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The effects of aircraft noise on the auditory language processing abilities of English first language primary school learners.

Hollander, Cara

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Abstract

The purpose of the research was to investigate the effects of aircraft noise on the auditory language processing abilities of English First Language (EFL) primary school learners. Schools located in close proximity to airports are exposed to extremely high levels of chronic, yet intermittent noise. These levels have been shown to cause cognitive, health and hearing problems. However, it is unsure whether this long term exposure to these noise levels may cause auditory language processing problems when hearing is normal, which could result in decreased academic performance. This study utilised a non-experimental, cross sectional and descriptive design, as well as a post-hoc design. Seventy children attending schools that are exposed to high levels of noise were matched according to socio-demographic characteristics to seventy children in quieter schools. All the schools were situated in Durban, South Africa, while the noisy schools were located 1.7 km and 1.9 km from the airport and the quieter schools were 4.6km and 3.5km from the airport. All participants are EFL, have attended the respective schools from grade 1, have hearing within normal limits, are in grade 6 or 7, are 12 years or younger, and have no pre-diagnosed learning, auditory or attention problems. Audiological screening and auditory language processing assessments (subtests of the TAPS, PhAB and the Dollaghan and Campbell task) were undertaken. This study utilised various types of statistical analyses, including descriptive methods, Pearson's chi-squared tests, Fisher's tests, three-way ANOVAs, Cramer's V tests and Cohen's D tests. The results from the schools that are exposed to noise have scored below average in all the auditory processing subtests. This study aimed to provide evidence that not only can hearing be affected by noise, but so too can the processing of sounds, even when hearing is normal. The results of this study are hoped to serve as a motivation for the provision of speech-language therapy and audiology posts within mainstream legislation with regard to schools due to the large amount of children with auditory language processing difficulties in both noisy and quieter schools, as well as for

noise treatment surrounding airports and appropriate to zoning of schools around airports to help and prevent this chronic noise interrupting the development of auditory language processing abilities and thus in turn affecting learning.

Keywords: Noise, Airports, Auditory Language Processing