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The effects of noise exposure and musical training on suprathreshold auditory processing and speech perception in noise

Ingrid Yeend, Elizabeth Francis Beach, Mridula Sharma, Harvey Dillon



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3 Ingrid Yeend^{a, b, c, *}, Elizabeth Francis Beach^{b, c}, Mridula Sharma^{a, c}, Harvey Dillon^{b, c}

4 ^a *Department of Linguistics, Australian Hearing Hub, 16 University Avenue, Macquarie*
5 *University, New South Wales, 2109, Australia*

6 ^b *The National Acoustic Laboratories, Australian Hearing Hub, 16 University Avenue,*
7 *Macquarie University, New South Wales, 2109, Australia*

8 ^c *The HEARing CRC, 550 Swanston Street, Audiology, Hearing and Speech Sciences, the*
9 *University of Melbourne, Victoria, 3010, Australia*

10

11 Abstract

12 Recent animal research has shown that exposure to single episodes of intense noise causes
13 cochlear synaptopathy without affecting hearing thresholds. It has been suggested that the
14 same may occur in humans. If so, it is hypothesised that this would result in impaired
15 encoding of sound and lead to difficulties hearing at suprathreshold levels, particularly in
16 challenging listening environments. The primary aim of this study was to investigate the
17 effect of noise exposure on auditory processing, including the perception of speech in noise,
18 in adult humans. A secondary aim was to explore whether musical training might improve
19 some aspects of auditory processing and thus counteract or ameliorate any negative
20 impacts of noise exposure. In a sample of 122 participants (63 female) aged 30-57 years
21 with normal or near-normal hearing thresholds, we conducted audiometric tests, including
22 tympanometry, audiometry, acoustic reflexes, otoacoustic emissions and medial

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