University of Strathclyde
Education

What is normal? Revisiting normative data for Scottish children's phonological processes

Wendy Cohen
Carolyn Anderson
University of Strathclyde

University of Strathclyde Education

Presentation outline

Why look?

What norms do we refer to in the clinical setting?

What have we found in our data?

University of Strathclyde Education

Why look?

Developing new resource for assessing single word phonological skills in pre school children

105 children in 3 nursery schools in West Central Scotland (inclusive)

Age range 3;01 – 5;05

78 pictures

University of Strathclyde Education

Our sample

	♀	♂
3;00 - 3;06	4	7
3;06 - 3;11	14	13
4;00 - 4;05	14	12
4;06 - 4;11	21	9
5;00 - 5;05	2	9
TOTAL	55	50

University of Strathclyde Education

What UK norms do we refer to in the clinical setting?

Grunwell (1981) Norms derived from error patterns in data recorded by Ingram (1976) and Anthony, Bogle, Ingram and McIsacc (1971).

Small group of children.

University of Strathclyde Education

Other interpretations of Grunwell's normative data

Howell & Dean (1994) Metaphon

Bowen, C. (1999). Phonological Development: The Gradual Acquisition of the Speech Sound System. Retrieved from www.speech-language-therapy.com/ on 29/01/09

University of Strathclyde Education

More recent UK based norms

Dodd, Holm, Hua & Crosbie (2003):

684 children

Articulation and Phonology assessment sections of the DEAP

Suppression of processes differs from ages proposed by Grunwell and others

University of Strathclyde Education

Approximate age of suppression of phonological processes

Adult target achieved 100% of time
Adult target achieved 90% of time
Adult target achieved 75% of time

this may account for the differences reported

But in intervention guide is to generalisation after 50% achievement

University of Strathclyde Education

Focus on 6 processes:

Velar fronting
Palato-alveolar fronting
Stopping affricates
Stopping fricatives
Cluster reduction
S-cluster reduction

University of Strathclyde Education

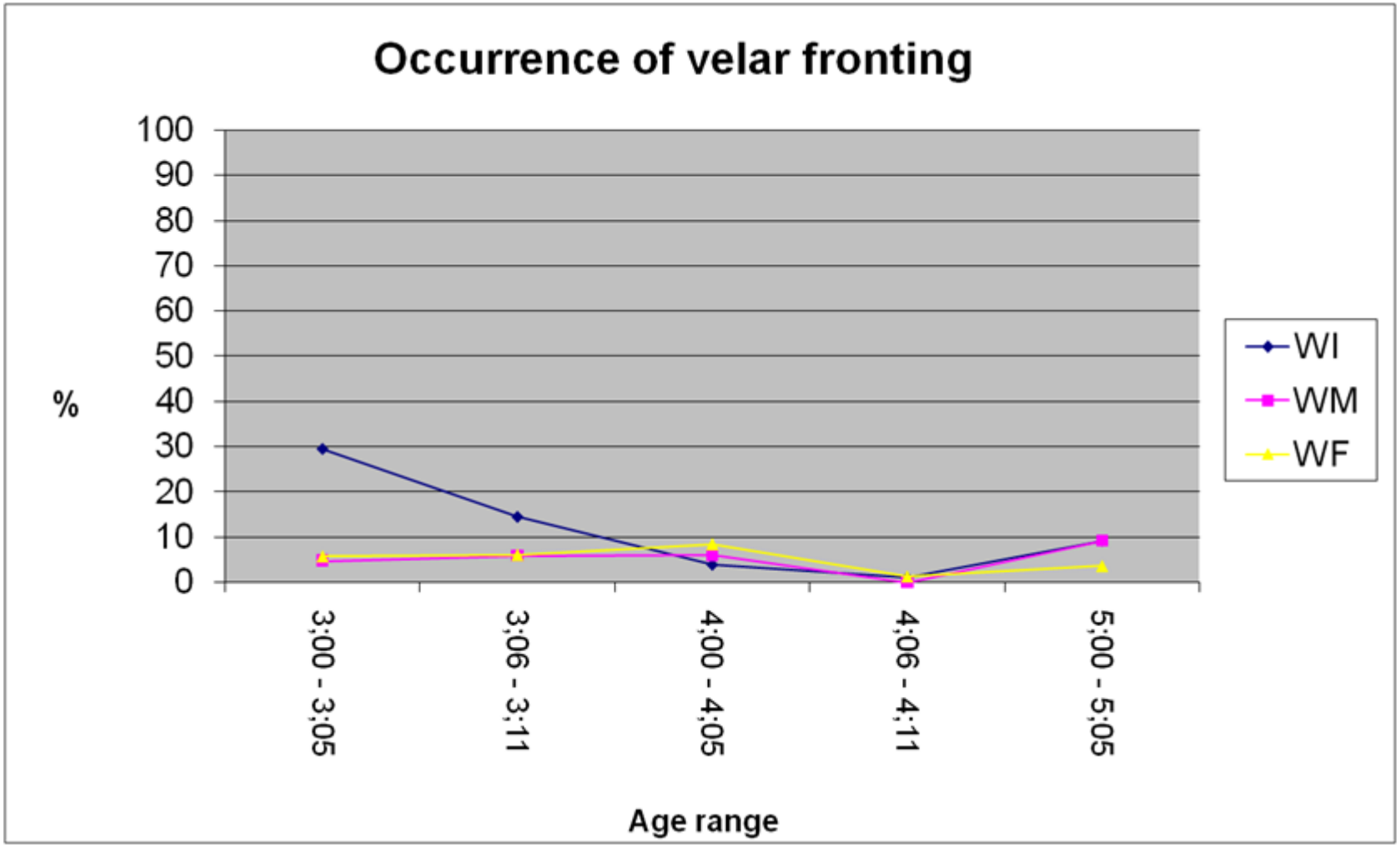
Velar fronting

		2;0–2;6	2;6 – 3;0	3;0 – 3;6	3;6 – 4;0	4;0 – 4;6	4;6 – 5;0	5;0 +
Velar Fronting	**Grunwell**							
	Howell & Dean							
	Bowen							
	Dodd et al *							

* No distinction between velar and palato-alveolar fronting in this sample

University of Strathclyde Education

Our data



		2;0–2;6	2;6 – 3;0	3;0 – 3;6	3;6 – 4;0	4;0 – 4;6	4;6 – 5;0	5;0 +
Velar Fronting	**Grunwell**							
	Howell & Dean							
	Bowen							
	Dodd et al							

OUR DATA FROM HERE

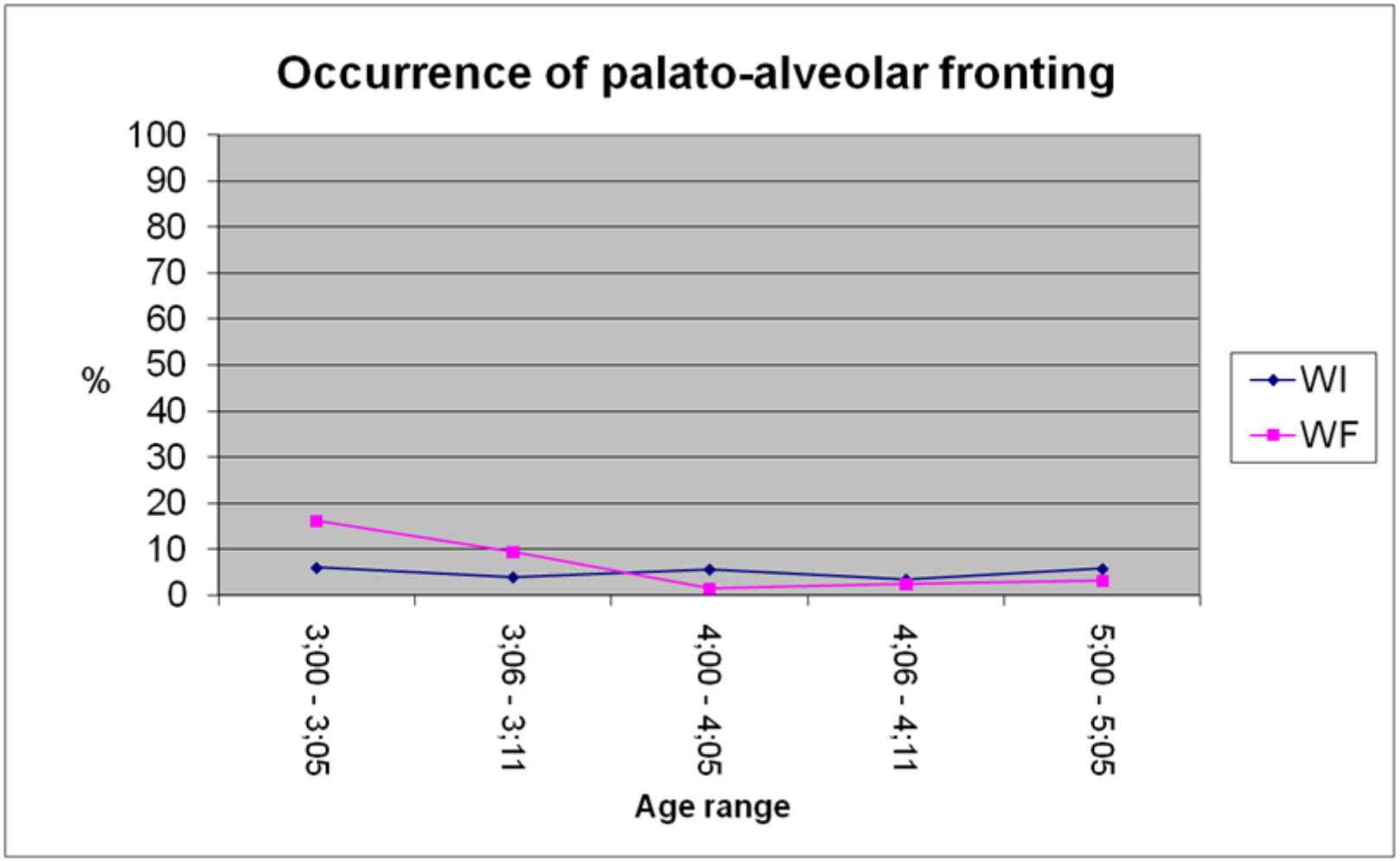
Palato-alveolar fronting

		2;0 – 2;6	2;6 – 3;0	3;0 – 3;6	3;6 – 4;0	4;0 – 4;6	4;6 – 5;0	5;0 +
Palato-alveolar fronting	**Grunwell**							
	Howell & Dean							
	Bowen							
	Dodd et al *							

* No distinction between velar and palato-alveolar fronting in this sample

University of Strathclyde Education

Our data



		2;0 – 2;6	2;6 – 3;0	3;0 – 3;6	3;6 – 4;0	4;0 – 4;6	4;6 – 5;0	5;0 +
Palato-alveolar fronting	**Grunwell**			**OUR DATA FROM HERE**				
	Howell & Dean							
	Bowen							
	Dodd et al							

University of Strathclyde Education

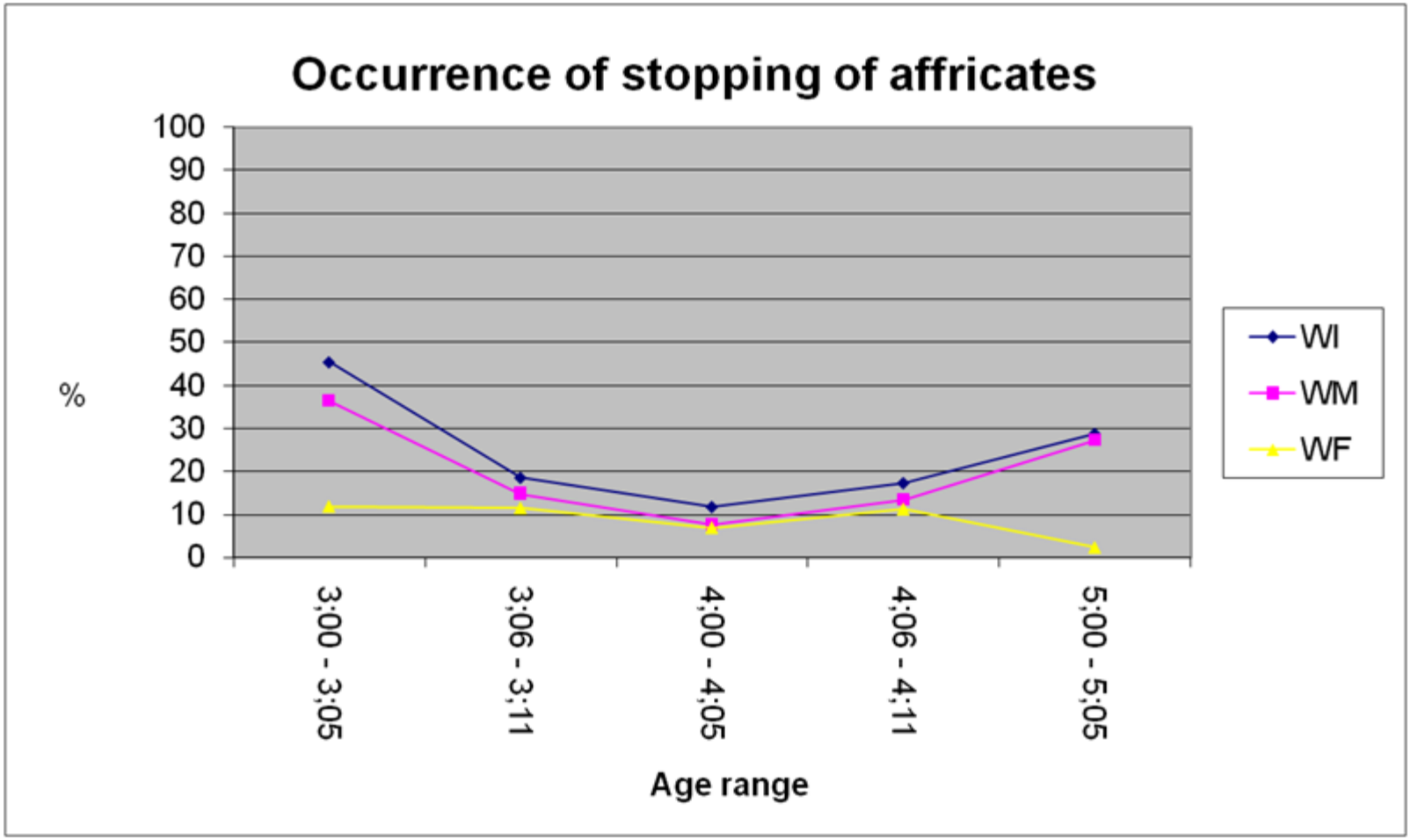
Stopping affricates

		2;0 – 2;6	2;6 – 3;0	3;0 – 3;6	3;6 – 4;0	4;0 – 4;6	4;6 – 5;0	5;0 +
Stopping affricates	**Grunwell**							
	Howell & Dean							
	Bowen							
	Dodd et al *							

* No distinction between stopping fricatives and stopping affricates in this sample

University of Strathclyde Education

Our data



		2;0 – 2;6	2;6 – 3;0	3;0 – 3;6	3;6 – 4;0	4;0 – 4;6	4;6 – 5;0	5;0 +
Stopping affricates	**Grunwell**							
	Howell & Dean							
	Bowen							
	Dodd et al *							

OUR DATA FROM HERE

University of Strathclyde Education

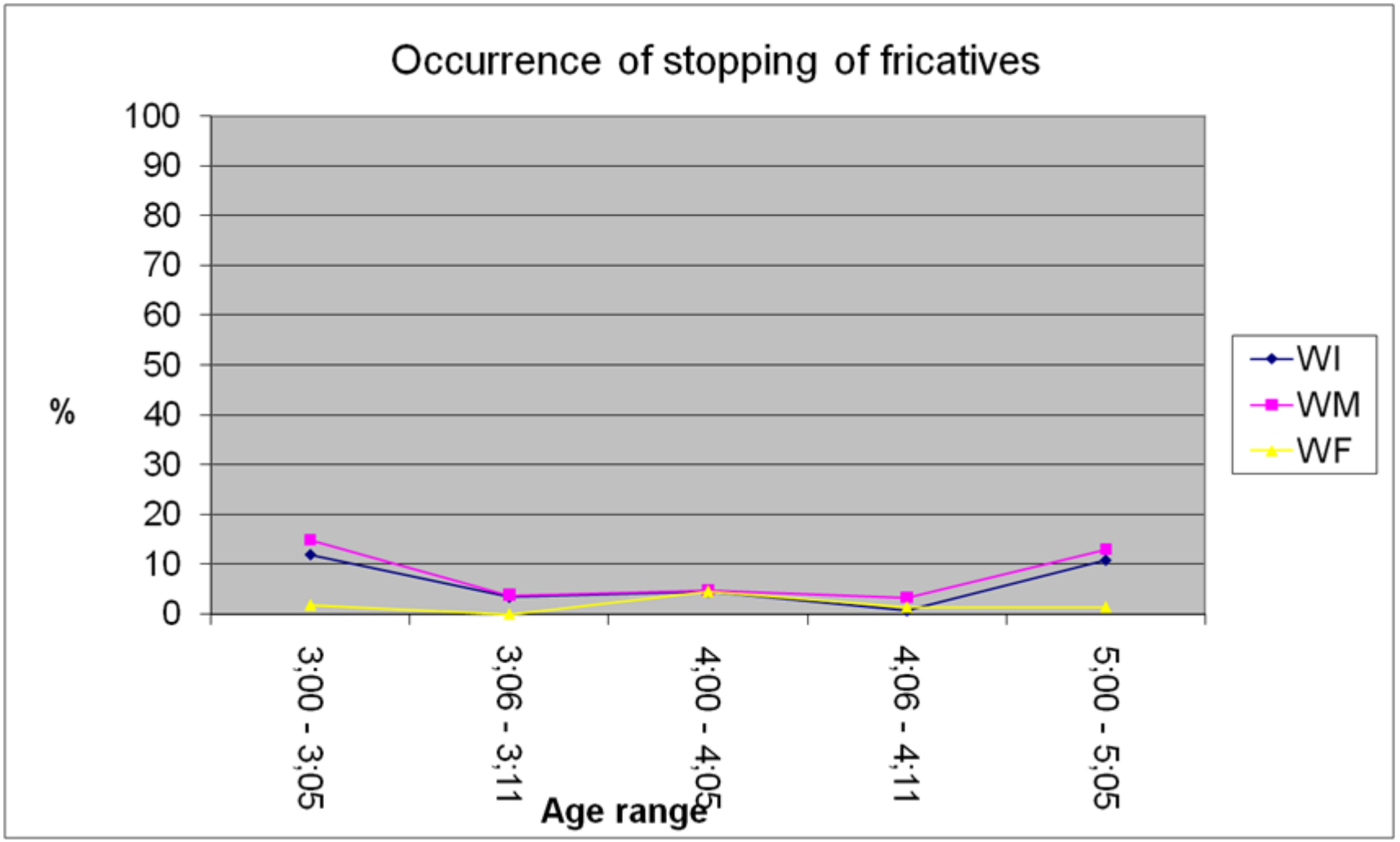
Stopping fricatives

		2;0 – 2;6	2;6 – 3;0	3;0 – 3;6	3;6 – 4;0	4;0 – 4;6	4;6 – 5;0	5;0 +
Stopping fricatives	**Grunwell**		/□/ /□/ /□/	/□ □/	/□/ /□/		/□ □/	/□/ /□/
	Howell & Dean		/□/ /□/	/□/ /□/	/□/			
	Bowen			/□/ /□/	/□/ /□/		/□/ /□ □/ /□ □/	/□/ /□/
	Dodd et al *							

* No distinction between stopping fricatives and stopping affricates in this sample

University of Strathclyde Education

Our data



		2;0 – 2;6	2;6 – 3;0	3;0 – 3;6	3;6 – 4;0	4;0 – 4;6	4;6 – 5;0	5;0 +
Stopping fricatives	**Grunwell**		/□/ /□/ /□/	/□ □/	/□/ /□/		/□ □/	/□/ /□/
	Howell & Dean		/□/ /□/	/□/ /□/	/□/			
	Bowen			/□/ /□/	/□/ /□/		/□/ /□ □/ /□ □/	/□/ /□/
	Dodd et al *							

OUR DATA FROM HERE

* No distinction between stopping fricatives and stopping affricates in this sample

University of Strathclyde Education

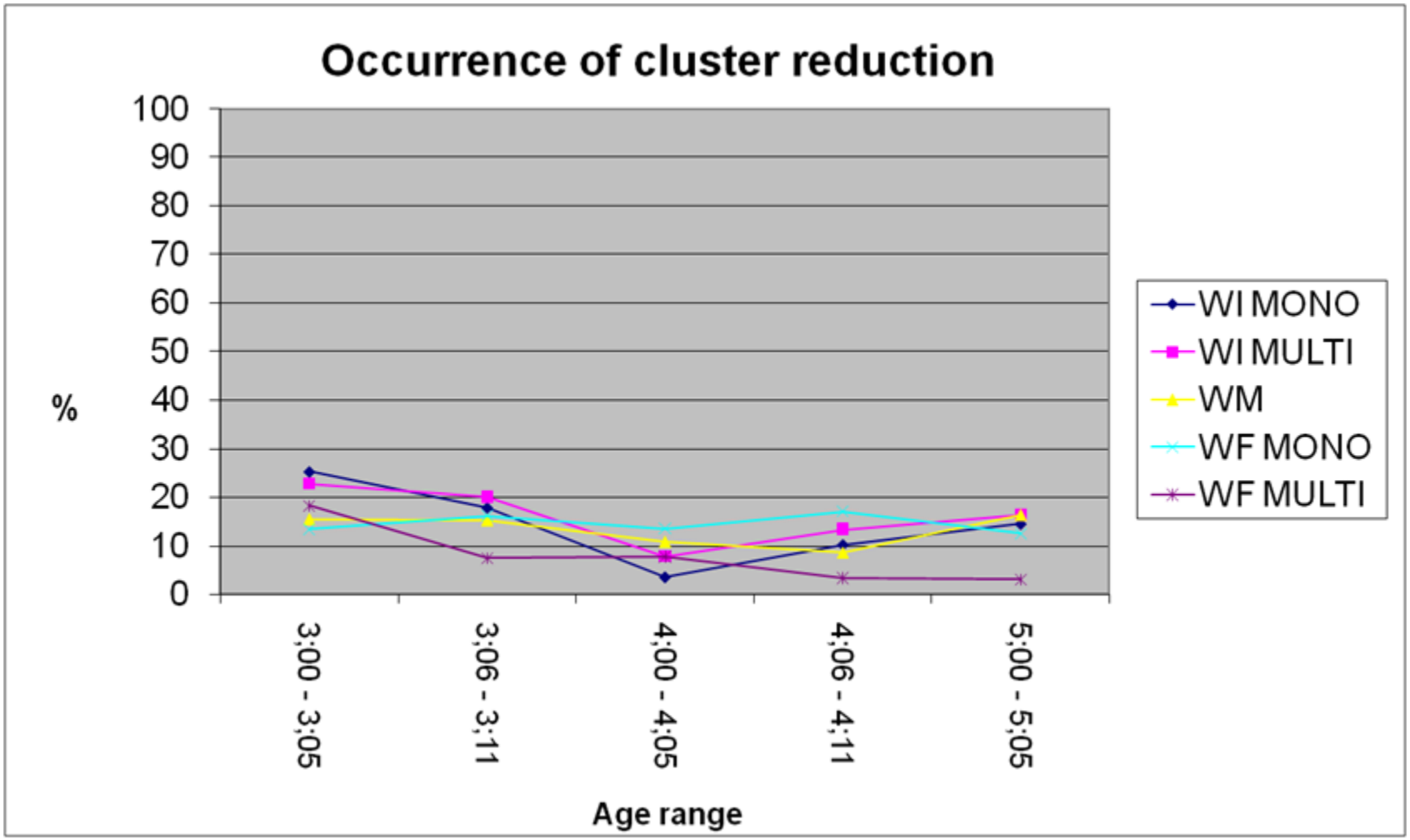
Cluster reduction

		2;0 – 2;6	2;6 – 3;0	3;0 – 3;6	3;6 – 4;0	4;0 – 4;6	4;6 – 5;0	5;0 +
Initial Cluster Reduction Obstruent + approximant	**Grunwell**							
	Howell & Dean *							
	Bowen *							
	Dodd et al *							

* No distinction is made between s-clusters and obstruent + approximant cluster combinations in these samples

University of Strathclyde Education

Our data



		2;0 – 2;6	2;6 – 3;0	3;0 – 3;6	3;6 – 4;0	4;0 – 4;6	4;6 – 5;0	5;0 +
Initial Cluster Reduction Obstruent + approximant	**Grunwell**							
	Howell & Dean							
	Bowen							
	Dodd et al							

OUR DATA FROM HERE

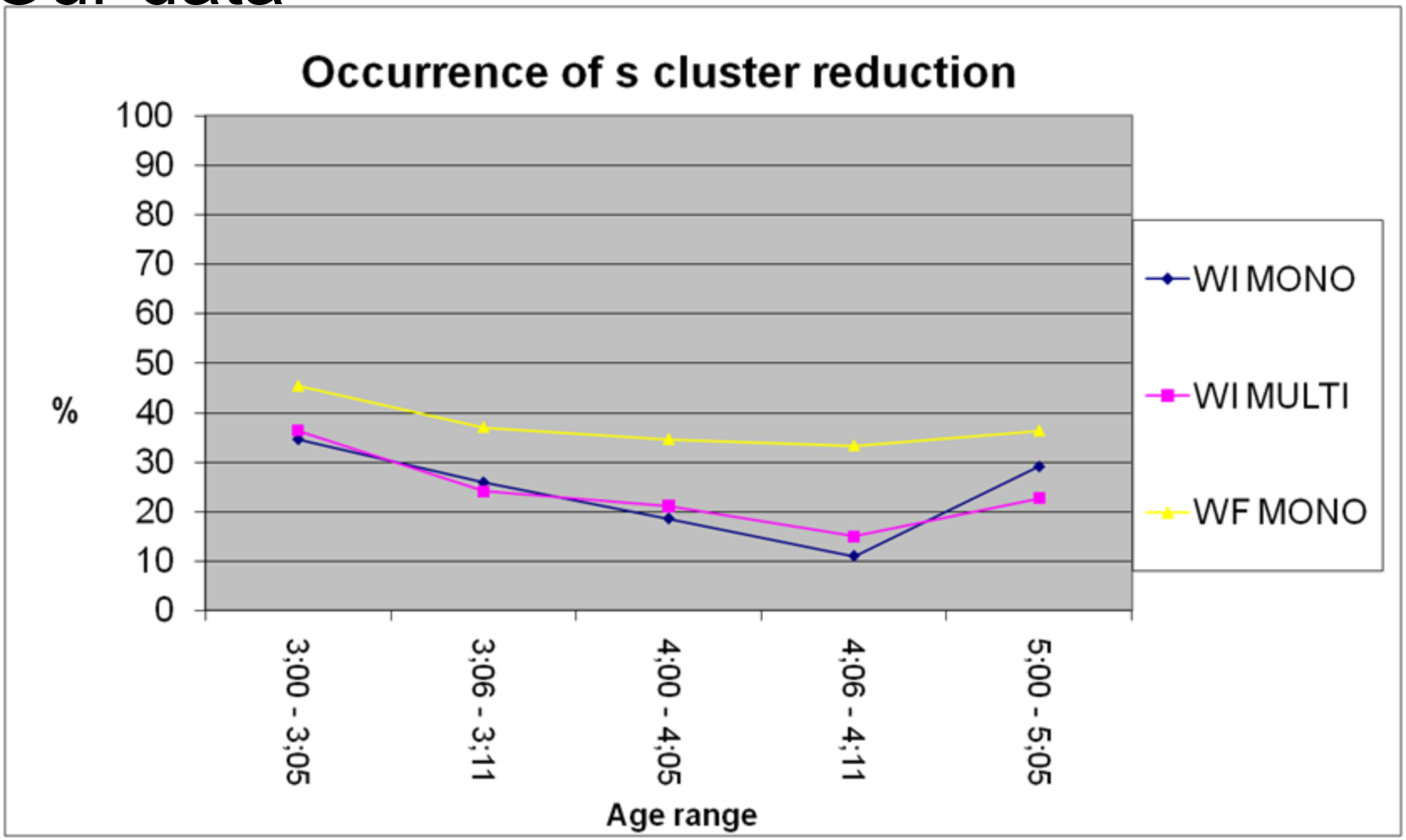
S-cluster reduction

		2;0 – 2;6	2;6 – 3;0	3;0 – 3;6	3;6 – 4;0	4;0 – 4;6	4;6 – 5;0	5;0 +
Initial Cluster Reduction /s/ + consonant	**Grunwell**							
	Howell & Dean *							
	Bowen *							
	Dodd et al *							

* No distinction is made between s-clusters and obstruent + approximant cluster combinations in these samples

University of Strathclyde Education

Our data



		2;0 – 2;6	2;6 – 3;0	3;0 – 3;6	3;6 – 4;0	4;0 – 4;6	4;6 – 5;0	5;0 +
Initial Cluster Reduction /s/ + consonant	**Grunwell**					OUR DATA FROM HERE		
	Howell & Dean							
	Bowen							
	Dodd et al							

University of Strathclyde Education

Results

Suppression of velar fronting, stopping of affricates and s-cluster reduction is similar to previous research

Suppression of palato-alveolar fronting, stopping of fricatives and obstruent cluster reduction occurring earlier than anticipated

University of Strathclyde Education

Why?

All children from age of 3 in Scotland are allocated free nursery placement

Children under the age of 3 are supported with the “Birth to Three – Supporting our youngest children” framework. (Scottish Executive 2005)

Communication and language skills form a core part of the Curriculum Framework for children 3-5 : Early Years Educators are trained in supporting this development (Scottish Executive, 1999)

Pre school children may be having to communicate with a wider range of people than previous research cohorts

University of Strathclyde Education

Limitations and Future Research

Limitations

- Sample size
- Distribution within age ranges
- Representativeness of oldest age group

Where do we go from here?

- Geographical diversity
- Publish assessment
- Clinical decision-making with norms

University of Strathclyde Education

Ask the audience

Do you have pre-school phonology cases on your caseload?

Do you routinely treat these children?

What developmental norms do you use?

- Grunwell (PACS)
- Howell & Dean (Metaphon)
- Bowen (Web resources)
- Dodd (DEAP)
- Other

University of Strathclyde Education

Implications

Speech unintelligibility can impact on key aspects of the Curriculum Framework for children 3-5 (Scottish Executive, 1999)

Children with expressive language problems can normalise without intervention – however, it is difficult to predict which children will do so (Law et al., 1998)

Dodd (2005) offers a framework for classifying difficulties

There is evidence to support efficacy of direct SLT intervention for children with speech difficulties (Law et al., 1998)

Are we relying on outdated norms when advising our colleagues in education?

University of Strathclyde Education

References

Bowen, C. (1999) http://www.speech-language-therapy.com/Table3.htm

Dodd, B., Holm, A., Hua, Z., & Crosbie, S. (2003) Phonological development: A normative study of British English-speaking children. *Clinical Linguistics & Phonetics*. 17 617–643

Dodd, B. (2005) *Differential diagnosis and treatment of children with speech disorder*. 2nd Ed. London: Whurr.

Grunwell, P. (1987) *Clinical Phonology* 2nd Edition. London: Croon Helm

Howell, J. & Dean, E. (1994) *Treating Phonological Disorders in Children.* London: Whurr

Law, J., Boyle, J., Harris, F., Harkness, A., & Nye, C. (1998) Screening for speech and language delay: A systematic review of the literature. *Health Technology Assessment* 2 (9)

Scottish Executive (2005) *Birth to Three – Supporting our youngest children.* http://www.ltscotland.org.uk/Images/birth2three_tcm4-161671.pdf

Scottish Executive (1999) *Curriculum Framework for children 3-5.* Scottish Consultative Council on the Curriculum