Supporting children with Developmental language disorder (DLD)
Workshop Objectives

• Part 1: understand diagnostic criteria for Developmental Language Disorder and associated conditions

• Part 2: consider impact of DLD on literacy and academic/employment outcomes

• Part 3: evaluate intervention and service delivery approaches – how can evidence inform your practice?
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why study intervention?

- important environmental factor that may influence the developmental trajectory of a disorder:
why study intervention?

necessary to make decisions about treatment and education:

• what factors (genotype, co-morbidity, family support, child readiness) promote or hinder treatment success?
• what is the best ‘developmental time’ to intervene (cf. early intervention)?
• how much intervention is necessary to affect change (dosage)?
• who is best equipped to deliver the intervention?
• what outcomes do we take as evidence of treatment benefit?
• is the cost of intervention (money, time out of daily routine, staff required, potential stigma) warranted for a given outcome?
what to look for in the (published) evidence

Duff & Clarke (2011)
Supplementary Material – Checklist
Journal of Child Psychology & Psychiatry

DOI: 10.1111/j.1469-7610.2010.02310.x

SpeechBite website http://www.speechbite.com/
Efficacy: Evidence supporting the treatment

1. Anecdotes / clinical experience
2. Change in raw score
3. Change in standard score
4. Feasibility studies (pilot studies)
5. Within-subject control
6. Between-subject control (non-random assignment)
7. Between-subject control (random assignment)
8. Meta-analysis
9. Systematic review, synopsis studies
10. Replication & weight of evidence

Effectiveness: Treatment in Practice

A. Treatment in common use as designed
B. Practitioners’ clients improve as result of intervention (using designs 1-10)
C. Practitioners show evidence of ability to carry out intervention accurately
D. Practitioners show evidence of being able to use aspects of intervention
E. Practitioners say know how to use intervention
F. Course / resources popular
G. Course / resources available

Credit: Susan Ebbels
the need for control

- want to demonstrate that any improvement at Time 2 is due to your intervention - without some controls, you can’t demonstrate this:
  - a developmental change
  - a change inspired by learning at home or good teaching in the classroom
  - a practice effect (having taking the test once, knows what to expect at Time 2)
  - spurious measurement error

“I’ve been reading to him every day for a month and his feet have grown 4 cm”
how to control

• control group
  – essential in a Randomised Controlled Trial
  – one group receives the treatment
  – another group receives either TREATMENT AS USUAL or DIFFERENT TREATMENT
  – preferable to have RANDOM assignment to groups
    • reduces confounding factors like IQ, language level, age, SES
  – “blind” assessment of both groups on target behaviour
how to control

• control task
  – only one group (within subjects design)
  – one TREATED target; one untreated target
  – trick here is to ensure that both targets are of a similar level of difficulty
  – could get clever and introduce a target that is not treated, but where you might expect some generalisation
  – “blind” assessment of both target behaviours pre- and post- therapy
how to control

• control *period*
  – only one group (within subjects design)
  – one TREATED target;
  – THREE assessment points:
    • baseline: followed by period of no intervention
    • pre-therapy: any improvement in skill during the no intervention period?
    • post-therapy: greater improvement in therapy period versus baseline period
  – aims to control for practice effects – so need to make assessments as similar as possible
  – “blind” assessment of target behaviour at baseline, pre- and post- therapy
• measures of treatment fidelity are included
  – is treatment offered in the way it was intended?
  – esp. if delivered by others (parents, LSAs)

• pre-, post- treatment and follow-up measures are taken
  – ‘blind’ assessment – assessors do not know whether the child is in the treatment or the control group
  – primary and secondary outcome measures (reduce Type I errors)
  – mixture of bespoke, standarised, observation, and questionnaire assessments
• conclusions are measured and follow from results
  – beware of miracle cures!

  – really think about how these results might generalise to the kinds of children in everyday clinical and education contexts...

• authors entertain possibility that null findings mean treatment (content, duration, frequency, etc) is ineffective…
All children

Children with language just below what is expected for their age

Wave 1 – Universal support
Inclusive quality first teaching for all

Wave 2 – targeted intervention
Additional interventions to enable children to work at age-related expectations or above

Wave 3 – specialist intervention
Highly Personalised Interventions

Children with unexplained language difficulties

service delivery frameworks
(Ebbels et al. 2018, IJLCD)
service delivery frameworks
(Ebbels et al. 2018, IJLCD)

Wave 2 – targeted intervention

Wave 1 – Universal support

Wave 3A
indirect
specialist intervention

Wave 3B
direct
specialist intervention

Wave 3A
indirect
specialist intervention

Wave 2

Wave 1

Proportion of specialist clinician time

Number of children
what is the desired outcome?

• normalisation of language/ change trajectory
  – e.g. improve significantly on a standardised test of language such as the CELF or BPVS
• teach a new skill:
  – vocabulary, sentence structure, narrative
• teach a new strategy:
  – ask someone to slow down if talking too fast, raise hand if you don’t understand, use mind map in interview
• support:
  – using the phone, increasing number of social visits/activities, reducing challenging behaviours, improving communication skills of caregivers/changing environment
variables to consider

• **outcome measures**: questionnaires, standard tests, bespoke measures. What aspects of language / behaviour

• **context**: at school, home, clinic

• **who will deliver**: direct intervention, parents as agents of change, training school staff/support workers

• **when**: does developmental age matter?

• **therapy content**: language focus? Mental health priorities? How to decide targets?

• **dosage**: frequency, intensity, duration
different approaches to intervention:

• teach the skill that is missing (usually by alternative means)
  – Explicit rules of grammar (e.g. shape coding)
  – Vocabulary (e.g. semantic webs, gesture, mind maps)

• improve the underlying cognitive skill that is implicated in language impairment
  – Auditory processing (e.g. FastForWord)
  – Working memory training (e.g. CogMed)

can improve the skill, but rarely see transfer to language/academic skills of interest (so little functional impact)…
explicitly teach the thing you want to change!!

measure that target
measure downstream impacts
indirect intervention: key findings

• Who employs provider
  – McCartney et al. (2011). Intervention provided by school staff under “consultative model” was not effective
  – If assistant is provided to the school by a research project (Boyle et al. 2009), or SLT services (Mecrow et al., 2010) intervention can be effective, but not for those with receptive language difficulties.

• Training and support
  – McCartney et al. (2011)
    • little training / support (targets, manual and materials provided)
    • limited monitoring from SLTs (one mid-intervention meeting)
    • school staff do not provide intervention as planned

• Amount of intervention provided (need for monitoring)
  – McCartney et al. (2011): 10 hours (aimed for 20)
  – Boyle et al (2009): 20 hours
  – Mecrow et al. (2010): 29 hours
targeted interventions (non-specialists): key findings

• a number of rigorous studies now report significant (though often modest) gains
  – for primary-aged children
  – taking part in small group work (at least 3x 30 mins per week)
  – with highly trained (4+ days) and very regularly supported (at least fortnightly) school assistants
  – for improving expressive language, narrative, vocabulary and reading comprehension, but not listening comprehension

– Clarke et al. (2010) - ReadMe
– Fricke et al. (2013) – Nuffield Early Language Intervention
– Bowyer-Crane et al. (2008; 2011) – Language 4 Reading
– Special issue papers!!
training by specialist clinicians – what is the impact?

• Training secondary teachers
  – Published in peer reviewed journal:
    • 10x 50 mins training of teachers, DLD students’ listening comprehension and writing improved, but not reading or speaking (Starling et al. 2012)
  – Not yet published in peer reviewed journal:
    • Improves their teaching of vocabulary, but not teacher talk or classroom practice (Clegg et al., 2011, ICAN’s secondary talk)
    • Improves their self-reported use of language modification techniques (Clegg et al., 2011)

• Training primary teachers
  – Not yet published in peer reviewed journal:
    • Improves their teacher talk and classroom practice
    • No evidence of whether this improves outcomes for children (Stackhouse et al., ICAN’s primary talk)
what did it take for you to learn English?

(motivation)

your friends were doing it too!

lots and lots of practice!

consistent input over a very long period of time

There is no quick fix! Changing a language trajectory will take time, energy, and consistent support.

see work by Laura Justice and/or Holly Storkel on dosage needs
some examples:

• In pairs:
  
  – What is the level of evidence?
  
  – Would you recommend it to your service?
  
  – What might you do differently?
  
1. Anecdotes / clinical experience
2. Change in raw score
3. Change in standard score
4. Feasibility studies (pilot studies)
5. Within-subject control
6. Between-subject control (non-random assignment)
7. Between-subject control (random assignment)
8. Meta-analysis
9. Systematic review, synopsis studies
10. Replication & weight of evidence
• **Clustered RCT** (Wake et al. 2011)
  – 158 treated
  – 143 control
• Expressive vocab <20th centile at age 2
• Six 2-hour sessions, pre-school, focus on language input to late talker toddlers
• Parents love it!!

*(session 1)—encouraging parents to follow child’s interests in interactions
(session 2)—ways parents can engage with their child to sustain their interaction
(session 3)—extending information shared with child: increasing language, words used
(session 4)—applying initial principles in everyday play
(session 5)—applying initial principles while reading with child
(session 6)—programme overview, parents’ questions, feedback questionnaire*

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**“The program changed how...”**

<table>
<thead>
<tr>
<th>Question</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I communicate with my child</td>
<td>80</td>
</tr>
<tr>
<td>My child communicates with me</td>
<td>60</td>
</tr>
<tr>
<td>My child behaves with me</td>
<td>40</td>
</tr>
<tr>
<td>I help my child behave</td>
<td>60</td>
</tr>
<tr>
<td>I communicate with my other kids</td>
<td>40</td>
</tr>
</tbody>
</table>
## Language & behaviour at 3 years

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Intervention</th>
<th>Control</th>
<th>Mean difference (I - C)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Language</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLS Expressive</td>
<td>98 (16)</td>
<td>101 (14)</td>
<td>-2.4</td>
<td></td>
</tr>
<tr>
<td>PLS Receptive</td>
<td>96 (18)</td>
<td>97 (15)</td>
<td>-0.3</td>
<td></td>
</tr>
<tr>
<td>MCDI Vocabulary</td>
<td>54 (28)</td>
<td>41 (25)</td>
<td>4.1</td>
<td>0.2</td>
</tr>
<tr>
<td>EVT</td>
<td>101 (16)</td>
<td>101 (12)</td>
<td>-0.5</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Behavior</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Externalising</td>
<td>11 (8)</td>
<td>11 (7)</td>
<td>-0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Internalising</td>
<td>6 (6)</td>
<td>6 (5)</td>
<td>-0.1</td>
<td>0.9</td>
</tr>
</tbody>
</table>
some examples:

• In pairs:
  – What is the level of evidence?
  – Would you recommend it to your service? (if not, why not?)
  – What might you do differently?

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Ebbels (2014)

- ShapeCoding therapy for adolescents with severe and persistent language disorder
- delivered by highly specialist speech-language therapist
- typical focus on one aspect of grammar for therapy block (e.g. co-ordinating conjunctions)
- RCT, but very small groups
RCT: n = 14 per group
Four hours of intervention

Table 2. Means (standard deviations) at each testing point

<table>
<thead>
<tr>
<th></th>
<th>Therapy group</th>
<th>Waiting controls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-therapy$^a$</td>
<td>Post-Phase 1 therapy$^a$</td>
</tr>
<tr>
<td>Conjunctions (/24)</td>
<td>10.3 (3.6)</td>
<td>13.7 (2.1)</td>
</tr>
<tr>
<td>TROG-2 Raw Score</td>
<td>6.3 (2.3)</td>
<td>8.5 (2.1)</td>
</tr>
<tr>
<td>TROG-2 Standard Score</td>
<td>57.3 (5.7)</td>
<td>62.2 (7.8)</td>
</tr>
<tr>
<td>Passives (/12)</td>
<td>7.8 (2.5)</td>
<td>8.7 (2.0)</td>
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<td>TROG-2 Standard Score</td>
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<td>58.0 (5.5)</td>
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<td>Passives (/12)</td>
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some examples:

• In pairs:

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9. Systematic review, synopsis studies

10. Replication & weight of evidence
• Bowyer-Crane et al. 2008;
• Fricke et al. 2017
• Independent evaluation by the Education Endowment Foundation:


• RCT: children selected by class screening
• 3x week for two/three 10-week blocks during school term
• Small group (2-4 children, aged 4-6) and individual sessions
• Trained teaching assistants deliver programme
• All sessions focus on listening, narrative and vocabulary skills
• Phonological awareness introduced in last 10 weeks
relative advantage of language group post-intervention
response to treatment similar at all levels of severity

No sign of an interaction here – slopes are equal

Relate to ANCOVA model

There are a minority of children who do not respond…

Credit: Charles Hulme
some examples:

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Part 3: Intervention summary

• Changing language trajectories is very hard to do (and likely to take lots of time and effort)

• More success in changing/developing specific language targets (but still takes time)

• Intervention can be delivered by non-experts, providing they are well-trained & well-supported!
Find out more about language disorder and the impact of language disorder on children and young people!

https://www.youtube.com/RADLD

http://www.lilac-lab.org

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