The influence of task

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Which of these skills....

Well-established link between speech (phonological) skills and early reading

- **But … is this link due to the nature of the stimuli or the nature of the task?**
- **Current study systematically varies processing demands and response type across speech and non-speech tasks**

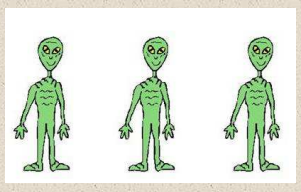
… are important for letter-knowledge?

The tasks

Stimuli: Non-speech = tones, Speech = phonemes and nonwords

Non-speech, non-verbal response

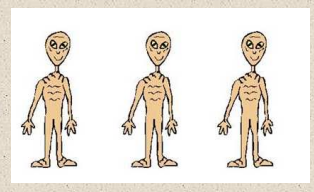
500Hz **1000Hz** **2000Hz**



Example: Child sees aliens play 1000Hz, 500Hz, 2000Hz.
Isolation: Press the alien that makes the first sound you heard = 1000Hz
Repetition: Press the aliens in the order that you heard them = 1000Hz, 500Hz, 2000Hz
Deletion: Play the aliens back without the first sound = 500Hz, 2000Hz

Speech (phonemes), non-verbal response

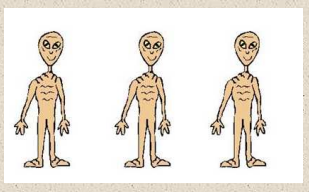
g **k** **p**



Example: Child sees aliens play k, g, p
Isolation: Press the alien that makes the first sound you heard = k
Repetition: Press the aliens in the order that you heard them = k, g, p
Deletion: Play the aliens back without the first sound = g, p

Speech (phonemes), verbal response

g **k** **p**



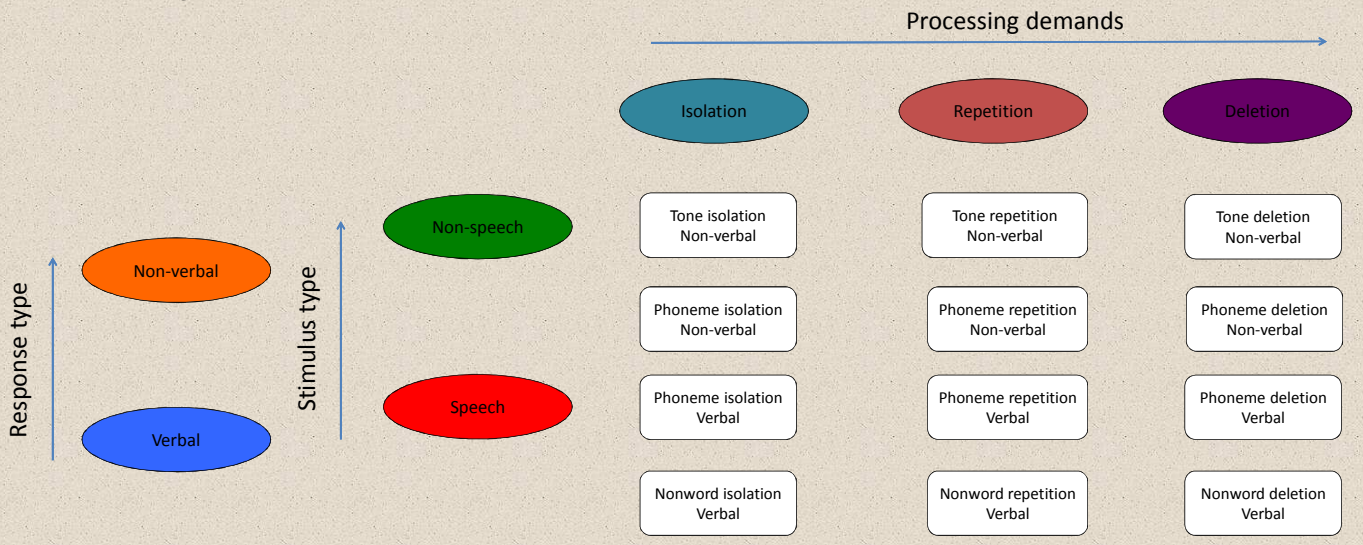
Example: Child hears aliens play k, g, p
Isolation: Say the first sound you heard = 'k'
Repetition: Say the sounds in the order that you heard them = 'k, g, p'
Deletion: Say the sounds back without the first sound = 'g, p'

Speech (nonwords), verbal response

"S A N"

Example: Child hears 'san'
Isolation: Tell me the first sound you hear in san = 's'
Repetition: Say san back to me = 'san'
Deletion: Say san without the first sound = 'an'

Method: 788 children were tested during the first term of Reception (first year of reading instruction in UK), mean age 4 years, 7 months on these tasks plus a test of letter knowledge (LeST; Larsen, Kohnen, McArthur & Nickels, 2011).



Results

Composite Variable (average total correct for isolation and repetition. Deletion omitted due to floor effects)	Letter-sound knowledge (total correct)	
	β	ΔR²
1. Speech stimuli	.61**	.37**
2. Non-speech stimuli	<.01	<.01
1. Non-speech stimuli	.27**	.07**
2. Speech stimuli	.61**	.30**
1. Verbal response	.52**	.27**
2. Non-verbal response	.34**	.08**
1. Non-verbal response	.53**	.28**
2. Verbal response	.32**	.07**

Composite Variable (average total correct for nonwords, verbal phoneme, non-verbal phoneme and auditory)	Letter-sound knowledge (total correct)	
	β	ΔR²
1. Repetition	.31**	.25**
1. Deletion	.28**	
2. Isolation	.53**	.15**
1. Isolation	.58**	.38**
1. Deletion	.06	
2. Repetition	.11	.01
1. Isolation	.56**	.39**
1. Repetition	.11	
2. Deletion	.05	<.01

Conclusions

- Tasks with speech stimuli are more predictive than tasks with non-speech stimuli. Supports phonological hypothesis (Melby-Lervag, Lyster & Hulme 2012).
- Both verbal and non-verbal response tasks are predictive. Supports auditory-articulation Boets, Wouters, van Wieringen, & Ghesquiere (2007), and auditory-visuospatial hypotheses (McBride-Chang, Zhou, Cho, Aram, Levin & Tolchinsky 2011).
- The tasks with the lowest processing demands (isolation) are most predictive. Does not support task complexity hypothesis (Banai & Ahisar, 2006), although problems with low performance on deletion task.