

# Hearing Rehabilitation of Adults with Auditory Processing Disorder (APD): A Systematic Review and Meta-analysis of Current Evidence-Based Interventions



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## INTRODUCTION

Adults with APD can have difficulty processing speech and non-speech signals causing wide ranging communication difficulties<sup>1</sup>. Practice guidelines, whilst suggesting suitable treatments, acknowledge a need to establish efficacy in the target population<sup>2</sup>. With increased interest in this field and no systematic reviews written on the effectiveness of interventions in adults, there is now an urgent need to establish the current extent of knowledge.

### Aim

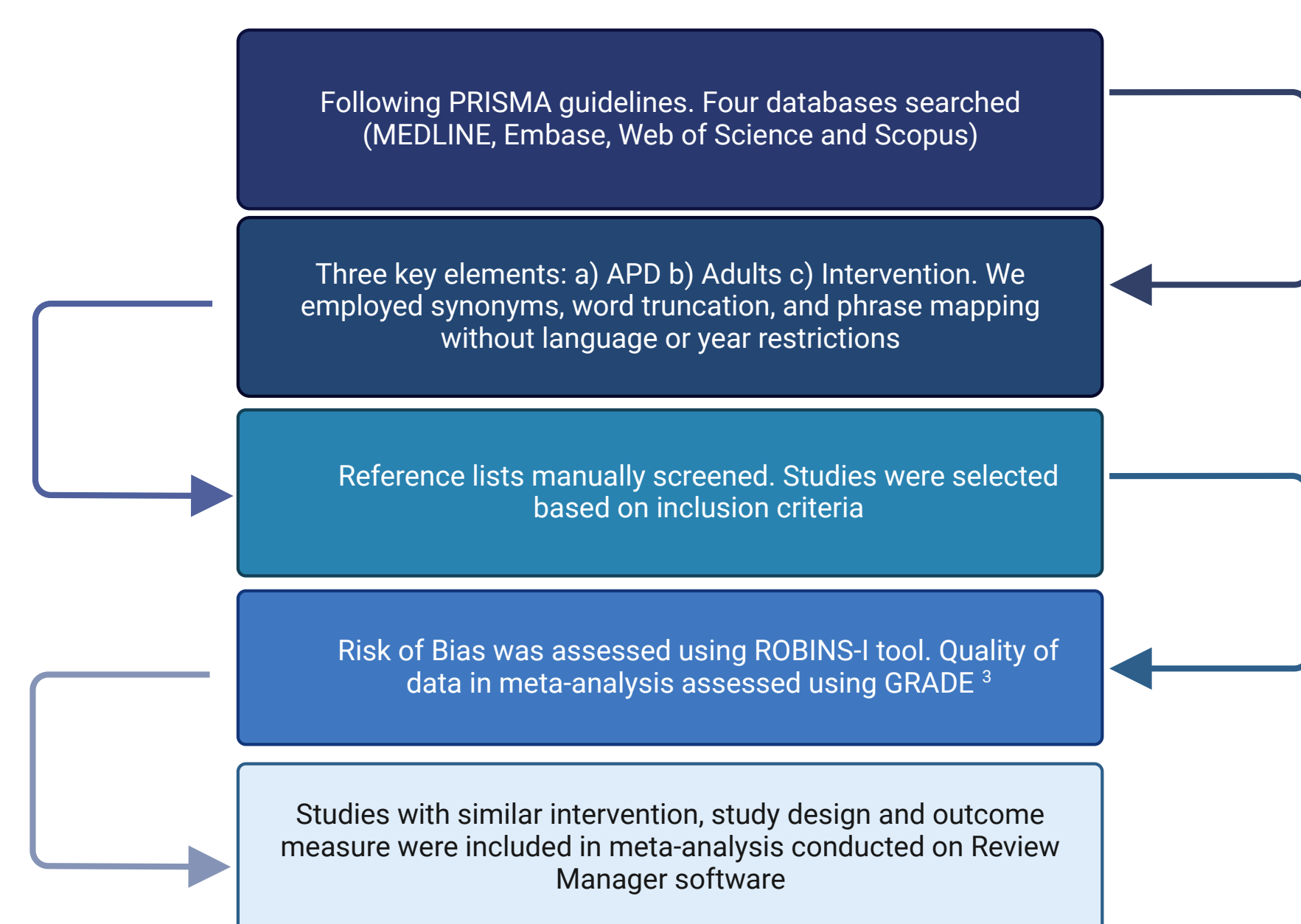
To systematically identify and critically evaluate evidence of the effectiveness of treatments for adults with documented AP difficulties and to highlight issues that are hindering progress in this field.

### Research question

How effective are the various interventions in treating APD in adults?

## METHODS

PICO	Inclusion Criteria	Exclusion Criteria
Population	Adults aged 18 years and older Participants with at least one abnormal result on a validated AP test	Cognitive disorders, unmedicated ADHD, acute psychiatric conditions, amusia
Intervention	Auditory training, compensatory strategy	Any study involving medication, any study involving existing hearing aids users
Comparator	Suitable control groups of any design Repeated measures design using pre-intervention measures as a comparator	Case study reports, conference abstracts, review papers, book chapters, expert opinions
Outcomes	Behavioural or electrophysiological tests sensitive to the CANS Validated questionnaire	Any measure not directly sensitive to the CANS



## RESULTS

- Thirteen studies met inclusion criteria
- Studies grouped into four intervention categories (A,B,C,D)
- Two types of 'real world' outcome measures were analysed:
  - Monaural low redundancy speech testing
  - Subjective listening ability

## RESULTS

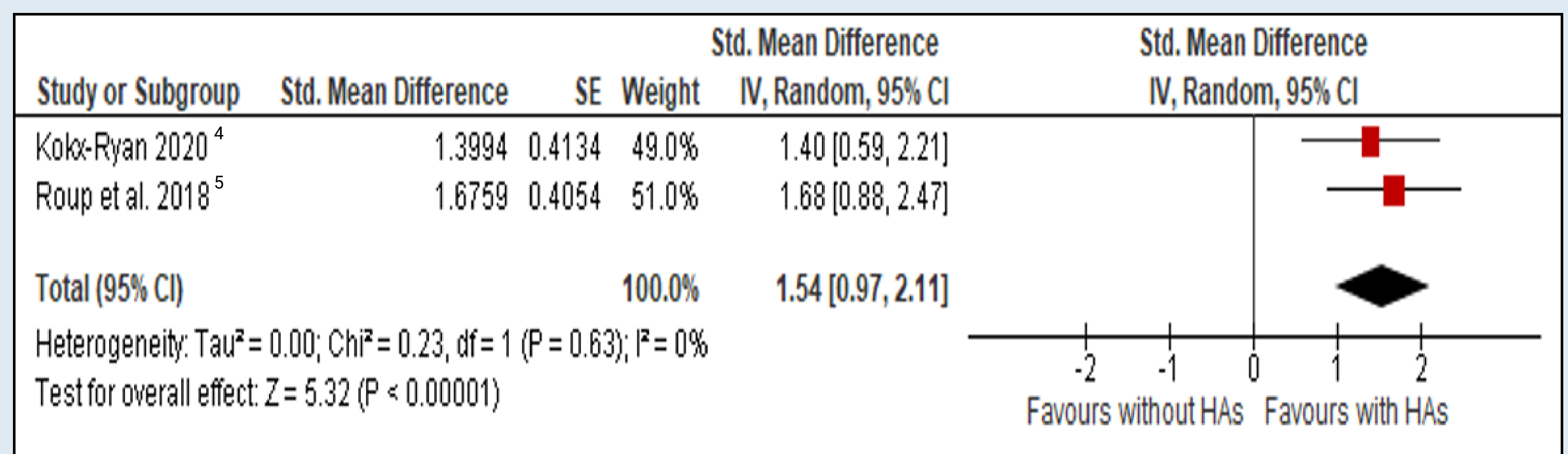
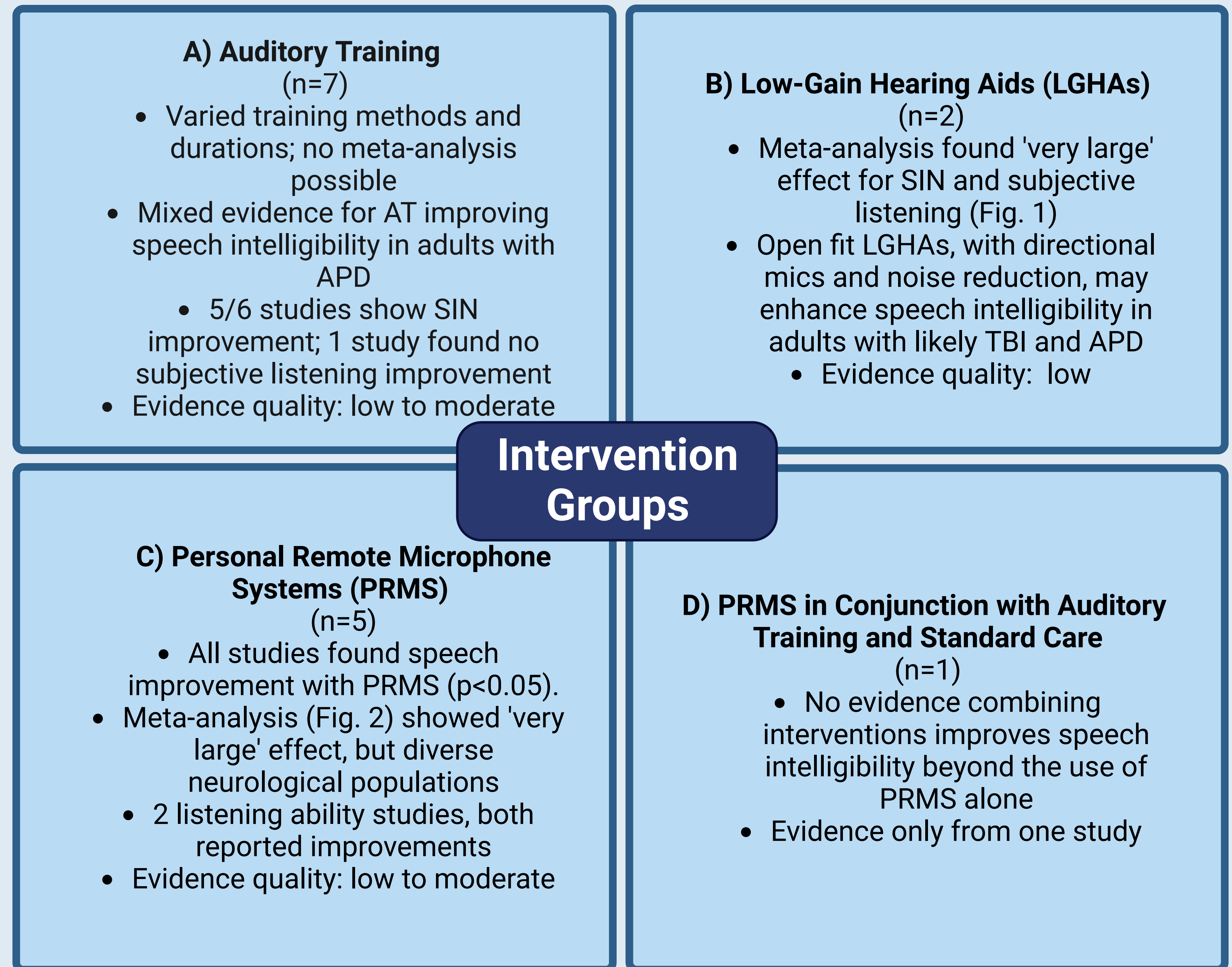


Figure 1 Meta-analysis of monaural low redundancy speech testing results, with LGHAs vs. unaided, SMD plotted with 95% CI

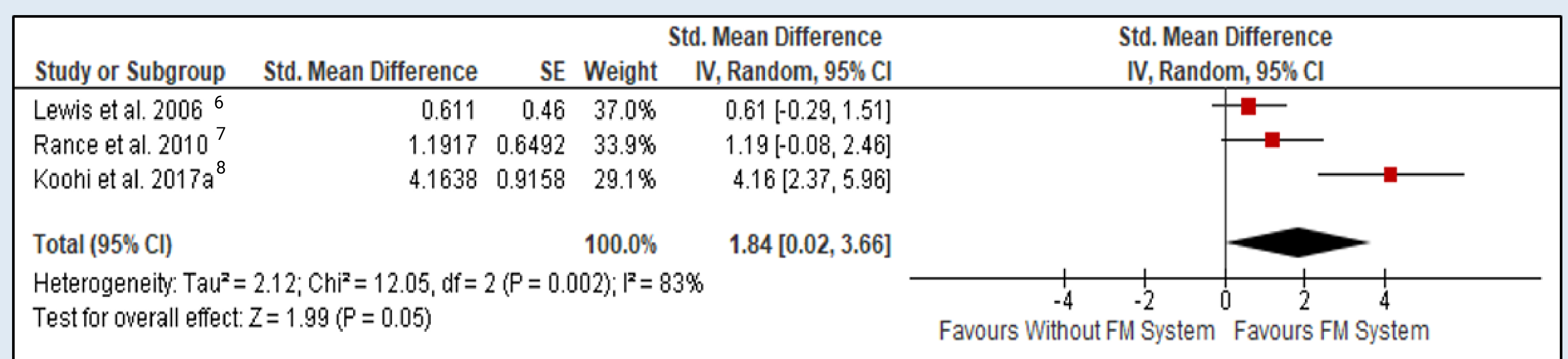


Figure 2 Meta-analysis of monaural low redundancy speech testing results, with PRMS vs. unaided, SMD plotted with 95% CI

## CONCLUSION

While acknowledging limitations such as reliance on data from small-scale studies and the use of Standardized Mean Difference (SMD) data, which can result in exaggerated and imprecise effect sizes, this analysis still provides some evidence supporting the efficacy of PRMS and suggests potential benefits of LGHAs, albeit with low-quality evidence. However, it is important to note that there is insufficient evidence to definitively establish the effectiveness of the interventions discussed in this review. The presence of high heterogeneity among the studies and suboptimal study design have hindered progress in this field.

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