**Ontogeny of behavioral traits in commercial sows**

Kristina M. Horback and Thomas D. Parsons

animal: An International Journal of Animal Bioscience

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| Behavior Events | Operational Definition | Test |
| Lines crossed (#) | Number of gridlines in open field test that a gilt’s front two limbs cross. Gilt may be walking forward or backward. | OFT, HAT |
| Returns to start box (#) | Number of times the entire body of the gilt re-enters the start box after the gilt has completely exited the start box. | OFT, HAT |
| Jump at walls (#) | Number of times the gilt attempts to jump over the walls of open field. | OFT, HAT |
| Orient to human (#) | Number of times the gilt directs her gaze in the direction of the human. | HAT |
| Latency touch human (s) | Length of time between the door of the start box opening to the open field and the time for entire body of the gilt to leave the start box. | HAT |
| Behavior State | Operational Definition | Test |
| Latency leave start box (s) | Length of time between the door of the start box opening to the open field and the time for entire body of the gilt to leave the start box. | OFT, HAT |
| Lie down (s) | Duration of time the gilt lies down in lateral or sternal recumbency in the open field. | OFT, HAT |
| Nose environment (s) | Duration of time gilt places snout on the walls or floor of open field arena. Gilt may be walking or standing still. | OFT, HAT |
| Rest (s) | Duration of time gilt stands motionless in the open field, without nosing the environment. | OFT, HAT |
| Walk (s) | Duration of time gilt moves forward or backward in the open field, without nosing the environment. | OFT, HAT |
| Vocalize (s) | Duration of time gilt produces grunts (low frequency, low decibel sound) and/or squeals (high frequency, high decibel sound). | OFT, HAT |
| Touch human (s) | Duration of time gilt makes physical contact with the human. Includes nosing, biting, levering and body rubbing. | HAT |

**Supplementary Table S1** Ethogram of behavior events and mutually-exclusive behavior states coded with gilts (*Sus scrofa*) during open field tests (OFT) at 5 weeks old and human approach tests (HAT) at 3 months old.

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| Behavior Event | Operational Definition |
| Bite | Sows uses teeth to clamp down or scrape another sow’s hear or body. |
| Chase | Sow purses another sow at a fast pace, trying to reduce the distance between the dyad. |
| Displace | Sow forces another sow to move away from current location. May or may not be at the end of a fight. |
| Fight | A dyad of sows engage in reciprocal hits and bites while pressing shoulders against each other (face-to-face). |
| Hit | Sow uses snout or side of head to hit another sow’s face or body with force. |
| Lie down | Sow lies lateral or sternal recumbent position with eyes open or closed and not nosing the environment or another sow. |
| Nose other | Sow places snout near (<4 cm) the snout, head, body or limbs or another sow. |
| Retreat | Sow moves away from another sow, at a walking or running pace. May or may not be at the end of a fight. |

**Supplementary Table S2** Ethogram of behaviors coded with sows (*Sus scrofa*) during 1 hour post-introduction to unfamiliar, dynamic gestation pen 5 days following weaning and breeding.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Open Field Test (5 weeks) | | | | | Human Approach Test (3 months) | | | 24 hr Post Farrow | Pen Mixing (Parity 1) | | | | | |
|  |  | Latency enter (s) | Walk (s) | # Lines crossed | Vocal (s) | In start box (s) | Vocal (s) | Human proximity (s) | Contact human (s) | Litter Restraint Test | | # Displace | # Chase other | # Fights | Bite other (s) | # Nose other |
| 5 wk | Restraint Test | *ns* | *ns* | *ns* | *ns* | 0.40\* | 0.58\*\*\* | *ns* | *ns* | 0.38\* | | *ns* | *ns* | 0.51\*\* | 0.50\*\* | *ns* |
| Latency enter (s) | . | -0.39\* | -0.37\* | *ns* | *ns* | *ns* | *ns* | *ns* | *ns* | | *ns* | *ns* | *ns* | 0.44\* | *ns* |
| Walk (s) | . | . | 0.38\* | *ns* | *ns* | *ns* | 0.46\*\* | *ns* | *ns* | | *ns* | *ns* | *ns* | *ns* | *ns* |
| # Lines crossed | . | . | . | 0.60\*\*\* | *ns* | *ns* | *ns* | *ns* | *ns* | | *ns* | *ns* | *ns* | *ns* | *ns* |
| Vocalize (s) | . | . | . | . | *ns* | *ns* | *ns* | *ns* | *ns* | | *ns* | *ns* | *ns* | *ns* | 0.43\* |
| In start box (s) | . | . | . | . | . | *ns* | *ns* | *ns* | 0.64\*\*\* | | *ns* | 0.50\*\* | 0.42\* | *ns* | *ns* |
| 3 mo | Vocalize (s) | . | . | . | . | . | . | *ns* | *ns* | *ns* | | *ns* | *ns* | *ns* | *ns* | *ns* |
| Human proximity (s) | . | . | . | . | . | . | . | 0.78\*\*\* | *ns* | | 0.53\*\* | *ns* | *ns* | *ns* | 0.39\* |
| Contact human (s) | . | . | . | . | . | . | . | . | *ns* | | 0.40\* | 0.46\* | *ns* | *ns* | 0.38\* |
| P1 | Litter Restraint Test | . | . | . | . | . | . | . | . | . | | 0.44\* | 0.74\*\*\* | 0.54\*\* | 0.48\*\* | *ns* |
| # Displace | . | . | . | . | . | . | . | . | . | | . | 0.63\*\* | 0.74\*\*\* | 0.83\*\*\* | 0.46\* |
| # Chase | . | . | . | . | . | . | . | . | . | | . | . | 0.58\*\*\* | 0.63\*\*\* | 0.43\* |
| # Fights | . | . | . | . | . | . | . | . | . | | . | . | . | 0.86\*\*\* | *ns* |
| Bite other (s) | . | . | . | . | . | . | . | . | . | | . | . | . | . | *ns* |

Note: \*P<0.05, \*\*P<0.01, \*\*\*P<0.001

**Supplementary Table S3** Significant Spearman’s rank correlation coefficients among all behaviors collected in gilts (*Sus scrofa*) from 5 weeks old, 3 months old, 24 hrs post-farrow of first litter, and as parity 1 sow in gestation pen. \*P<0.05, \*\*P<0.01, \*\*\*P<0.001