



# Screening Cantonese-speaking preschool children for language disorder using a caregiver-reported questionnaire

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# INTRODUCTION

# LANGUAGE DISORDER (LD)

- Refers to language problems that persist in childhood and beyond and cause a significant impact on children's daily social interactions or academic learning (Bishop et al., 2017).
- Affecting at least 7% of children (Norbury et al., 2016).

# DIAGNOSIS

- below the cut-off scores on language tests and experiences functional impairments (Bishop et al., 2017).
- However, performance on standardized tests can be negatively affected by test taker characteristics (Crozier & Hostettler, 2003; Von Der Embse et al., 2018)

# FUNCTIONAL COMMUNICATION SKILLS

- The abilities that allow a child to effectively communicate in daily life, e.g., following verbal instructions, answering questions, and describing past events (Thomas-Stonell et al., 2013).
- The involvement of caregivers can broaden and deepen the diagnostic profile.

# CAREGIVER SCREENING TOOL

1. Identify children who are in need of in-depth language and/or speech assessment
2. Offer insight into the impact of a child's language deficits on their daily communicative function.

**Chinese Communication Development Inventories (CCDI) – Cantonese and Mandarin** (Tardif et al., 2008).

CANTONESE CAREGIVER SPEECH-LANGUAGE  
SCREENING FOR PRESCHOOLERS(CCSLS-P)

Speech  
section  
8 items

Language  
section  
12 items

# CANTONESE CAREGIVER SPEECH-LANGUAGE SCREENING FOR PRESCHOOLERS(CCSLS-P)

Language  
section  
12 items

- Answering “who” and “when” questions (2)
- Following verbal instructions (2- and 3-step commands) (2)
- Verbal reasoning (3)
- Story comprehension and telling (2)
- Use of complex sentences, connectives, and internal state terms (3)

Based on the available normative data on language development in Cantonese preschool children (Heep Hong Society, 1995), which is a familiar reference for caregivers.

## 學前兒童言語能力篩查表

兒童姓名： \_\_\_\_\_ 性別： \_\_\_\_\_ 男 / 女  
 出生日期： \_\_\_\_\_ 年齡： \_\_\_\_\_ 歲 個月  
 填表日期： \_\_\_\_\_  
 填表人與兒童的關係： \_\_\_\_\_

此篩查表分為兩部份，第一部份為語言能力，第二部份為發音能力，兩部份都**必須完成**。請家長根據兒童**現在**的表現，圈出一個最合適的描述。**注意**，題目中的例子並非必要，家長應聯想兒童日常的類似表現。

第一部份：語言能力		從 未	間 中	經 常		
1	以「人物」回答「邊個」問題。	1	2	3	4	5
2	以「時間」回答「幾時」問題。	1	2	3	4	5
3	跟從兩步驟指令，例子：「拎碗，跟住拎筷子。」	1	2	3	4	5
4	跟從三步驟指令，例子：「首先拎蛋糕，跟住拎蘋果，最後拎雞蛋。」	1	2	3	4	5
5	以合理的原因回答「點解」問題，例子：家長問：「點解要剪頭髮？」兒童答：「因為頭髮好長。」	1	2	3	4	5
6	預計將會發生的事，例子：家長問：「天空有好多黑雲，跟住會點呀？」兒童答：「落雨。」	1	2	3	4	5
7	提供兩至三個合理解決方法，例子：家長問：「如果鉛筆鈍咗，寫唔到，可以點做？」兒童答：「問同學借，用鉛筆刨，或者用另一枝鉛筆。」	1	2	3	4	5
8	理解故事情節，例子：《北風和太陽》中，北風要跟太陽比試，是因為覺得自己本領比太陽高。	1	2	3	4	5
9	說出令人聽得明白的故事	1	2	3	4	5
10	合適地運用長句子一：「著紅色衫 嘅男仔 戴帽。」	1	2	3	4	5
11	合適地運用長句子二：「雖然 出面好熱，但係 我著短袖衫。」	1	2	3	4	5
12	運用「開心」、「唔開心」、「驚」及「鬻」以外的情緒詞語，例子：「失望」、「興奮」、「尷尬」等。	1	2	3	4	5

第一部份 = \_\_\_\_\_ / 60

# CCSLP

Language  
section  
12 items

1 - never

2 - rarely

3 -  
sometimes

4 - often

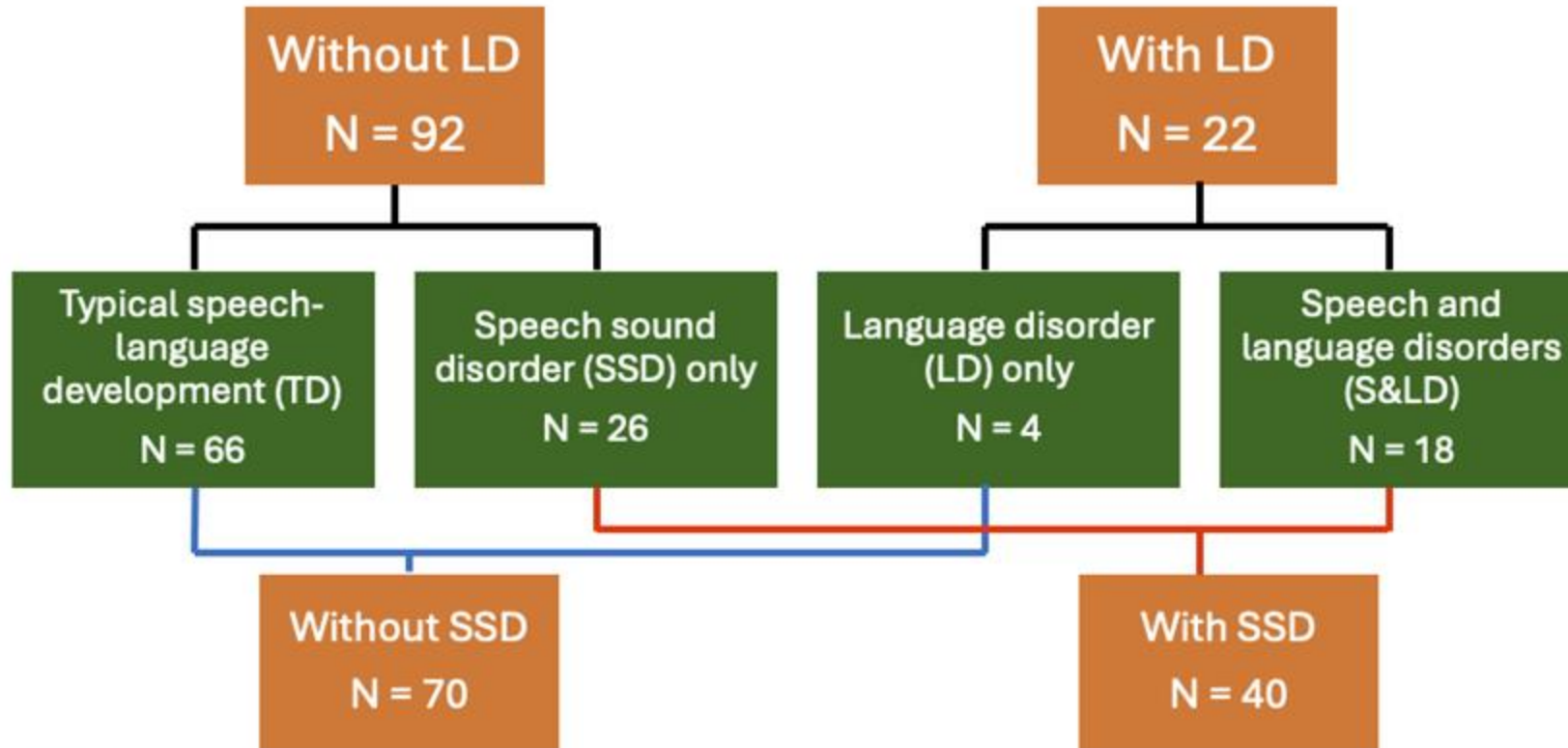
5 - always

Both sections used a 5-point Likert scale  
(maximum Language section score = 60)

# METHODOLOGY

# PARTICIPANTS

- 114 Cantonese-speaking preschool children and their caregivers (n = 112) participated.



# ASSESSMENT

1. Standardized language tests (TOPOL & HKCRVT)
2. A standardized articulation test (HKCAT)
3. A polysyllable imitation task
4. A pure-tone hearing screening
5. A conversational speech sample

LD = <16<sup>th</sup> percentile on HKCRVT or any TOPOL subtests

SSD = <16<sup>th</sup> percentile on any aspects of the HKCAT (i.e., initial consonants, vowel & diphthongs, final consonants, and tones)

TOPOL – Hong Kong Test of Preschool Oral Language;

HKCRVT – Hong Kong Cantonese Receptive Vocabulary Test;

HKCAT – Hong Kong Cantonese Articulation Test

# PROCEDURE

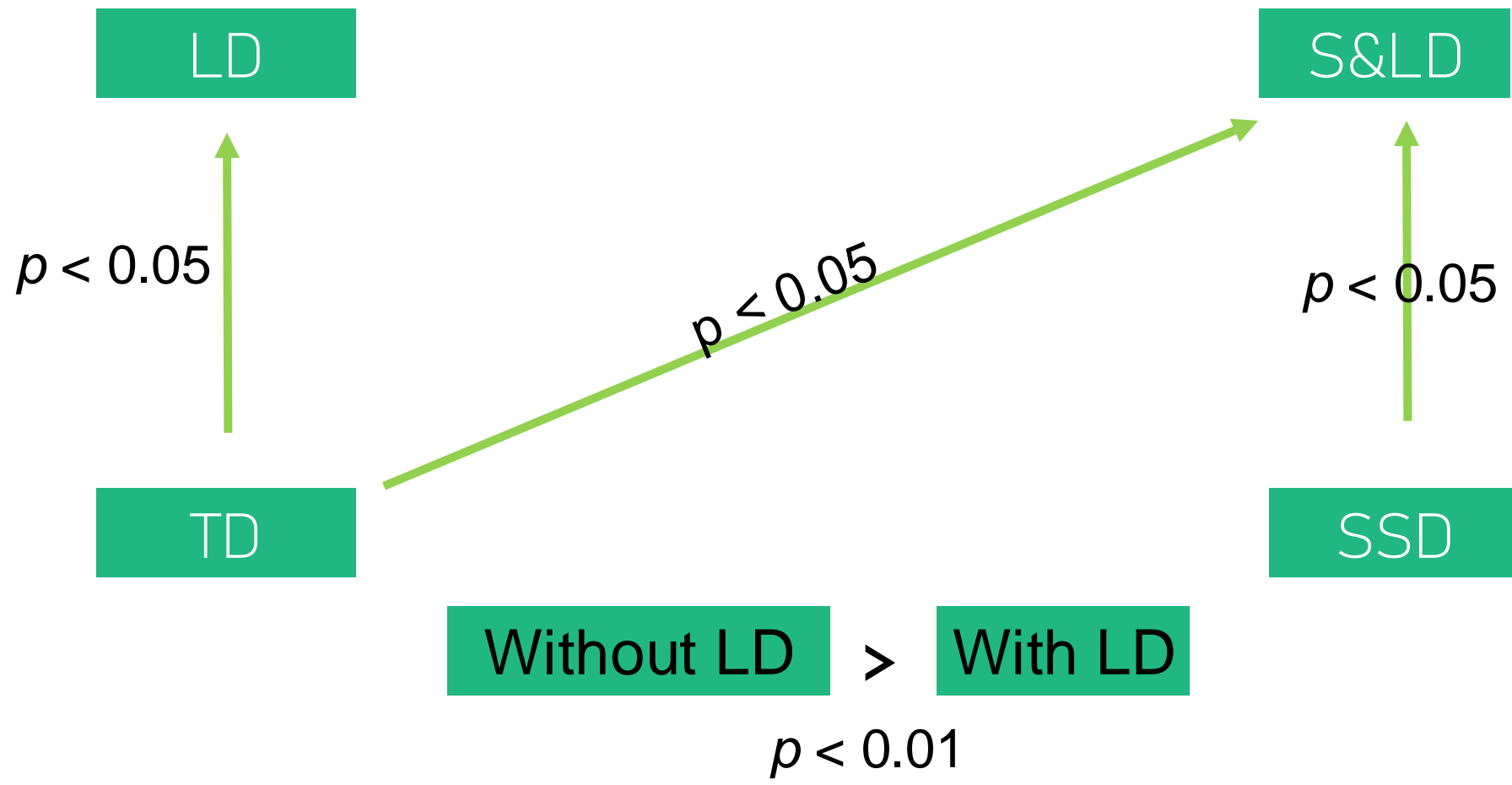
- All caregivers provided initial ratings via phone interview and second ratings by filling out the hard copy of the CCSLS-P, right before the speech and language assessment.
- The second ratings formed the data set.

# STATISTICAL ANALYSES

- Mann-Whitney  $U$  tests:
  - Compared the language section scores between children with and without LD
- Kruskal-Wallis  $H$  tests:
  - Compared the language section scores among the four different child participant groups (i.e., TD, SSD, LD, and S&LD)
- Structural validity (factor analysis and items correlation analysis), criterion validity (predictive and concurrent validity), and reliability (internal consistency and test-retest reliability)
- Receiver operating characteristics (ROC) curves: cut-off scores with satisfactory sensitivity and specificity (>80%) for the three age groups (3-, 4-, and 5-year-old groups).

# RESULTS

# STATISTICAL TEST RESULTS



# STRUCTURAL VALIDITY

Factor analysis (Principal Component Analysis [PCA]).

- Two components had an eigenvalue of greater than 1 (7.647 and 1.051).
- Explained 72.5% of the variance.

Spearman's rank correlation coefficient

- language section scores were not normally distributed ( $W = 0.914$ ,  $p < 0.001$ ).
- Coefficients ranged from 0.248 to 0.782 ( $p < 0.01$ ).
- **Weak to strong relationships** among the items.

# CRITERION VALIDITY

Predictive validity (Binary logistic regression model).

- Model statistically significant ( $\chi^2 = 45.36$ ,  $df = 1$ ,  $p < .001$ ), i.e., **had predictive value**; explained 52.5% of variance in LD.
- LSS significant predictor of LD ( $B = -.169$ ,  $p < .001$ ).
- Odds ratio for LD 0.84 (95% CI [.79 – .90]): For each additional unit increase in LSS, odds of having LD decrease by ~15.6%.
- Association statistically significant ( $p < .001$ ).
- Hosmer-Lemeshow test indicated model adequately fit data ( $\chi^2 = 12.14$ ,  $df = 8$ ,  $p = .145$ ), suggesting **good model fit**.

# CRITERION VALIDITY

## Concurrent validity

- measured with TOPOL
- Spearman rank correlation coefficient used because TOPOL total standard scores of sample not normally distributed ( $W = .916, p < .001$ ).
- Based on 114 responses, **moderately positive correlation** ( $\rho = .565, p < .001$ ) observed (Schober et al., 2018) between LSSs and TOPOL total standard scores.

# RELIABILITY

Internal consistency (Cronbach's alpha).

- Cronbach's alpha coefficient of 0.947 for the factor.
- Standard error of measurement = 2.59, which is small compared to the range of the LSSs (i.e., 12 to 60)
- **Good overall measurement precision.**

# RELIABILITY

Test-retest reliability (initial vs. second ratings of 20% data)

- ICC (2, 1) = .67, 95% CI (.61 – .73),  $p < .001$ .
- **Moderate test-retest reliability** (Koo & Li, 2016) on the 12 items in the language section

# SELECTED CUT-OFF SCORE

	Cut-off score	Sensitivity (%)	Specificity (%)
All child participants (n = 114)	41.5	77.3	82.6
	<b>42.5<sup>#</sup></b>	<b>81.8</b>	<b>80.4</b>
	43.5	86.4	76.1
Three-year-old age group (n = 40)	33.5	70.0	90.0
	<b>35.0<sup>#</sup></b>	<b>80.0</b>	<b>90.0</b>
	36.5	80.0	86.7
Four-year-old age group (n = 45)	43.5	85.7	81.6
	<b>45.0<sup>#</sup></b>	<b>100</b>	<b>81.6</b>
	47.5	100	73.7
Five-year-old age group (n = 29)	41.5	60.0	95.8
	43.5	80.0	91.7
	<b>45.0<sup>#</sup></b>	<b>80.0</b>	<b>87.5</b>

# DISCUSSION

# DISCUSSION

- The language section scores of the CCSLS-P are able to differentiate children with and without LD.
- The CCSLS-P may be a good screening tool to identify language impairment in Cantonese preschool children.
- It may be useful for recording the functional communication skills of children, from the caregivers' perspectives.

# CLINICAL IMPLICATIONS

- Professionals who work with children with SEN may use the CCSLS-P as a screener.

3-year-old	35.0
4-year-old	45.0
5-year-old	45.0

- Refer children with language impairment to Speech-Language Pathologist (SLPs) for further comprehensive assessments.

# FUTURE INVESTIGATIONS

- Develop a norm for the language section of the CCSLS-P.
- Transform it to a digital format.

# REFERENCES

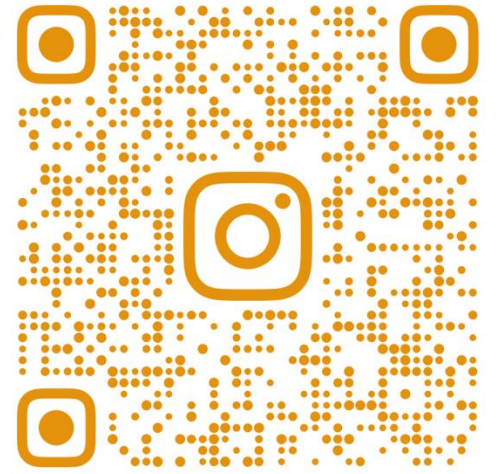
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# Thank You

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