

Do Yorkshire Gilts Become Habituated to Repeated Weighing Over a Trial?

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Summary and Implications

The objective of this study was to determine if Yorkshire gilts become habituated to the process of weighing. A total of 192 pure bred Yorkshire gilts were used. The gilts were housed in 12 pens, 16 gilts/pen providing a space allowance of 0.82 m²/gilt. Gilts were weighed every 2-wks for a maximum of eight scores/ gilt. Gilts were scored while on the weigh scale for activity using a whole number scale of one to five (1 = calm, minimal movement; 5 = continuous rapid movement and an escape attempt) at two different time points, T = 0 (as soon as the back gate was closed and T = 15, 15 sec after the back gate was closed. Analyses were done using Proc Mixed of SAS. The differences during round one between T = 0 and T = 15 was 1 point on the 5 point scale. By round eight this had dropped down to a difference of 0.2. During the first round over both time points the gilts scored on average 2.5, by round 5 this had dropped down to around 1.5 at which point it stabilized. In conclusion, Yorkshire gilts appear to become habituated to the process of weighing over the course of a trial, and as such do not seem to find the process highly aversive.

Introduction

Little work has been published on pig temperament, including their acceptance and habituation to routine research procedures such as being weighed. Many animals find novelty to be a stressful event. If an animal finds the event to be aversive, the level of displayed agitation should increase with each subsequent exposure to the process until a threshold is reached. However if the stimulus is not extremely aversive, the displayed level of agitation should decrease. Therefore, the objective of this study was to determine if Yorkshire gilts become habituated to the process of weighing.

Materials and Methods

Experimental design

The protocol for this experiment was approved by the Iowa State University Institutional Animal Care and Use Committee (12-07-6482-S). The experiment was conducted from April 15 to August 14, 2008. The experimental design for this study was a randomized complete block design, with pen as block and individual pig as the experimental unit.

Animals, housing and feeding

A total of 192 pure bred Yorkshire gilts were used. On the day of placement, gilts were sorted from their home pen by four trained caretakers using sort boards. Gilts were moved to the grow-finish building, and received an ear tag transponder in the right ear. Gilts on average started the trial weighing 40 kg. At the end of the trial average gilt weight was 104 kg. All gilts were housed in a conventional confinement unit located at the Lauren Christian Swine Research Center at the Iowa State University Bilsland Memorial Farm, near Madrid, Iowa.

Data collection

One week after placement, gilts were moved from their home pen to a central location to be weighed and scored for scale activity. Scale activity scoring was conducted every 2-wks until the first gilts completed the trial. Scale activity scores were collected over nine sessions. Once in the holding area, gilts were individually moved onto the weigh scale (Electronic Weighing Systems, Rite Weigh, Robert E Spencer Enterprises, Ackley, IA). The scale was a freestanding self-sustained flow through unit. The weigh scale was of steel construction with waded fiberglass sides and metal woven flooring with rebar spaced 0.30 m for added protection against slipping. The gates, located on both the entrance and exit of the scale, were 1.9 cm angle iron spaced 10.2 cm on center. The inside dimensions of the weigh scale were 0.41 m wide by 1.2 m long by 0.8 m tall. Individual gilt scale activity was determined and recorded while she was on the weigh scale.

Scoring system

Activity scores while in the scale were based on a subjective scale of one to five (Table 1).

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Table 1. Gilt scale activity, adapted from Rempel, *et al.* (2009).

Score	Description
1	Calm, little or no movement
2	Calm movement, including walking forward and backward at a slow pace
3	Continuous fast movement, including quickly walking forward and backward
4	Continuous rapid movement and vocalizing
5	Continuous rapid movement and an escape attempt

The gilt received two scores during each round, T = 0, immediately upon the back gate of the scale closing and T = 15, 15 seconds after the gate was closed.

Statistical Analysis

The scores of the two technicians were averaged to create a single score at each time (T = 0, T = 15) for each pig and used for analysis. Data were analyzed as a repeated measurers using Proc Mixed. The model included the fixed effects of line, round, time and all interactions. Random effects of litter, group and pen were included, along with the repeated measures of round (one through eight) and time (T = 0 and T = 15). Weight at the time of scoring was included as a covariate but was not found to be significant and was removed from the model. autoregressive(1) variance-covariance structure for residuals A variance-covariance structure between rounds was assumed unstructured but constant an autoregressive(1) structure was applied to the covariance of the residuals of time. *P-values*, when appropriate, are presented both raw and with a Bonferroni adjustment. *P-values* when adjusted using Bonferroni are indicated as such.

Results and Discussion

At the beginning of the trial, gilts averaged 2.5 ± 0.1 and this steadily dropped with each successive exposure to the weighing process until round 5 at which point it stabilized around 1.5 ± 0.1 (Table 2). Throughout the trial, gilts were considered calm; by round four, gilts had a mean score below two, indicating a calm pig. During the first round at T = 0 the gilts scored 1.9 ± 0.1 (Figure 1). During this same round, at T = 15 gilts scored 2.9, on the 5-point scale. The difference between T = 0 and T = 15 continually

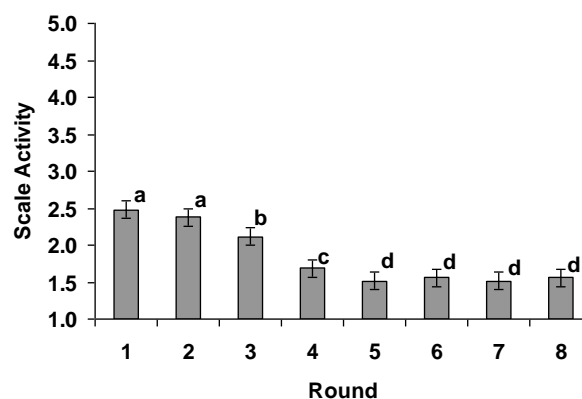
decreased. By round 8 at T = 0 gilts scored 1.5 and at T = 15 1.6. In conclusion, Yorkshire gilts appear to become habituated to the process of weighing over the course of a trial, and as such do not seem to find the process highly aversive.

Table 2. Least square means of scale activity score by time of score.

Round	Parameter		Significance
	T = 0 ¹	T = 15 ¹	
1	1.9	2.9	<0.001
2	2.1	2.6	<0.001
3	1.9	2.3	<0.001
4	1.6	1.8	<0.001
5	1.5	1.6	0.007
6	1.4	1.7	<0.001
7	1.4	1.6	<0.001
8	1.5	1.6	0.001

¹SE between lines equal ± 0.13

Figure 1. Least square means estimate of scale activity score of gilts by round.



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