

RGC Ref.: A-HKIEd801/15

(please insert ref. above)

The Research Grants Council of Hong Kong
ANR/RGC Joint Research Scheme
Completion Report

*(Please attach a copy of the completion report submitted to the ANR
by the French researcher (Appendix H))*

Part A: The Project and Investigator(s)

1. Project Title (ANR Acronym)

The Role of Consonants, Vowels and Tones in Early Lexical Acquisition (COVOTO)

2. Investigator(s) and Academic Department/Units Involved

	Hong Kong Team	French Team
Name of Principal Investigator <i>(with title)</i>	Dr. Hin Tat CHEUNG	Dr. Thierry NAZZI
Post	Professor	Senior Research Scientist
Unit / Department / Institution	Department of Linguistics and Modern Language Studies/The Education University of Hong Kong	Integrative Neuroscience and Cognition Center, CNRS - Université Paris Descartes
Contact Information	hintat@eduhk.hk	thierry.nazzi@parisdescartes.fr
Co-investigator(s) <i>(with title and institution)</i>	Dr. Regine LAI Department of Linguistics and Modern Languages/ The Chinese University of Hong Kong	Dr. Bijeljic-Babic RANKA Integrative Neuroscience and Cognition Center, CNRS - Université Paris Descartes

3. Project Duration

	Original	Revised	Date of RGC/ Institution Approval <i>(must be quoted)</i>
Project Start date	1-Jan-2016		
Project Completion date	31-Dec-2018	30 April 2020	21 May 2018 & 8 August 2019
Duration <i>(in month)</i>	36 months	52 months	21 May 2018 & 8 August 2019

Deadline for Submission of Completion Report	31-Dec-2019	30 April 2021	21 May 2018 & 8 August 2019
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Part B: The Completion Report

5. Project Objectives

5.1 Objectives as per original application

1. To determine if Cantonese-learning toddlers can use consonant, vowel and tone information when learning new words.
2. To determine if French-learning toddlers can use consonant, vowel and tone information when learning new words in a foreign language.
3. To determine if bilingualism induces/maintains increased ability to learn new words in a foreign language.
4. To determine if tone variation prevents Cantonese-, but not French-learning, toddlers from learning phonetically-contrasted words.

5.2 Revised Objectives

Date of approval from the RGC: _____

Reasons for the change: _____

6. Research Outcome

Major findings and research outcome

(maximum 1 page; please make reference to Part C where necessary)

Past research has demonstrated that infants are endowed with rich speech capacities, with which they can discriminate many consonantal and vocalic contrasts and become attuned to the language-specific properties of the ambient language quickly. An advantage in the use of consonant cues was found in French-learning infants (C-bias), but subsequent studies revealed that infants exposed to English and Danish displayed either no bias or a higher sensitivity to vowels. Three accounts for the C-bias have been proposed and are examined: (1) The innate bias hypothesis, (2) The acoustic/phonetic hypothesis, and (3) The lexical hypothesis. To further examine these three hypotheses, this project conducted a series of crosslinguistic studies, exploring infants' and adults' relative sensitivity to and use of consonants, vowels and tones in tonal Cantonese and non-tonal French environments. A C-bias is predicted for French, no bias or a V-bias for Cantonese, with better use of tonal information in Cantonese.

Animated cartoons were used to teach our participants pairs of words contrasting either by a consonant, a vowel or a tone. Eye gaze information during cartoon viewing was collected and analyzed. Results from adults show that adult native speakers of Cantonese process all three types of contrast (consonant, vowel and tones) to the same degree, while French-speaking adults had lower performance in the tone condition. The children results at 30 months show a C-bias in French-learning infants, and a V-bias in Cantonese-learning infants. The presence of tones in Cantonese enhances its perceptual sensitivity as well as its use in word learning, giving support to the acoustic/phonetic hypothesis.

Potential for further development of the research and the proposed course of action
(maximum half a page)

In this study a clear V-bias in Cantonese-learning infants is found at 30 months while similar results found at 24 months for another tone language, Mandarin (Wewalaarachchi et al., 2017). It is interesting to further explore whether this effect is present at 20 months in Cantonese. To test 20-month Cantonese-learning infants, some refinement of the word learning task should be done first since the current task appeared too difficult for our younger participants.

7. The Layman’s Summary

(describe in layman’s language the nature, significance and value of the research project, in no more than 200 words)

Past research has demonstrated that infants are endowed with rich speech capacities, with which they can discriminate many consonantal and vocalic contrasts and become attuned to the language-specific properties of the ambient language quickly. An advantage in the use of consonant cues was found in French-learning infants (C-bias), but subsequent studies revealed that infants exposed to English and Danish displayed either no bias or a higher sensitivity to vowels. Three accounts for the C-bias have been proposed and are examined: (1) The innate bias hypothesis, (2) The acoustic/phonetic hypothesis, and (3) The lexical hypothesis. Animated cartoons were used to teach our participants pairs of words contrasting either by a consonant, a vowel or a tone. The results from adults show that adult native speakers of Cantonese process all three types of contrast (consonant, vowel and tones) to the same degree, while French-speaking adults had lower performance in the tone condition. The children results at 30 months show a C-bias in French-learning infants, and a V-bias in Cantonese-learning infants. The presence of tones in Cantonese enhances its perceptual sensitivity as wells its use in word learning, giving support to the acoustic/phonetic hypothesis.

Part C: Research Output

8. Peer-reviewed journal publication(s) arising directly from this research project

(Please attach a copy of each publication and/or the letter of acceptance if not yet submitted in the previous progress report(s). All listed publications must acknowledge RGC’s funding support by quoting the specific grant reference.)

The Latest Status of Publications				Author(s) <i>(bold the authors belonging to the project teams and denote the corresponding author with an asterisk*)</i>	Title and Journal/ Book <i>(with the volume, pages and other necessary publishing details specified)</i>	Submitted to RGC <i>(indicate the year ending of the relevant progress report)</i>	Attached to this report <i>(Yes or No)</i>	Acknowledged the support of this Joint Research Scheme <i>(Yes or No)</i>	Accessible from the institutional repository <i>(Yes or No)</i>
Year of publication	Year of Acceptance <i>(For paper accepted but not yet published)</i>	Under Review	Under Preparation <i>(optional)</i>						
2018	2017			Poltrock, S., Chen, H., Kwok, C., Cheung, H., & Nazzi, T.	Adult learning of words in a nonnative language: Consonants, vowels, and tones. <i>Frontiers in Psychology</i> , 9:1211.	No	Yes <i>(Appendix A)</i>	Yes	Yes

2020	2020			Chen, H., Labertonière, D., Cheung, H., & Nazzi, T.	Infant learning of words in a typologically distant nonnative language. <i>Journal of Child Language</i> , 47, 1276-1287	No	YES (Appendix B)	YES	YES
In press	2020			Chen, H., Lee, D.T., Luo, Z., Lai, R.Y., Nazzi, T. & Cheung, H.	Variation in phonological bias: Bias for vowels, rather than consonants or tones in lexical processing by Cantonese-learning toddlers. <i>Cognition</i>	No	YES (Appendix C)	YES	YES

9. Recognized international conference(s) in which paper(s) related to this research project was/were delivered (Please attach a copy of each delivered paper. All listed papers must acknowledge RGC's funding support by quoting the specific grant reference.)

Month/Year/Place	Title	Conference Name	Submitted to RGC (indicate the year ending of the relevant progress report)	Attached to this report (Yes or No)	Acknowledged the support of this Joint Research Scheme (Yes or No)	Accessible from the institutional repository (Yes or No)
June 2018 EdUHK	Phonological biases in early lexical processing by Cantonese toddlers: eyetracking and developmental perspective	1st International Symposium on Frontiers of Chinese Linguistics	Yes	YES (Appendix D)	Yes	No

July 2018 Philadelphia	French-learning 20-month-olds learn Cantonese (pseudo)words in an object manipulation task	International Congress of Infant Studies (ICIS)	YES (Extension request, 2019)	Yes (Appendix E)	Yes	July 2018 Philadelphia
Oct/2018/ Singapore	Consonant/ Vowel bias in lexical processing by Cantonese-learning toddlers: Preliminary data from a word-learning task	The Asia-Pacific Constellation Conference	YES (Extension request, 2019)	YES (Appendix F)	Yes	No
June/2019/ Potsdam, Germany	Phonological biases in early word learning in Cantonese-learning toddlers.	The 4th Workshop on Infant Language Development	YES (Extension request, 2019)	YES (Appendix G)	Yes	No

10. Student(s) trained (*Please attach a copy of the title page of the thesis.*)

Name	Degree registered for	Date of registration	Date of thesis- submission/ graduation
YUAN, Jia-min	Bachelor-level	Sept 2014	June 2019
JOSON, Nicole Lee Kaye Kaye	Bachelor-level	Sept 2014	June 2019
TANG, Tsz-wai	Bachelor-level	Sept 2014	June 2019

11. Other impact (*e.g. award of patents or prizes, collaboration with other research institutions, technology transfer, etc.*)

12. Statistics on Research Outputs *(Please ensure the summary statistics below are consistent with the information presented in other parts of this report.)*

	Peer-reviewed journal publications	Conference papers	Scholarly books, monographs and chapters	Patents awarded	Other research outputs (Please specify)
No. of outputs arising directly from this research project	3	4	/	/	/