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SCREENING & DIAGNOSTIC

Life course health and environmental influences on hearing in mid-life

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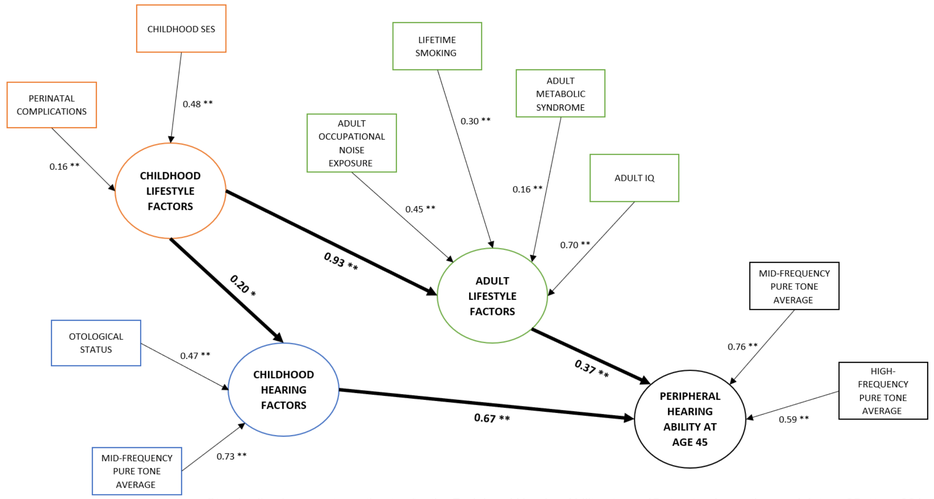
Results



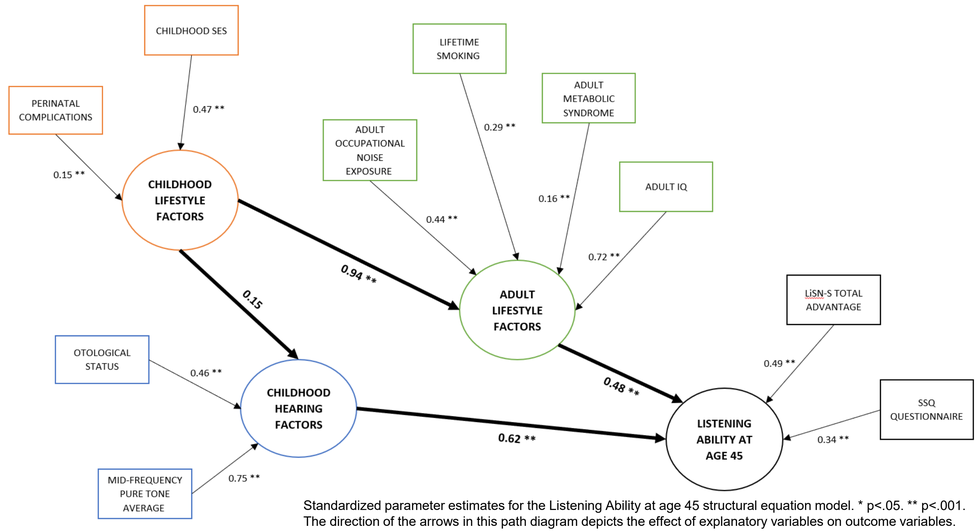
Standardized parameter estimates for the Peripheral Hearing Ability at age 45 structural equation model. * p<.05. ** p<.001. The direction of the arrows in this path diagram depicts the effect of explanatory variables on outcome variables.

Peripheral hearing and listening ability at mid-life largely stem from childhood ear and hearing health and lifestyle factors.

Direct associations with adult lifestyle factors are weak, and likely reflect compounding effects from childhood.

Factors determining childhood otological health and hearing acuity are multi-factorial; SES only contributes minimally, implying other systemic biases yet to be explored that may affect accessibility to ear and hearing healthcare.

Health and environmental factors contribute to trajectories of age-related hearing decline from childhood. Addressing these early may minimise life course consequences[1].



Standardized parameter estimates for the Listening Ability at age 45 structural equation model. * p<.05. ** p<.001. The direction of the arrows in this path diagram depicts the effect of explanatory variables on outcome variables.

Objectives

The Dunedin Multidisciplinary Health and Development Study - a longitudinal investigation of health and behaviour - provides a unique opportunity to document the progression of ear health and hearing ability within the same cohort of individuals from birth. Assessments were conducted at birth and ages 3, 5, 7, 9, 11, 13, 15, 18, 21, 26, 32, 38, and 45. A total of 908 study members participated in the collection of hearing data at age 45.

This investigation draws on ear health and hearing data from childhood, and lifestyle data from child to adulthood, to explore their associations with hearing and listening ability at age 45.

Conclusion

Existing evidence supports the suggestion that early modification of particular lifestyle behaviors may contribute to pre-clinical hearing decline in mid-life, and may change one's heath trajectory[4,5].

The identification of significant modifiable factors can potentially facilitate earlier points for intervention, like hearing amplification, cognitive training, and participation in social groups[6]. Additional physical health and lifestyle factors need to be explored in further extensions of this work.

We aim to use these findings to develop a foundational model that can further inform the nature of the relationship between hearing and cognitive decline from mid-life to older age[7].

Methods and Materials

Structural equation modelling: assess the effects of childhood hearing and co-occurring lifestyle factors on:

- peripheral hearing (mid- and high-frequency pure tone thresholds) at age 45
- listening ability (listening in spatialized noise[2] and subjective listening[3]) at age 45

References

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