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# Comparison of Ten Interventions for a 7-year-old with Unintelligible Speech

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# Comparison of Ten Interventions for a 7-year-old with Unintelligible Speech

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# Comparison of ten interventions for a 7-year-old with unintelligible speech

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## Overview

The management of speech impairment of unknown origin in children requires SLPs to make important clinical decisions around assessment, analysis, diagnosis and intervention. Ideally, clinicians should be guided in their decision making by evidence. Over thirty years ago, this was a relatively straightforward task. Most children's speech problems were assessed, analysed and treated from an articulation perspective. Since the paradigm shift from articulation to phonology, clinical decision making has become more challenging. This challenge is in part due to the increase in possible approaches. This short course will outline the application of ten intervention approaches to one child and will conclude with a description and outcomes of one intervention approach. Internationally recognized phonologists and speech researchers will present ten intervention approaches for Jarrod, a seven-year-old boy with highly unintelligible speech. Each theoretical framework will be outlined, followed by relevant methods of assessment and recommendations for intervention based on analysis data. Videos of the child during assessment will be shown to help participants understand his speech sound system. The intervention that was implemented will be summarized and results will be provided. Participants in this session will have opportunities to compare major phonological evaluation and intervention approaches currently being used in Australia, America, Canada, and England.

Baker, E. (2006). Management of speech impairment in children: The journey so far and the road ahead. *Advances in Speech-Language Pathology*, 8(3), 156 - 163.

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## Presentations

- Introduction to the session** – Sharynne McLeod
  - Section 1: Introducing Jarrod** – Alison Holm & Sharon Crosbie
  - Section 2: Core Vocabulary** – Barbara Dodd, Alison Holm, Sharon Crosbie & Beth McIntosh
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  - Section 9: Intervention Outcomes for Jarrod** – Beth McIntosh
  - Section 10: Comparison of approaches and discussion between authors and audience**
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# 1

# Introducing Jarrod

Alison Holm & Sharon Crosbie, University of Queensland, Australia

## Overview

Jarrod is an engaging boy with speech disorder of unknown origin. When he was seven he still had highly unintelligible speech and underwent extensive speech and language assessment. Jarrod's family, medical, developmental, audiological, educational, and speech and language history will be presented and assessment protocols described.

### Assessment battery

- 7 speech assessments
- 1 oromotor assessment
- 3 psycholinguistic assessment tasks
- 3 phonemic awareness assessments
- 1 assessment of activity and participation



## Data source

Holm, A., & Crosbie, S. (2006). Introducing Jarrod: A child with a phonological impairment. *Advances in Speech-Language Pathology*, 8(3), 164-175.

**ABSTRACT:** In this paper, Jarrod, a seven-year-old child with a severe phonological impairment is presented. The paper outlines the process of recruitment and selection of the child. The assessment battery and process is described in detail. The child's case history, family background and context, medical and developmental history, audiological history, educational history, speech and language history and non-verbal abilities are presented. This is the first paper in this special issue of *Advances in Speech-Language Pathology*. In the remainder of the special issue, experts provide analyses of these data and recommend intervention targets for Jarrod. The final paper in the special issue describes the outcome of intervention for Jarrod using core vocabulary therapy.

## Approach 2

# Core Vocabulary

Barbara Dodd, Alison Holm, Sharon Crosbie & Beth McIntosh,  
University of Queensland, Australia

## Overview

A case management plan for Jarrod is described. Assessment data were analysed to address questions regarding need for intervention, service delivery, differential diagnosis, intervention goals, generalisation, discharge criteria and evaluation of efficacy. Jarrod was diagnosed as having inconsistent speech disorder that required intervention, a disorder that has been associated with a deficit in phonological assembly. Core vocabulary intervention was chosen as the most appropriate therapy technique.

### Assessment and analysis tools

- *Diagnostic Evaluation of Articulation and Phonology* (DEAP, Dodd, Zhu Hua, Crosbie, Holm & Ozanne, 2002): Screen, Articulation, Oromotor, Phonology and Consistency Assessment.

### Potential intervention goals

- To establish consistency of production and enhance consonant and vowel accuracy

### Intervention approach

- Core vocabulary therapy (Holm, Crosbie & Dodd, 2005)

## Data source

Dodd, B., Holm, A., Crosbie, S., & McIntosh, B. (2006). A core vocabulary approach for management of inconsistent speech disorder. *Advances in Speech-Language Pathology*, 8(3), 220-230.

**ABSTRACT:** Developmental speech disorder is accounted for by theories derived from psychology, psycholinguistics, linguistics and medicine, with researchers developing assessment protocols that reflect their theoretical perspective. How theory and data analyses lead to different therapy approaches, however, is sometimes unclear. Here, we present a case management plan for a 7-year-old boy with unintelligible speech. Assessment data were analysed to address seven case management questions regarding need for intervention, service delivery, differential diagnosis, intervention goals, generalisation of therapeutic gains, discharge criteria and evaluation of efficacy. Jarrod was diagnosed as having inconsistent speech disorder that required intervention. He pronounced 88% of words differently when asked to name each word in the 25 word inconsistency test of the *Diagnostic Evaluation of Articulation and Phonology* (DEAP) (Dodd, Crosbie, Zhu, Holm & Ozanne, 2002) three times, each trial separated by another activity. Other standardised assessments supported the diagnosis of inconsistent speech disorder that, according to previous research, is associated with a deficit in phonological assembly. Core vocabulary intervention was chosen as the most appropriate therapy technique. Its nature and a possible protocol for implementation are described.

## References

- Dodd, B. Crosbie, S., Zhu Hua, Holm, A. & Ozanne, A. (2002). *Diagnostic Evaluation of Articulation and Phonology*. London: Psych-Corp.
- Holm, A., Crosbie, S. & Dodd, B. (2005). Treating inconsistent speech disorders, In B. Dodd (Ed). *Differential diagnosis of children with speech disorder* (pp. 182-201). London: Whurr.

# Cycles Approach

Barbara W. Hodson, Wichita State University, USA

## Overview

Jarrold's phonological deviations were analyzed to identify deficient phonological patterns, determine the severity of his phonological impairment, identify optimal target patterns for treatment to expedite intelligibility gains, and obtain baseline data for later comparisons. A 50-word object-naming sample was evaluated for occurrences of syllable/word structure omissions (e.g., final consonants), consonant category deficiencies (e.g., velars), substitutions and other strategies (e.g., assimilations). Results, as well as the process of selecting optimal phonological targets for beginning cycles, will be explained. In addition, underlying concepts and rationales for intervention will be discussed.

Assessment and analysis tools

- *Hodson Assessment of Phonological Patterns-3<sup>rd</sup> edition*. (Hodson, 2004). Austin, TX: ProEd.
- *Hodson Computerized Analysis of Phonological Patterns*. (Hodson, 2003). Wichita, KS: PhonoComp Software

Potential intervention goals

- Increase child's intelligibility by facilitating emergence of the following Primary Target Patterns for beginning cycles: (a) final consonants, (b) /s/ clusters, (c) velars, and (d) liquids

Intervention approach

- Cycles Phonological Remediation Approach (Hodson, 2007; Hodson & Paden, 1983, 1991)

## Data source

Hodson, B. W. (2006). Identifying phonological patterns and projecting remediation cycles: Expediting intelligibility gains of a 7 year old Australian child. *Advances in Speech-Language Pathology*, 8(3), 257-264.

**ABSTRACT:** The primary purpose of this case study was to analyse phonological deviations of a 7 year old with highly unintelligible speech in order to (a) identify deficient phonological patterns, (b) determine the severity of his phonological impairment, (c) identify optimal target patterns for treatment, and (d) obtain baseline data to be used for comparison following treatment. The method involved analysing transcriptions of 50 phonological assessment words for occurrences of (a) syllable/word structure omissions, (b) consonant category deficiencies, and (c) substitutions and other strategies. The total occurrences of major phonological deviations placed this client's performance in the profound range of phonological impairment. Primary target patterns for the first cycle of intervention include: (a) final consonants, (b) /s/ clusters, (c) velars, and (d) liquids. Potential optimal phoneme targets to enhance the phonological patterns were projected for cycle one (approximately 16 contact hours). In addition, potential secondary target patterns for later cycles were discussed.

Michele L. Morrisette, Ashley W. Farris, & Judith A. Gierut,  
Indiana University, USA

## Overview

This paper provides a tutorial on the selection of complex target sounds for treatment following from known principles of language learnability. The focus is on syllable structure in recommending onset consonant clusters for treatment. The step-by-step procedure of cluster selection is illustrated for Jarrod. The prediction is that treatment of onset clusters will facilitate Jarrod's learning of both complex and simple properties of the sound system.

### Assessment and analysis tools

- *Diagnostic Evaluation of Articulation and Phonology* (DEAP; Dodd et al., 2002)
- Supplementary list of 90 words from the *Phonological Knowledge Protocol* (PKP; Gierut et al., 1987) and *Onset Cluster Probe* (OCP; Gierut, 1998)

### Potential intervention goals

- To promote broad system-wide generalization by targeting onset clusters in treatment based on efficacy research (Gierut, 1999; Gierut & Champion, 2001; Morrisette et al., 2006)
- Treat complex 2-element clusters to promote learning in less complex 2-element clusters
- Treat 3-element clusters to promote learning in 2-element clusters, affricates, and other singletons

### Intervention approach

- Production practice in imitative and spontaneous phases of treatment
- Predetermined time & performance based criterion for advancement
- Successive approximation & corrective feedback

## Data source

Morrisette, M. L., Farris, A. W., & Gierut, J. A. (2006). Applications of learnability theory to clinical phonology. *Advances in Speech-Language Pathology*, 8(3), 207-219.

**ABSTRACT:** This paper provides a tutorial on the selection of complex target sounds for treatment following from known principles of language learnability. The focus is on syllable structure in recommending onset consonant clusters for treatment. The step-by-step procedure of cluster selection is illustrated for one child, Jarrod, who presented with a phonological disorder. Target selection procedures are guided by universal principles that govern the phonotactics of onset clusters and experimental evidence that supports the efficacy of phonologically complex targets. The prediction is that treatment of onset clusters will facilitate Jarrod's learning of both complex and simple properties of the sound system.

### Acknowledgments

This work was supported by a grant from the National Institutes of Health DC 001694 to Indiana University, Bloomington.

## Approach 5

# PROMPT

Deborah Hayden, PROMPT Institute, USA

### Overview

This paper will provide general assessment guidelines and priorities for treatment of Jarrod using PROMPT (Prompts for Restructuring Oral Muscular Phonetic Targets), a tactually grounded, sensori-motor, cognitive-linguistic treatment model. The PROMPT Conceptual Framework and the Motor-Speech Hierarchy are described as frameworks that help clinicians develop a holistic communication focus for treatment, while embedding motor, language and social interaction goals. The role of technique and tactual systems in PROMPT will be explained.

Assessment and analysis tools

- Hayden, D. A. & Square, P. (1999). *Verbal Motor Production Assessment for Children (VMPAC)*. San Antonio, TX: The Psychological Corporation.
- Hayden, D. A. & Square, P. (1994). Motor speech treatment hierarchy: A systems approach. Developmental apraxia of speech: Intervention. *Clinics in Communication Disorders*, 4(3), 162-174.

Potential intervention goals

- The goal of Phase One treatment is to develop or rebalance speech motor control in a single plane of movement (vertical or horizontal) for use in communication within tightly structured activities and routines.
- The goal of Phase Two treatment is to further refine and develop speech motor control by combining two planes of movement (vertical and horizontal planes) in a speech sound sequence and embedding these new productions in short phrases for communicative interactions.
- The goal of Phase Three treatment is to: 1) Further refine speech motor control by producing words and phrases involving three planes of movement (the vertical, horizontal and anterior-posterior planes); 2) Expand the complexity of the linguistic phrase structures produced; and 3) Develop flexibility in motor speech control for spontaneous, intelligible functional communication.

Intervention approach

- The PROMPT Approach (Chumpelik [Hayden], 1984, 2004)
- Hayden, D. A. (2004). PROMPT: A tactually grounded treatment approach to speech production disorders. In I. Stockman (Ed.), *Movement and action in learning and development: Clinical implications for pervasive developmental disorders* (pp. 255–297). San Diego, CA: Elsevier.

### Data source

Hayden, D. (2006). The PROMPT model: Use and application for children with mixed phonological-motor impairment. *Advances in Speech-Language Pathology*, 8(3), 265-281.

**ABSTRACT:** PROMPT (Prompts for Restructuring Oral Muscular Phonetic Targets) a tactually grounded, sensori-motor, cognitive-linguistic treatment model is explored as a philosophy, approach, system and technique. The PROMPT Conceptual Framework and the Motor-Speech Hierarchy are described as frameworks for both assessment and treatment that help clinicians develop a holistic communication focus for treatment, while embedding motor, language and social interaction goals. The role of technique and tactual systems in PROMPT are explained with relevance to their use and application with children who have moderate to severe mixed phonological and motor impairment. General assessment guidelines and priorities for treatment, with one case study are discussed.



## Approach 6

# Profiling Approach

Nicole Müller, Martin J. Ball & Ben Rutter,  
University of Louisiana at Lafayette, USA

## Overview

This paper describes the notion of the linguistic profiling of disordered communication, and in particular the profiling of disordered speech. Grunwell's (1985) *Phonological Analysis of Child Speech (PACS)* system is introduced, and applied to the speech of Jarrod. The analysis includes a series of profiling charts that illustrate Jarrod's speech output, and the paper concludes with suggestions for remediation planning that emerge from the profile.

Assessment and analysis tools

- Grunwell, P. (1985). *PACS: Phonological Assessment of Child Speech*. Windsor: NFER-Nelson.
- Grunwell, P. (1982). *Clinical phonology*. (2<sup>nd</sup> ed). London: Croom Helm.

Potential intervention goals

- A first useful target would be the establishment of a consistent alveolar placement of singleton /t, d/. This could also help distinguish dental, alveolar and postalveolar fricatives.
- Once this is established, the major placement contrasts (e.g., alveolar – velar) in singletons can be targeted, thus extending Jarrod's functional phonetic inventory.
- Once the singleton placements are stabilized, we may expect that correct productions carry over into clusters, as well.
- The lack of a functional voicing contrast should be worked on in conjunction with place of articulation and feedback given on aspiration as well as voicing.
- The SFWF position is the most deficient, so these previous targets (especially fricatives) should be emphasized in this word position.

Intervention approach

- Electropalatography, electroglottography

## Data source

Müller, N., Ball, M. J., & Rutter, B. (2006). A profiling approach to intelligibility problems. *Advances in Speech-Language Pathology*, 8(3), 176-189.

**ABSTRACT:** This paper describes the notion of the linguistic profiling of disordered communication, and in particular the profiling of disordered speech. The PACS system is introduced, and applied to the speech of a 7;0 year old boy with highly unintelligible speech. The analysis includes a series of profiling charts that illustrate the client's phonetic and phonological output, and the paper concludes with suggestions for remediation planning that emerge from the profile.

## Approach 7a

# Nonlinear Approach

B. May Bernhardt, Joseph Stemberger, & Eva Major,  
University of British Columbia, Canada

## Overview

Nonlinear analysis identifies the child's strengths and needs at all levels of the phonological hierarchy from the phrase to the individual manner, place and laryngeal features. Jarrod's target selection balances structural and segmental (feature) needs, and the context of intervention suggested by associated factors in his assessment profile.

Assessment and analysis tools

- Bernhardt, B. & Stemberger, J. (2000). *Workbook in nonlinear phonology for clinical application*
- Masterson, J. & Bernhardt, B. (2001). *Computerized Articulation and Phonology Evaluation System*. San Antonio, TX: The Psychological Corporation.

Potential intervention goals Many needs but many strengths, too! Suggested order as:

- Communicative competence
- Speech perception, phonological awareness, literacy
- New Structure: Iambic stress in 2-3 syllable words and in 2-3 word phrases
- New Feature: [+lateral] in CV(V)(+nasal) (i.e., /l/)
- Oldish Structure, New Ways: C1VC2 and C1VC2V, with labial, coronal stops, nasals, i.e., /m/, /n/ all positions, /b/ and /d/ in initial position, /p/ and /t/ in medial, final positions (bring in velars and voiceless word-initial stops in Block 2?)
- Oldish Features Combined: Fricatives in VC and CV(C) – a variety...
- More New Structure: CCV(C) words with /s/C, /kw/, /tw/ (what's treatment without clusters?)

Intervention approach

- Phonological intervention in general learning program to enhance attention, focus, speech perception, phonological awareness, preliteracy and literacy and communicative competence
- Narrative and communicative contexts to engage attention and provide motivation
- Possible mild amplification and monitoring of hearing levels
- Visual feedback to help oral-motor facilitation (consider ultrasound or electropalatography for /l/, /r/)
- Familial and school support on an intensive basis for another 1-2 years

## Data source

Bernhardt, B. H., Stemberger, J. P., & Major, E. (2006). General and nonlinear phonological intervention perspectives for a child with a resistant phonological impairment. *Advances in Speech-Language Pathology*, 8(3), 190-206.

**ABSTRACT:** This paper describes an intervention plan for a child with a resistant phonological impairment. The plan first addresses factors and intervention strategies associated with the phonological impairment: a history of otitis media, attention deficit, learning difficulties, language delay, oral-motor dysfunction and environmental factors. A phonological intervention plan is then proposed that is based on a nonlinear phonological analysis and supported by the *Computerized Articulation and Phonology Evaluation System* program. Nonlinear analysis identifies the child's strengths and needs at all levels of the phonological hierarchy from the phrase to the individual manner, place and laryngeal features. Immediate target selection balances structural and segmental (feature) needs, and the context of intervention suggested by associated factors.

## Approach 7b

# Psycholinguistic Approach

Joy Stackhouse, Michelle Pascoe & Hilary Gardner,  
University of Sheffield, England

## Overview

A psycholinguistic approach can be helpful for children like Jarrod because it tackles speech and literacy simultaneously and has inbuilt assessments, monitoring and evaluation.

Assessment and analysis tools

- Assessment: a range of speech and psycholinguistic assessment tools (Stackhouse et al., 2007)
- Analysis: psycholinguistic speech processing profile (Stackhouse & Wells, 1997)

Potential intervention goals

- General aim: to improve his intelligibility and literacy performance
- Specific intervention objectives: to expand use of onsets to include fricatives, mark codas with fricatives or plosives, attempt more clusters, stabilize 2+ syllable words, reduce glottalisation across word boundaries, develop phonological awareness of segments, and link speech skills with letter knowledge.

Intervention approach

- Work on the goals above taking into account Jarrod's strengths and weaknesses addressing input and output speech and phonological awareness skills. Motor programming of multisyllabic words and motor planning of connected speech could be targeted.

## Data source

Stackhouse, J., Pascoe, M., & Gardner, H. (2006). Intervention for a child with persisting speech and literacy difficulties: A psycholinguistic approach. *Advances in Speech-Language Pathology*, 8(3), 231-244.

**ABSTRACT:** This paper illustrates a psycholinguistic approach to investigating children's speech and literacy difficulties by describing a "three-way" intervention plan for Jarrod, a 7 year old boy with unintelligible speech. First, a speech processing profile, a speech processing model and developmental phase models of speech and literacy were used to determine the relationship between his spoken and written language skills and what strengths could be built on in an intervention programme. Second, an analysis of the speech data was used to examine contributing factors to Jarrod's unintelligibility and what intervention targets might be selected to promote his speech, phonological awareness and literacy skills. Third, who might be involved in his intervention programme is suggested and what training might be needed to ensure appropriate interaction between child and listener in the therapy/teaching situation. A psycholinguistic approach can be helpful for children like Jarrod as it tackles speech and literacy simultaneously and has inbuilt assessments, monitoring and evaluation. The intervention can also be carried out by others and in groups. However, this approach needs to be combined with that derived from other perspectives (e.g. linguistic, educational, medical and psychosocial) to ensure a comprehensive management programme is carried out.

## References

- Stackhouse, J., Vance, M., Pascoe, M., & Wells, B. (2007). *Compendium of auditory and speech tasks. Children's speech and literacy difficulties 4*. Chichester: John Wiley and Sons.
- Stackhouse, J., & Wells, B. (1997). *Children's speech and literacy difficulties: A psycholinguistic framework*. London: Whurr.

A. Lynn Williams, East Tennessee State University, USA

## Overview

Based on organizational principles suggested by the phoneme collapses, targets were identified for Jarrod's intervention using the distance metric approach, which is based on the function of sounds within a given system rather than the characteristics of a given sound. A multiple oppositions approach will facilitate Jarrod's learning across phoneme collapses and lead to system-wide phonological restructuring.

Assessment and analysis tools

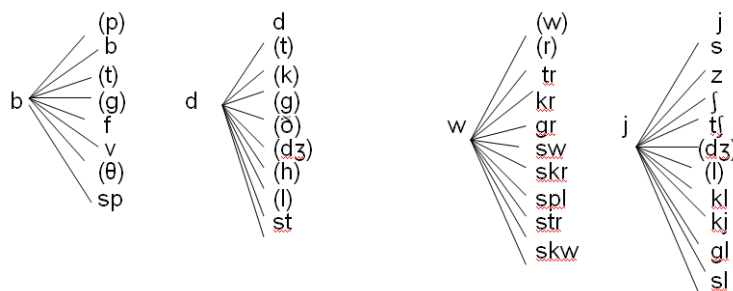
- *Systemic Phonological Analysis of Child Speech (SPACS)* (Williams, 2006)

Potential intervention goals

- To facilitate learning across phoneme collapses and lead to system-wide phonological restructuring

Intervention approach

- Multiple oppositions treatment approach (Williams, 2000a, b)



## Data source

Williams, A. L. (2006). A systematic perspective for assessment and intervention: A case study. *Advances in Speech-Language Pathology*, 8(3), 245-256.

**ABSTRACT:** A systemic perspective was employed in completing a phonological analysis and developing an intervention plan for Jarrod, a 7;0 year old child who exhibited a severe speech sound disorder characterized by inconsistency. Results of the *Systemic Phonological Analysis of Child Speech (SPACS)* revealed a limited sound system that was characterized by phonotactic inventory constraints, positional constraints, and sequence constraints. Mapping the child-to-adult sound systems through phoneme collapses revealed a logical and symmetrical system that maintained systematicity, yet permitted variability. Based on the organizational principles suggested by the phoneme collapses, targets were identified for intervention using the distance metric approach, which is based on the function of sounds within a given system rather than the characteristics of a given sound, and assumes that targets will interact dynamically with the child's unique sound system. Finally, a multiple oppositions treatment approach intended to facilitate learning across phoneme collapses and lead to system-wide phonological restructuring was described.

## Approach 7d

# Parents and Children Together

Caroline Bowen and Linda Cupples, Macquarie University, Australia

## Overview

PACT includes parent-observed screening, independent and relational analyses, treatment planning and scheduling, and target selection and goal-setting which involves the participation of caregivers in therapy. Difficulties in applying PACT with Jarrod will be noted principally that PACT is suited to younger children.

Assessment and analysis tools

- *The Quick Screener* based on Dean, Howell, Hill and Waters' (1990) screening procedure and available here: <http://www.speech-language-therapy.com/tx-a-quickscreener.html>
- Independent and Relational Analysis detailed here: [http://speech-language-therapy.com/Independent\\_Relational\\_Analysis.pdf](http://speech-language-therapy.com/Independent_Relational_Analysis.pdf)

Potential intervention goals

- Facilitation of Jarrod's parents' understanding of his speech needs, and their role as active agents of (speech output) change via specific "parent education and training" in appropriate techniques.
- Improvement in auditory discrimination, self-monitoring and self-correction.
- Reduction of syllable structure processes, particularly FCD and CR with word final fricatives as exemplars, incorporating the Phonotactic Therapy suggestions of Velleman (2002).

Intervention approach

The PACT Approach (Bowen and Cupples, 1999a, 1999b), involving:

1. The modification of a group, or groups, of sounds produced in error, in a patterned way.
  2. An emphasis on featural contrasts rather than accurate sound production.
  3. Making it explicit to the child that the function of phonology (contrasts) is communication.
- Phonemic change is motivated by homophony and enhanced through metalinguistic awareness of the sound system. Heightened perceptual saliency of contrasts makes new contrasts easier to learn (increases learnability) which also facilitating phonemic change.

## Data source

Bowen, C., & Cupples, L. (2006). PACT: Parents and children together in phonological therapy. *Advances in Speech-Language Pathology*, 8(3), 282-292.

**ABSTRACT:** PACT (parents and children together) is a broad-based intervention approach for children with phonological impairment, which involves the participation of caregivers in therapy. Its components are: Parent Education; Metalinguistic Training; Phonetic Production Training; Multiple Exemplar Training (minimal pair therapy and auditory bombardment); and Homework. Accommodating to the gradual nature of phonological change in typical development, PACT therapy is delivered in planned therapy blocks and breaks from therapy attendance, during which parents continue aspects of the therapy. A review of literature relevant to the theoretical underpinning, development and evaluation of PACT is provided, and unique features of the approach are highlighted. The processes of speech assessment using parent-observed screening, independent and relational analyses, treatment planning and scheduling, and target selection and goal-setting are presented and discussed in the context of Jarrod, a 7 year old boy with a severe, inconsistent phonological impairment. Difficulties in applying the PACT approach with Jarrod are noted, principally that PACT is most suited to the three to six year age-group. Alternative intervention approaches are suggested.

Sharynne McLeod, Charles Sturt University, Australia

## Overview

This paper provides an holistic and systematic view of Jarrod using the *International Classification of Functioning, Disability and Health – Children and Youth* (ICF-CY) (WHO, 2007). Consideration will be made of Body Function, Body Structure, Activities and Participation, Environmental and Personal Factors. Recommended intervention is directed in two ways: (1) towards amelioration of Jarrod's speech impairment using an evidence-based approach and monitored by data-based decision making (2) towards others in Jarrod's immediate environment and towards policy makers who have an effect on the provision of facilitative environments and appropriate services.

Assessment and analysis tools

- Traditional speech pathology assessments of Body Structure and Body Function
- Consideration of Activities and Participation, Environmental and Personal Factors using the *Speech Participation and Activity Assessment of Children* (SPAA-C)(McLeod, 2004)

Potential intervention goals

- Goals focusing on Body Function (e.g., b320 Articulation function), Activities and Participation, reducing Environmental barriers and enhancing Environmental facilitators

Intervention approach

- Intervention should focus on Body Function using an approach outlined by the previous authors.
- Intervention should also focus on Activities and Participation, Environmental and Personal Factors. Consequently, the focus is not only directed towards Jarrod and his family, but also is directed towards others in society.

## Data source

McLeod, S. (2006). An holistic view of a child with unintelligible speech: Insights from the ICF and ICF-CY. *Advances in Speech-Language Pathology*, 8(3), 293-315.

**ABSTRACT:** This paper provides an holistic and systematic view of a 7 year old boy, Jarrod, as a unique individual with unintelligible speech. Jarrod was considered using the *International Classification of Functioning, Disability and Health-Children and Youth* (ICF-CY) beta draft. Consideration was made of Body Function, Body Structure, Activities and Participation, Environmental Factors and Personal Factors that impacted on his life and were affected by his speech impairment. Intervention was recommended to be directed in two ways. The first towards amelioration of Jarrod's speech impairment using an evidence-based approach and monitored by a data-based decision making model. The second approach was directed towards others in Jarrod's immediate environment such as his peers and teachers as well as towards policy makers and others in society who have an effect on the provision of a facilitative environment and appropriate services for children with speech impairment. This paper is a preliminary attempt to determine salient dimensions and codes of the ICF-CY (beta draft) for use by speech-language pathologists working with children with unintelligible speech.

## References

- McLeod, S. (2004). Speech pathologists' application of the ICF to children with speech impairment. *Advances in Speech-Language Pathology*, 6(1), 75-81.
- World Health Organization (WHO Workgroup for development of version of ICF for Children & Youth). (2007). *International classification of functioning, disability and health. Children and youth version (ICF-CY)*. Geneva: World Health Organization.

# 9 Intervention Outcomes

Beth McIntosh, University of Queensland, Australia

## Overview

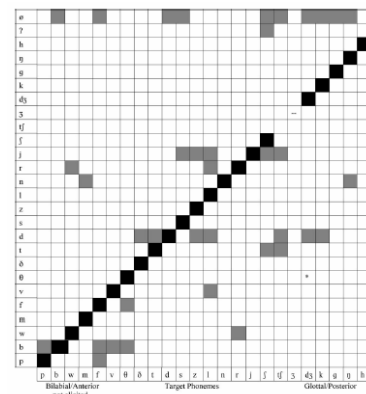
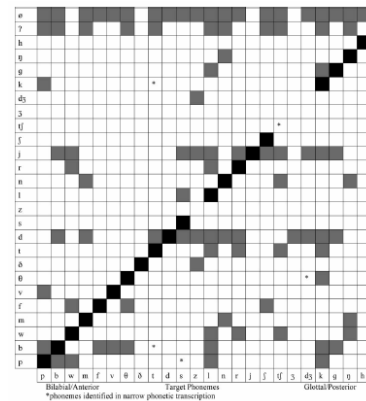
Dodd et al. (2006) hypothesised that Jarrod had an underlying deficit of generating phonological plans for word production and suggested that Jarrod would benefit from Core Vocabulary Therapy. This paper reports on one block of such therapy with Jarrod. Pre- and post-intervention measures showed that Jarrod's speech became more consistent and his accuracy (PCC) increased.

Intervention approach

- Core Vocabulary Therapy
- Target: consistent productions of set of 10 functionally powerful words each week
- Syllables drilled sound-by-sound then reassembled
- Sixteen 30-minute intervention sessions over an eight-week period
- Required high commitment to program by family/school

Intervention outcomes

- 64 words targeted and learned to be consistently produced
- Inconsistency decreased from 80% to 36%
- Consonant accuracy increased by 22%
- Significant qualitative changes in speech



## Data source

Crosbie, S., Pine, C., Holm, A., & Dodd, B. (2006). Treating Jarrod: A core vocabulary approach. *Advances in Speech-Language Pathology*, 8(3), 316-321.

**ABSTRACT:** This paper is the final paper in a special issue of *Advances in Speech-Language Pathology*. The paper presents an intervention case study of a 7 year old child with severe phonological difficulties described in Holm and Crosbie (2006). Dodd et al. (2006) hypothesised that Jarrod had an underlying deficit of generating phonological plans for word production and suggested that Jarrod would benefit from core vocabulary therapy. This paper reports on one block of core vocabulary therapy undertaken with Jarrod. Pre- and post-intervention measures showed that Jarrod made significant progress. His speech became more consistent and his accuracy (percent consonants correct) increased.