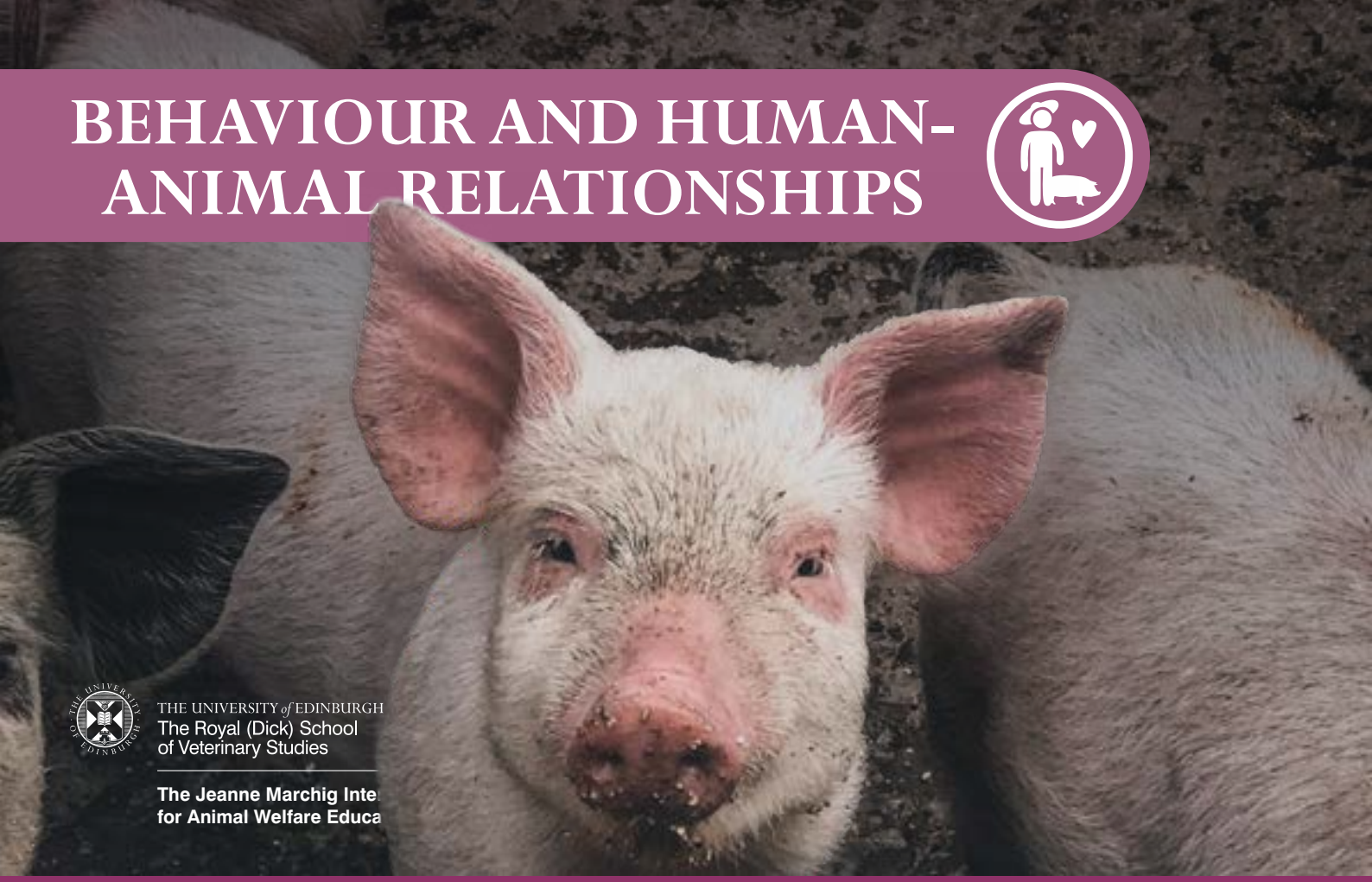
BEHAVIOUR AND HUMAN-ANIMAL RELATIONSHIPS



THE UNIVERSITY of EDINBURGH
The Royal (Dick) School of Veterinary Studies

The Jeanne Marchig Inte
for Animal Welfare Educa

The way behaviour and the Human Animal Relationship impact on the welfare of pigs

The differences in the life cycle of wild pigs in nature and pigs in commercial farms.

How most commercial farms for pigs are structured and managed.

Main welfare issues to look for in the pig industry and opportunities to promote positive animal welfare.

Behaviour and Human-Animal Relationships (HAR)

Pigs are very social animals. Understanding their natural behaviour is important to recognise the welfares challenges they will face during their life on farm. Understanding changes in behaviour can also help us to identify problems and guide us to find potential solutions.

This section has been broken down into (1) general behavioural issues, (2) dry/pregnant sow behavioural issues, (3) farrowing/lactating sows and piglets, and (4) HAR.

General behavioural issues

Aggression in group housed pigs

Aggression can be a problem when unfamiliar pigs are mixed together (see also **Interactions with other piglets**). If breeding sows are group housed, they are mixed into a group of gestating sows at every weaning period (or once mating is confirmed). At each new mixing, sows need to form a dominance hierarchy in the new group, which often involves aggressive interactions. While this is considered a natural behaviour, it can be very stressful and lead to injury, especially in commercial situations where there is a large number of sows, if a dominance hierarchy fails to form quickly or if more pigs are mixed in later.

Aggressive interactions can also be observed after a dominance hierarchy has been formed, being more frequent and shorter in duration. In this case, they are expressed as single bouts of aggression (e.g. displacement, knocks and bites). Levels of aggression can vary depending on housing type, space allowance, amount of social mixing, the feeding system (feed on the floor, in troughs, or from an electronic sow feeder) and diet, including the type and quantity of fibre, the form of the feed and the timing and frequency of feeding (see **Nutrition**).

Key points Strategies to reduce aggression in group housed pigs:

- Establishing stable groups early and mixing pigs back in with familiar pigs following weaning after farrowing and lactation, known as batch farrowing.
- Using a specific mixing pen with deep straw bedding and plenty of space and different hiding areas will allow sows to protect their legs when fighting or mounting each other when coming back on heat.
- Allowing piglets to intermingle before weaning can help them to resolve conflicts later in life when they meet other unfamiliar pigs.
- Strategies to improve piglet social competence can also be beneficial when they become sows themselves (see Interactions with other piglets).
- Allowing sow contact during lactation can reduce aggression at weaning (e.g. multisuckle/ group lactation systems, or fence line contact in zero-confinement farrowing systems).

Tail-biting, other injurious behaviours

Ear, tail, and vulva biting is a multifactorial problem, commonly associated with barren housing conditions. It causes painful injuries to the recipient pigs and economic losses associated with this behaviour is a serious issue in the industry. When extreme, tail biting causes the amputation of the tail and can cause spinal abscesses.

Tail-biting is considered an abnormal behaviour since it is rarely reported under extensive or semi-natural environments. At first, this behaviour can be a redirected exploratory behaviour where one pig gently holds the tail of another pig in its mouth without causing damage. However, this behaviour can cause severe tissue trauma when a pig's tail is seized and bitten forcefully. Tail-biting is commonly seen when confined pigs are unable to access a desired resource, such as food, but is also a sign of frustration. In severe cases, some pigs may become obsessive tail biters, which spend significantly more time performing this behaviour, negatively impacting their growth. Bitten pigs are usually less reactive (less avoidance behaviour) due to pain caused by tissue damage and are more susceptible to diseases. Pain and reduced health due to secondary wound infection is also a welfare issue.

Tail-docking – May be performed to reduce the risk of tail-biting later in the pig's life. However, the procedure is acutely painful, commonly done without anaesthesia or analgesia, and does not fully prevent tail biting (see more in **Health**).

The most important risk factor for an outbreak of tail biting is the lack of straw or other environmental enrichment in confined systems (see **Physical Environment**), although high stocking density, competition for feed and water, and poor air quality also play a role in the prevalence of tail biting. Genetics may also predispose an animal to become an obsessive biter.

Benefits of environmental enrichment for piglets' behaviour:

- Piglets reared with straw, logs and branches spent more time interacting with the materials and less time nudging and tail-biting littermates and manipulating pen floor and walls, compared to piglets in pens without added materials.
- A tray of peat, replenished daily, enhances piglets' foraging-type snout activity and weight gain compared to piglets without enrichment, even when both groups also are provided with a tray of dry feed.
- For pigs reared in slatted or partly slatted pen floors (where adding straw and branches are not feasible), giving shredded papers on the floor (minimal distractions with the manure removal system) or ropes suspended on the walls found to reduce damaging behaviour towards pen-mates (tail or ear biting).

Behavioural issues for dry/pregnant sows

Restricted feeding

To limit the issues associated with fast growth (more details in **Health**), pregnant, or "dry" sows are typically fed a restricted diet, which is around 40-50% of what they would eat if given the choice or an ad libitum diet (see **Nutrition**). Because of this practice, dry sows are likely to experience hunger, demonstrated by a change in their behaviour. They show increased activity and foraging behaviour and more motivation to access additional food if it is available. This frustration from lack of feed/feeding behaviour can lead to the development of abnormal oral behaviours (stereotypical behaviours) such as bar-biting, sham-chewing and over-drinking. Restricted feeding and short feeding duration may also result in aggression around feeding, especially if the feeding management is poor. For example, if feed is scattered on the floor, sows will compete to access feed, and subordinate sows are often pushed away from the feed. Good feeding management practices can minimise the hunger and frustration due to restricted feeding (see **Nutrition**). However, competition can occur to gain access to the stall or electronic feeder.

Key points to reduce aggression between sows while feeding:

- Synchronised feeding in feeding stalls
- All sows fed in stalls must have a feeding place, and controlling for 'fast feeders' by locking their stalls until every pig has finished eating
- Increasing the number of electronic feeders.
- Creating a long route from exit to entrance to the electronic feeder and positioning the feeder away from busy areas or other resources.
- Allowing access to suitable manipulable materials for sows can also be an alternative as they work as an outlet for these abnormal behaviours.
- Having plentiful drinking water sources, especially in restricted fed sows, that are away from busy areas of the pen. After eating their dry ration, sows will all want to drink, which can cause queuing and aggression.

Restriction of natural behaviour in gestation stalls

Sows/gilts in the mating unit can be individually confined in stalls, housed individually in pens or grouped in smaller or larger groups. Gestation stalls are commonly used to keep pregnant sows/gilts individually, although some countries do not allow their use. They are designed to prevent the animal from turning around, which allows for easy management of feed delivery and dung removal. However, due to severe restriction of movement and of other natural behaviours, this system causes various behavioural and physical concerns.

Consequences and welfare problems with the stall systems during gestation[1]:

- Limited space allowance per pig in a stall prevents the animals from standing up and lying down freely. Pigs cannot turn round and often have shoulder injuries.
- The increasing size of sows, as pigs are selected for faster growth, also means that gestation stalls and farrowing crates are becoming increasingly restrictive
- Restricted ability to engage in important natural behaviours – exploration, foraging, and social behaviours.
- Lack of opportunities to engage in natural behaviour may result in oral stereotypies (e.g. bar biting)
- Inactivity leads to poor cardiovascular fitness and leg weakness.

Due to these major welfare problems raised with the use of individual stalls for sows and gilts, its use has been banned or is being banned in many countries. Complete bans on stall use are in place in Sweden, Switzerland, Norway and the United Kingdom. Legislation in the European Union, Australia and New Zealand require group-housing from 4-6 weeks into pregnancy. There are also restrictions to stall use proposed in Canada and several US states. Group systems allow pigs to move more freely and engage in natural behaviour such as foraging/eating as a group. However, sow welfare can still be at risk if the group environment is poorly managed (see **Aggression in group housed sows**).

[1] These consequences are specific for gestation housing, but are similar to issues created by restriction at farrowing.

Behavioural issues for farrowing sows and piglets

Nest-building behaviour in farrowing sows

Farrowing sows and gilts are highly motivated to perform nest building behaviour in the 8-12 hours before farrowing, which is linked with positive maternal behaviours during farrowing. When sows are kept in farrowing crates and not provided with straw before farrowing they show signs of behavioural and physiological frustration. The behaviours performed during nest-building accompany changes in hormone production that facilitates a smooth farrowing and the development of good maternal behaviours. There are positive effects on colostrum and milk production which is vital for piglet survival. Adequate farrowing environments with sufficient space for sows to move, lie down and inspect piglets, and bedding material can reduce risk of piglet crushing and contribute to suckling success for piglets. Sows allowed to show satisfactory nest-building are less likely to show piglet-directed aggression ('savaging') and have longer suckling periods resulting in weaning heavier piglets.

Farrowing crate systems restrict these key behaviours. As well as consequences of physical restriction described in gestation housing above, consequences and welfare problems with restrictive farrowing crates include:

- Inability to perform satisfactory nest-building behaviour due to the design of the crate and limited or no provision of substrates such as straw.
- Inability of sows to inspect the young due to the design of the crate leads to frustration.
- Increased risk of piglet-directed aggression by sows unable to fully perform nest-building behaviour

Farrowing crates are banned in Sweden, Switzerland and Norway. Germany, Austria and New Zealand have proposed phasing out their permanent use. The European Union and United Kingdom are reviewing their current welfare regulations to reduce use of farrowing crates.

Mother-offspring bonds

As a survival strategy, the sow and her piglets form a strong bond within the first three days of farrowing. Separations after this critical period cause significant distress to both sows and piglets, seen as increased vocalisation and agitation. Therefore, when artificial rearing or fostering is necessary (see **Nutrition**), piglets need to be removed from the sow before establishing a bond and teat fidelity. This should help a transition to an artificial teat or a new group of piglets without fighting to re-establish a teat order.

Due to economic pressure in the pig industry, and the aim to get as many litters from each sow as possible, weaning age for piglets in commercial farms is very early (typically 21-28 days), and the process is normally abrupt (1 day). In wild pigs or natural systems weaning is gradual, occurring over 3 – 4 months period as their wild counterparts. Early and abrupt weaning involves various welfare challenges for piglets, such as the removal from the mother, change in feed from milk to solids, and an introduction to an unfamiliar environment with littermates or mixed with other litters of piglets.

There are behavioural consequences of artificial rearing and early abrupt weaning. In natural conditions, young piglets spend significant amounts of time sucking and massaging the sow's udder to stimulate the milk production and let-down by the sow. In the absence of the sow (e.g. either due to an artificial rearing or early weaning), these behaviours are re-directed to pen mates or objects in a pen, and this may result in behavioural problems such as persistent belly-nosing and chewing of other piglets or objects.

This behaviour can persist after weaning, and there is a direct link between the extent of these behaviours and the age at which abrupt weaning occurs. Belly-nosing and chewing behaviours are not only driven by the motivation for feed and may be mitigated by the provision of enrichment materials (see **Physical Environment**).

Interactions with other piglets

Piglets' interactions with littermates start just after farrowing. They compete to gain access to the best possible teat and protect it until the teat order is formed. They also work co-operatively to initiate nursing bouts, rest together, and engage in social play. Through these processes, they form social bonds with littermates and learn species-specific social interaction patterns. In natural conditions, piglets stay in the nest with their mother and littermates for about 2 weeks. They leave the nest then to follow their mother going back to the main sow group, and this is when they encounter other piglets for the first time.

In commercial situations, disruptions of the social bond can occur from an early age, such as cross-fostering during the lactation period and an abrupt introduction to a new social group at weaning if piglets are grouped by weight or sex. This often leads to aggressive interactions with new pen mates to establish a new dominance hierarchy which often occurs through intense fighting. The fighting can lead to large numbers of skin injuries. These injuries peak in the first day after regrouping, but pigs continue to receive a greater number of injuries than normal for around 3 weeks after regrouping. Due to the impact of fighting and injury, weaner piglets can also experience lameness, reduced immunity, greater risk of pathogen entry to the body, as well as impacts on productivity such as slower and less efficient growth. Pigs that are then low in the dominance hierarchy may experience chronic stress from subordination, although retaining a high dominance rank position may also be stressful.

The limited space in confinement systems prevent pigs from exercising and to escape others who are being aggressive or are performing tail and ear biting (see **Physical Environment**).

Consequently, a lack of space is a risk factor for high levels of aggression and other damaging behaviours.

Strategies to mitigate aggression/social stress in piglets:

- Only if cross-fostering is necessary, carry it out after initial colostrum intake but within 2 days, before maternal recognition and teat fidelity has been established.
- Keep the same litter of piglets together throughout the entire production process and avoiding regrouping with unfamiliar piglets can reduce the aggressive interactions at weaning.
- Where regrouping cannot be avoided, allowing litters to intermingle before weaning (e.g. 10-14 days of age) can help them to resolve conflicts later in life when they meet other unfamiliar pigs.
- A complex early environment stimulates and enhances social play, which is essential for piglets to develop necessary social skills to form a dominance hierarchy.
- Piglets reared in a complex environment early in life learn to assess the body weight of other piglets through play-fights, which is important further to form a dominance hierarchy with less aggressive interactions.
- When mixing pigs in a pen, provide a space that is large enough to allow defeated animals to signal that they have lost, or providing barriers for defeated animals to escape behind. This will help to limit the amount of bullying that occurs at the end of a fight.

Human–Animal Relationships (HAR)

Interactions between humans and pigs in the farm can occur through sensory channels such as acoustic, visual, tactile or chemical. Pigs recognise each other and humans mainly by a combination of these sensory stimuli. During routine activities in the farm, handlers will likely use their voice to interact with pigs. They may shout or produce sounds by whistling, clicking the tongue or clapping their hands while moving animals trying to make pigs move faster or prevent them from stopping in corridors. Shouting is alarming for animals, so keeping a calm voice can facilitate a good human-pig relationship, and may more easily facilitate some tasks, since pigs will show less avoidance behaviour.

Visual contacts are also common in pig farms while feeding, cleaning, performing health checks, moving and farrowing. Pigs can discriminate people through visual cues such as clothing colour or body size. Human tactile contacts are frequent soon after birth, during painful procedures, such as castration, tail docking and teeth clipping. But positive contacts are also possible and should be encouraged, such as stroking and scratching during the human presence in the pen or around feeding.

All these interactions make pigs create a mental representation of the people. The interactions between humans and pigs will depend on pigs' perception of humans and on the relationship they may have developed with them throughout their lives. Each interaction can impact positively or negatively how pigs perceive a person or even humans in general.

In Type C, and D pig production systems, human interaction during the first week in the life of the pig can be associated with painful procedures such as castration, tooth resection, tail docking or injections. Other stressful events like separation from the sow, forced handling, weaning, cleaning and veterinary interventions, are also common human interactions pigs will have later in life.

Negative interactions should be avoided, especially during stressful events, as these can reduce pig welfare by intensifying an already stressful event. Alternatively, positive emotions provoked by positive human interactions can improve the health status of the pig. Therefore, it is important that these interactions with pigs are non-aversive and/or positive, to reduce stress whenever possible. Repeated gentle contacts between humans and pigs can reduce fear of humans and increase approach towards humans. This positive relationship can then be spread out within the group through behavioural and emotional contagion.

Key points to encourage positive human-pig interactions:

- To have a calm voice and avoid shouting or loud noises (clapping) when handling pigs, especially during more stressful events, for example during transfer of gestating sows to the farrowing house or preparation and moving fattening pigs for loading into a truck.
- To increase positive tactile interactions such as stroking and scratching when in the pen, during feeding or pre-and post-farrowing. Brushing pigs can increase pigs' attention and approach towards humans.
- Positively (or neutrally) interacting with pigs regularly increases their opportunities to approach humans and the variety of their interactions with human handler, reducing their fear of humans.
- A poorly designed system can make it difficult to handle and move pigs thus creating a negative HAR. Details on good handling practices are below.

Good handling practices

Gentle handling will improve pig welfare and may also impact productivity. Reproductive performance and performance of finishing pigs can be positively affected by good stockpersonship. Pigs should always be handled gently in all circumstances for an effective and safe handling. When the animals experience positive interactions with humans, they become less fearful, which will facilitate handling. On the other hand, poor handling (loud noises, unpredictable management, and rough handling) can make pigs fearful, affecting short term performance (milk production for lactating sows) and compromising reproductive success at critical times. In the long term, poor animal handling can become a chronic stress leading to reduced performance, reduced immune function and poor meat quality.

Pigs are not very visual and they do not have a flight distance, so gentle moving with pig boards is recommended. Pigs can experience 'visual cliffs', where they may perceive a change in lighting to be a change in flooring. These changes in lighting will stop them from moving, disrupting any good flow you may have. They are also highly social and easier to move in groups rather than individually. Considering all of these factors before moving pigs can reduce the stress of handling for pigs and staff.

Key points for good handling of pigs:

- Ensure that obstacles and distractions are removed before handling the animals.
- Use pig boards (also called a sorting board – wooden or plastic) to gently encourage pig movements. They are very useful tools to move pigs, which are safe for both the pig and the handler. You want to steer pigs, not force them.
- Restraining pigs should only last for as long as it is required, and this should be done in a safe way for the pig and the handler, during a particular procedure using appropriate devices and carried out by trained staff. Immediately after the procedure is completed, the pig should be set free.
- Avoid using loud noises, excitement or force and do not hit the animals, or put pressure on any particularly sensitive part of the body.
- Electric or physical goads should never be used to move pigs. Touching sensitive areas including the udder, face, eyes, nose, ears or anogenital region should never be used to move pigs.
- Good and gentle handling costs nothing but can be rewarding for the pig and handler and improve productivity.

The Jeanne Marchig International Centre for Animal Welfare Education

E: JM.Welfare@ed.ac.uk
W: www.ed.ac.uk/vet/jeanne-marchig-centre

THE UNIVERSITY of EDINBURGH
The Royal (Dick) School of Veterinary Studies

The Jeanne Marchig International Centre for Animal Welfare Education

Data-Driven Innovation

SRUC

CAWSE