Reading for Understanding: Supporting Chinese-English Bilingual Reading Comprehension

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Hong Kong Chinese Students with Bilingual Reading Comprehension Difficulties
(An Educationally/Clinically Urgent Problem)

In **2011-2013**, our first 2-year longitudinal study of 208 Hong Kong 2nd graders reported the link between Chinese lexical tone sensitivity & English reading comprehension (Funded by the U.S NAED-Spencer).

**Identification**

Approximately 15% of Hong Kong school-aged children are poor comprehenders (Tong et al., 2017).

Different subtypes of poor comprehenders exist: around 5% poor in Chinese only, 5% poor in English only and 5% poor in both (Tong et al., 2017).

In 2011-2013, our 2nd study of 467 Hong Kong Chinese-English bilingual children demonstrated the language-specific & language-general influences on Chinese & English reading comprehension development (Funded by the HK-UK ESRC-RGC).

**Investigation**

In **2013-2014**, our 2nd study of 467 Hong Kong Chinese-English bilingual children demonstrated the language-specific & language-general influences on Chinese & English reading comprehension development (Funded by the HK-UK ESRC-RGC).

In 2015-2018, our large-scale 3-year longitudinal study of 397 2nd graders clarified the common linguistic & cognitive factors determining Chinese & English bilingual reading comprehension (Funded by the HK RGC/ECS).

**Intervention**

Based on these findings, we have developed a Comprehensive Assessment of Chinese and English Reading Comprehension (CACERC) for diagnosis.

We conducted an annual workshop for parents, teachers & clinical practitioners.

In 2017-2018, we developed Oral-Prosody-English-Reading-Assessment and Intervention (OPERA-I) curriculum for improving reading comprehension skills.

**Assessment and Remedial Programs for Bilingual Reading Comprehension Difficulties**
Underpinning Research Overview

Achievement: We have successfully developed **assessment and remedial programs for bilingual reading comprehension difficulties** through three stages of large-scale cross-sectional and longitudinal studies.

**Stage 1: 2011-2013**
Conducted a two-year longitudinal study which explored the role of higher phonological processing in Chinese-English biliteracy.
*(Funded by U.S. National Academy of Education/Spencer Foundation)*

**Stage 2: 2013-2014**
Conducted a one-year study which examined the language-specific and language-general influences on the Chinese and English reading comprehension development in bilingual children.
*(Funded by UK Economic and Social Research Council/Hong Kong Research Grants Council (RGC) Joint Grant Scheme)*

**Stage 3: 2015-2018**
Conducted a three-year study which clarified the linguistic and cognitive factors on Chinese and English reading comprehension in bilingual children.
*(Funded by Hong Kong Research Grants Council (RGC)/Early Career Scheme)*

**Roles:**

**Professor Shelley Xiuli Tong**
- PI of all three projects
- Supervised and was responsible for research designs

**Professor Kate Cain**
- Co-PI of the project
- Responsible for UK part

**Dr. Qinli Deng**
- Assessment and identification

**Dr. Stephen Lee**
- Acoustic data analyses
Our work on bilingual reading comprehension development and difficulties was published in internationally prestigious journals.

Selected Publications Within Five-Years:

- **Speech Prosody and Reading Comprehension in Chinese–English Bilingual Children: The Mediating Role of Syntactic Awareness**
  - Xinhong Tong, Qinli Deng, and Shelley XiuLi Tong
  - DOI: 10.1080/17457007.2021.2003999

- **How vocabulary breadth and depth influence bilingual reading comprehension: Direct and indirect pathways**
  - Xinhong Tong, Shelley XiuLi Tong
  - Canadian Modern Language Review, Volume 72, Issue 3, pp. 400-419
  - DOI: 10.1080/0008360X.2016.1207567

- **How Chinese–English Bilingual Fourth Graders Draw on Syntactic Awareness in Reading Comprehension: Within- and Cross-Language Effects**
  - Xinhong Tong, Joyce Lui Yin Niu, Shelley XiuLi Tong, and Qinli Deng
  - Reading Research Quarterly, Volume 57, Issue 1, pp. 145-169
  - DOI: 10.1002/rrg3.12323

- **Suprasegmental but not segmental phonological awareness matters in understanding bilingual reading comprehension difficulties in Chinese and English: a 3-year longitudinal study**
  - Qinli Deng, Shelley XiuLi Tong
  - International Dyslexia Association 2021
Our work on bilingual reading comprehension development and difficulties has gained international recognition via invited talks, conference presentations and symposia.
Underpinning Research

**Key Finding 1:** Prosodic reading, which involves expressive changes in pitch patterns and pause durations, predict Chinese and English reading comprehension among Hong Kong Chinese-English bilingual children.

**Pitch Patterns**

**Pause Durations**

Reading Comprehension

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Key Finding 2: (a) *Within-language*: Phonological awareness, vocabulary, and word reading directly and indirectly predicted L1 Chinese and L2 English reading comprehension levels, but not their growth across time. (2) *Cross-language*: L1 phonological awareness had an indirect effect on L2 reading comprehension via L2 vocabulary and word reading.

Key Finding 3: Suprasegmental phonological awareness, especially Cantonese lexical tone awareness, is associated with reading comprehension difficulties.

Segmental phonological awareness
(n.s.)

Suprasegmental phonological awareness

Key Finding 3a: We utilized regression approach to identify four types of comprehenders and their prevalence rates among Hong Kong Chinese-English bilingual children.
Knowledge to be Exchanged

- Developed a new reading framework, i.e., **Prosodic catalyzing hypothesis (PCH)**, emphasizing that pitch and pause production, can bridge prosody and syntax to facilitate reading comprehension.

![Diagram](image)

Knowledge to be Exchanged

- Using objective spectrographic technique to quantify L1 Chinese and L2 English reading fluency, which accelerates the identification of poor comprehenders.
Engagement Diagnostic Assessment

During the assessment phases, Professor Tong and her team have provided cognitive, linguistic, reading comprehension assessments in both Chinese and English for over 1,000 Hong Kong school-aged Chinese-English bilingual children.
Upon completion of each year’s assessments, a detailed individual report describing the child’s reading comprehension performance and progress was distributed to each participant.
Over the past years, Professor Tong and her team have disseminated the research findings on the distinguished aspects of bilingual reading comprehension difficulties and approaches for remediating corresponding difficulties to over hundreds of parents, teachers, and clinical practitioners through **community workshops** and **international conferences**.

Successfully held workshop titled “Becoming a Skilled Comprehender in Both Chinese and English” (超級中英閱讀理解小博士) with support from the Faculty of Education and the Knowledge Exchange (KE) office on 17 March 2018.
Engagement  External Partners

Academic

• Research collaborators on reading comprehension development and difficulties

Community

• Connected with 18 local primary schools across Hong Kong regions by assessing the oral and reading comprehension abilities of their students

• Examples:
  • Hong Kong Island
  • Kowloon
  • New Territories

Funding Bodies

- National Academy of Education
- ESRC Economic & Social Research Council
- UGC University Grants Committee
Impacts Achieved  (1) Development of Assessment Tool

Professor Tong and her team have developed and validated the Comprehensive Assessment of Chinese and English Reading Comprehension (CACERC) for identification of Chinese-English bilingual poor comprehenders. The assessment tool is available upon request to researchers, teachers and clinical practitioners.
Impacts Achieved  (2) Development of Remedial Programs

a) The Oral Prosody English Reading Assessment and Intervention (OPERA-I) curriculum using reciprocal teaching has been developed to provide remedial instruction for poor comprehenders.

Example of a subcomponent of the program – Narrative Production
Impacts Achieved (2) Development of Remedial Programs

b) A Literacy Learning Pack has been developed for bilingual Chinese-English school-aged children. The materials are available in both Chinese and English. Parents, teachers, and clinical practitioners are able to download the document for free on the Speech, Language and Reading lab website: https://slrlab.edu.hku.hk/resources/.
Impacts Achieved (3) Training of Young Research Talents

• Throughout the years, the Speech, Language and Reading Lab, directed by Professor Tong, has organized Student Internship Programs for university students interested in psycholinguistic and neuroscience research. Our aim is to offer a platform for students to develop their own research interests and acquire hands-on experience in assessing and training children with specific language impairments and learning difficulties.

• Student interns come from a wide range of local and overseas universities:
  – The University of Hong Kong
  – Johns Hopkins University
  – University of Sydney
  – King’s College London
  – University of Bath
  – University College London