



Understanding the effect of humans on pig behaviour

How does human behaviour and interaction in the pig barn influence an animal's motivation and emotional state? The pig-human interaction paradigm, also known as the human approach test, was designed to find out.

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Understanding the interaction between pigs and humans is critical as human-pig interactions are intimately related to swine welfare. Evaluating these interactions is especially important when conducting on-farm welfare assessments that may in turn affect market accessibility. Human-pig interaction measurements provide a means to capture previous and on-going experiences between the pig and the caretaker.

In order to objectively assess pig-human interactions and take into account internal and external factors that may influence this relationship, several tests have been developed. These include the Open Field, Tonic Immobility, Elevated Plus Maze, Emergence Test and the Pig-Human Interaction paradigm.

This last one is an on-farm tool to assess these experiences is the pig-human interaction paradigm, which can be defined as measuring the positive, negative and

neutral interactions a pig displays towards a human. In the interest of brevity, this review will address this paradigm and discuss factors that can affect it.

Reduce negative interactions

The pig-human interaction paradigm (also known as the human approach test) was published by Dr Paul Hemsworth and colleagues in 1986 as a means to examine the influence of human behaviour and interaction on animal motivation and emotional state. Producers can use a pig-human interaction paradigm to evaluate levels of fear and subsequently implement positive management strategies to reduce negative interactions experienced by the pig. During the pig-human interaction paradigm, pigs can be evaluated either individually, as in a study by Dr Janice Siegford and colleagues in 2008, or in groups, as previously described by Dr Elaine van Erp and her team in 2002. The test is designed to measure a pig's response to an unfamiliar human stimulus and can be conducted either as a forced- (defined as the human approaching the pig) or a voluntary approach (defined as the pig

Pig-human interaction paradigm in a research setting published by Jessica Colpoys and colleagues in 2014. The human observer is in a standing posture and allowing the pig to voluntarily approach.

approaching the human at its own will). Willingness to approach the human, avoidance of the human, pig activity, and elimination are commonly recorded during this test.

Willingness to approach

A variety of factors may influence the response of an individual pig's willingness to approach a human and should be taken into consideration. This includes how the pig processes external information internally via their senses, genetics, stage of production, and previous pig-human interactions. Let's consider some of these factors.

Pig senses

When a pig is placed into the pig-human interaction paradigm, the pig could use the sense of sight to decide whether to approach. Dr Hajime Tanida and colleagues in 1996 reported a pig was more willing to approach either in a lighted area or move toward a more brightly illuminated area.

Human characteristics

Human posture can also influence the pig's willingness to approach as demonstrated in the pictures. Dr Miura and colleagues reported that weanling pigs approached a dummy lying face down more quickly than a dummy stooped down or standing upright.



Pig-human interaction paradigm using a digital image system created by Shawna Weimer and colleagues in 2013. The human observer in the nursery pen has assumed a crouched posture. Some pigs touch the observer; others are orientated towards the observer and others are not orientated.

Table 1 - A selection of peer reviewed articles that have reported pig-human interaction paradigms with outcomes.

Factors	Effects on pig-human interaction
Positive handling between 0-3 weeks and 9-12 weeks	Positive handling early in life reduces the pigs' level of fear of human.
Unpleasant handling (Whenever a pig approached the experimenter the pig was briefly (about 1 s) shocked with a battery-operated prodder)	Unpleasant handling decreases welfare.
Grouping in similar weight categories	Grouping pigs in similar weight categories decreases the aggression.
Grouping in large social groups	Being in large social groups decreases aggressiveness.
Stockperson attitudes and tactile behaviour	Positive attitudes to the use of petting and the use of verbal and physical effort to handle pigs are negatively correlated with the use of negative tactile behaviors, such as slaps, pushes and hits.
Indoor housing system (Electronic Sow Feeder, more space-limited and thermally controlled/ human contact centered around cleaning out) vs. outdoor system (more extensive/ human contact centered around feeding)	Outdoor pigs had lower heart rate and performed fewer short vocalisation. Took less time to make physical contact with human.
Stall or small group gestation housing	Lesion scores of the head, face, body, feet and legs were higher in group housed vs. gilts in stalls.
Indirect genetic effects and enrichment with bedding of sawdust and straw	Pigs selected for a positive effect on the growth of their group members showed less aggression at reunion with familiar group members.

Sex

Studies have compared barrows and gilts during pig-human interaction paradigms with conflicting outcomes. Dr Inonge Reimert and colleagues in 2014 reported that gilts were faster than barrows to approach and touch a person. However, Jessica Colpoys and colleagues in 2015 reported that barrows and gilts took a similar amount of time to approach a human, but barrows spent more time touching the human than gilts.

Genetics

In another study by Jessica Colpoys and colleagues in 2014, barrows genetically selected to be more feed efficient took longer to approach a human than those that were less feed efficient. However, more feed efficient barrows showed fewer fear behaviours overall, such as attempting to escape and freezing less, suggesting that pigs that are more willing to approach may still be fearful of the pig-human interaction paradigm. For more information on the factors that can affect a pig's willingness to approach, please refer to *Table 1*.

Practical use

The Welfare Quality Assurance programme from the European Commission (2009) measures fear of humans using a pig-approach test, but the Pork Quality Assurance Plus (PQA-Plus) programme from the National Pork Board (2010) discusses the importance of good pig-human interaction but does not formally

assess this.

During beta testing of the PQA-Plus programme, it became apparent that the pig-human-paradigm outcome was detrimentally affected by previous management events that improve pig welfare. For example, vaccination is a critical component of herd health. However, observations by Dr Thomas Fangman and colleagues in 2010 indicated that for several hours after vaccination, pigs were more reluctant to approach a human. In addition, when animals become sick they demonstrate several classical sickness behaviours including increased lying, decreased activity, exploration, feed- and water intake as a means to cope with disease and aid in survival. Thus, health status can change not only the interaction between pigs and their conspecifics but the interaction between pigs and humans as well.

Evaluate multiple measures

To provide an assessment and conclusion on swine welfare, multiple measures can be evaluated including changes to the physiology, performance, health and behaviour of the pig. Human-pig interaction paradigms are one method to assess quality of care through pig behaviour between the caregiver and pig. However, if a human-pig interaction paradigm was to be included in an on-farm assessment, we recommend caution with interpretation as many internal and external factors can affect a pig's willingness to approach. **PP**