Annex III
K. 15/424

# Reading for Understanding: Supporting Chinese-English Bilingual Reading Comprehension

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Faculty of Education

Date of Submission: 5 May 2024

# Summary of the Impact

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

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).*

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).*

**Investigation**

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

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).

**Identification**

**Intervention**

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

Conduced 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

**Professor Kate Cain**
- CI of the project

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

**Dr. Stephen Lee**
- Acoustic data analyses

# Underpinning Research Key Contextual Information

Our work on bilingual reading comprehension development and difficulties was published in **internationally prestigious journals**.

## Selected Publications Within Five-Years:

Learning and Instruction 89 (2024) 101846
Contents lists available at ScienceDirect
Learning and Instruction
journal homepage: www.elsevier.com/locate/learninstruc

The roles of prosody in Chinese-English reading comprehension

Shelley Xiuli Tong [a,*], Rachel Ka Ying Tsui [a], Nicole Sin Hang Law [a], Leo Shing Chun Fung [a], Ming Ming Chiu [b], Kate Cain [c]

[a] Human Communication, Development, and Information Sciences, Faculty of Education, The University of Hong Kong, Hong Kong SAR, China
[b] Department of Special Education and Counseling, The Education University of Hong Kong, Hong Kong SAR, China
[c] Department of Psychology, Lancaster University, United Kingdom

Contemporary Educational Psychology 73 (2023) 102153
Contents lists available at ScienceDirect
Contemporary Educational Psychology
journal homepage: www.elsevier.com/locate/cedpsych

Synergetic effects of phonological awareness, vocabulary, and word reading on bilingual children's reading comprehension: A three-year study

Xiuhong Tong [a], Ming Ming Chiu [b], Shelley Xiuli Tong, Ph.D. [c,*]

[a] Department of Psychology, The Education University of Hong Kong, Hong Kong
[b] Department of Special Education & Counselling, The Education University of Hong Kong, Hong Kong
[c] Human Communication, Development, and Information Sciences, Faculty of Education, The University of Hong Kong, Hong Kong

Educational Psychology Review (2023) 35:78
https://doi.org/10.1007/s10648-023-09792-8
META-ANALYSIS

How Prosodic Sensitivity Contributes to Reading Comprehension: a Meta-Analysis

Shelley Xiuli Tong[1] · Kembell Lentejas[1] · Qinli Deng[1] · Ning An[1] · Yanmengna Cui[1]

Accepted: 10 June 2023 / Published online: 21 July 2023
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ASHA American Speech-Language-Hearing Association
JSLHR
Research Article

Speech Prosody and Reading Comprehension in Chinese–English Bilingual Children: The Mediating Role of Syntactic Awareness

Xiuhong Tong,[a] Qinli Deng,[b] and Shelley Xiuli Tong[b]

[a]Department of Psychology, The Education University of Hong Kong [b]Human Communication, Development, and Information Sciences, Faculty of Education, The University of Hong Kong

Learning and Individual Differences 100 (2022) 102227
Contents lists available at ScienceDirect
Learning and Individual Differences
journal homepage: www.elsevier.com/locate/lindif

How vocabulary breadth and depth influence bilingual reading comprehension: Direct and indirect pathways

Xiuhong Tong [a], Shelley Xiuli Tong [b,*]

[a] Department of Psychology, The Education University of Hong Kong, China
[b] Human Communication, Development, and Information Sciences, Faculty of Education, The University of Hong Kong, China

Annals of Dyslexia (2022) 72:532–551
https://doi.org/10.1007/s11881-022-00268-y

Syntactic awareness matters: uncovering reading comprehension difficulties in Hong Kong Chinese-English bilingual children

Xiuhong Tong[1] · Qinli Deng[2] · Shelley Xiuli Tong[2]

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INTERNATIONAL LITERACY ASSOCIATION READING RESEARCH QUARTERLY

How Chinese–English Bilingual Fourth Graders Draw on Syntactic Awareness in Reading Comprehension: Within- and Cross-Language Effects

Xiuhong Tong
Joyce Lok Yin Kwan
*The Education University of Hong Kong, China*

Shelley Xiuli Tong
*The University of Hong Kong, China*

S. Hélène Deacon
*Dalhousie University, Halifax, Nova Scotia, Canada*

ABSTRACT

Syntax, or sentence structure, plays a role in reading comprehension, but how students draw on their awareness of syntax in their reading remains unclear; the mechanism is even more ambiguous in bilingual students. In this study, we evaluated the direct and indirect contributions of syntactic awareness on first-language Chinese and second-language English reading comprehension among 227 Hong Kong Chinese-English bilingual fourth graders. We designed language-shared and language-unique tasks of syntactic awareness, assessed reading comprehension in both Chinese and English, and took other reading-related cognitive and metalinguistic measures. We found a statistically significant direct effect of syntactic awareness on reading comprehension within both first-language Chinese and second-language English, along with indirect effects via word reading. Moreover, in their reading comprehension within both English and Chinese, students drew on awareness of syntactic features that are shared between English and Chinese more than those unique to either language. Students were also generally more accurate

Annals of Dyslexia (2021) 71:150–169
https://doi.org/10.1007/s11881-021-00213-5

Suprasegmental but not segmental phonological awareness matters in understanding bilingual reading comprehension difficulties in Chinese and English: a 3-year longitudinal study

Qinli Deng [1] · Shelley Xiuli Tong [1]

Received: 3 September 2019 / Accepted: 13 January 2021 / Published online: 27 January 2021
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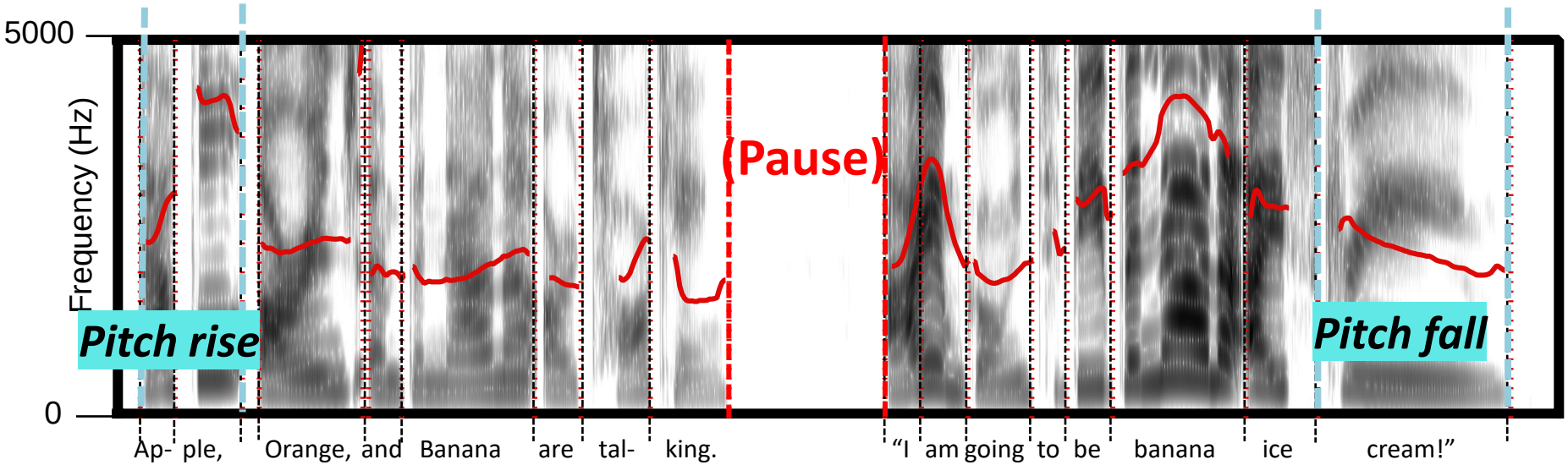
# Underpinning Research Key Contextual Information

Our work on bilingual reading comprehension development and difficulties has gained international recognition via **invited talks, conference presentations and symposia**.

# Underpinning Research Innovativeness & Significance

**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

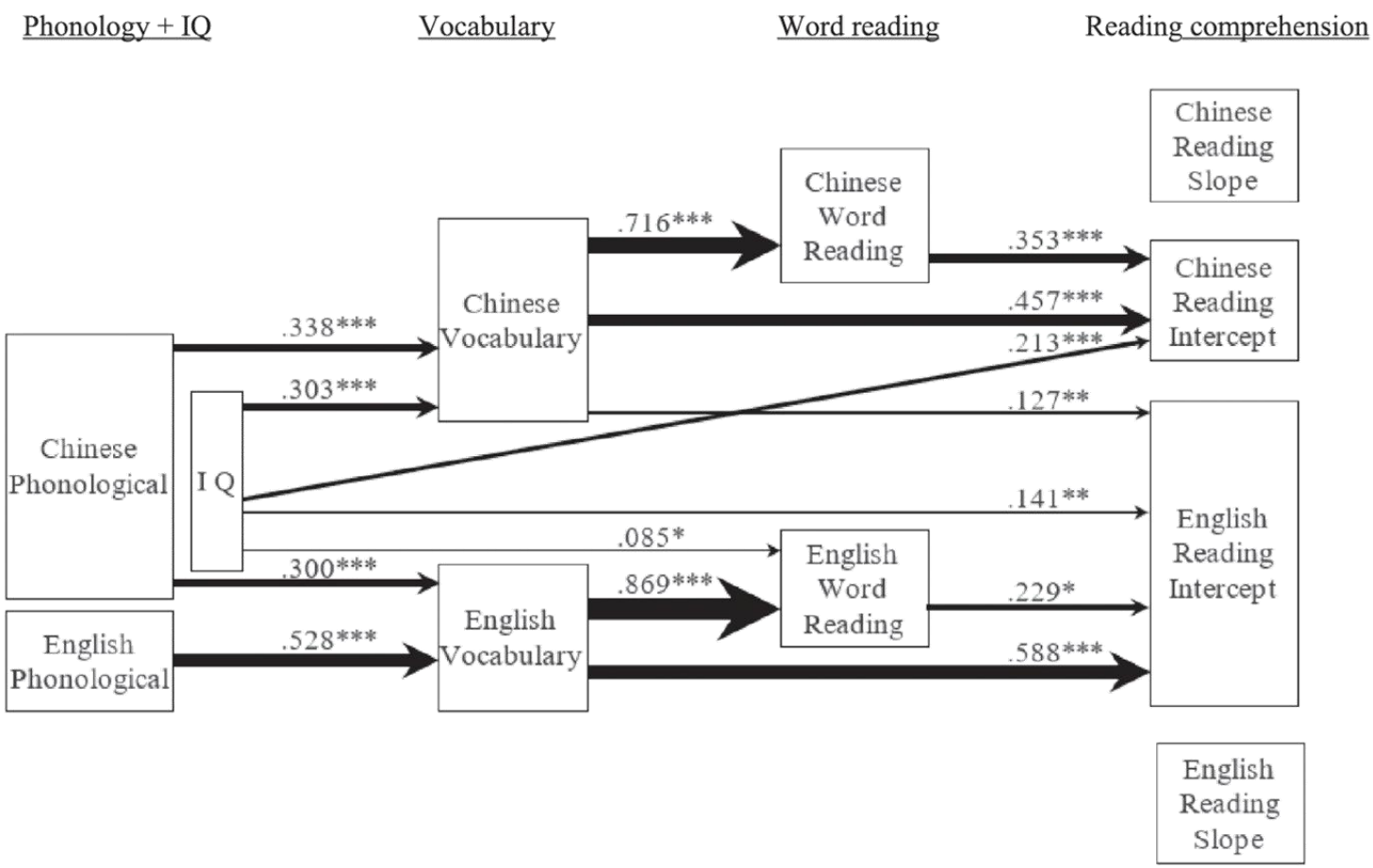
Pause Durations

Reading Comprehension

**Tong, S. X.*,** Tsui, R. K. Y., Law, N. S. H., Fung, L. S. C., Chiu, M. M., & Cain, K. (2024). The roles of prosody in Chinese-English reading comprehension. *Learning and Instruction, 89*, 101846.

# Underpinning Research Innovativeness & Significance

**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.



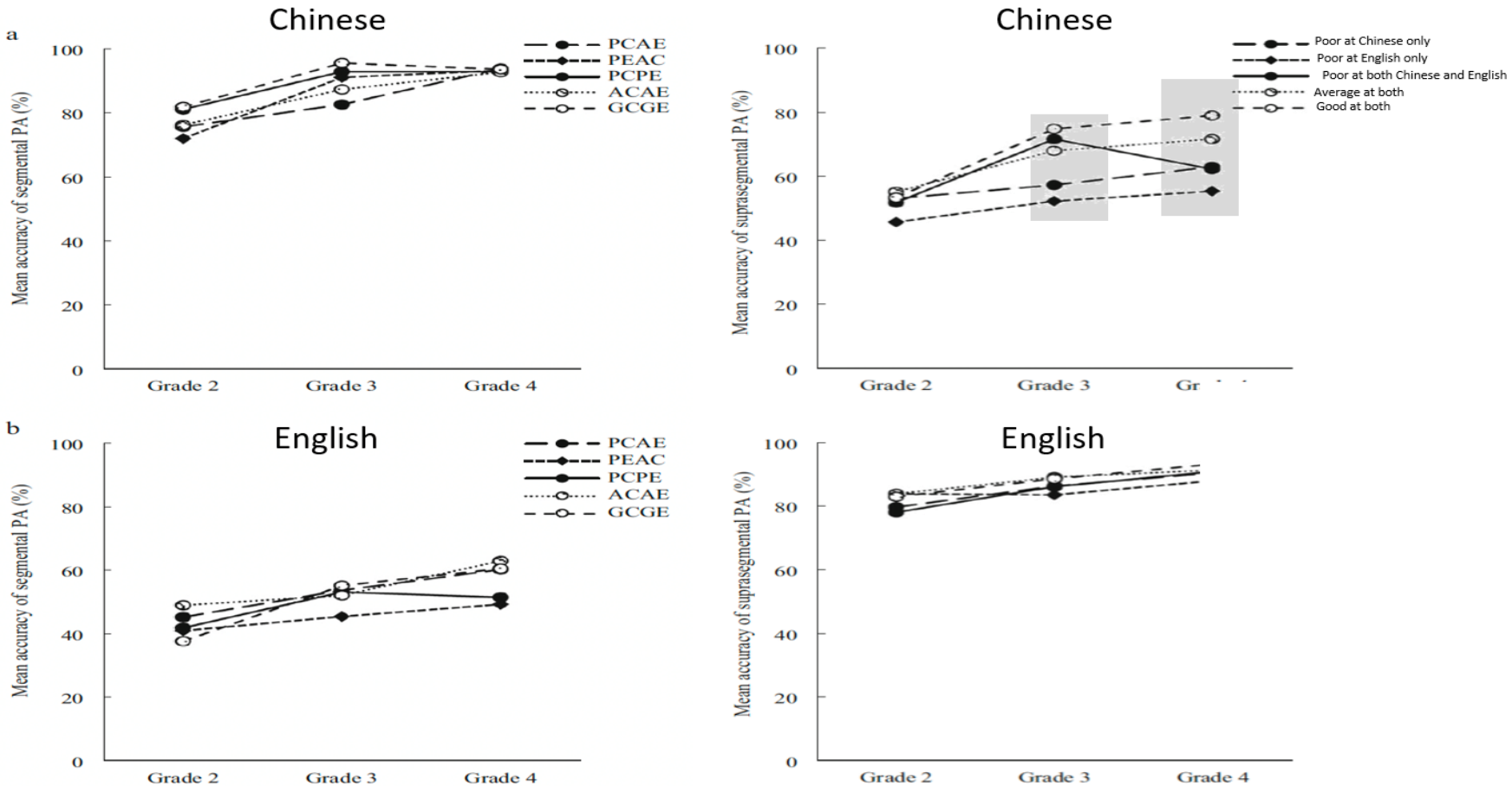

Tong, X., Chiu, M. M., & **Tong, S. *** (2023). Synergetic effects of phonological awareness, vocabulary and wording reading on reading comprehension in bilingual children: A 3-year study. *Contemporary Educational Psychology, 73*, 102153.

# Underpinning Research Innovativeness & Significance

**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

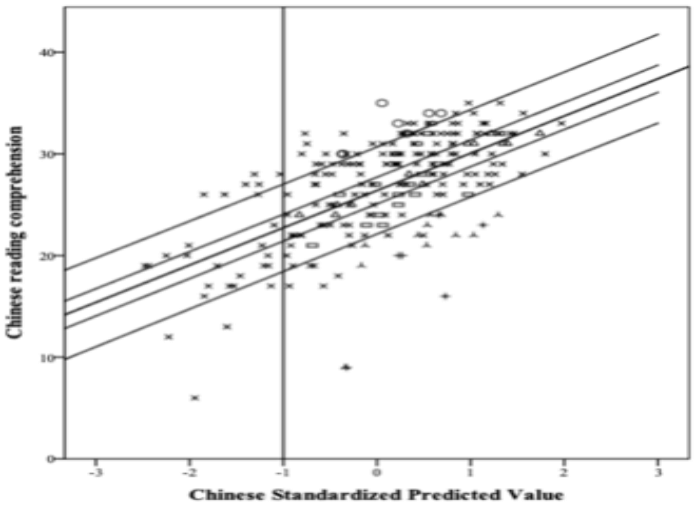


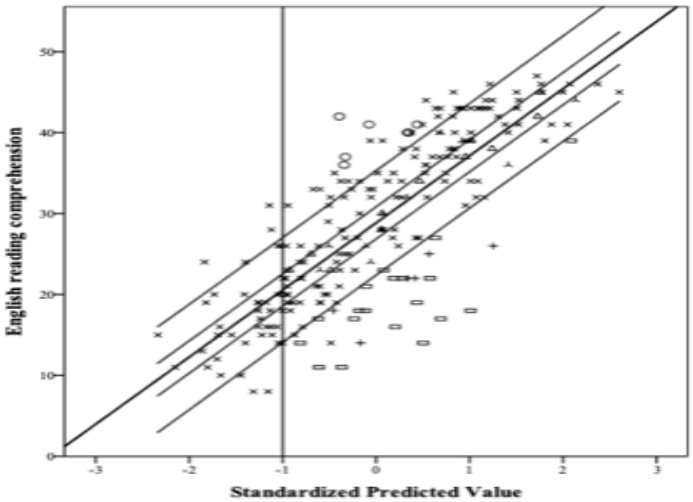

Deng, Q., & **Tong, S. X.** * (2021). Suprasegmental but not segmental phonological awareness matters in understanding bilingual reading comprehension difficulties in Chinese and English: a 3-year longitudinal study. *Annals of Dyslexia, 71*(1), 150-169.

# Underpinning Research Innovativeness & Significance

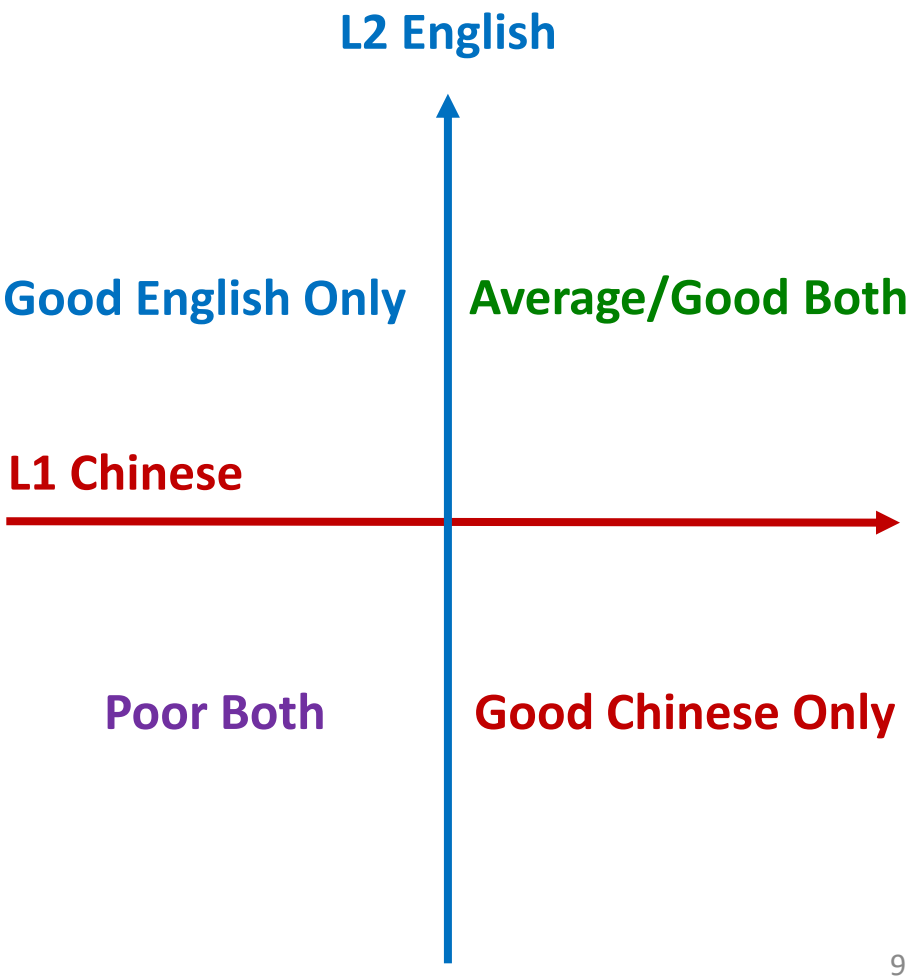
**Key Finding 3a:** We utilized regression approach to identify four types of comprehenders and their prevalence rates among Hong Kong Chinese-English bilingual children.

## Poor comprehender identification



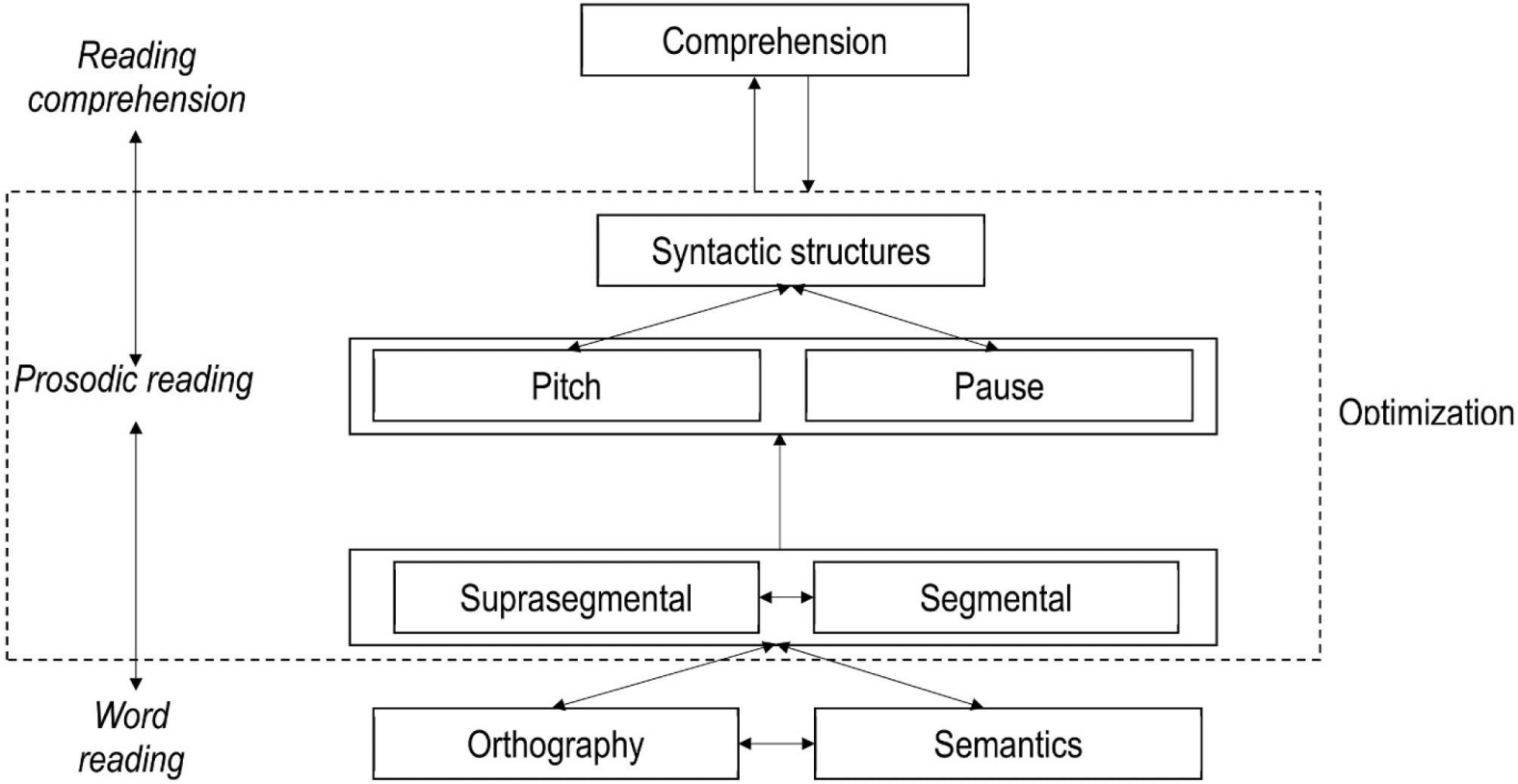




## Four Types of Comprehenders



# Knowledge to be Exchanged

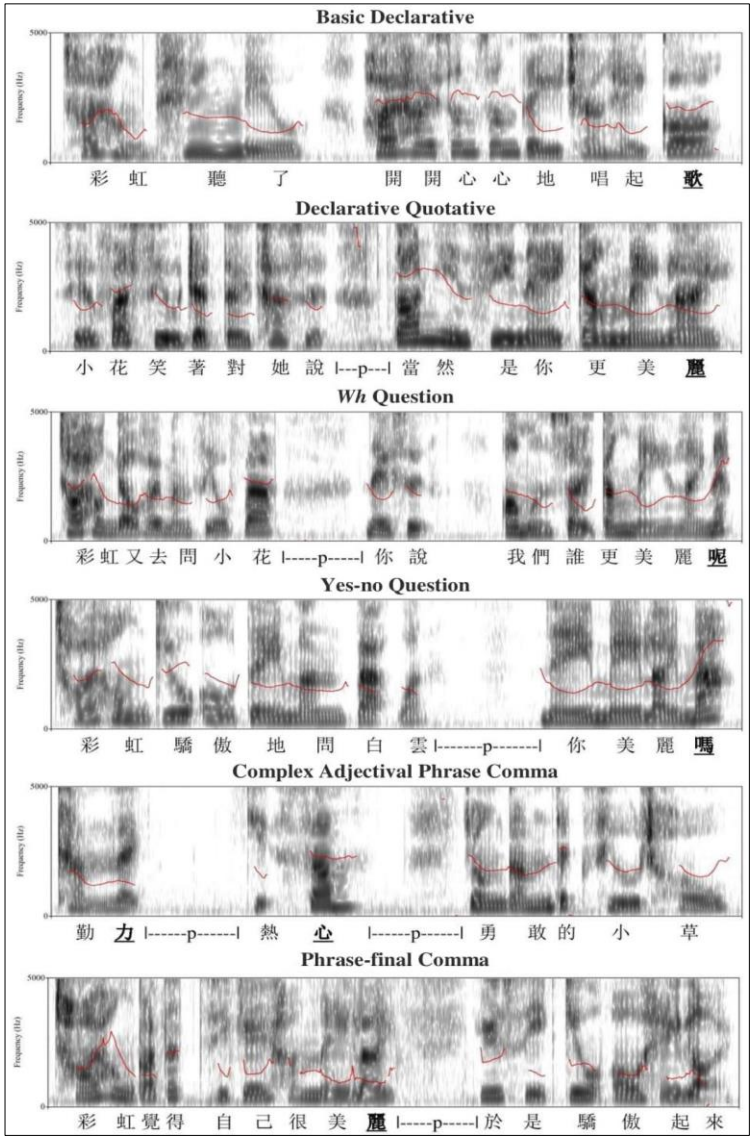
- Developed a new reading framework, i.e., **Prosodic catalyzing hypothesis (PCH),** emphasizing that pitch and pause production, can bridge prosody and syntax to facilitate reading comprehension.

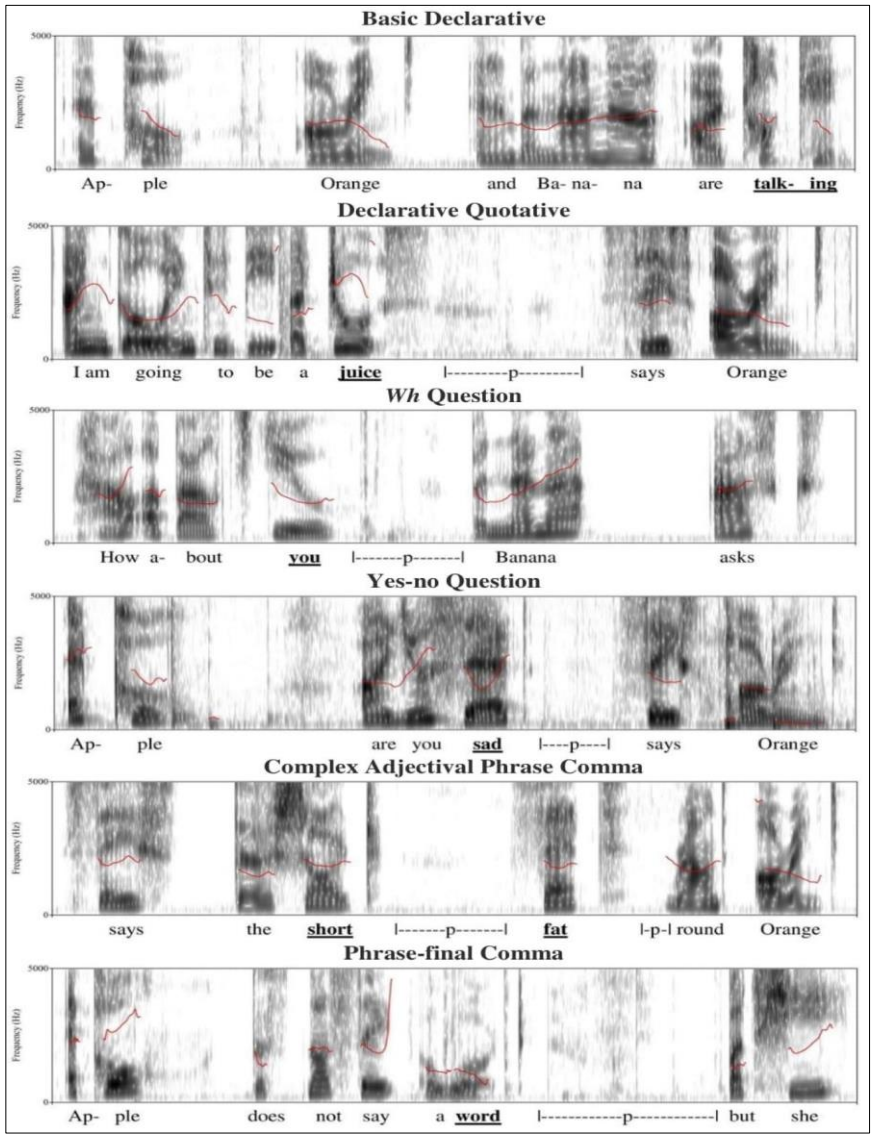



**Tong, S. X.*,** Tsui, R. K. Y., Law, N. S. H., Fung, L. S. C., Chiu, M. M., & Cain, K. (2024). The roles of prosody in Chinese-English reading comprehension. *Learning and Instruction, 89*, 101846.

# 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**.

# Engagement Regular Performance Monitoring

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.

| Example of Yearly Individual Report | Example of Training Program's Materials |
| --- | --- |
| | |

# Engagement Knowledge Exchange Workshops

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

Lancaster University

香港教育大學
The Education University of Hong Kong

## 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

    港大同學會小學 HKUGA PRIMARY SCHOOL

    李陞小學 L.S.P.S.

    CHU SHEUNG SCHOOL HONG KONG
  - Kowloon

    CCS 啟基

    PETRA PACIS CHRISTUS ES.E.CATHOLIC PRIMARY SCHOOL

    PO LEUNG KUK HONG KONG 學小人夫昌南陳
  - New Territories

    CHOW YIN SUM PRIMARY SCHOOL TUNG WAH GROUP OF HOSPITALS

    HOH FUK TONG PRIMARY SCHOOL 何福堂

## Funding Bodies

NATIONAL ACADEMY of EDUCATION SPENCER FOUNDATION

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

UGC 大學教育資助委員會 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.

香港大學教育學院

(閱卷員：_____)

中文閱讀理解測試

姓名： _____ (英文) _____ (中文)

班別： _____ (　　)　　性別： 男 / 女

出生日期： _____年 _____月 _____日

學校名稱: _____

日期： _____年 _____月 _____日

指引

請細心閱讀下面 4 篇文章，

每篇文章均有 10 題問題。

請在閱讀文章後，回答全部問題。

Faculty of Education
The University of Hong Kong

(Marker: _____)

English Reading Comprehension Test
英文閱讀理解測試

*Student"s Name* 姓名：_____ *(English)* _____ *(Chinese)*

*Class* 班別：_____ (　　)　*Gender* 性別： 男 / 女

*Date of Birth* 出生日期: _____年 _____月 _____日

*School"s Name* 學校名稱：

_____

*Date* 日期: _____年 _____月 _____日

**Instruction:**

Please read the following **4** passages carefully. There are **10 questions** for each passage. Please answer **all questions** after reading.

指引：

請細閱以下 **4 篇**文章，每篇文章均有 10 題問題。

請在閱讀文章後，回答全部問題。

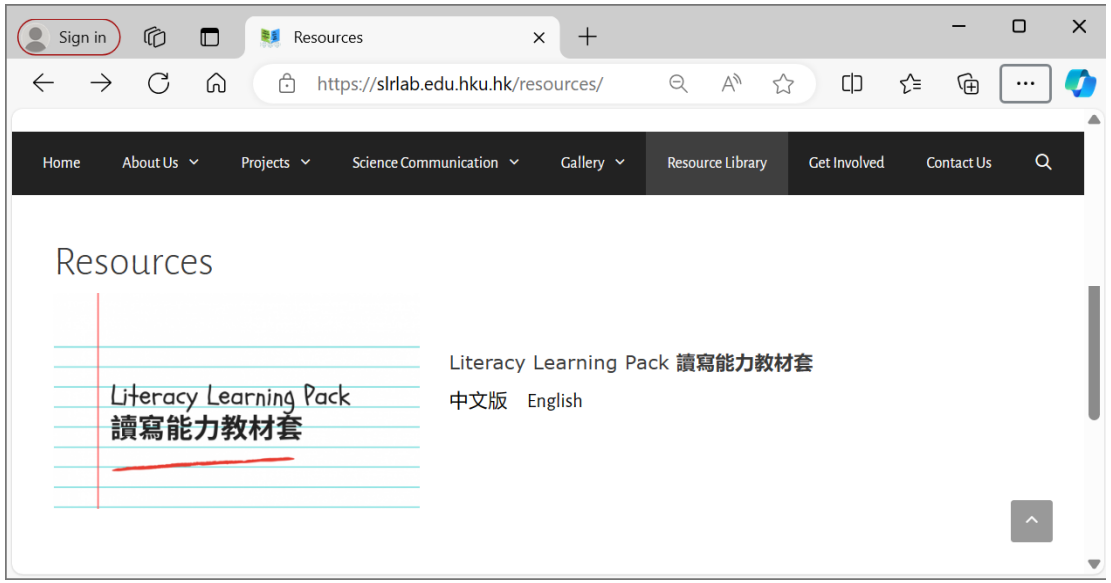
# Impacts Achieved (2) Development of Remedial Programs

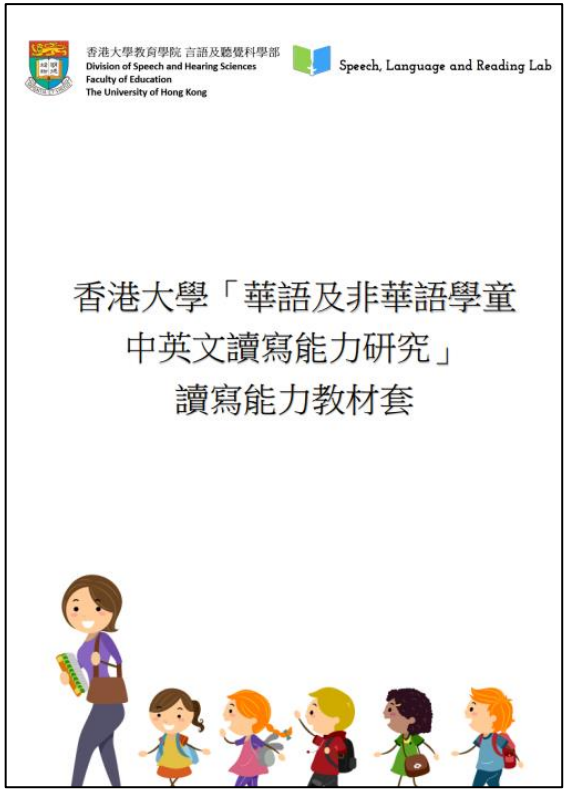
a) The Oral Prosody English Reading Assessment and Intervention (OPERA-I) curriculum using reciprocal teaching has been developed to provide remedial instruction for poor comprehenders.

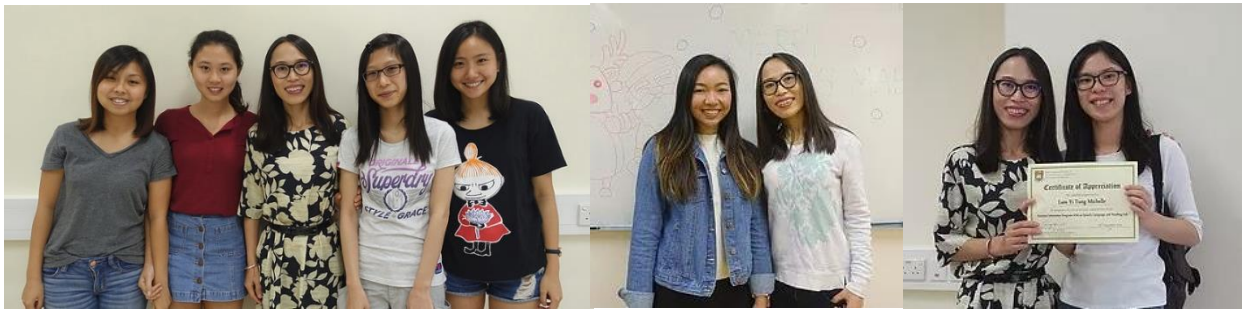
**Example of a subcomponent of the program – Narrative Production**

# 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