

Martina Kröll

By your side.

*How social support affects habituation, training and test results of piglets
in a judgement bias task*

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Summary

Social animals, as the name suggests, have one common characteristic: They benefit from social support during challenging situations and they suffer from stress when exposed to social isolation. Concerning the negative impact of stress on animal welfare, this should be avoided whenever possible. However, this fact is still widely ignored when it comes to training and testing highly social animals, like pigs, who commonly have to endure this procedure in social isolation.

This study compared piglets trained and tested in social isolation (ISO, $n = 12$) with piglets trained and tested with visual and physical contact to social companions next to the test arena (SOC, $n = 12$). Two familiar SOC piglets, not trained or tested, could see and had the possibility to interact with the focal piglet that was trained/tested through a wire mesh. The 24 focal piglets were trained and tested in a so-called Judgement Bias Task (JBT), a promising cognitive proxy measure of affective states. The principle of the JBT is that animals in a positive affective state are more likely to make an optimistic judgement about ambiguous future events than negatively minded individuals. The JBT allowed us to assess both behavioural (e.g. behaviour indicating relaxation or discomfort during training or testing) as well as cognitive differences (i.e. optimistic choices during testing) between the two treatment groups. The apparatus for the JBT was a wooden construction with five openings (goal-holes). The two outer goal-holes were used for discrimination training (right and left), whereby one of the two doors indicated a reward (positive goal-hole), while the other one indicated no reward or a mild punishment (negative goal-hole). The piglets were trained to distinguish between these two openings, i.e. approaching the positive goal-hole and staying away from the negative one, as soon as it opened. Once they had reached a predefined learning criterion, they were tested in the JBT.

During testing three ambiguous cues were interspersed between the already known positive and negative trials. The JBT is based on the assumption that optimistically minded piglets approach the ambiguous goal-holes since they expect a reward (Go response), whereas pessimistically minded individuals do not approach the goal-holes since they do not expect to receive a reward (No-Go response).

The aim of this study was to identify differences between ISO and SOC piglets during habituation to the apparatus and the test arena, training, and the test (JBT), focusing on three key research questions: 1) What is the influence of social companions on 1) training duration 2) test results in the JBT, and 3) the behaviour of the piglets in the test arena, compared to piglets trained and tested in social isolation. To compare differences in training duration (1), the numbers of sessions required to reach the learning criterion of each training stage were assessed. The results of the JBT (2) were compared using the ratio of Go and No-Go responses in ambiguous trials. The behaviour between treatment groups was analysed based on video recordings taken during habituation, training and test sessions.

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From the 24 piglets that were trained, 17 successfully learned the task and were tested in the JBT. General(ised) mixed-effect models revealed no significant differences between ISO and SOC piglets with respect to the number of sessions required to fulfil the learning criterion ($p = 0.30$, $x^2_1 = 1.04$) and piglets' performance in the JBT ($p = 0.36$, $x^2_1 = 0.85$), which means that treatment groups did not differ in their optimism/pessimism level. The behavioural video analysis revealed that ISO piglets showed more stress-related behaviours than SOC piglets, including differences regarding the frequency of freezing ($p < 0.001$, $x^2_1 = 30.71$), exit-approaching behaviour ($p < 0.001$, $x^2_1 = 27.94$), vocalisations ($p < 0.001$, $x^2_1 = 15.68$) as well as heavy escape attempts ($p = 0.02$, $x^2_1 = 5.34$).

Despite some methodological limitations, this study recommends the use of companion animals in training and test situations. It plays a demonstrative role to enhance the use of companion animals in training and testing situations, thereby providing new insights to improve pig welfare by considering the probable calming effect of the social companions.