Literature Review for "*How L2 learners cope with the constraints & challenges of language acquisition: An explanatory mixed-methods study*"

Introduction

Imagine an adult starts living in a foreign country and she now has to study and work in a second language. How could this person manage to articulate her own feelings, thoughts in a second language? How could she be respected and recognized by people who do not speak her mother tongue? How could she have the great amount of confidence to deal with the stress coming from everyday conversations in the second language? The anxiety, disappointment and challenges might be imaginable to anyone.

According to American Immigration Council's report (Flood et al., 2020), in 2019, 14 percent of the nation's residents are foreign-born and 69 percent of them report speaking English well or very well, which indicates that 31 percent of the 44.9 million immigrant population might not have a handle on English yet have already immigrated to the U.S (not to mention there are a considerable number of international students and workers across the country).

This language incapability just makes this minoritized population extremely vulnerable and makes them fail to have a voice in the society where they might live the rest of their lives. It is studied that the core of the relationship between language and social inequality is the concept that some expressions of language are valued more than others, and it is associated with the fact that some people are socially more valued than others thus some ideas expressed by these people through language are more valued -- and here comes the inevitable social inequity (Philips, 2004).

Although language is a critical factor that has an impact on social capital and equity, there's little research on how to overcome second language acquisition (SLA) difficulties and on

informing educational language development programs and practices. Out of 30 empirical studies, 28 illustrated the differences, and only 2 books touched upon learning strategies. None of them were written to inform educational language development practices and programs in real life. The gap is a critical problem and addressing it could substantially contribute to social equity for the following reasons. First, there is a huge minoritized population who need help with language acquisition across the country. For the purpose of promoting social equity, language is the most important yet seemingly unachievable goal. Second, the majority of research focuses on telling the differences, instead of presenting the ways to improve and conquer the challenge. Last but not least, little research is conducted from a second language (L2) learner's perspective which articulates the possibility of having a successful SLA.

By looking into the pre-existing literatures, **flaws of critical period studies that go against adults' successful second language acquisition are identified -- adult L2 learners could have great language acquisition.** Early linguistics researchers Penfield and Roberts (1959) claimed that there is a critical period for language acquisition that limits the ultimate level of competence attainable by older L2 learners, Penfield, Roberts and some other researchers were the first researchers to propose critical period hypothesis. They claimed that there is a critical period that ends at 9-12 years of age, after which complete or native-like mastery of language, first or second, is difficult or impossible. They attributed this limitation to the loss of general neural plasticity of the brain. White et al. (1996) argue that extant results are not an adequate test of the critical period's hypothesis because the studies are based on the performance of learners who have not necessarily achieved native-like proficiency in the L2. Besides the argument, they also develop criteria to establish whether an L2 speaker has developed native-like language abilities/proficiency.

Evidence for lifelong experience-related neuroplasticity has been widespread in cognitive neuroscience, and language learning is unique to neuroplasticity and cognitive ability. A transformational fact was established in cognitive neuroscience after 2000 and in the following decades – researchers believe in lifelong experience-related neuroplasticity and its role in understanding the brain and cognitive systems (Pascual-Leone, Amedi, Fregni, & Merabet, 2005). The adult language learners' performances are closely related to formal education, and education can affect both brain structure and cognitive level, especially in terms of slowing cognitive decline which happens along with aging (Kramer, Bherer, Colcombe, Dong, & Greenough, 2004). Second language learning is a prime factor that could have effects on shaping brain structure and cognitive ability because language use is the most intense, sustained, and integrative experience in which humans engage. The intensity is accounted for activities we might engage in on a day-to-day basis, including verbal communication and conceptualizing and interpreting ongoing experiences (Bialystok, 2017). There is a chance that second language learning can lead to changes in brain and cognitive systems. There have been findings of structural brain changes associated with learning a foreign language: in a review in 2014, Li, Legault, and Litcofsky describe the reliable differences in brain structure for not only grey matter density but also white matter integrity after even brief periods of second-language learning.

Extensive studies have shown a certain percentage of the adult L2 learner population could achieve native-like language acquisition. Based on a review of research at that time, Selinker (1972) asserted that 5–10 percent of late learners can attain native-like language abilities in a second language (L2). Thus, "rare" and "exceptional" are not appropriate enough to describe successful learners demographically, though the latter is widely accepted. These cases always cause curiosity and debate among neuro- and psycholinguists, cognitive

scientists, and others. A lot of research aimed to discuss the problem on a theoretical level, but there are more important practical issues to take into consideration. Gladly, there have been some scholar-practitioners who tried to put together a "recipe for success" based on the qualities and practices of these successful language-learning individuals (Oxford, R. L., 2011).

Theoretical frameworks

In the linguistics field of study, interlanguage perspectives provide the theoretical framework for the linguistic lenses used in this study. In Selinker's publication (1972), An interlanguage perspective is brought up to assess a learner's underlying knowledge of the second-language sound system (interlanguage phonology), grammar (morphology and syntax), vocabulary (lexicon), and linguistic norms (interlanguage pragmatics). Employing Selinker's interlanguage perspective as the quantitative theoretical framework, this study aims to establish a standardized data set regarding perspectives of sound system and grammar.

Phonological acquisition & speech presentation: Phonological acquisition for most generative linguists' linguistic units is unique, so it is not comparable to other units of cognition. Nathan (1986) proposed that phonemes were prototype categories and the think that phonemes are some sort of category has been considered fundamental for all cognitive linguists. In a 1993 publication on Using Optimality Theory, Prince & Smolensky reviewed the study of Broselow et al. examining the simplification of English codas through a study of Mandarin native speakers. Broselow's framework had been analyzed and been used extensively in mainstream phonology but has only recently come in SLA (Hancin-Bhatt, B., & Bhatt, R. M., 1997). The Optimality Theory framework consists of a set of innate constraints that are ranked and define optimal outputs instead of containing a grammar with a set of rules as in traditional generative

phonology. According to this, researchers suggest the language learner stimulate the language-specific rankings, not the constraints themselves. In other words, languages differ in the rankings, not in the actual constraints. The modifications the Mandarin speakers made in their coda English productions were vowel epenthesis, deletion, and devoicing. By comparing monosyllabic and disyllabic English words produced by Mandarin speakers, Broselow et al. argue that the Mandarin speakers' preferences for epenthesis in monosyllabic words but devoicing in bisyllabic words are examples of the emergence of the unmarked. The authors came to conclusion that "markedness" effects are seen in constraint rankings appearing in the interlanguages, even though these rankings are not visible in either the L1 (first language) or L2 (second language).

UG and the logical problem of L2 acquisition: In a 2003 publication by White, L, it was claimed that UG the subtle and abstract knowledge attained by native speakers goes far beyond the input that they receive as young children. In L2 acquisition, learners are faced with a similar task to that of L1 acquirers, namely the need to arrive at a system accounting for L2 input. In addition, L2 learners are also faced (or they might be faced at least) with a logical problem of language acquisition, which includes abstract, complex and subtle properties of grammar that are underdetermined by the L2 input (Schwartz and Sprouse 2000; White 1985, 1989). If it is true that the L2 learner acquires abstract properties that could not have been induced from the input, then it strongly indicates that principles of UG constrain interlanguage grammars, compared to the situation in L1 acquisition. This is true even if the linguistic competence of L2 learners differs from the linguistic competence of native speakers. In other words, it is not necessary for L2 learners to obtain the same amount of knowledge as native speakers in order to spell out a "poverty-of-the-stimulus" situation in second language

acquisition; it is good enough to show that L2 learners acquire complex and subtle properties of language that could not have been induced from the L2 input.

Strategies for language learning have also been discussed in pre-existing literatures. The theoretical framework for learners' strategy employs the what is discussed regarding learning styles and strategies in the publications of Leaver, B., Ehrman, M., & Shekhtman, B. (2005), Moyer, A. (2021), and Macaro, E. (2006). The authors came up with interrelated topics of language learning strategies aiming to help university students improve their learning strategies. This study makes a conscious effort to further investigate and advance the extant research on the niche topic of successful L2 learners' near-native language acquisition.

Learning styles are habitual patterns of perceiving, processing, or reacting to information. **Sensory preferences** refer to the channels through which we perceive information which consists of visual, auditory, and motor modalities, as a minimum. Including **Cognitive styles (**refer to individualized ways of processing information) and **Personality types.**

Learning strategies are the specific actions one takes and/or techniques one uses in order to learn. The learning styles are divided into the following categories: **Deep and surface strategies:** This dichotomy includes strategies that require maximum thinking (i.e. much cognitive activity and attention); other strategies that require minimal thought are called surface strategies. **Taxonomies of learning strategies:** A number of authors have attempted to organize the myriad of possible learning strategies into systems, or taxonomies. Several of these are overviewed here; for the learner who wants more information about learning styles, any of these taxonomies is worth exploring. **Comprehension strategies:** Specific strategies are useful for achieving success in listening and reading activities in the classroom and in real life. **Production**

strategies: Specific strategies are useful for achieving success in speaking and writing activities in the classroom and in real life.

The overarching aim of the current study is to understand what the challenges L2 might be faced with and how to conquer the, and we approach the big goal by achieving 3 specific aims.

AIM1: Investigating the constraints and challenges by comparing the differences between L2 and native speakers by conducting a quantitative meta-analysis study where I investigate the differences between native and L2 speakers (near-native or non-native) in the context of language development through the lenses of phonological acquisition, universal grammar (UG) & speech presentation by doing a systematic review of existing literature.

AIM2: Describing the solutions to the challenges by having a rigorous focus group study where experienced experts and successful L2 learners have in-depth discussions on SLA challenges (concluded from the quantitative study). In other words, we provide answers to what can help with SLA.

AIM3: Informing educational language development practices with the findings of this study based on the results of the quantitative strand and qualitative strand.

A sequential explanatory mixed-methods approach is adopted to answer the overarching question "How do L2 learners cope with the constraints & challenges of language acquisition". To be more specific, I use the quantitative strand to define the problems, followed by the qualitative strand to provide (describe) findings of solutions. The rationale for the necessity of having the qualitative study is the urge of contributing to social equity and the obligation of informing educational language development programs.

Approach

Quantitative study phase

In the quantitative meta-analysis phase, I will investigate the differences between native and L2 speakers (near-native or non-native) in the context of language development through the lenses of phonological acquisition, universal grammar (UG) & speech presentation by doing a systematic review of existing literature. Two research questions will be answered in this phase of study.

- RQ1: What are the language development differences between native and L2 speakers (near-native or non-native) regarding the three following aspects: phonological acquisition, & speech presentation and universal grammar (UG)?

- RQ2: How much do the language developments of native and L2 learners differ from each other through the three lenses? How can we define the challenges?

The literature screening process in the meta-analysis study is planned as follows: first, I will use an electronic database to select the articles for the review. MLA International Bibliography (MLAIB) will be the primary source to identify relevant studies. This stage allows as many items as possible to be found.

Search terms	#article
Language acquisition (AB) AND English (TX) AND Phonological (TX)	66
Language acquisition (AB) AND English (TX) AND Phonological (TX) AND Adult (TX)	12
Language acquisition (AB) AND English (TX) AND Universal Grammar (TX)	31
Language acquisition (AB) AND English (TX) AND Universal Grammar (TX) AND Adult (TX)	10
Language acquisition (AB) AND English (TX) AND Speech (AB)	93
Language acquisition (AB) AND English (TX) AND Speech (AB) AND Adult (TX)	18

A preliminary screening will be conducted to remove exact duplicates and include only relevant articles with online access to full texts. After that, articles will be excluded based on certain criteria. There will be two rounds of screening. Descriptive statistics (measures of frequency) will be performed on the first categories of data to provide an overview of the publications. The last category of data will be synthesized using theoretical thematic analysis.

Primary Search Term
Second language acquisition
Secondary Search Term
Components (a), (b), (c)
(a) phonological acquisition
(b) universal grammar (UG)
(c) speech presentation
Tertiary Search Terms
Adults (18 years old or older)
Number of Search Results
(a), (b), (c), Subtotal

After the relevant studies are selected, the data related to phonological acquisition, universal grammar, and speech presentation will be extracted and standardized for the current study to analyze. The quantitative data analysis software will be used to assist with the data standardization process.

Qualitative study phase

According to aim 2, in the qualitative stage, I will provide solutions by having a rigorous focus group study where experienced experts and successful L2 learners have in-depth discussions on SLA challenges which are concluded from the quantitative stage.

- RQ3: What kind of solutions the experts can provide to help L2 learners cope with these challenges?

Focus group approach and structure

A focus group approach is adopted to explore the reasons behind successful second language acquisitions. The focus group approach provides insights into various and diverse journeys of L2 leaners to native-like language capabilities. Along with the focus group process, new strategies might be included in pre-existing strategies in the focus group protocol to form a more inclusive answer to overcome language incapability. In addition, the focus group is not only aiming to let the experts help identify the success factors but also provide a place for L2 learners to listen to others' experiences. During this process, they might also identify new factors by discovering the parts of speech of others that resonate with them.

There will be 0~2 experts in each group, and the sizes of the groups might range from 2 to 12 individuals, not including the investigators. Ideally, we look to include at least one expert in one focus group session, but considering the situations where we might not be able to achieve that, it is more rigorous to design the range as 0~2 experts.

Focus group subject selection & recruitment

Purposive sampling & snowball sampling will be used in the sampling process to recruit experts and successful L2 representatives. The potential participants are contacted either through Annual Second Language Research Forum (SLRF) or Graduate School Seminar. People who respond to our request and agree to participate in the focus group study will be recruited.

Experts in linguistics field are recruited because we need roles in the focus group that can identify the factors that have an impact on L2 learners' successful language acquisition and provide linguistics knowledge on the discussion to contribute to the replicability of the results. L2 representatives from a variety of backgrounds are recruited aiming to have fruitful conversations during which the stories of others might enlighten one's own knowledge on 'why I am a successful learner'.

Focus group recruitment techniques & sources

I will recruit experts and successful L2 representatives from Annual Second Language Research Forum (SLRF) and Graduate School Seminar, using purposive sampling & Snowball sampling.

Focus group content

Challenges concluded from Phase I and/or personal experiences. Linguistics experts are expected to answer questions related to linguistics field of knowledge (e.g. "How Mandarin speakers adjust their preferences for epenthesis in monosyllabic words but devoicing in bisyllabic?", "What has this successful language learner achieved that manifests his or her language excellency regarding aspects of learning styles/strategies?"). Representatives are encouraged to articulate their own challenges and their ways to cope with the challenges, and the investigators might include the new themes that the representatives bring up in the future focus group protocol.

Data Analytic Plan

After each session, RA or other staff members in attendance at the current focus group discuss and summarize the content and key findings of the group, according to the semi-

structured protocol. All new themes will be identified and categorized to the protocol and other additional information might be taken into consideration as well.

Limitation

Purposive sampling and snowball sampling are both non-probability sampling techniques, this means the representativeness of my sample is not guaranteed. However, my study is meaningful because it provides insights into successful language learning, and in that way, it can still enlighten language learners with possible learning strategies that they can adopt.

Sampling bias: when using the snowball sampling technique, initial subjects tend to nominate people that they know well.

Mixed-methods approach

I use the quantitative method to define the problems, followed by the qualitative method to provide (describe) findings of solutions. The rationale for the necessity of having the qualitative study is the urge of contributing to social equity and obligation of informing educational language development programs.

- RQ4: How can we inform educational language development programs and contribute to social equity?

This question will be answered by writing Op-eds and/or working as a consultant in language learning schools across the country.

References

Bialystok, E. (2017). The bilingual adaptation: How minds accommodate experience. *Psychological bulletin*, *143*(3), 233.

Broselow, E., & Finer, D. (1991). Parameter setting in second language phonology and syntax. *Interlanguage studies bulletin (Utrecht)*, *7*(1), 35-59.

Broselow, E., Chen, S., & Wang, C. (1998). THE EMERGENCE OF THE UNMARKED IN SECOND LANGUAGE PHONOLOGY. *Studies in Second Language Acquisition, 20*(2), 261-280. doi:10.1017/S0272263198002071

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational evaluation and policy analysis*, *11*(3), 255-274.

Hancin-Bhatt, B., & Bhatt, R. M. (1997). Optimal L2 syllables: Interactions of transfer and developmental effects. *Studies in second language acquisition*, 331-378.

Kramer, A. F., Bherer, L., Colcombe, S. J., Dong, W., & Greenough, W. T. (2004). Environmental influences on cognitive and brain plasticity during aging. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, *59*(9), M940-M957.

Leaver, B. L., Ehrman, M. E., & Shekhtman, B. (2005). *Achieving success in second language acquisition*. Cambridge University Press.

Li, P., Legault, J., & Litcofsky, K. A. (2014). Neuroplasticity as a function of second language learning: Anatomical changes in the human brain. *Cortex*, *58*, 301-324.

Macaro, E. (2006). Strategies for language learning and for language use: Revising the theoretical framework. *The modern language journal*, *90*(3), 320-337.

Moyer, A. (2021). *The gifted language learner: A case of nature or nurture?*. Cambridge University Press.

Nathan, G. S. (1986, May). Phonemes as mental categories. In *Annual Meeting of the Berkeley Linguistics Society* (Vol. 12, pp. 212-223).

Oxford, R. L. (2011). Strategies for learning a second or foreign language. *Language teaching*, *44*(2), 167-180.

Pascual-Leone, A., Amedi, A., Fregni, F., & Merabet, L. B. (2005). The plastic human brain cortex. *Annu. Rev. Neurosci.*, *28*, 377-401.

Penfield, W. and Roberts, L. 1959: Speech and brain-mechanisms. Princeton, NJ: Princeton University Press.

Philips, S. U. (2004). Language and social inequality. *A companion to linguistic anthropology*, 474-495.

Prince, A., & Smolensky, P. (2004). Optimality Theory: Constraint interaction in generative grammar. John Wiley & Sons.

Sarah Flood, Miriam King, Renae Rodgers, Steven Ruggles and J. Robert Warren. Integrated Public Use Microdata Series, Current Population Survey: Version 7.0 [dataset]. Minneapolis, MN: IPUMS, 2020. https://doi.org/10.18128/D030.V7.0

Schwartz, B. D., & Sprouse, R. A. (2000). When syntactic theories evolve: Consequences for L2 acquisition research. *Second language acquisition and linguistic theory*, 156-186.

Selinker, L. (1972). Interlanguage.

White, L. (1985), THE "PRO-DROP" PARAMETER IN ADULT SECOND LANGUAGE ACQUISITION. Language Learning, 35: 47-61. https://doi.org/10.1111/j.1467-1770.1985.tb01014.x

White, L. (1989). Universal grammar and second language acquisition. *Universal Grammar and Second Language Acquisition*, 1-210.

White, L. (2003). *Second language acquisition and universal grammar*. Cambridge University Press.

White, L., & Genesee, F. (1996). How native is near-native? The issue of ultimate attainment in adult second language acquisition. *Second language research*, *12*(3), 233-265.