

Noise around hatching hampers chick communication and reduces hatching synchronisation

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Layer chicks hatch in noisy incubators, offering a very different environment from a mother hen. Noise may negatively affect communication among hatching chicks and may reduce hatching synchronisation. Furthermore, the noisy environment may negatively affect physical and behavioural development of the chicks, resulting in smaller and more fearful chicks. Therefore, the aim of this study was to investigate effects of noise during the hatching phase on communication during hatching, hatching synchronisation and physical and behavioural development of layer chicks. Layer eggs were incubated in two separate climate respiration chambers. In one of the chambers, noise from a commercial hatcher was played back, creating a noise level of approximately 90 dB. In the other chamber, no noise was played back resulting in a noise level of approximately 60 dB. From day 19 until day 22 of incubation, every four hours the number of hatched chicks was recorded and birds were marked and weighed. Chick vocalisations were recorded in each chamber by six wireless microphones and analyzed in samples of 10 s, spread across the hatching day. After hatching, chicks were housed in groups of 5 males and 5 females per treatment, with 14 pens per treatment and chicks were weighed at 4 and 6 weeks of age and tested in an open-field test at 5 weeks of age. Data were analysed using mixed models with fixed effects of noise and gender and a random effect of pen nested within treatment. Chicks from the noise treatment hatched later than chicks from the quiet treatment (62% hatched on hatching day 20 compared with 91%; $F_{1,24}=18.02$, $P<0.001$). Fewer vocalisations were recorded in the noise treatment than in the quiet treatment (6.1 vs 18.4 calls per 10 s; $P<0.001$). Chicks from the noise treatment also had a lower birth weight (42.6 vs 43.6 g; $F_{1,24}=10.69$, $P<0.05$), but this difference was no longer found in weeks 4 and 6. No differences between treatments were found in open-field behaviour at five weeks of age. Birds were active in the open-field with on average 57 steps and 182 calls. In conclusion, the negative effects of noise on communication, hatching synchrony and early life development indicates negative effects of loud incubators on chick development, but not on fearfulness. It needs to be investigated whether these negative effects carry-over to later life phases.