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**Summary**

Stereotypies are repetitive behaviours that serve no known function and occupy a large portion of the pig’s time. Tail-biting, ear-biting, bar-biting, and vacuum chewing are all swine oral stereotypies. Although tail-biting is generally recognized as the most high-risk behaviour, it has been shown that oral stereotypies tend to occur together (Brunberg et al., 2011). This suggests that there are common motivational factors influencing all oral stereotypies (Brunberg et al., 2011). Thus, it is important that they are studied together. However, not all oral manipulation is stereotypic. For example, play fighting and tail-biting when competing for resources (Hakansson and Bolhuis, 2021).

Tail-biting is when a pig is chewing on the tail of another pig resulting in tail lesions (Hakansson and Bolhuis, 2021; Taylor et al., 2010; Breuer et al., 2005). Some authors will also classify cannibalism and tail-in-mouth as tail-biting (Taylor et al., 2010). In contrast other studies, although not confirmed, view tail-in-mouth as a naturally occurring precursor to tail-biting (Munsterhjelm et al., 2016). Without a precise definition it makes it difficult to compare studies. Notably, a study by Brunberg et al. (2011) classified the severity of the biting based on the receiver’s reaction.

Ear-biting is when a pig chews or quickly bites the ear of another pig, and this pig reacts (Diana et al., 2019). Bar-biting is when the pig is chewing on objects such as bars and bolts (Brunberg et al., 2011).

Oral stereotypies are typically studied using an observational approach. Researchers interested in determining what influences oral stereotypies observe the incidence of biting behaviours in different environments through direct observation or by examining video recordings for fixed time intervals (Brunberg et al., 2011; Statham et al. 2009). However, this method makes it difficult to tell what kind of tail manipulation is occurring (Schrøder-Petersen et al., 2004). Many studies also make ethograms (Brunberg et al., 2011; Hakansson and Bolhuis, 2021; Diana et al., 2019).

Using these methods, researchers have been able to correlate oral stereotypies to the pigs’ internal physiological state, social environment, and ecological environment. The restrictive environments in which commercially farmed pigs are often housed in are the major, if not the main, influence leading to the development of these behaviours (Lawrence and Terlouw, 1993; Ursinus et al. 2014). Restrictive environments prevent pigs from performing their natural behaviours. For an animal that normally spends seven hours a day rooting on pasture, a commercial farm environment that lacks the opportunity for oral exploration can be confining. Therefore, pigs in housing systems lacking proper enrichment materials, such as straw (Godyń et al., 2019), will redirect and channel their exploratory behaviour towards other pigs, which may result in ear and tail-biting (Van de Weerd et al., 2006).

Unfavorable microclimate conditions, and air conditions, may also lead to the development of stereotypies (Taylor et al., 2010). Stereotypies may also arise because of feed restriction since lack of nutrition induces feeding motivations, such as hunger. As a result, bar-biting tends to occur after a pig has fed (Lawrence and Terlouw, 1993). High-stocking density was also found to be associated with biting (Taylor et al., 2010). A less studied cause is linked to the heritability of tail-biting. Breuer et al. (2005) determined, using pedigrees, and observing individual tail-biting incidence, that certain breeds may have a higher predisposition to tail-biting. The higher prevalence in a specific breed was found to be correlated with a higher lean tissue growth rate, which is influenced by genetics (Breuer et al., 2005).

The association between age or weight and biting is contradictory (Taylor et al., 2010). Breuer et al. (2005) suggests that perhaps the environment has an over-riding influence on tail-biting such that other factors have little influence. However, this is not known for certain, and the relative influences of major factors should be further researched. Consequently, future research should investigate the economic costs and benefits of minimizing certain factors depending on how influential they are.

Together, studies demonstrate how oral stereotypies are the result of multiple influences. Nonetheless, a common factor is that most of these influences cause the animal stress. As a result, these behaviors not only reduce the victim’s welfare but performance of the behaviour itself is also an indicator of reduced welfare (Taylor et al. 2010).

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