

Supplemental Material S6. Risk of bias for all included studies using the ROBINS-I scale.

First author	Year	Comp -arator	Type	Variant (Proficiency of the target language)	Outcome	Bias due to confound -ing	Bias due to participant selection	Bias due to intervention classification	Bias due to deviations from intended interventio ns	Bias due to missing data	Bias in measurement of outcomes	Bias due to selection of reported result	Overall Risk of Bias
Barriuso	2018a	0:30	HVPT- Vowel	Beginner	d'prime of ABX discrimination	Moderate	Low	Moderate	Moderate	Low	Low	Low	Moderate
Barriuso	2018b	0:30		Intermediate	d'prime of ABX discrimination	Low	Low	Low	Moderate	Low	Low	Low	Moderate
Fouz-González	2021	0:4		Intermediate	score of ID	Low	Low	Low	Low	Low	Low	Low	Low
Giannakopoulou	2017a	1:4		Advanced	Acc of three- interval oddity discrimination	Low	Low	Low	Low	Low	Low	Low	Low
Giannakopoulou	2017b	1:4		Advanced	Acc of three- interval oddity discrimination	Low	Low	Low	Low	Low	Low	Low	Low
Lambacher	2005	0:5		Intermediate	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Lengeris	2010	0:5		Advanced	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Lerdpaisalwong	2015a	2:2		Intermediate	Acc of Identification (<i>t</i> value)	Low	Low	Moderate	Low	Low	Low	Low	Moderate

Mokari	2018	0:5		Intermediate	Sensitivity A' score of discrimination	Low	Low	Low	Low	Low	Low	Low	Low
Nishi	2007	0:2		N/A	Acc of Identification	Moderate	Low	Moderate	Low	Low	Low	Low	Moderate
Wong	2013a	0:1:6		Intermediate	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Wong	2013b	0:1:6		Intermediate	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Wong	2013c	0:1:6		Intermediate	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Wong	2013d	1:6		Intermediate	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Wong	2013e	1:6		Intermediate	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Wong	2013f	1:6		Intermediate	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Zhang	2021	1:4		Intermediate	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Bradlow	1999	0:5	HVPT-Consonant	Intermediate	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Brekelmans	2022	1:5		Intermediate	Acc of Identification	Moderate	Low	Moderate	Low	Low	Low	Low	Moderate
Lengeris	2014	0:5		Intermediate	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Lerdpaisalwong	2015b	2:2		Intermediate	Acc of Identification (<i>t</i> value)	Low	Low	Moderate	Low	Low	Low	Low	Moderate

Lerdpaisalwong	2015c	2:2		Intermediate	Acc of Identification (<i>t</i> value)	Low	Low	Moderate	Low	Low	Low	Low	Moderate
Lively	1993	1:5		Intermediate	Acc of Identification (<i>F</i> value)	Low	Low	Low	Low	Low	Low	Low	Low
Lively	1994	0:5		Intermediate	Acc of Identification (<i>F</i> value)	Low	Low	Low	Low	Low	Low	Low	Low
Shum	2021	0:4		Intermediate	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Poulsen	2023	0:2	HVPT-Tone	Advanced	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Deng	2018	1:4		Beginner	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Dong	2019	1:4:4		Beginner	Acc of Discrimination	Low	Low	Low	Moderate	Low	Low	Low	Moderate
Sadakata	2014	3:5		Beginner	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Silpachai	2020	1:4		Beginner	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Wang	1999	0:4		Beginner	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low
Wang	2013	0:4		Beginner	Acc of Identification	Low	Low	Low	Low	Low	Low	Low	Low