

A Cultural-Historical Approach to Children With Specific Language Impairment in China

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Abstract

Specific Language Impairment (SLI) is a developmental disorder in children with lower language capacity than average children in the same age group without vivid physical or mental illness. Children with SLI in China have lower academic achievements than their peers; thus, they could be considered lazy or stupid. In the past two years of our first phase of the study, we evaluated more than 40 primary students aged 7 to 9 from 3 primary schools in northern Jiangsu Province in China, with 35 children scoring below 1.5 standard deviations. This study created a social atmosphere by empowering teachers' instruction management skills with better awareness of SLI children. This study also designed a procedure based on Computational Thinking (CT) as a negotiation theme for adult-children interaction for CT logic generalized into sequential and conditional logic. With assistance from an inclusive education classroom with support from teachers and classmates, students explore more social interactions with a better comprehension of correct orders and expressions in a social environment. At the same time, this study used CT activities for internal language development supported by signs and symbols acquired from CT and actualized in the inclusive education classroom. We have seen a gradual improvement in their academic performance and social interactions at school.

Keywords: Specific Language Impairment (SLI), Computational Thinking (CT), Academic Performance

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Introduction

It is a long-time mystery that we have seen children who perform extremely undesirable in terms of their academic performance across all subjects in their elementary school. However, those children are often treated as “stupid” or “lack sufficient study.” In addition, they are sometimes conveniently labeled as “lazy.” This study aimed to investigate a proper way of diagnosing children with this special type of language impairment and to explore a possible working supportive activity for their further language development and academic success.

Specific Language Impairment (SLI) is a developmental disorder in children with lower language capacity than average children in the same age group without vivid physical or mental illness. Characteristics of children with SLI are generally described by Dorothy V.M. Bishop (2006) and Leonard (2014) in terms of the criteria of SLI:

1. The children’s language expression and comprehension on standardized tests are considerably less effective
2. Nonverbal IQ and nonlinguistic traits are within the normal range
3. Hearing loss, physical abnormalities of the speech apparatus or environmental deprivation cannot be accounted for as causes of language difficulties
4. Brain damage is not the cause of language difficulties

Children with SLI may experience the following, as depicted by Rice (2020) and Dorothy V.M. Bishop (2006) suggested that:

1. have no hearing loss or other developmental delays
2. affecting 7-10% of children
3. usually persistent into adulthood
4. Not likely to be identified (clinically) for services to help with their language impairment, so:
5. A high risk for reading impairments
6. Lower-than-expected academic achievement
7. Difficulties in establishing peer relationships
8. A heightened risk for peer victimization as a student (bully, marginalized)
9. Increased risk of being identified as having an Attention Deficit Disorder (ADHD), Auditory Processing Disorder (APD), and Autism

In addition, language disorders or impairments in children are under-recognized compared to other neurodevelopmental conditions such as attention deficit hyperactivity disorder (ADHD), autism spectrum disorder, and developmental dyslexia. (D. V. (Bishop & Leonard, 2014, p. 2) In other words, SLI is more exclusive compared with Developmental Language Disorder, or DLD. DLD diagnoses include children with lower IQs and co-occurring conditions (e.g., ADHD, DCD, dyslexia), whereas DLD diagnoses include children with lower IQs and co-occurring conditions (Dorothy V. M. Bishop, 2017).

Methodology

The “Language Impairment Scale for School-Aged Children” was used in this study to diagnose children’s language performance. It is published by National Taiwan Normal University, with a “norm” for school-aged students (age 6-12) in the Taiwan area that appropriates the Chinese language used in Taiwan's local context. This is problematic for participants of our study on the Mainland as the local word choice and language usage differed. The local contextualized evaluation scale was prepared from the original “Language

Impairment Scale for School-Aged Children” but adjusted and revised with adopted Chinese used in northern Jiangsu Province. This scale includes the question book and picture book. The procedure is still Mandarin Chinese based, but not local Chinese dialects in the northern Jiangsu Province. Forty participants of our first phase are reported (grade 3, 7-9, 5 in age 7, 31 in age 8, 4 in age 9). This study will also compare and discuss the average of 1.5 standard deviations obtained from our data. In addition, the age group of this study is based on the child's actual age on the day of the test (the date of the test minus the child's birthday).

There are four tests on this scale, sub-tests:

1. Sound and fluency,
2. Language comprehension:
3. (1) 32 questions, 40 points, 40% of the total score
4. (2) Including semantic comprehension, vocabulary, grammar skills
5. Conformation, tone,
6. Oral expression
7. (1) 23 questions, 57 points, 59% of the total score
8. (2) Including vocabulary, grammar, pragmatics, shadowing, sentence formation, storytelling skills

Table 1. *Sales of Take-Home Ice Cream in New Zealand*

	age group	n	Mean	SD	M-1.5SD
Language Comprehension	7	5	33.60	1.52	31.32
	8	31	32.90	5.18	25.14
	9	4	33.00	2.71	28.94
	Total	40	33.00	4.63	26.06
Oral Expression	7	5	39.20	8.61	26.28
	8	31	38.42	7.94	26.51
	9	4	38.25	2.22	34.92
	Total	40	38.50	7.52	27.22
Language Development (Sum)	7	5	72.80	9.91	57.94
	8	31	71.32	11.53	54.03
	9	4	71.25	3.59	65.86
	Total	40	71.50	10.66	55.52

According to Table 1, the data of the average and standard deviation of each subtest and the total score show that the eight-year-old group has a larger standard deviation in language comprehension, and the seven-year-old and eight-year-old groups have a larger standard deviation in oral expression, that is, the scores are more dispersed. The standard deviation of the nine-year-old group is smaller in individual subtests.

Table 2. Comparison of the Mean and Standard Deviation of Each Sub-Test and the Total Score of Participants and National Taiwan Normal University

	age group	n	Mean (N.Jiangsu)	Mean (NTNU)	SD (N.Jiangsu)	SD (NTNU)	M-1.5SD (N.Jiangsu)	M-1.5SD (NTNU)
Language Comprehension	7	5	33.60	30.69	1.52	4.56	31.32	23.84
	8	31	32.90	32.97	5.18	3.76	25.14	27.33
	9	4	33.00	33.54	2.71	4.10	28.94	27.39
	Total	40	33.00	33.27	4.63	4.80	26.06	26.08
Oral Expression	7	5	39.20	38.13	8.61	7.44	26.28	26.97
	8	31	38.42	40.38	7.94	6.51	26.51	30.61
	9	4	38.25	42.93	2.22	7.14	34.92	32.22
	Total	40	38.50	42.25	7.52	8.12	27.22	30.07
Language Development (Sum)	7	5	72.80	68.82	9.91	10.71	57.94	52.76
	8	31	71.32	73.35	11.53	9.06	54.03	59.77
	9	4	71.25	76.47	3.59	9.88	65.86	61.65
	Total	40	71.50	75.52	10.66	11.86	55.52	57.72

Table 2 compares the mean and standard deviation of the measured data of participants and the normative test and total scores of the National Taiwan Normal University. In terms of average, in Bishuiwan subtest II language comprehension, there is a large gap between the seven-year-old age group and the norm of National Taiwan Normal University, about 2.91. In addition, in subtest 4, oral expression, there is a big difference between the nine-year-old age group and the norm of Taiwan Normal University, reaching 4.68. The differences between the sub-items of the other groups and the norm of Taiwan Normal University are about 1. It may also be related to the small sample size (n=5 for seven years; n=4 for nine years). The standard deviations are convenient but highly variable, indicating that scores within groups are more dispersed.

Table 3. Cut-Off Point Statistics

	age group	n	M-1.5SD (NTNU)	cut-off	M-1.5SD (N. Jiangsu)	cut-off
Language Comprehension	7	5	23.84	0	31.32	0
	8	31	27.33	6	25.14	2
	9	4	27.39	0	28.94	0
Oral Expression	7	5	26.97	0	26.28	0
	8	31	30.61	4	26.51	2
	9	4	32.22	0	34.92	0
Language Development (Sum)	7	5	52.76	0	57.94	0
	8	31	59.77	5	54.03	3
	9	4	61.65	0	65.86	0

According to Bernstein & Tiegerman (2002), if a standardized test tool is used to screen children with language impairment, the index is generally two standard deviations below the mean, but if it is used for screening purposes, early parents and For school interventions for

further language and communication skills training, the cut-off point is 1.5 standard deviations below the mean. This study will use the normal model constructed by Lin Baogui (2016) of Taiwan Normal University as a reference and compare the results based on the cumulative mean and standard deviation as the cut-off point. As in Table 3.

Table 4. *Participating Children Scores Below “Within Group” Cut-Off Points*

Participant	Sex	age group	Language Comprehension	Oral Expression	Language Development (Sum)
XXX229	男	8	26	24	50
XXX218	男	8	19	21	40
XXX225	男	8	21	34	55
XXX224	女	8	26	28	54

According to Table 4, if the calculated data based on participants’ test data is lower than the mean by 1.5 standard deviations, the abnormal children are all in the eight-year-old age group. In each sub-test performance, language comprehension has two, lower than 25.14. The student numbers are XXX218 and XXX225. In the oral expression subtest, XXX229 and XXX218 were below the cut-off point, lower than 26.51. The total score has three places: XXX229, XXX218, and XXX224. Although XXX225 language comprehension is lower than the cut-off point, lower than 54.03, the total score is higher than the cut-off point. Although the subtests of XXX224 are all higher than the cut-off point, the total score is lower than the cut-off point. So with three digits, the ratio is 7.50%.

Table 5. *Participating Children Scores Below “NTNU” Cut-Off Points*

Participant	Sex	age group	Language Comprehension	Oral Expression	Language Development (Sum)
XXX229	M	8	26	24	50
XXX240	F	8	26	38	64
XXX220	M	8	36	28	64
XXX218	M	8	19	21	40
XXX225	M	8	21	34	55
XXX224	F	8	26	28	54
XXX219	M	8	26	33	59

According to Table 5, the abnormal children are all in the eight-year-old age group compared with the norms of Taiwan Normal University. Among them, six scores were lower than 27.33 for language comprehension, four scores were for oral expression, and five scores were lower than the cut-off point of 30.61. XXX229, XXX218, and XXX224 are lower than the cut-off

point, and the calculation of participants' within-group measured data is the same, but XXX219 and XXX225 are also abnormal after using the norm comparison of Taiwan Normal University. Five students have a total score lower than the cut-off point of 59.77 of Taiwan Normal University, accounting for 12.50%.

Conclusion

According to statistics, the prevalence rate of language barriers among school-age children in Taiwan was 3.3% in the 2008 school year (Lin Baogui, 2016, p.2). According to The University of Kansas, the prevalence of children with specific language impairment is 7-10% (Rice, n/d, p.2). The prediction of the prevalence rate (morbidity rate) of SLI in the current academic circle is generally based on the Tomblin et al. (1997) study of 7.4%, 8% for males, and 6% for females. The prevalence rate of a class in the third grade of participating children in this study is 7.5-12.5%, which is higher than Taiwan and international references. However, it may also be due to the small number of test samples.

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