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► To cite this version:

Céline Tallet, Marine Rakotomahandry, Carole Guérin, Alban Lemasson, Martine Hausberger. Influence of prenatal experience with human voice on the neonatal behavioural reaction to human voices with different emotion. 48th Congress of the International Society for Applied Ethology, Jul 2014, Vitoria-Gasteiz, Spain. Wageningen Academic Publishers, 2014, Proceedings of 48th Congress of the International Society for Applied Ethology - Moving On. 10.3920/978-90-8686-797-4 . hal-02740724

HAL Id: hal-02740724

<https://hal.inrae.fr/hal-02740724v1>

Submitted on 2 Jun 2020

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Influence of prenatal experience with human voice on the neonatal behavioural reaction to human voices with different emotion

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Farm animals have to adapt to human presence from birth and being handled may lead to fear and stress reactions. It is known that the mother can be used as a postnatal model in the development of young-human relationship. Through her, some information like auditory ones may even be learnt prenatally. We tested this idea in pigs because they communicate a lot by acoustic signals. The hypotheses were that prenatal experience with human voice could modify behavioural reactions to the experienced voice and to an unfamiliar voice expressing different emotions. We worked with 30 pregnant sows from the last month of gestation. Ten sows (treatment A) were submitted to recordings of human voices during handling: vA during positive interactions and vB during negative interactions, twice a day, 5 days a week, for 10 minutes. Ten other sows (treatment B) received the contrary, i.e. vB during positive interactions and vA during negative interactions. Ten last sows (treatment C) received no vocal stimulations during handling sessions. Two days old piglets (36 A, 39 B, 35 C) were submitted to a 5 min choice test between voices vA and vB in a testing pen (2x1 m). Each voice was played back through loudspeakers positioned at each end of the pen. At 15-18 days of age, 20 other piglets from each treatment were tested in the same conditions except that we played back the voice of an unknown person, reading the same text with a joyful or angry intention. In both tests we recorded vocalisations and locomotion. Data were analysed using non parametric statistics (Statview). In both tests, A and B piglets started to move sooner ($P < 0.01$) and produced less stress related vocalisations than C piglets ($P < 0.05$). All piglets spent more time close to the loudspeakers (< 50 cm) than at a distance ($P < 0.001$). The latency (median (IQ): 54 s (86 s), $P > 0.05$) to be and the time spent (178 s (46 s)) close to the loudspeakers did not depend on the treatment ($P > 0.05$). We also found no difference between the time spent close to one loudspeaker or the other, neither for vA versus vB, nor for joyful versus angry intention ($P > 0.05$). The results show that the prenatal experience of human voice reduces postnatal behavioural reactions of stress (vocalisations, latency to move) during the playback human voices. However, it does not seem to induce specific attraction toward human voice, or human emotional intention. Therefore prenatal experience with human voice may be a good way of reducing fear reactions to human voice after birth.