Does Assessor Masking Affect Kindergartners' Performance on Oral Language Measures?

A COVID-19 Era Experiment With Children From Diverse Home Language Backgrounds

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1 Research Questions & Background

RQ1: Do students perform worse on an oral language measure when the assessor is wearing a face mask?

RQ2: Does assessor masking increase discrepancies between students from different language backgrounds?

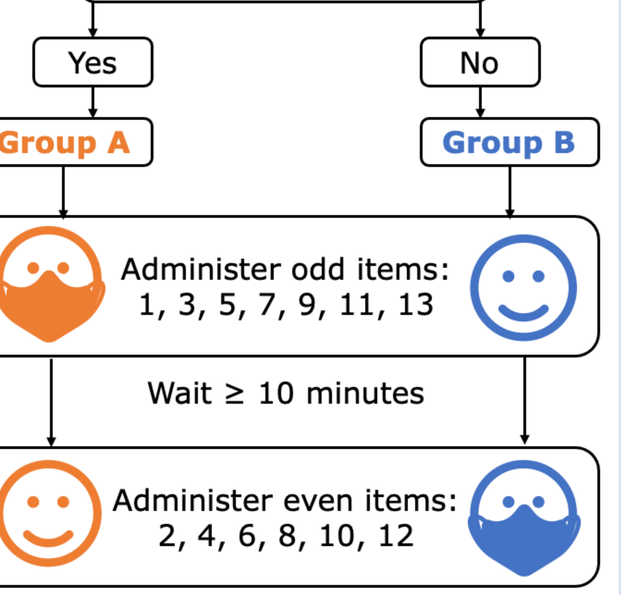
Reasons to predict YES

- Children and adults integrate visual and audio information to process speech sounds[1]
- Young children look at speakers' mouths more than their eyes[2,3]
- Young bilinguals look at mouths more than young monolinguals[4]
- For adults, face masks interfere with language comprehension[5,6]

Reasons to predict NO

- Audiovisual integration (i.e., lip reading) develops slowly in young children[7,8]
- In two studies of masking on older children (7-19) and adults, the children benefited less than adults from seeing the speakers' mouth[9.10]

2 Method



Participants: 96 kindergartners (aged 5-7) from two ongoing studies in 3 urban public school districts in the southeastern U.S. (55% Latine, 47% from homes where a non-English language was spoken)

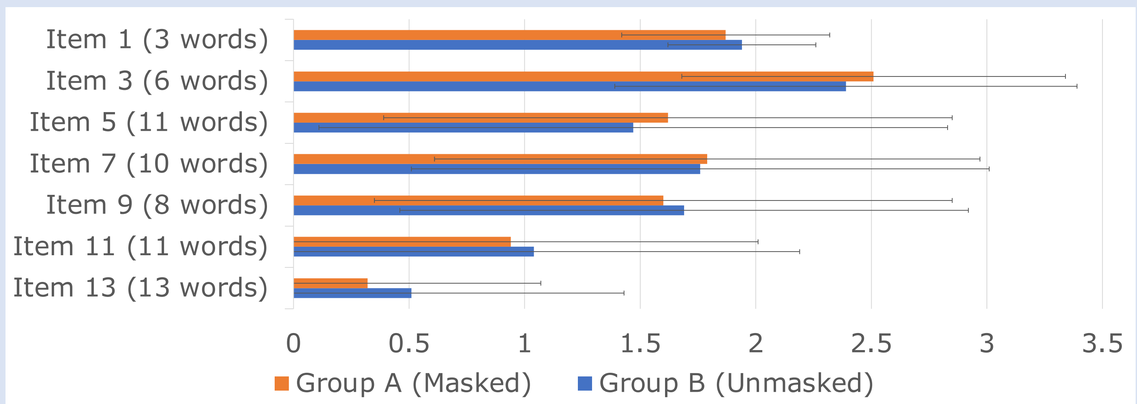
Dependent measure: Raw score on CELF-P2 Recalling Sentences items in two conditions

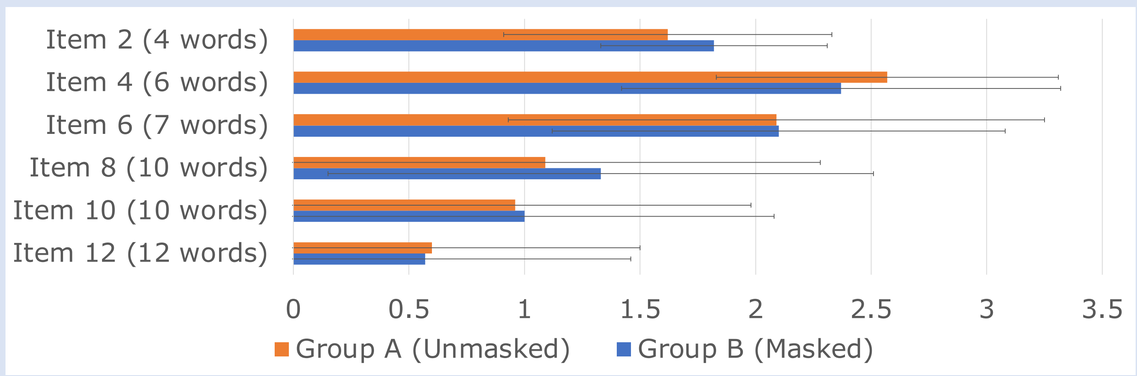
Key predictor: Masked/un-masked assessor condition

Controls: CELF-5 Sentence Comprehension subtest (administered masked), child gender, child home language

Group A (n = 47) and B (n = 49) were statistically equivalent in age, gender, ethnicity, race, language background, and comprehension skills

3 Results





RQ1: Effect of masking non-signficant, explained only 0.3% of total variance

RQ2: Effect of masking did not differ by child home language background

	Odd Items		Odd Items		Even Items		Even Items	
	Est.	(SE)	Est.	(SE)	Est.	(SE)	Est	(SE)
Group (masked)	0.58	(0.80)	-0.42	(1.10)	-0.44	(0.70)	-0.04	(0.97)
CELF-5 Sentence Comp.	0.43***	(0.07)	0.44***	(0.07)	0.42***	(0.06)	0.43***	(0.06)
Female	-1.63*	(0.80)	-1.45	(0.81)	-0.30	(0.70)	-0.23	(0.71)
Home language not Eng.	-2.14*	(0.85)	-3.12**	(1.12)	-0.02	(0.74)	0.44	(1.07)
Group X HL			2.14	(1.61)			-0.86	(1.42)
Intercept	13.95***	(1.34)	14.17***	(1.35)	9.83***	(1.14)	9.51***	(1.26)
R^2	0.49		0.50		0.44		0.44	
F	19.54		16.13		15.92		12.71	

Notes: Group is coded as A=1 for models predicting odd items and B=1 for the models predicting even items, so that for both sets of models, the estimates on group are for the masked condition and the reference category is the unmasked condition.
$^{*}p$ <.05, $^{**}p$<.01, $^{***}p$<.001

4 Discussion

- No evidence of a clinically meaningful, negative impact of masking on sentence recall for Kindergarten-aged students
- Children with a home language other than English scored lower on average, but gap was *not* exacerbated by assessor masking

Potential explanations

- Kindergartners may not yet be proficient at integrating audio-visual information, so less affected by masking than adults
- Changes to audio signal may have been minimal
- Tested in quiet location at school without competing background noise
- Pandemic-era students may have adapted to processing speech from masked adults

Limitations

- Could be under-powered (but effect size was small and not consistently negative)
- Limited information on the language exposure of the bilingual children
- Not generalizable to other measures and domains

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