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A developmental study of the effects of aircraft noise exposure on primary school learners' reading comprehension.

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Abstract

Considerable research has been conducted regarding the impact of aircraft noise on children's cognitive performance. Little has been carried out in developing countries however, particularly on the African continent. This study, which was conducted over a three year period, aimed to determine whether the reading comprehension of primary school learners in South Africa was affected by exposure to aircraft noise. The sample comprised 737 learners aged between 8-14 years (mean age = 11.3) in 2009; 650 learners aged between 11-15 years (mean age = 12.3) in 2010; and 178 learners aged between 12-16 years (mean age = 13.1) in 2011. The reading comprehensions of participants from two public schools in KwaZulu Natal in a high aircraft noise area (16h outdoor Leq> 63dBA) were compared with those of participants attending three matched public schools exposed to lower levels of aircraft noise (16h outdoor Leq <56). Reading comprehension was assessed through the use of the Suffolk Reading Scale 2 (SRS2), which was group administered. A univariate General Linear Model was used to investigate the effects of aircraft noise exposure, language and socio-economic status on reading comprehension, while observing for the possible impact of gender and noise sensitivity on the results. The first question aimed to establish whether aircraft noise negatively affects learners' reading comprehension. The results showed no significant differences between the experimental and control group (F_{713}=0.33, P=<0.8651). The second question sought to determine whether the removal of aircraft noise would lead to improved reading comprehension scores. No significant difference (P>0.05) was observed in interactions between time and the experimental and control groups, in relation to reading comprehension. Establishing whether having a different language to English as one's home language negatively affects reading comprehension, was the third question that was explored. Significant differences were observed between English first language speakers and English additional language speakers in the favour of the former (F_{713}=19.97, P<.001). The final research question looked at whether low socio-economic status negatively affects reading comprehension performance. The results showed no statistical difference regarding the impact of a low socio-economic status on reading comprehension (F_{713}=1.69, P>0.197). The overall results of this study suggest that chronic noise exposure does not affect children's reading comprehension, but that language plays a large role in reading comprehension performance. Furthermore, it would indicate that the removal of aircraft noise does not result in improved performance on reading comprehension.