Predictors and stages of very young child EFL learners' English development in China
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Chapter 1
General Introduction
1.1 Introduction

1.1.1 Early foreign language education worldwide

Driven by the unprecedented large number of young learners worldwide, early foreign language (FL) learning, particularly English as a foreign language (EFL) learning, has stimulated an increasing amount of research interest in recent years (Nikolov & Mihaljevíc Djigunovíc, 2011). Millions of children are sent to FL programs by their devoted parents, and the latter greatly support the widespread mushrooming of early FL language education, which is described vividly as a “grassroots” movement of parents by de Bot (2014, p.410). Some child FL learners are extremely young; Nikolov and Mihaljevíc Djigunovíc (2011) call those who are still at preschool (3-6 years old) very young learners. Many parents believe that such an early start could ensure that their children learn a FL better. However, this might not be the case. The Position Statement on Teaching English as a Foreign or Additional Language to Young Learners (TESOL, 2009) clearly notes that “age alone does not determine success in learning a foreign language” and that “there is no single best way to implement” (p. 1) such programs.

If age of onset is not the only influential factor for early FL learning, what else could there be? Studies on very young child second language (L2) learners might be a source of inspiration. In contrast to FL learners who learn a new language in instructional settings, L2 learners learn the new language in a naturalistic setting where the new language is dominant. In those studies, the children are usually from immigrant families (e.g., children from Latino families in the U.S.) and need to learn the L2 for daily communication and academic purposes. In these settings, both cognitive factors (e.g., phonological short-term memory) and environmental factors (e.g., input quantity and quality) appear to affect the learning outcome significantly. Not only language performance but also the route of language development displays substantial individual differences. For instance, immigrant children’s L2 learning behaviors are not only influenced by age and type of instruction but also by their personality (Toohey, 2000). In an individual child’s development, dynamic changes of learning behaviors over months have been found (Clarke, 1999). When we relate these insights from child L2 studies in naturalistic settings to child FL studies in instructional settings, we should pay special attention to the differences between the two learning environments. Children in the former settings have much better language input and opportunities for natural language use than

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1 Researchers have a slightly different view on the age range of very young language learners. For instance, Philp, Mackey and Oliver (2008) considers child SL learners in their early childhood (between 2-7 years old) as very young learners. The current dissertation adopted Nikolov’s and Mihaljevic Djigunovic’s categorization (2011) because they consider children at preschools as very young learners, which fits well with the participants’ background in this study.
their counterparts in the latter settings. Muñoz (2008) provides a nice description about child FL learners’ instructional setting: 1) in general, there is very limited L2 exposure, and the instructional time is approximately 50 minutes per week; 2) teachers´ L2 proficiency and teaching approach heavily influence the quantity and quality of L2 exposure, which is probably the main source of L2 input for most children; 3) children do not use L2 to communicate with each other; and 4) L2 is barely used outside the class. Therefore, whether the findings from naturalistic settings are applicable to instructional settings is yet to be shown.

1.1.2 Early EFL learning in China

The current dissertation targets Chinese preschooler’s early EFL development. In this wave of global early FL education, Asian countries have moved to the foreground, and various types of early EFL programs have mushroomed all over the continent (Butler, 2013). China, for example, has approximately 210 million child English learners taking English courses in more than 50,000 private English institutes in the country (Li, 2013; Feng, 2011). These children are chosen as the focus of this dissertation not only because of the numbers but also because many of them are learning English in the private sector, an area where “most ministries are not aware of what goes on [in]” and where there is “a major issue in [educational] equity” (Nikolov & Mihaljevic Djigunovic, 2011, p.98) – a characterization that seems to apply to the Chinese situation in general.

Whether Chinese children should learn English at a very young age remains controversial, with the government and the public seeming to have contradictory opinions. On the one hand, the Chinese government will postpone the starting age of English learning from grade 1 to grade 3 in primary school and reduce the weighting allocated to the English language component of the national college entry examination from 2016 onwards, while on the other hand, millions of parents send children as young as two years of age to bilingual kindergartens and private English language institutes to start learning English. The new government policy has been interpreted as a response to increasing complaints about overlooked Chinese language education at school, while parents’ behavior is interpreted as concern about their children losing “at the starting line” when competing for high quality educational resources in China, and as a mindset of “the earlier, the better” for foreign language learning (Li, 2013). Moreover, more access to English in their own career and the status of English as a lingua franca drives young parents to invest money and effort in early English education. This hesitation by the government and the passion of the parents have caused the exponential growth of bilingual kindergartens and private English language institutes. According to Luo and Lu (2003), more than 80% of the kindergartens in China have attempted or have already set up English courses as part of their curriculum. These English initiation programs, also called
Chapter 1 General Introduction

1.2 Theoretical background

In line with Clark’s (2003) view that both social factors and cognitive status are crucial in early first language acquisition, the current dissertation also considers them essential to very young children’s early FL development. In other words, children’s FL usage and their cognitive maturation co-shape the developmental route and rate. Because of these assumptions, the current dissertation takes a usage-based view on language and a dynamic systems perspective on development as points of departure.

1.2.1 The usage-based model

Usage-based models of language refer to theories emphasizing the notion that language acquisition emerges from actual instances of language use in daily communication (Tomasello, 2009). According to Tyler (2010), five insights can be derived from usage-based models to second language studies. First, language is for communication and its structure develops through use. Second, a speaker’s environment and experience shape his or her linguistic expressions. Third, language is acquired through patterns of usage. Fourth, both lexicon and grammar are considered to express meaning. Fifth, linguistic structures can be accounted for by a monostratal model, i.e. different syntactic patterns are not seen as transformations of each other.

There are several usage-based models, such as Systemic Functional Linguistics and Cognitive Linguistics. Among them, Cognitive Linguistics is attracting more and more attention with the development of cognitive psychology and frequency-based analyses of language learning (for details of the three models, see Tyler, 2010). Cognitive Linguistics believes that humans use domain general cognitive abilities, such as inference and structured memory, to develop their language through socio-cultural practices and experience (Tyler, 2010; Verspoor, 2008). In other words, language is assumed to be constantly shaped by both internal factors (e.g., memory) and external factors (e.g., language input). A cognitive linguistic, usage-based view therefore provides us with a starting point to explore very young FL learners’ dynamic language development at both individual and group levels.
1.2.2 **The Theory of Complex Dynamic Systems**

If we want to trace the path of very young FL learners’ development, the Theory of Complex Dynamic Systems (CDS) may be an optimal approach that allows for such an endeavor. Born as a philosophical paradigm in the 17\textsuperscript{th} century and consistently applied in the natural sciences since the 1950s (Caspi, 2007), CDS has not widely caught the attention of SLA researchers until recent years (e.g., de Bot, Lowie & Verspoor, 2007; de Bot, 2008; Larsen-Freeman & Cameron, 2007, 2008; de Bot, Lowie, Thorne & Verspoor, 2013). CDS considers “language as a constantly, developing, changing system that is comprised of interacting components which are influenced by environmental input” (Caspi, 2007: 4). Generally speaking, CDS assumes that an open dynamic system has nine basic characteristics, including a sensitive dependence on initial conditions, complete interconnectedness, nonlinearity, internal reorganization and environment interaction, internal and external resources, attractor states, iteration, variation and emergent properties (for details, see de Bot & Larsen-Freeman, 2011). CDS focuses on the interconnectedness and non-linear development of different language components, stressing the changes of a system over time driven by the system’s self-reorganization and exchanges with the environment. Such a perspective might bring us a more precise reflection on the process of early FL development (see Van Dijk & Van Geert, 2005, 2007, 2011 for CDS on child first language development).

1.3 **Analytical approaches**

As an explorative study, the current dissertation targets the development of very young EFL learners’ early English proficiency and their individual learning behaviors in class over time. Using insights from studies on very young child learners in naturalistic settings, both group studies and case studies have been conducted. At the group level, relevant factors that affect early FL learning outcome are investigated, and at the individual level, both interpersonal and intrapersonal variations of learning behaviors in class are traced.

Three new analytical approaches have been used in the current dissertation at these two levels. To find the significant predictors for learning outcome, Bayes factor analysis was used for the cross-sectional study and linear mixed-effects regression modeling was adopted for the longitudinal study. To explore the intrapersonal variations of learning behaviors, recurrence quantification analysis was used for the micro-genetic study. Details of the three approaches are introduced below.
1.3.1 Bayes factor analysis

Using Bayes factors (BFs) is a good approach for model selection. Traditional approaches select the best model according to statistically significant results, which might cause problems concerning the "dance" of p-values (Cumming, 2012). BFs avoid these concerns with direct model comparisons. Results of BFs not only inform us about which model is better but also demonstrate the extent to which the chosen model is better based on the observed data. The BF is the ratio of posterior odds to prior odds of a hypothesis (say H1) over a competing hypothesis (say H2). If its value is larger than 1, it indicates that the observed data support H1 over H2 (and by how much), and a value smaller than 1 indicates the reverse. All of the models obtain BFs because each of them is compared to the only-intercept (i.e., without predictors) model (Kass & Raftery, 1995). The advantage of BFs over classical and frequently adopted approaches is that they allow the use of raw data to quantify the relative adequacy of competing models.

1.3.2 Linear mixed-effects regression modeling

Researchers conducting longitudinal studies might encounter difficulties such as within-group variation, small sample sizes and participant drop out. For example, in this dissertation, children varied in cognitive ability and learning environment. Testing each of them individually is quite time-consuming and results in a relatively small sample size. Furthermore, children may miss a test round due to illness and cause our dataset to be imbalanced. Linear mixed-effects regression modeling (LMER; for details see Baayen, 2008, Ch. 7) is a useful technique to control for these aspects. It is a powerful statistical technique that is robust to outliers and missing values and is able to take both by-item and by-participant variability into account, thereby yielding generalizable results (Baayen, 2008, Ch. 7).

1.3.3 (Cross) recurrence quantification analysis

Recurrence quantification analysis (RQA) is a type of nonlinear time-series analysis to investigate the development of dynamic systems. It measures the quantity and duration of recurrences of certain systems demonstrating its phase space trajectory (Reuzel et al., 2013). RQA has gained popularity in the life sciences in recent years (Marwan, Romano, Thiel & Kurths, 2007) but is still new to the social sciences (Cox & van Dijk, 2013). As far as we know, the current dissertation is the first study to apply it to child SL studies. A clear advantage of RQA is that it could offer us insights from short and fluctuated data, such as the data used in the current dissertation. In this dissertation, RQA has been used to explore the developmental pattern of children’s learning behaviors. In terms of the coordination between the learning behaviors, cross recurrence quantification analysis
(CRQA) has been applied. It reveals how the behavioral state of one system occurs earlier, concurrently or later in another system. For more details about RQA and CRQA, see Marwan et al. (2007) and Dale and Spivey (2006).

1.4 Outline of the dissertation

The current dissertation is organized as follows. Chapters 2 and 3 report on two group studies aiming at the significant predictors for very young child EFL learning. Chapters 4 and 5 are two case studies targeting individual variation. The individual chapters focus on the following:

Chapter 2 concerns the impact of internal (e.g., nonverbal intelligence) and external factors (e.g., mothers’ English proficiency) on very young EFL learners’ vocabulary and grammar in instructional settings. This chapter contains data from 71 children (onset age of learning English: ages 2;0 - 5;6). Their age of onset, short-term memory, nonverbal intelligence, English input quantity, English input quality, English use and maternal English proficiency level were used to predict their productive vocabulary, respective vocabulary and receptive grammar. The results provide insight into the forces influencing children’s early EFL development. More importantly, the results can be compared to Paradis’ findings (2011) and this in turn allows us to discuss the potentially different influence of internal and external factors on early child SL acquisition in natural and instructional settings.

Chapter 3 addresses the issue of longitudinal effects of internal and external factors on very young EFL learners’ vocabulary development. Both vocabulary width and depth have been covered. Forty-three very young Chinese EFL learners (ages 3;2-6;2) were tested twice with an interval of seven months for their English receptive, productive, paradigmatic and syntagmatic vocabulary knowledge. The development of these four aspects of knowledge was correlated with both internal factors (e.g., phonological short-term memory) and external factors (e.g., English input quantity). The results provide us with insight into the driving forces of children’s early EFL knowledge. Results from LMER analyses allow us to examine how internal and external factors interactively influence English vocabulary knowledge over time. Children’s Chinese vocabulary proficiency is also tested, allowing us to investigate the transfer effect between the children’s two languages.

Chapter 4 is a multiple case study addressing children’s similarity and differences in their classroom learning behaviors during the onset period of English learning. Four Chinese children were followed for half a year in China and their developmental pattern and variation were compared with child EFL learners in a naturalistic setting (Clarke, 1999). The variation of their learning
behaviors is associated with their different temperamental characteristics. Knowing the developmental patterns of young EFL learners could be a useful asset for teachers to gain insight into children’s linguistic development. A temperament record might enable them to provide tailored scaffolding to different children.

Moving on with the insights gained in Chapter 4, Chapter 5 focuses on one child’s behavioral development and tries to explore the rich intrapersonal variation in class over time. This microgenetic study follows a boy for five months and transcribes his verbal (e.g., code switching) and nonverbal behaviors (e.g., gesture repetition). The developmental pattern of different behaviors and the coordination between verbal and nonverbal behaviors show the dynamic nature of the learning mechanism. Insights from the systems’ self-reorganization and learning adaptation to the environment provide us a new angle to see early FL acquisition.

Chapter 6 contains the general discussion based on the four studies. Both the predictors and the individual variation are addressed in regard to instructional settings, where children’s language environment is significantly different from those in naturalistic settings. Implications of the findings and proposed directions for further studies are discussed.