

How do socioeconomic factors affect hearing?

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Introduction

Losing the ability to hear sounds in quiet is the biggest risk factor for dementia⁽¹⁾ but the reasons for this are unknown. Socioeconomic factors are known to modify risks for dementia and hearing in quiet⁽²⁾ but whether these also modify hearing in noise has not been studied before. Hearing in noise measures may be better linked to risks for dementia.

We studied whether:

- Level of education was better related to hearing in quiet or hearing in noise
- Education and barriers to housing socioeconomic factors were better related to hearing in noise or hearing in quiet

Methods

81 participants (aged 40-90) were recruited from local volunteer databases. Each participant performed:

- **Pure tone audiometry (PTA)** – standard clinical test of hearing in quiet ability
- **Digits in noise (DiN) task** – widely used test of hearing in noise ability
- **Speech in babble (SiB)** – ecological measure of hearing in noise ability

Both DiN and SiB metrics were combined to produce a single speech in noise (SiN) metric. An index of deprivation for education and barriers to housing socioeconomic factors was calculated using postcode data from the UK government data⁽³⁾ and participants were divided into top or bottom socioeconomic status groups.

We also included individual level of education as an internal measure of education status.

Results

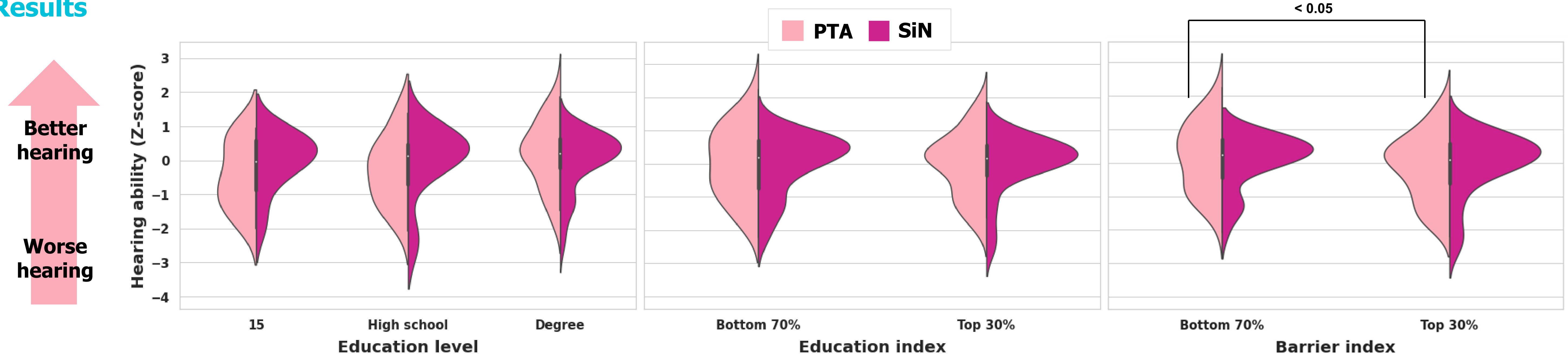


Fig 1. Relationships between education level, education index and barriers to housing index with PTA and SiN performance

Conclusions

- Neither personal education level nor education index metrics were associated with any hearing abilities
- Worse index score for barriers to housing was associated with poor hearing in quiet performance
- Indicators of barriers to housing may be associated with hearing in quiet thresholds due to environmental noise being a major factor

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References

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