Speech-language pathologists' assessment and intervention practices for childhood speech sound disorders

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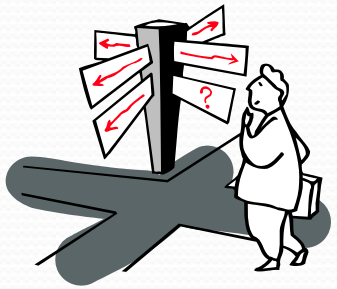
Purpose

- To describe speech-language pathologists' (SLPs) assessment, analysis, target selection and intervention practices for children with speech sound disorders (SSD)

- Contrast the findings with previously published research on SLPs' methods of practice in the US, UK and Australia

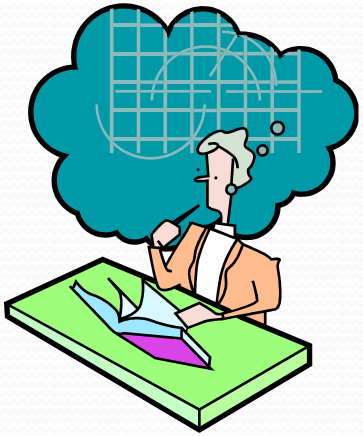
- Consider future directions for researchers and clinicians



Learner outcomes

- Compare and contrast your own clinical practice in the areas of assessment, analysis, target selection, and intervention with:
  - survey results
  - research evidence

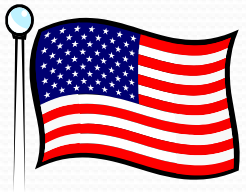
- Identify one aspect of your current clinical practice that you would like to review.



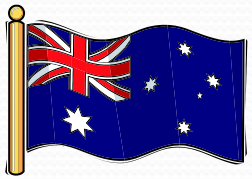
Children with speech sound disorders

Form a substantial portion of speech-language pathologists' (SLPs) caseloads

- USA
  - 74.7% of preschool children (Mullen & Schooling, 2010)



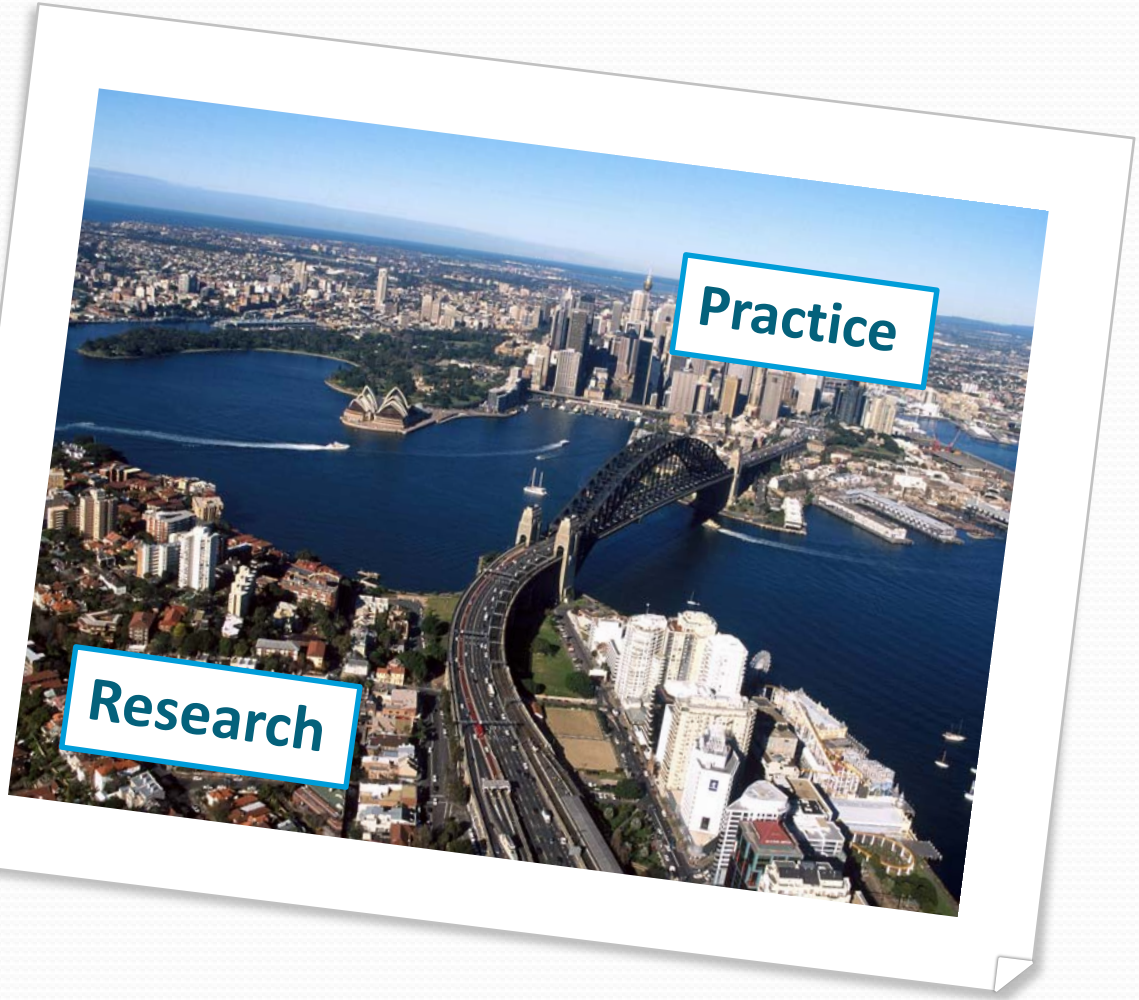
- Australia
  - Approximately 50% of children (McLeod & Baker, 2004)



Ideally… SLPs engage in evidence-based practice (EBP)

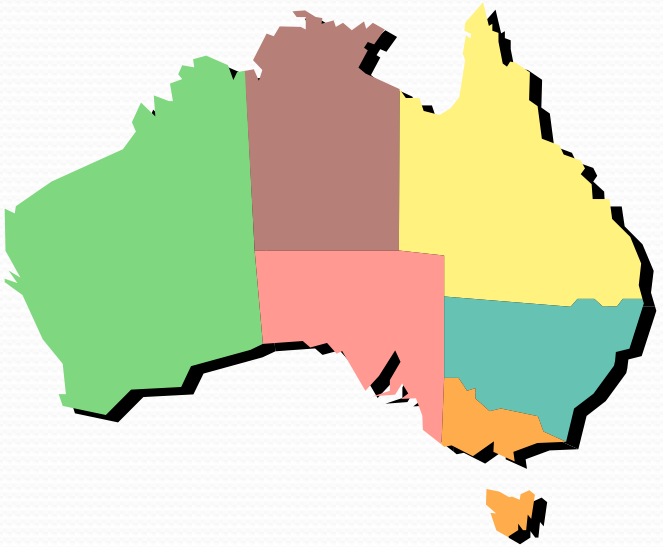
***However*... EBP "has not become a regular part of clinical practice"**

(Brackenbury et al., 2008, p. 78).



Participants

- 322 practising SLPs attended Speech Pathology Australia seminars in every state and territory of Australia.
- 71.5% (= 231 SLPs) completed questionnaires prior to seminars, and, consented to results being analysed



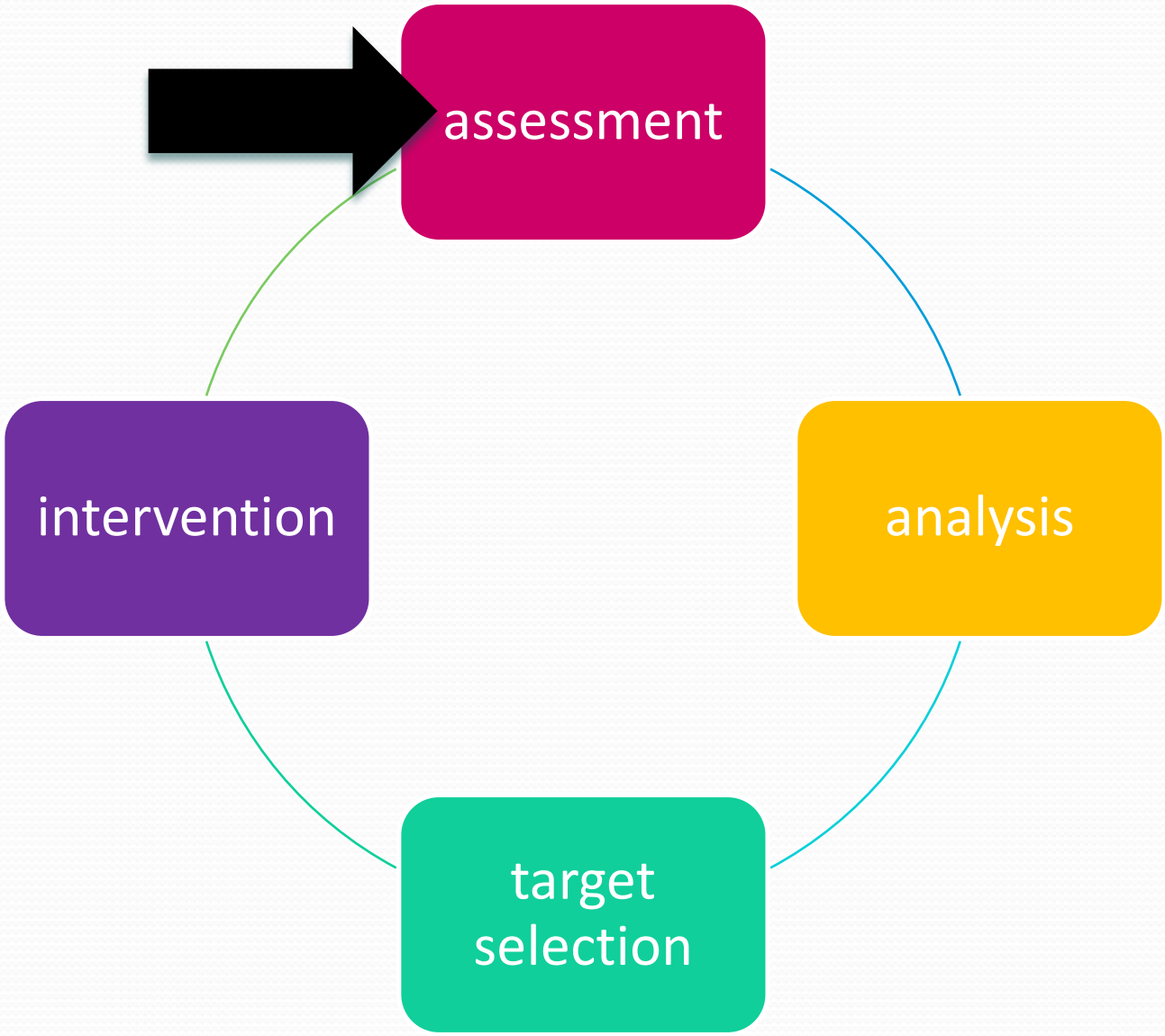
Participants

- 98.7% female
- 46.3% parents
- Practicing in every state and territory in Australia
- Professional training undertaken in Australia, UK, USA, New Zealand and South Africa
- 54.1% worked fulltime and 45.9% part time
- 47.6% practicing as an SLP for >10 years
- Typically worked in private practice (38.1%), schools (37.7%) or community health (29.0%) settings.

Survey

Example: *Please indicate the frequency with which you use the following speech assessment components*

	Always	Sometimes	Infrequently	Never
Single word test to determine sounds in error				
Assessing oral motor skills using nonspeech tasks				


assessment
analysis
target selection
intervention

Assessment Results

– *always and sometimes* used....

Component	ALWAYS	SOMETIMES
Single-word test to determine error sounds	88.9%	10.6%
Stimulability testing	77.7%	17.5%
Conversational speech sampling	58.3%	25.7%
Estimating intelligibility	55.1%	30.9%
Hearing Screening	41.3%	28.6%
Assessment of phonemic awareness	25.6%	59.7%
Assessment of oral motor skills using speech tasks	24.6%	47.4%
Assessment of oral motor skills using non-speech tasks	21.6%	47.4%
Perception / auditory discrimination	15.8%	46.3%
Single-word test to determine % rank or standard score	11.2%	26.1%

Assessment Results – *always* used....

Component	Current study	Skahan et al., 2007)
Single-word test to determine error sounds	88.9%	*
Stimulability testing	77.7%	67.0%
Conversational speech sampling	58.3%	36.2%
Estimating intelligibility	55.1%	75.4%
Hearing Screening	41.3%	70.6%
Assessment of phonemic awareness	25.6%	12.9%
Assessment of oral motor skills using speech tasks	24.6%	54.4%
Assessment of oral motor skills using non-speech tasks	21.6%	57.6%
Perception / auditory discrimination	15.8%	12.6%
Single-word test to determine % rank or standard score	11.2%	74.1%

** = not surveyed.*

Assessment results– *always…*

Component	Current study
Articulation Survey (Aitken and Fisher, 1996)	**38.1%**
Informal / own test	**59.1%**
Daz Roberts Test of Articulation (Roberts)	**9.4%**
Diagnostic Evaluation of Articulation and Phonology (Dodd et al., 2002)	8.6%
Goldman-Fristoe Test of Articulation (Goldman & Fristoe, 2000)	5.5%
Photo Articulation Test (Lippke et al., 1997)	0.6%
South Tyneside Assessment of Phonology (Armstrong & Ainley, 1988)	*

always & sometimes

** = not surveyed.*

Assessment: Always used...

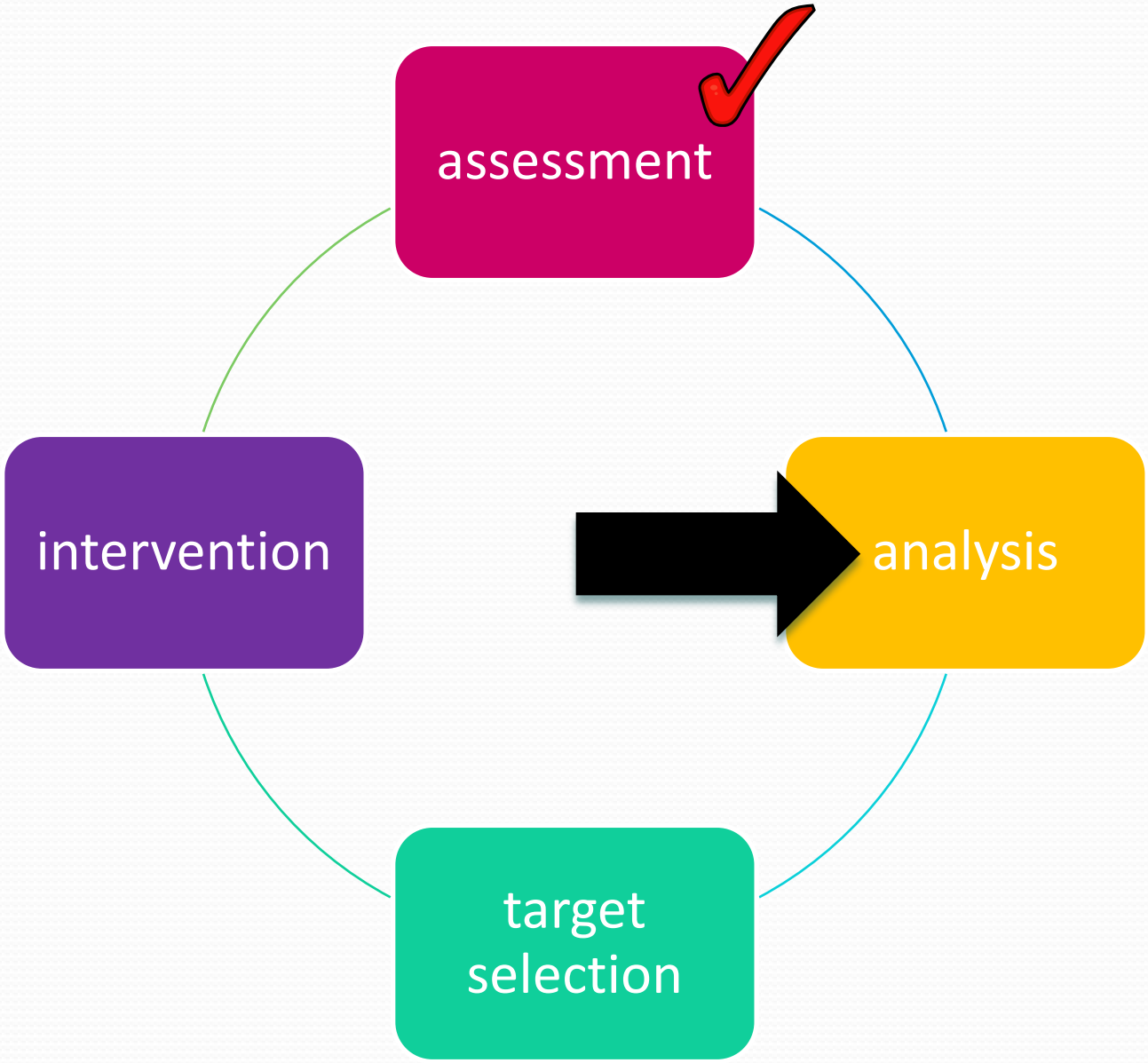
Children from non-English speaking backgrounds

Component	Current study	Skahan et al., 2008)
Informal procedures	70.8%	67%
English-only standardized tests	45.6%	35%
Standardized tests from a client's native language	3.7%%	19%
Developed local norms	10.3%	11%

"Most participants reported using informal assessment procedures, or English-only standardized tests, when evaluating non-native English speakers."
(Skahan, Watson, & Lof, 2007, p. 246)

Query

- Are suitable assessments unavailable or too expensive?
- Is expertise in other languages unavailable?


assessment
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Analysis results

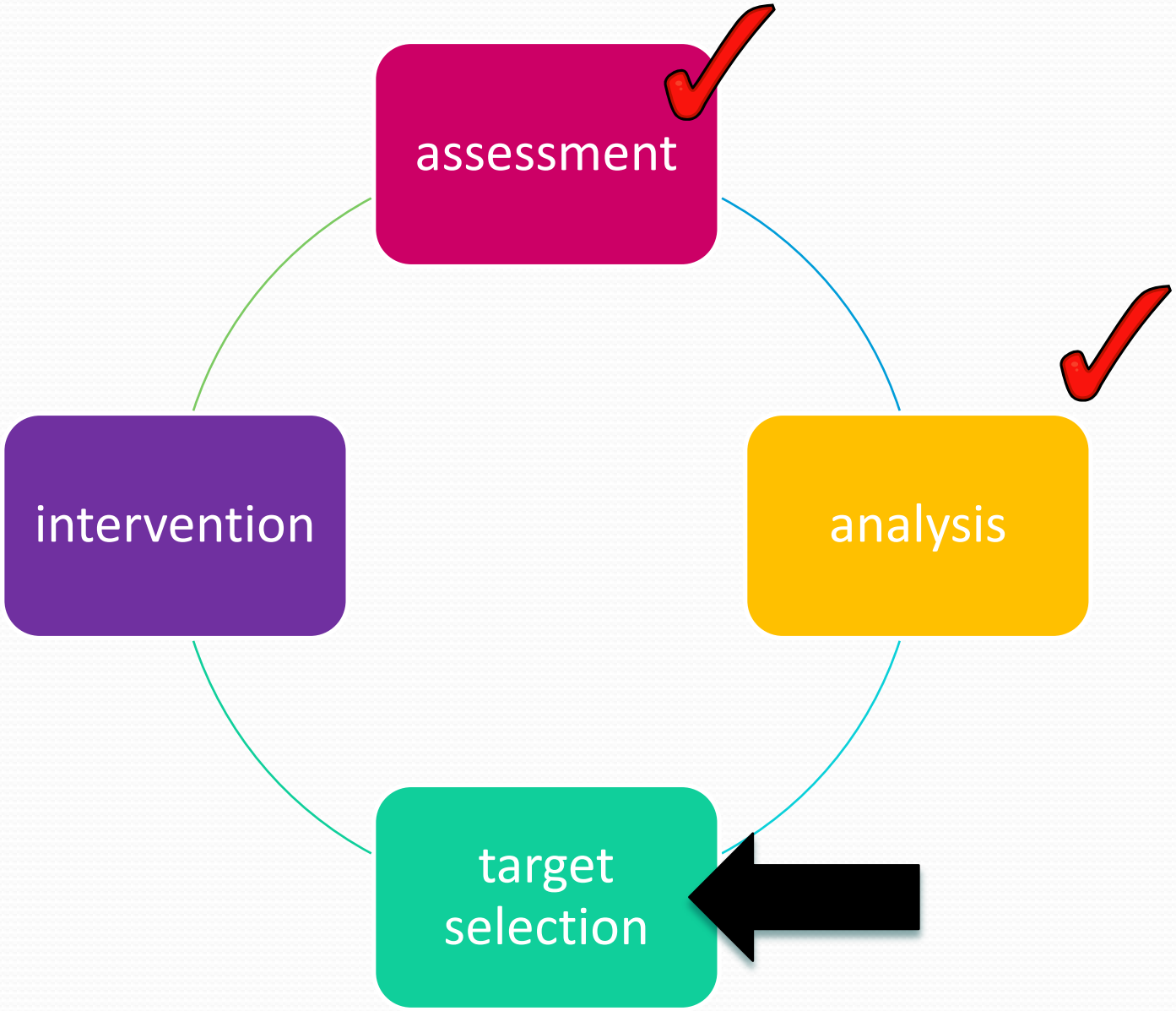
- When analysing children's speech, which methods do you use? *(tick as many as apply)*

Component	**Current study**
Substitution, distortion, addition omission (SODA - traditional articulation analysis)	94.0%
Phonological process analysis	96.3%
Syllable-word shape analysis	20.9%
Independent and relational analysis	13.4%
Psycholinguistic analysis	7.4%
Nonlinear analysis	4.1%
Computerized analysis (e.g., PROPH)	2.3%

Analysis results

- When analysing children's speech, which methods do you use? *(tick as many as apply)*

Component	Current study	Skahan et al., (2007)
Substitution, distortion, addition omission (SODA - traditional articulation analysis)	94.0%	*
Phonological process analysis	96.3%	51.1%
Syllable-word shape analysis	20.9%	11.3%
Independent and relational analysis	13.4%	*
Psycholinguistic analysis	7.4%	*
Nonlinear analysis	4.1%	*
Computerized analysis (e.g., PROPH)	2.3%	8%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Results: Target selection practices

Factor to consider

- Stimulable sounds
- Early developing sounds
- Sounds in error in one position

Developmental perspective

- Non-stimulable sounds
- Later developing sounds
- Sounds in error across all positions

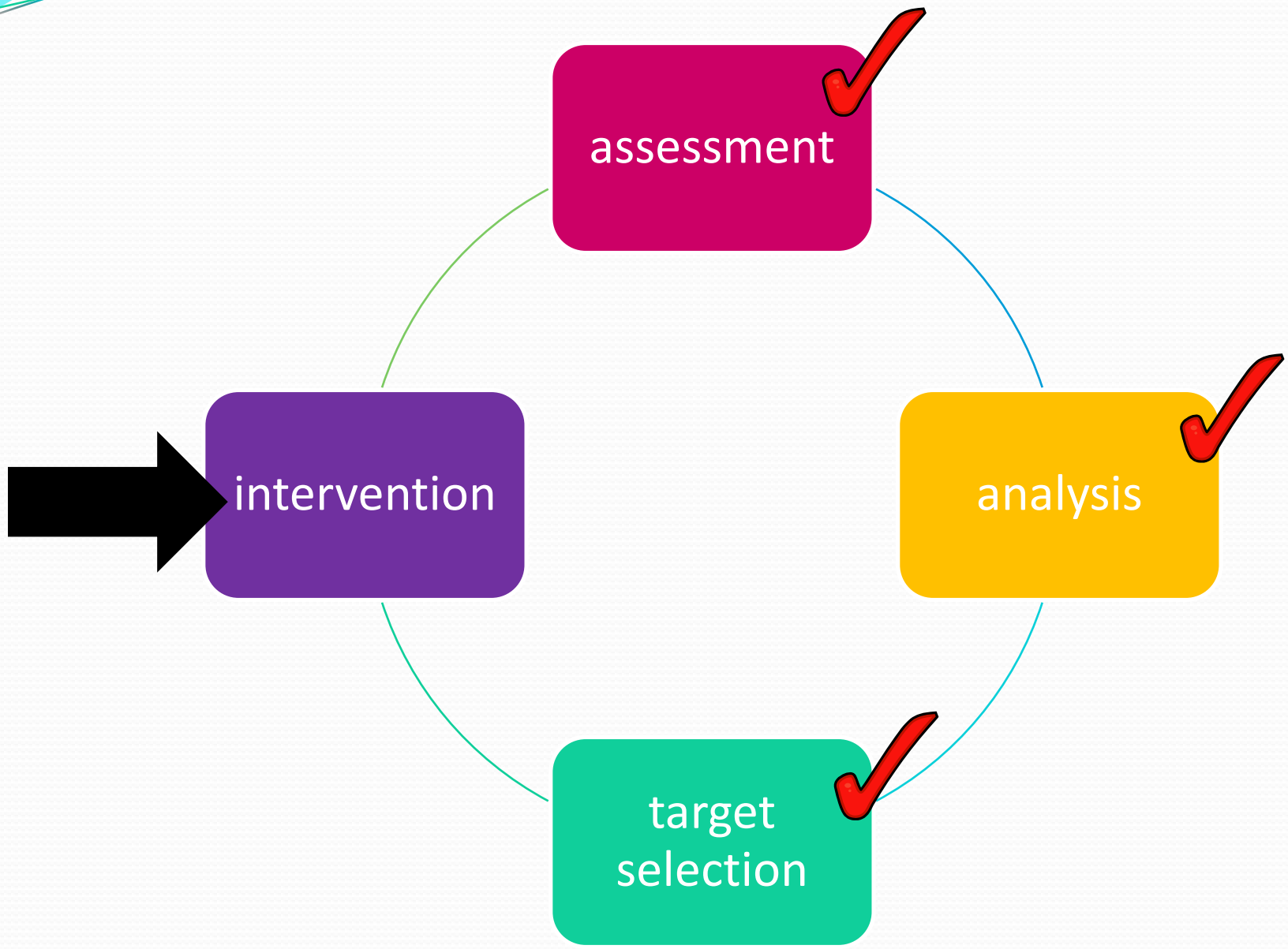
Complexity perspective

- Sounds in the child's name
- Sounds the parent / child would like
- Other factors

Social and other factors

Results: Target selection practices

Factor to consider	High priority
Stimulable sounds	**74.6%**
Early developing sounds	**64.8%**
Sounds in error in one position	19.4%
Non-stimulable sounds	24.2%
Later developing sounds	18.3%
Sounds in error across all positions	**65.0%**
Sounds in the child's name	31.3%
Sounds the parent / child would like	34.8%
Other factors	32.0%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Survey question: Please rate how frequently you use each of the following approaches in your therapy?

List include 28 options, including:

- Empirically-supported approaches (e.g., Baker & McLeod 2011)
- Approaches previously reported to be used by SLPs (e.g., Joffe & Pring, 2008; Lof & Watson, 2008;)

Empirically supported approaches

- **Minimal pairs** (minimal opposition contrast) *(e.g., Weiner, 1981)*
- **Multiple opposition** contrast (e.g., SCIP) *(e.g., Williams, 2000)*
- **Maximal oppositions** contrast *(e.g., Gierut, 1990)*
- **Cycles** *(e.g., Hodson, 2007)*
- **SAILS** speech perception intervention *(e.g., Rvachew, 1994)*
- **Metaphon** *(e.g., Howell & Dean, 1984)*
- **Metaphonological** intervention *(e.g., Hesketh, Adams, Nightingale, Hall, 2000)*
- **Nonlinear** phonological intervention *(e.g., Bernhardt & Stemberger, 2000*
- Parents and children together (e.g., **PACT**) *(e.g., Bowen & Cupples, 1999)*
- **Natural speech intelligibility training** (NSIT) *(e.g., Camarata)*
- **Phonological awareness** intervention *(e.g., Gillon, 2000)*
- **Core vocabulary** *(e.g., Dodd & Bradford, 2000)*
- **Psycholinguistically-based** intervention *(e.g., Stackhouse & Wells, 1997; 2001)*
- **Whole language** intervention *(e.g., Hoffman, Norris & Monjure, 1990)*
- Treatment program for enhancing **stimulability** *(e.g., Miccio, 2005)*
- **Instrumental approaches** e.g., electropalatography; ultrasound *(e.g., Hardcastle & Gibbon, 1997)*
- Dynamic temporal and tactile cueing (**Integral stimulation**) (*e.g., Strand & Caruso)*

Approaches with relatively less (...or in some cases no) empirical support

- Non-speech oro-motor exercises (e.g., Marshalla; Rosenfeld-Johnson)
- Cued articulation *(e.g., Passey, 1990)*
- Nuffield Centre Dyspraxia Programme
  (e.g., Nuffield Hearing & Speech Centre, 2004)
- Auditory discrimination *(e.g., Berry & Eisenson, 1956)*
- Suck–swallow–breathe synchrony *(e.g., Oetter et al., 1993)*
- Prompts for Restructuring Oral Muscular Phonetic Targets (e.g., PROMPT) *(e.g., Hayden, 2006)*
- Traditional articulation therapy *(e.g., van Riper, 1939) ...has been studied experimentally:*
  - *not as efficient for managing phonologically-based SSD.*

Top 5 most commonly used intervention approaches

APPROACH	Always	Sometimes
Auditory discrimination (Berry & Eisenson, 1956)	33.5%	55.5%
Minimal opposition contrast (minimal pairs) (Weiner, 1981)	31.3%	58.5%
Cued articulation (Passey, 1990)	30.7%	42.4%
Phonological awareness (Gillon, 2000)	26.0%	51.5%
Traditional articulation therapy (van Riper, 1939)	23.4%	58.2%

Use of a selection of empirically supported approaches

Approach	Always	Sometimes	Never
Cycles (Hodson & Paden, 1991)	4.3%	27.6%	**42.7%**
SAILS Speech perception intervention (Rvachew, 1994)	0.0%	0.0%	**97.7%**
Parents and children together (**PACT**) (Bowen & Cupples, 1999)	4.5%	16.9%	**62.7%**
Maximal oppositions contrast (Gierut, 1990)	6.0%	38.0%	**30.4%**
Multiple opposition contrast (SCIP) (Lynn Williams, 2000)	5.1%	26.0%	**53.1%**
Metaphonological intervention (Howell & Dean, 1984)	2.9%	10.5%	**73.8%**
Core vocabulary (Dodd & Bradford, 2000)	8.3%	56.0%	**16.1%**

Comparison between Australia and UK

APPROACH...always used	AUSTRALIA	UK
Auditory discrimination (Berry & Eisenson, 1956)	33.5%	↑ 87.7%%
Minimal opposition contrast (minimal pairs) (Weiner, 1981)	31.3%	↑ 61.3%
Cued articulation (Passey, 1990)	30.7%	30.6%
Phonological awareness (Gillon, 2000)	26.0%	↑ 72.4%
Traditional articulation therapy (van Riper, 1939)	23.4%	33.7%

Use of non-speech oral motor exercises (NSOMEs)

	Australia
use	37.6%
never use	62.4%

Summary:
What do these survey results mean?

Diversity in clinical practice

☑Empirically-based choices

☑Different types of SSD appear to benefit from different approaches

For example….specific options for specific difficulties

- **Limited phonetic & phonemic inventory >** Contrastive approaches such as multiple oppositions (Williams, 2000) and maximal oppositions, in addition to intervention targeting complex clusters (Gierut, 1992; 1999)

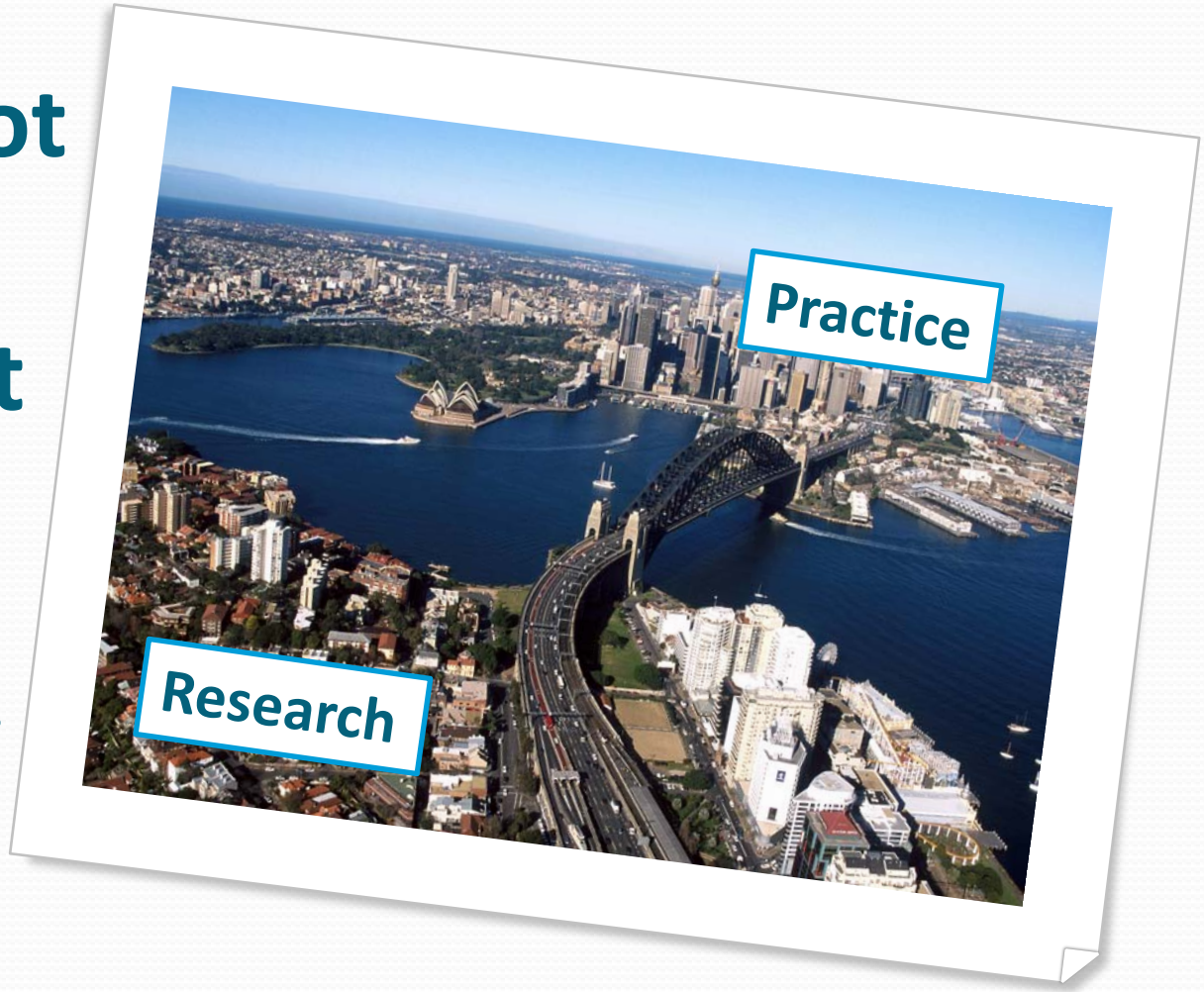
- **Limited phonetic & syllable structure inventory >** Cycles targeting patterns (Hodson, 2007), PACT targeting phonological processes (Bowen, 2009)

- **Phonological and morphosyntax difficulties >** Alternating phonological and morphosyntax intervention (e.g., Tyler et al., 2011)

- **Speech perception difficulties >** SAILS intervention or equivalent (Rvachew, 1994)

EBP “has not become a regular part of clinical practice”

(Brackenbury et al., 2008, p. 78).



Where to from here?

1. Better understanding the factors that influence clinicians' evidence-based decision making

2. Utilize empirically-based strategies known facilitate knowledge transfer and use

3. Researchers and clinicians to work together on the process of knowledge creation, transfer and exchange.

Acknowledgments

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QUESTIONS and DISCUSSION

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