaviour as motivational background.

All calculated scores differed between the pens and ranged on average from -0.34 to 0.25 for TE, -0.2 to -0.05 for BN and -0.34 to -0.01 for NO. Mean scores for TE increased towards the day of an outbreak (-0.11 [d₋₄] vs. -0.01 [d₀]), whereas scores for BN and NO did not follow a clear trend.

Few piglets were either performer (n = 6), receiver (n = 6) or neutral (n = 8) for all pig-directed behaviours simultaneously, all other piglets differed regarding their respective defined character. NO_R lied significantly more often than NO_P (mean ± std

= 242.5 ± 28.1 vs. 214.4 ± 25.8 , $p = 0.01$) and NO_P were standing significantly more often than NO_R (71.2 ± 23.8 vs. 52.8 ± 17.5 $p = 0.04$). Thus, NO_P showed a higher general activity than NO_R . Regarding feeding as well as manipulation of enrichment and pen no differences were found, which might be due to low frequencies of the respective behaviour performed. Regarding $TE_{R,P}$ and $BN_{R,P}$ no significant relations in any of the behaviours were found.

There are indications that pig- directed behaviours are not as strongly connected as supposed. Clear character differences were found and individuals can be simultaneously performer and receiver of pig-directed behaviour.