Interventions for children with dyslexia from different language backgrounds and with additional emotional/behavioural difficulties

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Introduction

- About 1 Billion (UNESCO - 2015) = Unable to read a book or sign their names
- Approximately 25% (60 million) of adults and school-age children in the U.S. have difficulty acquiring reading and spelling skills
- New Zealand (4 to 5 million) ≈ 1 million?

Introduction

- Reading difficulties among minority, inner-city children about 2/3rd
- 25% of adults are unable to read a newspaper
- ≈ 15% drop out of high school and over 75% report difficulties in learning to read

Introduction

- > 70% prison inmates cannot read above 4th grade level
- However, provide literacy help, about 16% chance of returning
- Without help in literacy, 70% chance of returning to prison
Introduction

- (NIH) Illiteracy is a public health issue
- Health care expenses (USA)
- Read at 3rd grade or below: 3 times costs in services (Weiss et al., 2004)
- Illiteracy costs > 1 trillion USD each year (WLF, 2015)

Instruction/Experience

- Ehri (1989): Inadequate instruction spawning limited reading and spelling development and limited phonological awareness is the primary cause of reading disability
- Juel (1988): Children who read poorly at the end of the first grade were likely to remain poor readers at the end of the fourth grade
- Lyon et al. (1993): 74% of reading disabled in the third grade continue to exhibit reading and spelling problems even at the ninth grade level

Instruction/Experience

- Oral language Development (Hart & Risley, 1995)
- Number of books available at home (Chiu & McBride-Chang, 2006)
- Parents reading to children (Feitelson, 1964)
- Enjoyment of reading (Chiu & McBride-Chang, 2006)
- Good readers read 4 nights a week – poor readers read one night a week

Orthographies

Word reading after 1 year of instruction

Seymour, Ara, Ensikne (2003), British Journal of Psychology
Orthographies

Syllable structure

<table>
<thead>
<tr>
<th>Shallow</th>
<th>Deep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple</td>
<td>Complex</td>
</tr>
<tr>
<td>Finnish</td>
<td>German</td>
</tr>
<tr>
<td>Greek</td>
<td>Norwegian</td>
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<tr>
<td>Italian</td>
<td>Icelandic</td>
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<tr>
<td>Spanish</td>
<td>Dutch</td>
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<td>Portuguese</td>
<td>Swedish</td>
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<tr>
<td>French</td>
<td>Danish</td>
</tr>
<tr>
<td>English</td>
<td></td>
</tr>
</tbody>
</table>

Based on Seymour, Aro, Enskine (2003)

Orthographies

Writing Systems

- Logographic (Morpho-syllabic)
  - Kanji Chinese
  - Korean Hangul
- Syllabic
  - No phonemic representation
  - Potential phonemic representation
- Alphabetic
  - Roman alphabet
  - Cyrillic alphabet

Componential Model of Reading

Domain I
- Cognitive Components
  - Word recognition
  - Comprehension

Domain II
- Psychological Components
  - Motivation and interest
  - Teacher expectations
  - Gender differences
  - Learned helplessness

Domain III
- Ecological Components
  - Home environment
  - Parental involvement
  - Classroom environment
  - Dialect
  - Orthography

Reading processes

Three kinds of poor readers:

1. those with decoding deficit only
2. those with comprehension deficit only
3. those with deficits in both decoding and comprehension

- $R = D \times C$ (Simple View of Reading) (Gough & Tunmer, 1986; Hoover & Gough, 1990; Joshi & Aaron, 2000)
Distribution of different types of reading disabilities (Grades 3, 4, & 6; 198 participants)

- 8% = Poor Decoding + Adequate Comprehension
- 7% = Adequate Decoding + Poor Comprehension
- 8% = Poor Decoding + Poor Comprehension


Influence varies with age/grade level

<table>
<thead>
<tr>
<th>Language</th>
<th>Predictors of Reading Comprehension</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>D: 4th grade = 42% / 7th grade = 13%</td>
</tr>
<tr>
<td></td>
<td>LC: 4th grade = 19% / 7th grade = 35%</td>
</tr>
<tr>
<td>French</td>
<td>D: 1st grade = 27% / 2nd grade = 16%</td>
</tr>
<tr>
<td></td>
<td>LC: 1st grade = 39% / 2nd grade = 44%</td>
</tr>
<tr>
<td>Norwegian</td>
<td>For 9 year olds, LC explained most variance, with decoding having minimal contribution</td>
</tr>
<tr>
<td>Dutch</td>
<td>After grade 1, LC explained most variability</td>
</tr>
</tbody>
</table>

Chinese (Mandarin)

- Grade 2: Character recognition & LC = 25%
- Grade 4: Character recognition & LC = 42%

Character recognition:

- Grade 2 = 22% ; Grade 4 = 32%

Listening Comprehension (LC):

- Grade 2 = 11%; Grade 4 = 31%
Reading processes across orthographies

Chinese (Cantonese)
- Hong Kong; grades 3-4
- Character Recog. + Fluency & LC = 74%
- Listening Comp. = 70%
- Char. Rec. & Reading Fluency= 42%

Hebrew (Joshi et al., 2015):
- 37% (Grade 6) to 70% (Grade 4)
  Decoding (D):
  > Grades 2 = 27%; 4 = 26%; 5 = 20%; 6 = 8%
  Listening Comprehension (LC):
  > Grades 2 =17%; 3 = 26%; 9 = 60%

Persian (Sadeghi, 2015):
Decoding (D):
> Grades 3 = 24%; 5 = 15%
Listening Comprehension (LC):
> Grades 3 =12%; 5 = 24%

Spanish (Joshi et al., 2012):
- Participants: 38 in grade 2 and 42 in grade 3
  (Home language and classroom instruction – Spanish)
- Tests administered: Woodcock-Muñoz Bateria III
- Decoding, reading comprehension and listening comprehension
- comparative group of English speaking children in Grades 2-4
Reading processes in Multilinguals

<table>
<thead>
<tr>
<th>Grade</th>
<th>English</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>LC &amp; D = 47%</td>
<td>LC &amp; D = 57%</td>
</tr>
<tr>
<td></td>
<td>LC = 33% &amp; D = 35%</td>
<td>LC = 45% &amp; D = 25%</td>
</tr>
<tr>
<td>3</td>
<td>LC &amp; D = 48%</td>
<td>LC &amp; D = 60%</td>
</tr>
<tr>
<td></td>
<td>LC = 37% &amp; D = 35%</td>
<td>LC = 47% &amp; D = 15%</td>
</tr>
<tr>
<td>4</td>
<td>LC &amp; D = 50%</td>
<td></td>
</tr>
</tbody>
</table>

Reading processes in Multilinguals

Punjabi/Hindi (Gautam, 2017):
- Decoding (D):
  - Grades 3 = 26%; 5 = 7%
- Listening Comprehension (LC):
  - Grades 3 = 7%; 5 = 16%

- N = 556
- Grades 2-5
- Schools from urban 'slum' communities and rural villages
- Biliteracy in Primary Literacy (Lit1) Kannada/Telugu; and Secondary Literacy (Lit2) English
- Mother Tongues: Kannada (N= 78); Telugu (N=132); Marathi (N=6); Tamil (N=45); Hindi (N=3); Urdu (N=10)
Reading processes in Multilinguals

<table>
<thead>
<tr>
<th></th>
<th>Low Elementary</th>
<th>High Elementary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>PA</td>
<td>.11</td>
<td>.12</td>
</tr>
<tr>
<td>Dec</td>
<td>.69</td>
<td>.17</td>
</tr>
<tr>
<td>LC</td>
<td>.08</td>
<td>.21</td>
</tr>
<tr>
<td>Total RC</td>
<td></td>
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</tbody>
</table>

Note. PA = Phonological Awareness; Dec = Decoding; LC = Language Comprehension; RC = Reading Comprehension; ** p < .01; *** p < .001

• Approximately 50% of the variance was explained by the two factors
• Decoding in ‘akshara’ plays a stronger role even at the fifth grade level.
• L2 much better after a threshold (0.6) is reached in L1

Consequences

- Literacy learning difficulties can lead to problems across school subjects
- poor educational qualifications/experiences + reduced job opportunities
- Poor school experiences may lead to poor behaviour and negative affect
- Low levels of self-esteem, increased anxiety, off-task behaviours, anti-social behaviours
Psychological aspects of literacy learning difficulties

- Early identification and intervention most successful, but not always possible
- Severity of the difficulty – increased problems may require longer to overcome
- If range of problems, will also need additional types of support
- Background may influence impact (e.g., Socio Economic Status or second language user)

Contrasting interventions with groups of students with evidence of literacy learning problems:

- Combining interventions: literacy plus psychosocial
- Targeting psychosocial factors within the literacy intervention

Literacy interventions:

- Focus on phonological awareness linked to written text
- Phonological and morphological decoding strategies - key words in text
- Vocabulary and comprehension
- Repetition for fluency and practice
Psychological aspects of literacy learning difficulties

• Negative behaviour – off-task behaviours
  ➢ cognitive-behavioural strategies – strategies for self-regulation of behaviours
  ➢ avoid distraction / boredom
  ➢ provide opportunities for movement and training in relaxation

• Emotional upset – anxiety / depression
  ➢ ensure experience success
  ➢ maintain interest/motivation

• Self-esteem / self-concept – self-worth
  ➢ use of age-appropriate material
  ➢ build resilience
Psychological aspects of literacy learning difficulties

Number of correct spellings

Number of negative (off-task) behaviours

Reading measures

Psychosocial measures

Pre-intervention psychosocial influences
Psychological aspects of literacy learning difficulties

**Word Reading**

- High resilience group
- Low resilience group

**Reading Comprehension**

- High resilience group
- Low resilience group

English Additional Language + literacy learning difficulties

**Phonological**
- saying sounds within words
- breaking up words into sounds
- changing sounds within words
- spelling words via sounds

**Vocabulary/Morphology**
- discussing meaning of word in text
- change words/word-parts – new meaning
- emphasis on frequent word-parts
Combined literacy and psychosocial interventions

- Phonological emphasis linked to literacy most likely to show benefits
- Multisensory allows repetition and may also allow targeting of success via skills
- May need phased approach to intervention (limited resources)
- Also need combined approaches to target different areas of difficulty

Concluding comments
Understanding processes involved in literacy
Language and orthography
Influence of learning experience
Consequences of experience of failure
Appropriate support – early and follow-up
Consider whole individual