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PROMOTING SECOND LANGUAGE DEVELOPMENT
WITH CONCEPT-BASED LANGUAGE INSTRUCTION
AND INTELLIGENT COMPUTER-ASSISTED LANGUAGE LEARNING

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ABSTRACT

This dissertation reports on a study that aimed to support intermediate-level American university students of Chinese (N=6) in developing conceptual knowledge in the functional purpose of the Chinese ba-construction and its differences from the canonical SVO and the topicalization OSV word orders through concept-based language instruction and intelligent computer-assisted language learning (ICALL). Although the ba-construction has been heavily studied in the theoretical linguistics literature, and second language (L2) acquisition studies have shown that L2 speakers find it especially challenging, surprisingly, few studies have attempted to promote L2 acquisition of this grammatical structure through pedagogical intervention. Adopting the concept-based approach to language instruction, which originates from Vygotskian tradition of sociocultural theory and advocates that instruction should provide learners with abstract scientific concepts and then guide them to discover how these concepts are applicable in concrete circumstances, this study investigates how this pedagogical approach, coupled with an ICALL system, can help learners develop conceptual understanding and performance abilities regarding various aspects of the ba-construction. As part of the study, I have developed a socioculturally-informed ICALL system for Chinese, the first of its kind. Through the analyses of the participants’ performance on a translation, a cartoon description task, card play activities, computer-based practice in ICALL system, and verbalization data, this study found that over the course of the study, the participants have made marked improvement in conceptual knowledge and performance abilities. Finally, I argue for a reconceptualization of the notion of “intelligence” in ICALL—what makes ICALL intelligent is not simply the utilization of NLP technology, but how NLP and other technologies can be creatively used to provide meaningful and appropriate mediational feedback in order to promote L2 development.
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Chapter 1

Introduction

1.1 Background

Over the last two decades, teaching and learning Chinese as a Foreign Language (CFL) in the United States have experienced an exponential growth. According to a survey administered by the Modern Language Association (MLA), from 1997 to 2008, U.S. elementary and secondary schools offering Chinese have increased 900% and 300%, respectively (Center for Applied Linguistics, 2008). Likewise, enrollments in Chinese courses in American colleges have increased by 81% from 1998 to 2006, followed by another 18% from 2006 to 2009 (Furman, Goldberg, & Lusin, 2007, 2010).

Despite such enthusiasm towards the Chinese language, there has been a lack of research in the field of CFL. Curricula for many Chinese programs, particularly at advanced levels, are often not well designed (Zhao & Huang, 2010). Since 1990s, only a few studies (e.g., Kao, 2014; Lai, 2012; J. Zhang, 2011; X. Zhang, 2014) have examined CFL in the U.S. context. In addition, there is a shortage of qualified Chinese teachers and instructional materials grounded in CFL acquisition research. Consequently, U.S. educational system is left scrambling to meet the increased demand for Chinese language instruction (Asia Society and the College Board, 2008).

One particular area in Chinese grammar that poses considerable challenge to CFL learners is the ba-construction (e.g., X. Cui, 1995; Y. Cui, 2003; Huang & Yang, 2004; Hu, 2011; Jepson, 1989; Yu, 2000; Wen, 2012). Although this grammatical structure has been heavily studied in the theoretical linguistics literature (Du, 2010; Huang & Yang, 2004; Liu, 1997; Tsao, 1987; Jing-Schmidt & Tao, 2009; see detailed discussions in Chapter 3), surprisingly few studies
have attempted to promote L2 acquisition of this grammatical structure through pedagogical intervention.

1.2 Focus of the study

Adopting Vygotskian sociocultural theory as the theoretical framework, this dissertation study aims to help intermediate-level American university students develop conceptual understanding of the functional purpose of the ba-construction, and its differences from the canonical Subject + Verb + Object (SVO) and topicalization Object + Subject + Verb (OSV) word orders. The pedagogical approach employed in this study is concept-based language instruction, an approach to educational praxis that originates from Vygotsky’s thoughts on development in scientific concepts in children. For Vygotsky (1978), conceptual knowledge not only forms the minimal unit of higher form of thinking, but also constitutes the foundational unit of instruction. Vygotsky advocates that instruction should provide learners with abstract scientific concepts and then guide them to discover how these concepts are applicable in concrete circumstances, since letting learners rediscover abstract concepts that are already known in science is inefficient and unnecessary.

One potential solution to the challenging mentioned earlier regarding the scarcity of qualified Chinese teachers and instructional materials lies in the area of intelligent computer-assisted language learning (ICALL, see Chapter 3 for a detailed account of ICALL research). In general, ICALL systems can support unlimited number of students, provide interactive and individualized learning opportunities based on learners’ response to prompts or questions, and are ubiquitously available. Thus, an ICALL system for Chinese holds great promise for addressing the surge in demand for Chinese language instruction. While ICALL systems have been developed for a number of languages (e.g., E-Tutor for German, WERTi for English,
TAGARELA for Portuguese, ROBO-SENSEI for Japanese), to the best of my knowledge, none exist for Chinese. In addition, while most ICALL systems are designed with reference to some SLA theories, none to date has adopted Vygotskian sociocultural theory as principal theoretical guidance. In this study, I explore the interdisciplinary synergy between sociocultural theory and ICALL by designing a socioculturally-informed ICALL system for Chinese, the first of its kind.

1.3 Research questions

In this dissertation, I address two principal research questions. The first research question deals with the relationship between the concept-based approach to language instruction and L2 development of the ba-construction. The second research question focuses on the interdisciplinary synergy between sociocultural theory and ICALL. The specific research questions and sub-questions are: (1) To what extent does concept-based language instruction promote L2 development of the Chinese ba-construction? (2) To what extent can meaningful and appropriate mediational feedback be provided to learners for the acquisition of the ba-construction in an ICALL environment? The second research question entails (i) development a socioculturally-informed ICALL system, and (ii) examination of its effectiveness in promoting L2 development.

1.4 Significance of the study

This dissertation study examines the effectiveness of the concept-based approach to language instruction, coupled with an ICALL system, in promoting L2 development of the Chinese ba-construction. As part of this dissertation project, I have developed a socioculturally-informed ICALL system for Chinese, which is able to analyze learners’ input, and provide
meaningful and pertinent mediational feedback on a dynamic scale, moving from more general to more specific. Results of the study show that the concept-based approach, together with the ICALL system, is effective in promoting L2 development of the Chinese ba-construction.

Second, this dissertation research intervenes in the long-standing paradigm of CALL/ICALL which is often concerned more about keeping up with technological advancement than with evolving theoretical understanding of SLA processes. My dissertation contributes to the SLA-ICALL interdisciplinary field by highlighting the importance of maintaining a balance between technology and SLA theories. Specifically, I argue for a reconceptualization of the notion of intelligence in ICALL research: what makes ICALL intelligent is not just the use of cutting-edge NLP technology, but how such technologies can be creatively and fruitfully exploited in order to promote L2 development.

Third, my proposed understanding of the functional purpose of the ba-construction, being more systematic, comprehensive and generalizable, makes useful contribution to the field of Chinese linguistics. Based on this model, I have developed concept-based pedagogical model and have designed a series of animated SCOBAs that illustrate the functional purpose of the ba-construction, and its differences between the canonical SVO and the topicalization OSV word orders. These pedagogical diagrams and materials represent a valuable contribution to the field of CFL.

1.5 Organization of the study

Including the introduction, this dissertation consists of nine chapters. Chapter 2 outlines the core tenets of Vygotskian sociocultural theory and discusses research related to ICALL. Chapter 3 provides a comprehensive overview of the Chinese ba-construction, including a survey of L2 acquisition literature on this grammatical device. Chapter 4 introduces the methodology of
this study, covering the enrichment program, the concept explanation and pedagogical diagrams, the development of a socioculturally-informed ICALL system, research instruments, learner profiles, and data collection and analytical methods.

The subsequent three chapters are devoted to data analyses and results. Chapter 5 presents the quantitative results regarding the participants’ performance on the three major tests (pretest, posttest, and delayed posttests). Chapter 6 documents the participants’ conceptual development on the functional purpose of the ba-construction and its difference between the canonical SVO and the topicalization OSV word order. Chapter 7 details the participants’ improvement in performance abilities regarding various aspects of the ba-construction as evidenced in paper-based tests, card play activities, and interaction in computerized ICALL environment.

Chapter 8 discusses the effectiveness of the concept-based approach, the effectiveness of my approach to the ba-construction, individual learner variability, and the development and the effectiveness of a socioculturally informed computerized ICALL system for Chinese. In this chapter, I make an argument for a re-conceptualization of “intelligence” in ICALL research. Chapter 9 provides a summary of the key and discusses theoretical, pedagogical and methodological implications. Limitations of this study and avenues for future research are also discussed.
Chapter 2
Theoretical Framework

2.1 Introduction

This chapter addresses the theoretical framework of the dissertation. I first examine central tenets of Vygotskian sociocultural theory, including (1) mediated mind, (2) the genetic method, (3) scientific concepts, (4) internalization, and (5) zone of proximal development. I then discuss its pedagogical applications, namely, the concept-based approach to language instruction. The discussion focuses on Gal’perin’s (1989, 1992) and Davydov’s (2004) pedagogical models, and how they are implemented in specific L2 studies. In the second portion of this chapter, I review the ICALL literature, focusing on existing ICALL systems, the benefits and challenges of ICALL systems, and the potential interdisciplinary synergy between ICALL and sociocultural theory.

2.2 Sociocultural theory

2.2.1 Mediated mind

The most important tenet in Vygotskian tradition of sociocultural theory is that the human mind is mediated by culturally constructed artifacts (Vygotsky, 1978, 1979, 1997d). Mediation refers to the use of material and symbolic tools or signs as a way to regulate our relationship with others and with ourselves and at the same time influence or change the nature of these relationships (Lantolf & Thorne, 2006). According to Vygotsky (1978, 1979, 1997d),
human’s interaction with the world is primarily realized through indirect, auxiliary or mediational means. In contrast to his contemporary behaviorists’ view, which claims a direct stimulus-response relationship between the external world and the internal mind, Vygotsky (1978, 1979, 1997d) foregrounds the importance of cultural artifacts, and suggests that they allow humans to create an indirect and auxiliary relationship with the world, and at the same time facilitate human’s interaction with the physical world.

Human higher mental functioning (or consciousness), according to traditional Cartesian dualistic account, either originated from the environment (e.g., behaviorism), or is biologically specified within the brain of the individual (e.g., innatism); by contrast, Vygotsky posits a dialectical relationship between the biologically endowed and the culturally constructed human mind and suggests that the biologically specified mental capacities and the internalization of culturally constructed mediational means provides genesis of human consciousness. Among all the semiotic systems, Vygotsky is most interested in the mediational means of human language, since it is the most powerful auxiliary means for intentionally controlling and reorganizing our social life and our psychological processing (see Lantolf, 2000).

Of particular interest to the present study is the potential capability of exploiting cutting-edge computer technology (e.g., natural language processing, NLP) to provide meaningful and immediately mediational feedback to students in order to facilitate L2 development. This is an interdisciplinary area of study where researchers have just begun to explore (see Poehner & Lantolf, 2013; Poehner, Zhang & Lu, 2015; Lantolf & Poehner, 2011 for discussions of the Computerized Dynamic Assessment project).
2.2.2 The genetic method

For Vygotsky, the process—not just the product—of the formation of higher mental functioning constitutes an important area of inquiry in psychology. In fact, Vygotsky (1978) suggests that the most adequate way to understand human mental functioning is to trace it back through the developmental changes it has undergone.

We need to concentrate not on the *product* of development but on the very *process* by which higher forms are established ... To encompass in research the process of a given thing’s development in all its phrases and changes—from birth to death—fundamentally means to discover its nature, its essence, for “it is only in movement that a body shows what it is.” Thus, the historical [that is, in the broadest sense of “history”] study of behavior is not an auxiliary aspect of theoretical study, but rather forms its very base. (Vygotsky, 1978, pp. 64-65)

In contrast to most psychological or psycholinguistic theories, which follows a more or less independent approach to research (e.g., quantitative, qualitative, or mix-methods), Vygotskian sociocultural theory advocates a close relationship between theory and affiliated approach to research. For Vygotsky (1978), “*the search for method becomes one of the most important problems of the entire enterprise of understanding the uniquely human forms of psychological activity. In this case, the method is simultaneously prerequisite and product, the tool and the result of the study*” (p. 65, italics original). To analyze the dynamic and historical formation process, Vygotsky (1978, 1997c) proposed the genetic method, a novel analytical approach that contains four different domains: (1) phylogenesis (the development of the species), (2) sociocultural history (change in human cultures over time), (3) ontogenesis (life history of individuals), and (4) microgenesis (history of particular psychological functions over short periods of time).

For L2 research, ontogenetic and microgenetic domains of the genetic method are most relevant. The formation of psychological processes—including L2 development—can be studied
either over a long term (ontogenetic development), or over a short term (i.e., microgenetic
development). The microgenetic analysis focuses on developmental processes that occur in a
relatively short period of time. Wertsch (1985) suggests that one can think of it as “a very short-
term longitudinal study” (p. 55). Particularly relevant to the present study is (1) the microgenetic
analyses of learners’ conceptual development of the functional purpose of the Chinese ba-
construction over a five-week enrichment program, and (2) the ICALL system’s ability to track
the learners’ microgenetic changes as they work through different mediational feedback provided
by the system.

2.2.3 Scientific concepts

The term concept constitutes an important building block in Vygotsky’s theory about the
human mind (Vygotsky, 1978, 2012). Vygotsky (ibid.) made a distinction between two types of
concepts: everyday (or spontaneous) concepts and scientific concepts. Everyday concepts are
largely formed inductively through observation or personal experience, take a long period of time
to develop, and tend to be unsystematic and incomplete. By contrast, scientific concepts are
acquired deductively through formal schooling, take a relatively short period of time to learn, and
are abstract, systematic, and generalizable (Lantolf, 2006). As such, everyday concepts represent
empirical knowledge (Karpov, 2003) and are based on “an immediate observable property of an
object” (Kozulin, 1995, 123), while scientific concepts represent “generalizations of the
experience of humankind that is fixed in science” (Karpov, 2003, p. 66), which are more abstract
and might not be immediately observable. As an example, children may be able to tell who their
brothers and sisters (i.e., everyday concepts) are, but they cannot explain what siblings (i.e.,
scientific concepts) mean. As another example, children who have not learned the biological
definition of mammals might very well consider whale as a type of fish, based on the surface characteristics that whales also have fins and live in the water.

As Bakhurst (2007) noted, everyday concepts first emerge in children’s thinking as they form a united abstraction from entities, whereas scientific concepts are acquired through instructional intervention. The development of scientific concepts, according to Vygotsky (1978), depends directly on a particular level of maturation of everyday concepts. The importance of scientific concepts primarily lies in their pedagogical application. In concept-based instruction (discussed below), scientific concepts constitutes the minimal unit of higher form of thinking, as well as the foundational units of instruction.

2.2.4 Internalization

Another core concept in Vygotskian sociocultural theory is the notion of internalization. For Vygotsky, the process of internalization represents an essential element in the formation of higher mental functioning (Kozulin, 1990). Essentially, internalization is the “reconstruction on the inner, psychological plane, of socially mediated external forms of goal-directed activity” (Lantolf, 2000, p. 13). The formation of higher mental or psychological function occurs twice: first between people (inter-psychological) and then within the individual (intra-psychological) (Lantolf & Thorne, 2006). Internalization represents the mechanism through which control of our natural mental endowments is established. This voluntary control of human cognition (e.g., memory, attention, planning, learning, and development, among others) is achieved through a variety of culturally constructed semiotic systems, the most important of which is our language. In other words, human’s control over internal mental functions (e.g., thinking activity) is mediated by externally or socioculturally formed artifacts (e.g., language).
To illustrate the importance of internalization, Wertsch (1998, cited in Lantolf & Thorne, 2006) discussed an example of the difference between a world-class expert and a beginner pool player. The beginner pool player needs to actually play the shot in order to determine what the trajectory and the result of a particular shot is likely to be. In doing so, he or she is relying on the external material support of the cue stick, the balls, and the table. By contrast, the world-class expert is able to ‘visualize’ the shot on the psychological plane, and determine the outcome of the shot internally before playing it, because the expert pool player has internalized what was at one time the external material support provided by physical pool playing equipment.

The concept of internalization is considered as a “pivotal theoretical construct” for L2 development (Lantolf & Thorne, 2006, p. 151). L2 development does not depend solely on internal mechanisms but on the quality and quantity of social interaction that is attuned to the learners’ potential ability (Lantolf, 2012). Through social interaction, learners gradually develop internalized repertoires for thinking and speaking that are provided by the historically evolved sociocultural environments they frequent (Tomasello, 1999).

2.2.5 Zone of proximal development

Among all the key theoretical constructs in Vygotskian sociocultural theory, Zone of Proximal Development (ZPD) has become the most commonly invoked (Wells, 1999), with a high visibility in education and psychology (Lantolf & Thorne, 2007). According to Vygotsky (1978), ZPD is defined as “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (p. 86). In other words, what a person can do today with help from others is what he or she will be able to do independently tomorrow, because assistance from others or from additional mediation triggers the
internalization process by which one’s ability to control the mind is enhanced (Lantolf, 2000). For example, a medical student struggles to successfully put in stitches. With the help of a more experienced student, who provides detailed, step-by-step modeling, this new student is able to effectively put in stitches and assume full responsibility independently on later task.

As such, the ZPD construct not only evaluates a learner’s past performance, but also is indicative of that learner’s future potential. This forward-looking characteristic of the ZPD construct, therefore, has important implication for assessment (see Poehner, 2008 for discussions regarding Dynamic Assessment). For Vygotsky (1978), learning and development are not the same. He explains that the developmental process does not coincide with—but lags behind—the learning process. The difference between the two then creates ZPD. In other words, the essential characteristic of learning is that it creates ZPD. Vygotsky (1978) suggests that “the only good learning is that which is in advance of development” (p. 89).

Formal schooling plays an important role in shaping the development as children learn to collaborate with others, especially in instructional settings (Lantolf & Thorne, 2007). Artificially or intentionally designed learning instructions, which is organized to be sensitive to learners’ ZPD, is highly effective in stimulating qualitative mental development, and can lead to qualitative changes in development. In this study, I will create a socioculturally-informed ICALL system that aims to identify learners’ current stage of development and provide meaningful and pertinent mediational feedback in order to create ZPD in an ICALL environment.

2.3 Concept-based language instruction

As a pedagogical approach to educational praxis, concept-based instruction originates from Vygotskian tradition of sociocultural theory (Vygotsky, 1978, 1997a). For Vygotsky (1978), conceptual knowledge not only forms the minimal unit of higher form of thinking, but also
constitutes the foundational unit of instruction. Rather than letting learners rediscover abstract concepts that are already known in science, a process that is inefficient and unnecessary, instruction should provide learners with abstract scientific concepts and then guide them to discover how they are applicable in concrete circumstances. However, for conceptual knowledge to be of value, Vygotsky noted that it needs to be linked with practical activity.

The development of the concept-based approach to instruction was not developed by Vygotsky himself, due to his abbreviated academic career. This work was carried out by two of his followers: Gal’perin and Davydov. The concept-based pedagogical model developed by Gal’perin (1989, 1992) is called Systemic-theoretical instruction (STI). This model includes three major principles: (1) concepts as unit of instruction (i.e., providing learners with comprehensive and coherent explanation of the scientific concept); (2) materialization (i.e., converting concepts into imagistic representations, or Schema for the Orienting Basis for Action [SCOBA], in Gal’perin’s term); (3) verbalization (i.e., asking learners to explain the concept to themselves first loudly and then silently). To foster internalization, the best way to conduct verbalization activity is to ask learners to explain the concept in actual communicative activities. It is important to note that the quality of the pedagogical materials play a crucial role in the outcome or success of L2 learning. In general, meaning-based approach to designing pedagogical materials is effective in helping learners to internalize concepts. To date, a variety of formats of materialized pedagogical illustrations (i.e., SCOBAs) have been used in previous concept-based language studies. These include images, flowchart, pictures, 3-D clay models, and animations, among others.

Davydov’s (2004) model of the concept-based approach to instruction focuses on “movement from the abstract to the concrete (MAC).” It has six learning actions: (1) a problem situation; (2) modeling the relevant concepts; (3) applying the model to solve tasks; (4) monitoring one’s action using the model; (5) evaluating one’s action using the model; and (6) modifying the model.
Davydov’s model differs from Gal’perin’s primarily in the area of flexibility. Gal’perin’s (1989, 1992) model is inflexible, and can be used as a procedure to accomplish “error-free action” (Haenen, 1996, p. 190, e.g. a flowchart that leads to definite answers). By contrast, Davydov’s model is flexible enough to guide learners through a quasi-investigation of a concept. While the two models of concept-based approaches to instruction take slightly different operational steps, they both treat scientific concept as the minimum unit of instruction, and both present and model scientific concepts in order to guide learners’ appropriation of the concept they are learning. In addition, they both require learners to verbalize (i.e. explaining, monitoring and evaluating) their understanding of the concept, thus making it available for conscious inspection and revision, which in turn facilitates the internalization of the concept.

The effect of the concept-based approach to instruction on promoting L2 development has been documented by a growing number of studies (e.g., Ferreira, 2005; Hartig, 2014; Kabanova, 1985; Kim, 2013; Lapkin, Swain & Knouzi, 2008; Lee, 2012; Negueruela, 2003; Lai, 2012; Oboukova, Porshnev, Porshneva, & Gaponova, 2002, Serrano-López & Poehner, van Compernolle, 2012; Yáñez Prieto, 2008; Zhang, 2014, among others). Short-term intervention studies documented the usefulness of concept-based instruction in the learning of Spanish locative prepositions (Serrano-López & Poehner, 2008), Chinese temporal system (Lai, 2012), and the notion of voice in French (e.g. Knouzi, Swain, Lapkin & Brooks, 2010).

Longer period studies spanning from several months to an entire academic semester also showed the benefits of concept-based instruction. These include Negueruela’s (2003) study on tense, aspect and modality in L2 Spanish, Ferreira’s (2005) study on genre in ESL writing, Lee’s (2012) study on phrasal verbs in English, van Compernolle’s (2012) study on address forms in L2 French, Lai’s (2012) investigation of the temporal system in L2 Chinese, Kim’s (2013) study on sarcasm in L2 English, Hartig’s (2014) study on legal literacy, Zhang’s (2014) study on topicalization in Chinese, and Yáñez Prieto’s (2008) study on literacy and language development.
In all these long-term studies, concept-based instruction facilitated language learners’
appropriation of the relevant concepts and resulted in improved performance over time. In what
follows, I discuss Negueruela’s (2003), van Compernolle’s (2012) and Zhang’s (2014) studies in
more detail, as they have been the primary models for the research project in this dissertation.

Negueruela (2003) is the first study that applied the concept-based approach to the L2
field. In this study, Negueruela examined how the concept-based approach can be used to
promote intermediate–level US university students’ development in conceptual understanding of
Spanish mood, aspect, and tense in a composition and grammar class over a 16-week academic
semester. He used a flowchart to help learners understand the concept underlying the choice of
aspect in Spanish: the interaction of lexical aspect (cyclic vs. noncyclic) and grammatical aspect
(preterito vs. imperfecto). For data collection, Negueruela asked his students to audio-record six
verbalization tasks in which they were asked to explain to themselves the relevant concepts and
engaged in several spontaneous spoken-interactive tasks that were conducted at home. The results
showed that over the course of the study, students’ conceptual knowledge developed from rule-
of-thumb explanations of the use of grammatical aspects (preterito vs. imperfecto) to
conceptually grounded, meaning-based understanding of the role of aspect in assigning a
particular aspectual perspective in a given event. In addition, the results also found that learners
improved significantly in their spoken performance in the area of agentive use of aspect to
assigning specific meanings to events described. Undoubtedly, Negueruela found that some
learners continued to struggle in performance, as evidenced in their faltering control over
linguistic forms from time to time. He explained that this should not be surprising since
conceptual knowledge typically develops ahead of performance abilities (Valsiner, 2001).

van Compernolle (2012) examined how the concept-based approach to language
instruction help intermediate–level college students of L2 French internalize sociopragmatic
concepts (i.e., indexicality, social distance, power hierarchies), and improve their sociopragmatic
capacity in specific communicative practices (i.e., second-person address forms). Based on analyses of learners’ performance on the verbalization tasks, appropriate judgment questionnaires, and spoken strategic interaction scenarios, van Compernolle showed that the concept-based approach to instruction was instrumental in promoting the participants’ microgenetic development in sociopragmatic knowledge as well as spoken performance abilities.

Zhang (2014) used concept-based instruction to teach Chinese topicalization to eight beginning level L2 Chinese learners and two heritage speakers in three experiments. In the first experiment, six participants at the SVO stage were taught the OSV structure, and were found to be able to produce the OSV structure before they could produce the ADJ+SVO structure. In the second experiment, two participants at the SVO stage were taught the OSV as well as the ADJ+SVO structure concurrently. Both learners were reported to be able to process these two structures. In the third experiment, Zhang reported that his two heritage speaker could produce a higher stage grammar structure, i.e., the ba-construction, without the capability of processing a lower stage grammar structure, i.e., the OSV structure. Zhang’s findings suggest that concept-based instruction can indeed alter developmental trajectory and that instruction is an important factor that leads cognitive development.

The three concept-based studies reviewed above illustrate that internalization of conceptual knowledge plays an essential role in L2 development. As Lantolf and Thorne (2006) noted, the concept-based approaches to L2 instruction emphasize three aspects of mental actions: orientation, execution, and control. Internalized concepts not only provide an orientating basis to action, but also serve to control, monitor, and evaluate the same action. As such, in concept-based L2 instruction, conceptual knowledge is not only considered as the minimal unit of instruction, but also as a fundamental means of promoting learners’ ability to control their actions voluntarily in order to achieve specific goals.
In what follows, I switch gear and review research on ICALL. In particular, I examine how principles regarding L2 development from the Vygotskian perspective can be potentially integrated to develop a socioculturally-informed ICALL systems.

2.4 Intelligent computer-assisted language learning

As mentioned earlier, one object of this dissertation study is to explore the interdisciplinary synergy between Vygotskian sociocultural theory and ICALL. In this section, I discuss the definition of ICALL, existing ICALL systems, the benefits and challenges of ICALL systems, and the potential opportunities in designing an ICALL system that specifically reference theoretical constructs in Vygotskian sociocultural theory.

Computer-assisted language learning (CALL) is an area of study that involves “the search for and study of applications of the computer in language teaching and learning” (Levy, 1997, p. 1). Advancement of CALL research is primarily driven by two factors: (1) evolving theoretical understanding of principles of second language acquisition, and (2) technological advancement. Over the past several decades, the landscape of CALL research has changed dramatically, thanks to the evolving understanding of SLA processes, and especially rapid advancement in educational technology.

A recent development in CALL research is intelligent CALL or ICALL. The notion of “intelligence” in ICALL refers to the utilization of technologies from the field of artificial intelligence, primarily natural language processing (NLP) technologies (e.g., lemmatization, part-of-speech annotation, syntactic parsing) that are developed in computational linguistics (Heift & Schulze, 2007; Schulze, 2008). To date, a number of ICALL systems have been created for different languages. These include E-Tutor for German, TAGARELA for Portuguese, ROBO-SENSEI for Japanese, and WERTi for English. In what follows, I examine and describe three
major ICALL systems: E-Tutor, TAGARELA and WERTi, and discuss how they inspire my work in developing a socioculturally-informed ICALL system for Chinese.

2.4.1 Existing ICALL systems

2.4.1.1 E-Tutor for German

The E-Tutor is a web-based ICALL system for L2 learners of German (Heift, 2010a, 2010b). It covers the contents of the first three introductory German courses. The system is based on a commonly used text book (Deutsch: Na Klar! An introductory German course) for L2 learners of German in North America. E-Tutor divides its contents into 15 chapters, each beginning with an introductory text, in the format of a story or dialog. Different learning activities are included in each chapter to support practices of chapter-related grammar and vocabulary. For example, in the sentence building activity, students are encouraged to construct sentences from grammatical cues and words that are provided in their base forms. A key feature in E-Tutor is that it is able to track L2 development longitudinally. E-Tutor has a “History” function that tracks the history of students’ performance in a particular activity. In addition, E-Tutor has an error-checking system that “identifies and communicates one error at a time to learners” (Heift, 2010b, p. 448).

E-Tutor is able to provide individualized interaction to learners. This design is strongly motivated by pedagogical considerations. For example, the system aims to “emulate a learner-teacher interaction by focusing on individualized interaction between the learner and the CALL system” (Heift, 2010b, p. 445). The E-Tutor’s capacity to providing individualized interaction lies in its sophisticated answer-processing mechanism, and a system to collect and maintain information about its users and their language learning performance over time. Thus, E-Tutor is
capable of responding to each student differently, based on their historical language learning data stored in the system. The intentional design principle of recognizing individual’s different learning history and requirement, and not treating every student in the same manner, in my view, reflects the compatibility of ICALL design and theoretical insights from sociocultural theory.

2.4.1.2 TAGARELA for Portuguese

TAGARELA (short for Teaching Aid for Grammatical Awareness, Recognition and Enhancement of Linguistic Abilities) is an ICALL system for Portuguese (Amaral & Meurers, 2011). It helps learners of Portuguese to practice reading, listening, and writing skills with the help of an intelligent automatic workbook. This system has been employed in Portuguese courses at University of Massachusetts at Amherst. It uses state-of-the-art NLP technology to analyze students’ input, and detect spelling, morphological, syntactic and semantic errors. Its NLP components allow the system to handle activities that go beyond the usual multiple choice or fill-in-the-blanks used by regular CALL systems. The activities that TAGARELA provides include listening and reading comprehension, picture description, vocabulary practice, phrasing and re-writing.

The TAGARELA system has a student model and a teacher model. The student model is capable of keeping track of each student’s individual performance, whereas the teacher model is used to track information about activity and error types. Working together, the student model and the teacher models allow the system to choose the best feedback strategy to use with each individual learner based on the level of the activity, type of task, characteristics of error, and learner profile. In recent development, new functions have been added to this ICALL system, including (1) true extensible annotation-based processing, (2) adaptation to activities based on
information from the activity model, and (3) adaptation of feedback for individual students based on basic student modeling.

2.4.1.3 WERTi for English

WERTi is a web-based ICALL system for English (Meurers et al., 2010). It provides various types of supplementary language learning activities based on authentic English texts selected by learners. It supports the practice of a wide range of grammatical forms and functions, including articles, determiners, gerunds/infinitives, noun countability, phrasal verbs, prepositions, and wh-questions. In addition, WERTi supports three types of activities: colorize, click, and practice. The colorize activity, as a form of receptive presentation, simply highlights the targeted linguistic forms in the text. The click activity requests the learner to do productive representation by clicking on the targeted forms. The practice activity, as a controlled practice, offers the learner fill-in-the-blank and editing exercises. In terms of technical implementation, WERTi employs state-of-the-art (mostly freely available) NLP software to generate exercises, identifying targeted lexical and phrasal material through a combination of tokenization, lemmatization, morphological analysis, part-of-speech tagging, and shallow syntactic parsing.

2.4.2 Advantages and challenges of ICALL

ICALL systems have several key benefits in facilitating language learning. First, they can support unlimited number of students, and have ubiquitous availability. This is a major advantage over traditional classroom-based language teaching and learning environment, where the number of students is typically quite limited. In addition, both students and teachers need to convene at the same place and time. By comparison, ICALL systems allow students access contents and
learning materials from anytime, anywhere, and have no cap or control on how many students that can be enrolled. This becomes particularly relevant in the digital age, as more and more students are connected to the Internet through smartphones and tablets.

Second, ICALL systems can track the participants’ interaction with the system in great detail. This is enabled by the use of database-driven technologies (e.g., relational database such as MySQL). ICALL designers can keep record of all the interaction between a learner and the ICALL system, including attempted answer, feedback received, time elapsed between each attempts, and a whole range of information that deemed pedagogically relevant. This tracking ability could provide data for researching language development longitudinally. By drawing upon this historical information regarding individual learner, ICALL systems can provide individualized instruction and feedback that is particularly relevant to each learner. For this reason, I argue that there is great potential in developing ICALL systems that reflect thoughts on language development from the perspective of Vygotskian sociocultural theory.

To be sure, ICALL systems have their own share of challenges and drawbacks as well. The first major challenge for ICALL systems is that the quality of mediational feedback they provide cannot match those provided by human teachers. This is because human teachers can take students’ facial expressions, body movements, gestures, agency, purposes, and many other factors into considerations, and weigh each factor accordingly before providing appropriate mediation. In addition, they can easily detect students’ response to mediation, and dynamically adjust strategies to accommodate for them. While such social interactions are quite natural and easy for human teachers, these same types of interactions are extremely difficult for computers to model after. This should not, however, prevent us from being working toward the goal of providing better mediation by using computers.

Heift (2010) suggested that ICALL systems should have a mechanism to automatically process students’ answers, because “it is simply not feasible to anticipate every mistake a student
might make” (p. 445). However, designing those mechanisms or algorithms to analyze students’ answers, which might contain various errors, is a computationally challenging task. On the other hand, depending on the context, it might be possible to predict at least a good number of potential answers that students might make, particularly if such answers or patterns can be obtained from existing learner corpus data.

Another challenge facing ICALL systems is their limited capabilities of providing distinct individualized feedback (Engwall & Balter, 2007; Mitra, Tooley, Inamdar, & Dixond, 2003). Ware and Kessler (2013) discussed three dimensions of feedback. The first dimension considers mode of delivery: face-to-face feedback, human feedback delivered electronically, and computer-generated feedback (e.g., automated evaluation software). The second dimension concerns the focus of feedback. Some feedback focuses on error correction (e.g., morphological or syntactic forms), others on idea development (e.g., focus on global organization through drafting, responding, and revising), yet still others on genre awareness (e.g., awareness of register, rhetoric, and audience). The third dimension focuses on strategies of delivering feedback: instructor-directed strategies, peer-interaction strategies, and autonomous strategies. As Ware and Kessler (2013) noted, although a wide variety of automated responses are available in CALL system, there is often a gap between the specific feedback needed by a learner and the information offered by the CALL system. For this reason, they underscored the importance for developing technologies to provide quality feedback that is “accessible and appropriate” (ibid., p. 335) to individual learners.

Although ICALL systems have great potentials, the development of an ICALL system itself constitutes a major undertaking, requiring close collaboration between SLA researchers and computational linguists. Heift (2010) noted that “the development of an NLP system along with its integration into a CALL package is a very complex, onerous, and extremely time-consuming endeavor, largely due to its sophisticated underlying technology” (p. 443). Heift and Schulze
(2007) have identified a total of 119 ICALL projects over the past four decades. It is important to note that many publications of ICALL are published outside the mainstream journals of CALL, because of the interdisciplinary nature of the field. Despite the interdisciplinary nature of the field, there is a general “mutual lack of interest” (Zock, 1996, p. 1002) in neighboring disciplines such as CALL and Computational Linguistics. More work in bridging these interdisciplinary gaps is needed to move this field forward.

As an interdisciplinary field, ICALL research seeks to draw technological advancement in computational linguistics and theoretical understanding regarding learning and teaching principles from SLA. For example, WERTi draws on SLA theories such as focus on form (cf. Lightbown, 1989; Long, 1991) and textual enhancement (cf. Sharwood Smith, 1993); E-Tutor supports discovery learning (cf. Leech, 1997); TAGARELA adopts general scaffolding methodology to help learners develop self-editing skills (cf. Hyland & Hyland, 2006). However, it is not uncommon for ICALL research to focus more on the computational side, rather than the theoretical side of the equation. The imbalance was noted by Oxford (1993) for ICALL research in the mid-1990s and is still relevant today.

It is somewhat surprising to me to discover that most of the papers presented at the ARI Workshop contained only outdated language learning and teaching references… ICALL must devote as much attention to its language learning/teaching principles as it does to its exciting technology (Oxford, 1993, p. 174)

2.4.3 ICALL and sociocultural theory

Levy and Stockwell (2006) noted that CALL designers and researchers frequently turn to SLA theories in order to make more principled and sound decisions. Within the field of ICALL research however, few studies have drawn on theoretical insights of language development from the perspective of Vygotskian sociocultural theory. The computerized dynamic assessment (C-
DA) project developed at The Pennsylvania State University, while not ICALL per se, inspired my design of the socioculturally-informed ICALL system for Chinese. The C-DA project is able to evaluate students’ language proficiency in French, Russian and Chinese (Poehner & Lantolf, 2013; Poehner, Zhang & Lu, 2015; Lantolf & Poehner, 2011). The key theoretical construct the C-DA system reference was Vygosky’s writings on ZPD, which argues that an individual’s responsiveness to assistance is indicative of his/her future performance. This web-based formative assessment tool is designed in such a way that it is capable of gauging student test-takers’ listening and reading comprehension abilities in a fine-grained manner than possible with traditional tests by offering graduated assistance. A key advantage of the C-DA system is that it not only documents how many test questions learners answered correctly and incorrectly on the very first try, but also track how much support students need in order to complete the assessment task.

In this dissertation study, I continue this line of work by designing a socioculturally-informed ICALL system for Chinese. I explore a more open-ended question format, and utilize NLP technologies and reference key theoretical constructs of sociocultural theory. In addition to draw theoretical insights from Vygotskian sociocultural theory, the ICALL system to be developed in this study also build on successful practices in existing ICALL projects as reviewed above. For instance, I will incorporate principles of “textual enhancement” (Sharwood Smith, 1993), as used in the WERTi project, to improve the design of feedback delivery. I will also borrow the “scaffolding” idea that is employed in the TAGARELA project in order to provide feedback in an iterative fashion. In addition, the notion of tracking students’ historical performance data as employed in the E-Tutor project also influence the design of my ICALL system (i.e., the use of relational database to document and trace learners’ interactions with the ICALL system).
2.5 Summary

In this chapter, I have discussed the central tenets of Vygotskian sociocultural theory, including the mediated mind, the genetic approach, scientific concepts, internalization, and zone of proximal development. In addition, I have reviewed the concept-based approach to instruction, focusing on Gal’perin’s (1989, 1992) and Davydov’s (2004) pedagogical models, and how they are implemented in L2 developmental studies to promote conceptual understanding of various scientific concepts. In the second portion of the chapter, I have reviewed research on ICALL, focusing on major existing ICALL systems (e.g., E-Tutor, TAGARELA, WERTi), the benefits and challenges of ICALL systems, and the potential possibility of designing a socioculturally-informed ICALL system for Chinese. In the next chapter, I turn to the Chinese ba-construction, a grammatical device that is heavily discussed in theoretical linguistics literature, poses considerable challenges to L2 speakers, yet receives little attention in the area of explicit pedagogical interventions.
Chapter 3

The Chinese ba-construction

3.1 Introduction

In this chapter, I begin by presenting an overview of the syntactic, semantic, and pragmatic characteristics of the ba-construction, a grammatical structure used fairly extensively in modern Mandarin Chinese (hereafter referred to as Chinese). I then discuss four major analyses in theoretical linguistics, namely, the disposal account, the discourse-dramaticity account, the aspectual account, and the topic-comment account. In the second section, I propose my own conceptual understanding of the functional purpose of the ba-construction, which serves as a basis for developing concept-based pedagogical materials. The third section discusses the notion of focus as related to the present study. The following section surveys the literature on L2 acquisition of the ba-construction, including textbook treatments of this construction, L2 speakers’ major areas of difficulty and major sources of confusion, the role of L2 proficiency in the types of errors that learners make and the acquisition sequences they go through.

3.2 An overview of the ba-construction

The ba-construction is one of the most studied yet poorly understood grammatical structures in Chinese, such that it has fascinated Chinese linguists for over half a century1 (cf. Liu, 1997; Jing-Schmidt, 2005; Tsao, 1987; Wang, 1947). A prominent syntactic feature of the ba-construction lies in its word order. The basic syntactic structure can be schematized as “Subj.

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1 According to Jing-Schmidt and Tao (2009), a ritualized morning session is devoted entirely to the ba-construction at every meeting of the International Sino-Tibetan Linguistics Conference (Scott Delancey’s personal communication to Jing-Schmidt, March 2008).
+ ba + NP + VP.” Note that the object (NP) is placed before the main verb (VP). This word order differs from the canonical word order in Chinese, which is generally agreed to be Subject + Verb + Object (SVO). In Example 3.1, the direct object, or noun phrase (henceforth $b$a-NP), in the $b$a-construction 这块肉 (“this piece of meat”) is placed before the verb phrase (henceforth $b$a-VP) 拿走 (“take away”).

Example 3.1
kuai yidian ba zhei kuai rou na zou
快一点把这块肉拿走。
Fast a:little BA this piece meat take go
“Take this piece of meat away quickly!”
(Li & Thompson, 1981, p. 463)

According to Li and Thompson (1981), the fronted object or the $b$a-NP must refer to something specific, definite, or generic (e.g., the notion of money). The $b$a-NP must refer to something that has either been invoked earlier in the discourse or something that can be inferred from the context. In comparison to $b$a-NP, the predicate or $b$a-VP is more complex. Structurally, the $b$a-VP can take a variety of forms:

Example 3.2
a. V + resultative verb compound
b. V + de (resultative)
c. V + retained object
d. V + perfective marker –le
e. V + PP (dative or locative)
f. V + quantified phrase
g. V + yi + V (tentative construction)
h. V + durative marker -zhe
i. Adv + V
(cf. Liu, 1997)

A more complex issue related to the *ba*-construction relates to the characterization or determination of the types of objects and verbs that can be included in the construction, the order in which they can appear, and the function of the construction itself. Li and Thompson (1981) describe the challenge of fully and precisely capturing these aspects as follows:

Somewhat less easy to specify are what kinds of direct objects and what kinds of verbs can occur in the construction, what can precede and follow the verbs, and what communicative function the construction serves. (p. 463)

Despite the extensive literature on this topic, surprisingly, a coherent and systematic account of the essential meaning and functional purpose of the *ba*-construction is not readily available. In the field of theoretical Chinese linguistics, broadly speaking, at least four major analyses of the *ba*-construction have been proposed: the disposal analysis, the discourse-dramaticity analysis, the aspectual analysis, and the topic-comment analysis. In the next section, I will discuss each of the four theoretical analyses and then present my own conceptual understanding of the functional purpose of the *ba*-construction—a conceptual understanding that I offer as a basis for creating a pedagogical model and related teaching materials.

**3.3 Major analyses in theoretical linguistics**

**3.3.1 Disposal analysis**

The disposal analysis is the earliest theoretical treatment of the *ba*-construction in Chinese linguistics (cf. Wang, 1947). In this analysis, the focus is the semantic meaning of the main verb in the *ba*-construction and the overall function of the construction is understood as
relating to “how a person is handled, manipulated, or dealt with; how something is disposed of; or how an affair is conducted” (Wang, 1947, pp. 160–161, translated by Li, 1974, pp. 200–201).

According to Li and Thompson (1981), the notion of disposal has to do with “what happens to the direct object” (p. 468). In Example 3.3, the verb 了解 “understand” indicates a mental activity, and cannot “dispose” the object 那件事情 “that matter.” Thus, the ba-construction is ungrammatical.

* Example 3.3

* wo ba nei jian shiqing liaojie
* 我 把 那 件 事情 了解。

I BA that CL matter understand

“I understand that matter.”

(Li & Thompson, 1981, p. 467)

Extending Wang’s (1947) work, Li and Thompson (1981) maintain that the notion of “disposal” should be understood more broadly. They note two conditions that must hold true in order to use the ba-construction: (1) the ba-NP is definite, specific, or generic; (2) the message involves disposal, i.e., that something has happened to the entity referred to by the ba-NP. They hypothesize that the stronger the sense of disposal and the more prominent the object, the more likely it is that the ba-construction is used. In other words, the more prominent the referent of the direct object and the more the verb elaborates or specifies how the direct object is being handled or dealt with (i.e., the longer the predicate), the more appropriate it is to use the ba-construction.

The disposal analysis was later linked to the notion of transitivity (Hopper & Thompson, 1980; Thompson, 1973). According to this analysis, the ba-construction expresses an action that is passed from the agent to the patient (Hashimoto, 1971; Li, 1974; Sun, 1995; Wang, 1957).
Example 3.4, the action "finished eating" is said to be passed from the subject 她 “she” to
the patient 苹果 “apple.”

Example 3.4
Ta ba pingguo chi le.
她 把 苹果 吃 了。
She BA apple eat PRF
“She ate the apple.”

However, transitivity is not a straightforward phenomenon in Chinese grammar. Jing-Schmidt
(2005) points out that “it is inappropriate to explain the uses of the ba-construction in terms of
transitivity only” (p. 84). Take Example 3.5: The verb 跑 “run/go” formally exhibits transitive
behavior, with 几家商店 “several stores” as its direct object. Semantically, however, the verb is
actually intransitive because the agent has virtually no effect on the patient. The seeming object
NP 几家商店 “several stores” is merely a locative.

Example 3.5
wo pao–le hao ji-jia shangdian, shenme ye mei mai.
我 跑了 好 几家 商店, 什么 也 没 买。
1SG run-PRF good few-CL store any also NEG buy
“I went to several stores but bought nothing.”
(cited in Jing-Schmidt, 2005, p. 85)

One criticism leveled at the disposal analysis is that the notion of disposal appears to be
too narrow to cover the ba-construction in its many forms (Chao, 1968). Although Li and
Thompson (1981) extend the sense of disposal beyond physical effect, it would still be quite a
stretch to understand the ba-NP 钥匙 “the key” in the counter-example given in Example 3.6, a
perfectly grammatical sentence that contains the *ba*-construction, as something to be disposed. That is, it is very hard to infer that the speaker intended to forget the key and, therefore, left it at home.

*Example 3.6*

wo ba yaoshi wang zai jiali le.

我 把 钥匙 忘 在 家里 了。

1SG BA key forget at home PRF.

“I forgot the key at home.”

**3.3.2 Discourse-dramaticity analysis**

Instead of focusing on the semantic meaning of the main verb, the discourse-dramaticity analysis takes discourse and contextual information into consideration in characterizing the *ba*-construction. According to Jing-Schmidt (2005), the *ba*-construction as a whole constitutes a syntactic means whereby the speaker can direct the hearer’s attention toward high discourse dramaticity, which is reflected by a high level of cognitive salience and noteworthiness and/or by the highly subjective and emotional stance that the speaker takes toward the information being communicated. According to this analysis, the *ba*-construction by default maintains the information focus on the predicate, and the *ba*-VP achieves maximal informativeness in regard to the proposition by allowing expansive verbal modification via, for example, intensifiers and quantifiers, or via the complement.

For example, the *ba*-construction used in Example 3.7 describes a metaphor, with *kuai yao xiadan de ji* “a hen that is going to lay eggs soon” referring to the person who is about to graduate and will be in a position to bring home money. The shared feature between the two, as noted by Jing-Schmidt (2005), is the kind of utilitarian loss subjectively felt by the
speaker on the grounds of his personal perspective, belief and rationalization that justifies his association of the egg-laying hen with the money-earning person. The emotionally-charged message with a high level of cognitive salience is considered to be communicated effectively by using the ba-construction.

Example 3.7

But don’t you think about it? He’ll graduate soon. After graduation he can grab some money to help the family make a living! Really, how could you let a hen go when it’s about to lay eggs?”

(Jing-Schmidt, 2005, p. 217)

Certainly, Jing-Schmidt’s (2005) discourse-dramaticity analysis brings a unique discourse-pragmatic perspective to bear on the study of the ba-construction. In addition, Jing-Schmidt’s (2005) study demonstrates strong methodological rigor: her analyses are based on empirical corpus data, and contrived examples are avoided whenever possible. This is in sharp contrast to the disposal analysis, which is primarily based on intuition and contrived examples. However, the main corpus Jing-Schmidt compiled for her study is not balanced—instead, it leans
heavily on literary texts from only one author (i.e., Lao Se). This focus on just one author and one
genre is hardly representative of the language in which the ba-construction is used, such that the
results cannot be generalized. Although Jing-Schmidt (2005) argues that literary discourse has a
communicative function, she also acknowledges that there are differences between spoken and
written discourse (Chafe, 1994; Christensen, 1994).

3.3.3 Aspectual analysis

The aspectual analysis of the ba-construction seeks to link it to the Chinese aspect
system, to the notion of telicity in particular (Liu, 1997; Mei, 1978; Sezto, 1988; Yong, 1993).
Yong (1993) argues that in the ba-construction verbs can be rendered telic, i.e., used to indicate a
natural conclusion or endpoint. Expanding on Yong’s work, Liu (1997) argues that the notion of
telicity as related to the ba-construction should consider not only the verb, but also its
complement. However, it should be pointed out that the notion of telicity, however understood,
does not constitute a necessary or sufficient condition for the use of the ba-construction. In
Example 3.8, the verbal complement 下去 “descend-go, or lasting” denotes an unbounded
temporal reference that literally has no visible endpoint or conclusion, yet this ba-construction is
perfectly grammatical.

Example 3.8

我 会 一直 把 她 照顾 下去 的。
1SG will always BA 3SG take-care descend-go DE.
“I will always take care of her.”

3.3.4 Topic-comment analysis

The topic-comment analysis of the *ba*-construction focuses on information structure and maintains that the *ba*-construction represents a break-down between what constitutes the topic (i.e. the *ba*-NP) and what constitutes the comment (i.e., the *ba*-VP) (Chen, 1983; Ho, 1993; Hsueh, 1987; Mei, 1978; Tsao, 1987). Briefly, the topic of a sentence refers to what is being talked about, whereas the comment refers to what is said about the topic.

Topic and comment are important linguistic categories in research on language typology. Li and Thompson (1981) classified languages typologically either as subject-prominent or as topic-prominent. Subject-prominent languages (e.g., English) stipulate that almost all sentences must have a subject, even if there is nothing for the subject to refer to, as with pleonastic subjects such as in “It is raining.” Topic-prominent languages (e.g., Chinese, Japanese, Korean), on the other hand, do not have this requirement, and the subject can often be omitted if it can be pragmatically inferred. Topic-prominent languages organize syntax based on topic-comment structure.

For the *ba*-construction, Mei (1978) theorizes the importance of topic and comment in terms of presupposition and focus: the *ba*-NP refers to presupposed or old information whereas the *ba*-VP refers to the focus or new information. Likewise, Chen (1983) argues that the focal message of the *ba*-construction is what has been, or is to be, done to the object or about the object, which is expressed by the *ba*-VP. Ho (1993) notes that with the movement of the object to the left of the verb, the element at the end of a sentence will receive focus, as that is where new information is expected. In all these analyses, the *ba*-NP is said to be the discourse topic of the sentence that contains old information whereas the *ba*-VP is the comment of the discourse topic that contains new information and, therefore, is the focus. The *ba*-NP is considered as a secondary topic (Mei, 1978; Tsao, 1986). Fahn (1993, p. 62) noted that the *ba*-NP has all the
properties of a topic: the *ba*-NP can be definite or generic. It occupies the initial position of a *ba*-topic chain and plays a prominent role in grammatical processes.

In the *ba*-construction, the comment is specifically used to indicate that a particular result is caused by an action. In most cases, in this grammatical construction, even when the subject and the *ba*-particle are omitted, the remaining structure is still grammatical (Hsueh, 1989). For example, if we remove the subject 我 “I” and the *ba* particle 把 from the sentence 我把衣服洗干净了 “I took the clothes and washed them,” the remaining part 衣服洗干净了 “clothes [have been] washed clean” is still grammatical and well-formed.

For clarification purposes, a discussion of topic, comment, and focus for the OSV and the *ba*-construction is in order. For the topicalization OSV structure, the topicalized object is in focus, while the subject and the verb serve as comment. For *ba*-construction, by contrast, there are two topics, with the subject being the primary topic, and the fronted object being the secondary topic. The comment is the verb phrase, and remains the focus of the sentence.

In the L2-acquisition literature, the topic-comment structure is considered a foundational component in learning the *ba*-construction (Hu, 2011), together with the aspectual marker and the resultative verb compound (RVC) structure. Hu (2011) notes that an understanding of the topic-comment structure can be beneficial to students who are to learn the *ba*-construction. For this reason, I have included the notion of topic and comment in my pedagogical model of a concept-based instruction program (Chapter 4).

### 3.4 Functional purpose of the *ba*-construction

The four theoretical analyses examine the *ba*-construction by considering (1) the semantic meaning of the verb in the predicate, (2) discourse and contextual information, (3) the
Chinese aspect system, or (4) topic-comment and information structure. Collectively, these theoretical treatments of the *ba*-construction have contributed to our overall understanding of this elusive Chinese grammatical construction. However, as discussed, some analyses are challenged by counter-examples, whereas others lack generalizability. The lack of a comprehensive and coherent analysis of the essential meaning and functional purpose of the *ba*-construction greatly hinders the development of pedagogical models and materials for Chinese-language teaching and learning.

As the earliest account of the *ba*-construction, the disposal analysis has the most visibility in Chinese-language pedagogy and material development. However, as noted, Chinese linguists find it challenging to characterize which verbs convey the “disposal” message, and which do not, and it is even more difficult for language instructors and L2 Chinese learners to determine which verbs convey this message. The discourse-dramaticity analysis considers discourse and contextual information, and is perhaps the most innovative of the four analyses. However, as discussed, the data on which this theory is built comprises literary texts written by a single author. This exclusive focus on one genre and one author cannot be taken as representative of the language as a whole. The aspectual analysis asserts that the verb (Yong, 1993) or the verb plus complement (Liu, 1997) in the *ba*-construction must be telic, i.e., must have a natural endpoint or conclusion. However, the notion of telicity does not constitute a necessary or sufficient condition for the use of the *ba*-construction, as illustrated in the counter-example in Example 3.7. Finally, the topic-comment analysis of the *ba*-construction centers on information structure and lends itself to efforts to explain the location of focus. It should be pointed out here that, as Chinese is a topic-prominent language, the topic-comment structure is very common in this language. In other words, the topic-comment pattern is not unique to the *ba*-construction.

Overall, each of the four theoretical analyses has contributed to our understanding of the *ba*-construction in one way or another. Even taken together, however, they do not lead to a
systematic or a comprehensive account of the functional purpose of the *ba*-construction that can easily be used for pedagogical purposes. Based on my readings of the Chinese linguistics literature on the topic and analyses of the commonalities of the four theoretical analyses, I have arrived at the following characterization regarding the essential meaning and functional purpose of the *ba*-construction:

In essence, the functional purpose of the Chinese *ba*-construction is to accentuate the cognitive saliency of the resulting state of the fronted object brought out by the verbal action described in the predicate.

This conceptualization focuses more on the pragmatic meaning of the *ba*-construction, rather than its semantic constraints or syntactic requirements. It is worth noting that the emphasis on the cognitive saliency of the resulting state is compatible with the four major theoretical treatments of the *ba*-construction. For example, the conceptualization is compatible with the disposal analysis in that if an object has been explicitly “disposed” of through the use of the *ba*-construction, it follows that this event is at least somewhat cognitively salient to the interlocutors and that a change in the state that the verb phrase describes must have taken place. It is compatible with the discourse-dramaticity analysis in that the focus on the resulting state is indeed achieved by adding lots of verbal modifications, such as intensifiers and quantifiers. It is also compatible with the aspectual analysis in that the notion of the “resulting state” is indicative of a natural endpoint or conclusion of an event. In other words, if an action is ongoing, or the result is still changing, it does not make much sense to talk about a resulting state. Finally, the conceptualization is also compatible with the topic-comment analysis, according to which the function of the *ba*-construction is not to highlight old information, i.e., the *ba*-NP, but to accentuate new information with the *ba*-VP. The latter typically describes a situation that differs from previous situations (i.e., offers new information).
Thus, transcending all the major theoretical analyses of the *ba*-construction is the notion of the focus on the cognitive saliency of the resulting state of a verbal action. Based on my proposed conceptualization, I have developed conceptual explanations and pedagogical materials designed to explicitly promote L2 learners’ conceptual development of the Chinese *ba*-construction (see Chapter 4 for a detailed account).

### 3.5 The notion of focus

In this section, I will briefly discuss the notion of focus as related to the present study. Basic notions of information structure consist of three pairs of grammatical concepts: topic vs. comment, givenness vs. newness, and topic vs. background. Of particular interest to this study is the notion of focus. Briefly, focus is a linguistic term that indicates “the presence of alternatives that are relevant for the interpretation of linguistic expressions” (Krifka, 2008, p. 247). It relates to phonology and has ramifications for how and where suprasegmental information (i.e., rhythm, stress, and intonation) is encoded in the grammar. That is, speakers can use pitch accents on syllables to indicate what word(s) are in focus. Typically, new information is accented while given information is not. While phonological means is the primary way to achieve focus, it is important to note that word order also has an effect on what is in focus in a sentence.

For the SVO structure, focus can be placed on different syntactic elements depending on stress patterns. As illustrated in Example 3.9 (stressed words are in bold font and underlined in Examples 3.9-3.11), the subject in (1b) 她 *ta* “she” is in focus, in order to answer the “who” question raised in (1a). However, if a “what” question is asked, as in (2a), then the object 那个苹果 *nage pingguo* “that apple” can be in focus, using exactly the same word order as in (1b). Finally, one can also ask about the verbal action, as in (3a). Its answer, shown in (3b), has focus
on verb phrase 了 chi –le “ate”. Note that the placement of focus in different syntactic elements are achieved through phonological means, not word order. In fact, (1b), (2b), and (3b) have exactly the same SVO word order.

**Example 3.9**

1a) shui chi le nage pingguo  
   谁 吃 了 那个 苹果?  
   “Who ate that apple?”

1b) ta chi le nage pingguo  
   她 吃 了 那个 苹果。  
   “She ate that apple.”

2a) ta chi le shenme le  
   她 吃 了 什么?  
   “What did she eat?”

2b) ta chi le nage pingguo  
   她 吃 了 那个 苹果。  
   “She ate that apple.”

3a) ta zuo shenme le  
   她 做 什么 了?  
   “What did she do?”

3b) ta chi le nage pingguo  
   她 吃 了 那个 苹果。  
   “She ate that apple.”

Similarly, focus can also be placed on different elements in the *ba*-construction depending on different stress patterns. As shown in Example 3.10, the subject, shown in (1a) and (1b), the object, shown in (3a) and (3b), and the verb phrase, as shown in (2a) and (2b) can all be in focus. Again, the word orders are exactly the same (i.e., S ba OV). In addition, the entire sentence can be in focus (as shown in 4b), if a question such as “what happened?” is asked (as in 4a). It is important to note that, in the *ba*-construction, because S and O are primary and secondary topic respectively, which refer to old/given information, the focus of the *ba*-construction is typically on the verb phrase, which presents new information.
Example 3.10

1a) shui ba men guanshang le
   "Who closed the door?"

1b) ta ba men guanshang le
   "He closed the door."

2a) ta ba men zenme le?
   "What did he do to the door?"

2b) ta ba men guanshang le
   "He closed the door."

3a) ta ba shenme guanshang le
   "What did he close?"

3b) ta ba men guanshang le
   "He closed the door."

4a) fasheng shenme shier le?
   "What happened?"

4b) ta ba men guanshang le
   "He closed the door."

In contrast to the SVO and the ba-construction, the focus in the OSV word order can be placed only on the topicalized object (as shown in 1b), but not other elements (as shown in 2b and 3b), as illustrated in Example 3.11. That is, it is inappropriate to answer the questions raised in (2a) and (3a) with the OSV structure. This seems to suggest that for the OSV structure, word order plays a central role in regard to placement of focus. Because the topicalized object is in focus, the OSV structure does not allow any other element (i.e., S or V) to be in focus, even if phonological means is applied. To answer the questions raised in (2a) and (3a), one can use the SVO structure, i.e., 我在找一个会讲俄语的学生 wo zai zhao yige hui jiang eyu de xuesheng “I am looking for a Russian-speaking student”, together with the use of stress.
Example 3.11

1a) ni zai zhao shui
   2SG PREP look who
   “Who are you looking for?”

1b) Yige hui jiang eyu de xuesheng, wo zai zhao
    One-CL can speak Russian DE student, I PREP look-for
    “A Russian-speaking student, I'm looking for.”

2a) shui zai zhao yige hui jiang eyu de xuesheng
    who PREP look-for one-CL can speak Russian DE student
    “Who is looking for a Russian-speaking student?”

2b) Yige hui jiang eyu de xuesheng, wo zai zhao
    One-CL can speak Russian DE student, I PREP look-for
    “A Russian-speaking student, I'm looking for.”

3a) ni zai zuo shenme?
    2SG PREP do what
    “What are you doing?”

3b) Yige hui jiang eyu de xuesheng, wo zai zhao
    One-CL can speak Russian DE student, I PREP look-for
    “A Russian-speaking student, I'm looking for.”

For the remainder of the study, I will confine the discussion of focus only in relation to word order, not phonology, as the former is the main distinctive feature between the three grammatical constructions examined in this study.
3.6 L2 acquisition of the *ba*-construction

The *ba*-construction poses a considerable challenge to L2 Chinese-language learners (X. Cui, 1995; Y. Cui, 2003; Hu, 2011; Huang & Yang, 2004; Jepson, 1989; Wen, 2012; Yu, 2000). Based on an analysis of data from the HSK corpus,$^2$ Jiang (1999) reported that only 50% of the test-takers correctly answered the items related to the *ba*-construction. Li (1996) and Liu (2003) noted that some of the challenges L2 learners face can be partly attributed to the complex task of understanding the various syntactic, semantic, and pragmatic constraints of the *ba*-construction. Typologically, Sun (2006) argued that “there is not another language in the world that has a phenomenon similar to the *ba*-construction” (cited in Hu, 2011, p. 11). Cross-linguistically, the conceptual understanding of “verb-action” differs between English and Chinese. In most cases, the implication of results in English is achieved through verb + tense without the need to use a complement or other additional elements, let alone a special syntactic structure such as the *ba*-construction. By contrast, this is not the case for Chinese, in which it is necessary to specify the result explicitly (see Tai, 1984 for a detailed discussion of this topic).

Despite the voluminous literature and theoretical discussions on this elusive construction in Chinese linguistics, as noted earlier, there is no consensus on either the essential meaning or the functional purpose of the *ba*-construction. Consequently, textbook treatments of the *ba*-construction tend to be superficial. Language instructors, despite being native speakers, find it challenging to describe and explain the structural, functional, and pragmatic constraints of this structure. In most college–level curricular, the *ba*-construction is typically introduced in the second- or third-semester Chinese course. However, it typically receives less than sufficient coverage in most textbooks. Indeed, as Hu (2011) stated, most textbooks devote no further

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2 The HSK corpus is a collection of students’ spoken and written performance while taking the Chinese Proficiency Test, China’s national standardized test designed to assess the Chinese language proficiency of non-native speakers.
pedagogical attention after the initial introduction, despite the fact that the *ba*-construction itself occurs frequently in various places. The majority of the participants in the current study learned the *ba*-construction using *The Routledge Course in Modern Mandarin Chinese* (Level 2), a popular textbook for L2 Chinese learners in the U.S. context. The *ba*-construction is introduced in Lesson 19 of this textbook as follows:

The verb *bǎ* is often used when talking about doing something to or with an object. Sentences with *bǎ* can often be phrased as:

*Subject* **bǎ** (takes) *something and does something with it.*

**Bǎ** is always used with verbs such as *放* that refer to putting things some place.

*Can you take the shoes and put them under the bed?*

**Bā** can be used with resultative verbs when the action does something to the object.

*We have to clean up the dorm room.*

*(We have to take the door room and clean it up.)*

When talking about completed action, *了* occurs after the resultative verb ending.

*Xiao Zhang put the clean clothing in the dresser.*

(Ross, He, Chen & Yeh, 2010, p. 56, emphasis original)

As can be seen from the textbook explanation and examples offered, the *ba*-construction is treated as a linguistic means to express the idea of “taking something and doing something with it.” The examples included primarily focus on the use of the *ba*-construction in contexts of physically placing an object in a specific location or rearranging or cleaning a room. This notion of the physical movement or placement of an object is reinforced with the statement “*Bā* is always used with verbs such as *放* “place” that refer to putting things some place.” Note that there is no mention of its other semantic, syntactic, and pragmatic meanings, nor are any comparisons offered between the *ba*-construction and either SVO or OSV forms.
In *Integrated Chinese*, another popular textbook, the *ba-*construction is said to be used to indicate a sense of “disposal” or an action that has some impact on the object. According to this book, in the *ba-*construction, the verb must appear with some complements, such as *le*, the tentative aspect, or other verbal complements. However, emphasis on the notion of disposal, as Hu (2011) notes, does little to help students understand the semantic focus of the *ba-*construction.

Another source of confusion can be attributed to the tendency of textbooks and/or instructors to teach the *ba-*construction as it relates to the imperative form, perhaps under the assumption that the *ba-*construction is primarily used in contexts that entail the use of imperatives (e.g., 把门关上 “Close the door”). However, Hu (2011) shows that the extent to which the *ba-*construction is used in imperative sentences is, in fact, very limited. Thus, pedagogical concentration on the imperative use of the *ba-*construction is ill-advised, as beyond the classroom setting learners are likely to encounter this construction more often in the context of other uses.

Traditionally, classroom-based instruction pertaining to the *ba-*construction tends to focus on structural–*le*vel practice, rather than on the construction’s function (Yu, 2000). It is not uncommon for language teachers to set exercises that involve the word order drill of changing SVO structures to the *ba-*construction, without working with students to ensure that they understand the differences between these two structures and the underlying functional purpose of the *ba-*construction. Another common pedagogical practice is that of teaching “verb + aspect marker –le” when introducing the *ba-*construction to learners. One of the drawbacks of this strategy is that in this particular structure the results are very abstract, such that L2 learners may find apprehending the meaning to be very difficult (Hu, 2011). For example, the verb 洗 “wash” plus the aspectual marker –le can have a variety of meanings: it could be that (1) the clothes have been thoroughly washed such that they are now very clean, (2) the clothes have been washed, but not very clean, and (3) the action of washing has just taken place. In other words, the abstractness
of the “verb + –le” configuration can be attributed to the context, the lexical meaning of the verb in question, or even to the constraints of verbal semantics in specific contexts (see Vendler, 1976, Dowty 1979). Thus, Hu (2011) recommends providing L2 learners with explicit instruction on results via the “verb + complement” when the ba-construction is introduced. This way, it will be easier for beginning L2 learners to establish the link between structure and meaning.

Another source of confusion lies in the large number of complements that can occur in the predicate of the ba-construction. The resultative complement can contain a wide array of elements, including (1) a resultative complement that expresses synonymous meaning (e.g., 完“complete,” 好 “good,” 光 “used up; with nothing left”); (2) a directional word (e.g., 起来 “upward,” 出去 “outward,” 下去 “downward”); (3) a degree complement (e.g., 得 “de-particle”); (4) a prepositional phrase (e.g., 在 “at,” 到 “to”); and/or (5) aspectual markers (e.g., –le). All of these verb complement elements can occur in a ba-construction, yet they have subtle differences in meaning (e.g., 修好了 “fix-good–le, fixed” vs. 修完了 “fixed-complete–le, action completed”). Thus, it is not difficult to see why L2 learners might find it overwhelming to grasp the various types of complements and the subtle differences between them.

Consequently, and as a popular strategy, it has been found that L2 learners tend to avoid the ba-construction whenever possible (Jin, 1992; Kim, 2010; Liu, 2003, Xiong, 1996; Yu, 2000). Jin (1992) reported that compared to native speakers, even her most proficient L2 learners only produced 14 out of 25 ba-constructions. For instance, the student in Example 3.9a did not use the ba-construction, opting for a canonical SVO structure instead. The avoided ba-construction version is given in Example 3.12b. Although Example 3.12a is grammatical, it lacks the contrast and textual linkage between the two actions “cleaned the blackboard” and “wrote down information.”
### Example 3.12

a. laoshi ca ganjin heiban hou xieshang le kaoshi de shijian he didian
   Teacher wipe-clean blackboard after write-up PRF test DE time and location

b. laoshi ba heiban ca ganjin hou xieshang le kaoshi de shijian he didian
   Teacher BA blackboard wipe-clean after write-up PRF test DE time and location

“The teacher cleaned the blackboard and then wrote down the time and location of the examination.”
(Yu, 2000, p. 50)

However, the student nevertheless did produce a correct resultative verb compound 擦干净 “wipe clean” together with the perfective marker –le, both of which are essential elements in the ba-VP construction. This indicates that although the student is likely to possess the necessary knowledge to produce the ba-construction, he or she decided not to use it. This example suggests that understanding why the ba-construction should be used in the first place is perhaps more important and challenging than determining how to use it correctly.

In the L2-acquisition literature, researchers have identified a range of errors made by L2 Chinese learners relating to the use of the ba-construction. These errors relate to (1) the collocation between the verb and its object, (2) the placement of the negation particle, (3) the resultative verb compound, (4) the aspectual marker, (5) the ba-particle (there is a tendency not to include it), (6) the replacement of the ba-particle with other propositions, (7) word order, and (8) bare verbs. The design of the pretest and posttest items used in this dissertation research accounts for some of these common error types (see Chapter 4 for a detailed description).

Two other issues pertinent to L2 acquisition of the ba-construction, both of which are related to L2 proficiency, are worth discussing. The first is the learners’ L2 proficiency and the
differential challenges they encounter when learning the *ba*-construction, and the other is the impact of L2 proficiency on the sequence or stages of learning the *ba*-construction. In regard to the first issue, Jin (1992) found that less-proficient learners were more susceptible to errors at the structural level than contextual and pragmatic errors, whereas more-proficient learners made more contextual and pragmatic errors than structural ones. Jin also found that L2 learners acquired obligatory *ba*-constructions before they acquired pragmatically and contextually dependent constructions. Similarly, Wen (2010) found that her L2 Chinese learners were capable of producing the basic spatial displacement *ba*-construction by the end of the elementary level. And, she found that as their proficiency improved, they began to add more varied forms and later still were able to use the propositional complement of the *ba*-construction. Only at the advanced level were they capable of producing the *ba*-construction with more native-like variations of the verb complement in which the direction of the verb is in focus.

However, even at an advanced-proficiency level, L2 Chinese learners still struggle with certain aspects of the *ba*-construction. For example, Du (2004) examined 65 L2 learners from three proficiency groups in regard to their ability to use the *ba*-NP and *ba*-VP constraints. The learners were asked to judge the well-formedness of various *ba*-constructions and to indicate how confident they were in their judgments. Du (2004) reported that some high-proficiency learners were confident about their non-target judgments (i.e., ungrammatical *ba*-constructions) and thus revealed their lack of understanding of the complex constraints of the *ba*-construction.

The other issue concerns the effect of L2 proficiency on the sequence or stages of learning the *ba*-construction. Researchers have reported that L2 Chinese learners appear to go through stages in acquiring the *ba*-construction whereby they start with simple variations and progress to more complex ones (Huang & Yang, 2005; Jin, 1992; Wen, 2010; Xu, 2011; Zhou, 1997). For instance, Huang and Yang (2005) reported a sequence whereby L2 learners’ use delimiting elements to express the boundedness of the *ba*-construction. The Japanese and English
learners of Chinese shared a similar path: directional/locatives > dative arguments in double objects > resultative compounds > resultative de-clauses. Interestingly, beginning L2 Chinese learners’ tendency to associate direction and location change with the *ba*-construction has also been reported in terms of the pattern whereby L1 Chinese children acquire the *ba*-construction (Zhou, 1997). However, this is not really surprising given that change of location (1) is generally considered more basic and salient than other types of changes and (2) has been found to be among the earliest and most basic of human experiences (Günter, 1996; Miller & Johnson-Laird, 1977). Thus, learners may find it easy to associate the requirement that the *ba*-construction express change with the basic and salient change of location. Similarly, Jin (1992) documented three definable stages whereby learners acquire the *ba*-construction in the area of treating the fronted object as the secondary topic. At stage one, learners tend to treat the *ba*-NP not as a topic, but rather as an object moved to the preverbal position. In other words, even though the object is moved to pre-verbal position, and becomes a secondary topic, students nevertheless still consider it as merely an object albeit in pre-verbal instead of post-verbal position. At stage two, the topic-prominent feature and sentence-prominent features interact and learners treat the *ba*-NP as partially a topic and partially an object. At stage three, learners have reanalyzed the English object as both a preverbal topic and postverbal object. Jin’s (1992) finding is in line with Flynn’s (1987) and White’s (1983) claim that L2 learners go through a process of pragmaticization whereby they establish the basic typological structure to be acquired before they can use it in working out specific properties of topic structures. Overall, Jin’s (1992) findings suggest that L2 learners progress from being merely sensitive to the structural meaning of the *ba*-construction to being able to discern and express more subtle pragmatic meanings.

Although these studies vary in regard to theoretical approach, instruments used, and even the stages identified, they all point to the existence of a sequence or stages in L2 learners’ acquisition of the *ba*-construction. In general, as proficiency improves, L2 learners progress from
a basic understanding of the syntactic structure of the *ba-*construction to a more advanced understanding of the pragmatic meaning of this construction. The sequence view should not come as a surprise, given the close relationship between the *ba-*construction and the linguistic elements it builds on. As discussed, elements such as verb-object collocation, aspect, resultative verb compound, are important components of the *ba-*construction. It is reasonable to assume, as Liu (1997) and Huang and Yang (2005) suggest, that it is necessary to learn these concepts, or building blocks, before embarking on something developmentally more advanced, such as the *ba-*construction in which sub-components are required. Even in acquiring the most basic concepts, a learner must take a series of steps. For instance, the resultative verb compound is syntactically and semantically more complex than is the perfective marker –*le* (see Zhang, 2011, for detailed analyses of L2 acquisition of resultative verb compound). Du’s (2004) study shows that L2 learners were more confident in judging the *ba*-VPs with the perfective marker –*le* than with the resultative verb compound. However, the sequence or stages via which learners acquire the *ba-*construction have yet to be systematically investigated. As Liu (1997) suggested, more research is needed to map out the exact stages and the relationship between the *ba-*construction and its various associated linguistic components.

### 3.7 Summary

In this chapter, I examined the syntactic, semantic, and pragmatic aspects of the Chinese *ba-*construction. The discussion concentrated on four major analyses of this construction in theoretical Chinese linguistics: the disposal account, the aspectual account, the discourse-dramaticity account, and the topic-comment account. By critiquing and incorporating insights from these theoretical analyses, I have proposed a new conceptual understanding of the essential meaning and functional purpose of the *ba-*construction, which serves as a basis for developing
pedagogical materials. In addition, I also discussed the effects of phonological means and word
order on the location of focus in a sentence. Finally, I surveyed the literature on L2 acquisition of
the *ba*-construction, including textbook treatment of the *ba*-construction, potential challenges
faced by L2 learners, the relationship between L2 proficiency and the types of errors learners
make, and the sequence or stages that learners go through in acquiring this grammatical structure.
In the next chapter, I will discuss how I convert the pedagogical model presented earlier in this
chapter into a series of pedagogical diagrams (i.e., animated SCOBAs) to help learners
understand the functional purpose of the *ba*-construction and how it differs in terms of word order
from both the canonical SVO and the topicalization OSV forms.
Chapter 4

Methodology

4.1 Introduction

This dissertation study explores how concept-based instruction coupled with an intelligent CALL approach promotes L2 acquisition of the Chinese ba-construction. Through a six-session enrichment program, the progress of six focal participants in regard to acquiring this construction was documented based on a case-study approach grounded in the Vygotskyian sociocultural theoretical framework. Specifically, the progress of each was mapped in regard to their microgenetic development of a conceptual understanding of the purpose of the ba-construction and the extent and nature of improvements in their ability to use this construction in various contexts. In addition, a quantitative analysis of the differences between each participant’s performance before and after the enrichment (i.e., pretest, posttest, and delayed posttest setup) program serves as an additional source of data for ascertaining the effectiveness of the pedagogical treatment.

4.2 Enrichment program

The participants each received tutoring through a six-session enrichment program designed to help them develop a conceptual understanding of the ba-construction. For each session, each participant met with the researcher individually for about an hour, during which time the focus was on a different aspects of the ba-construction. The enrichment program started in October 2014 and finished in November 2014, such that it lasted about two months. Table 4.1 summarizes the main contents learned and the activities conducted in each one-on-one session.
Table 4-1. Outline of the enrichment program

<table>
<thead>
<tr>
<th>Session</th>
<th>Agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Overview of the enrichment program; consent form; linguistic background questionnaire; pretest; review of pretest performance; pre-enrichment program interview</td>
</tr>
<tr>
<td>2</td>
<td>Introduction to the concept of topic vs. comment; use of animated slides to illustrate the differences between SVO, OSV, and the ba-construction; Session 2 practice: translation and cartoon description tasks</td>
</tr>
<tr>
<td>3</td>
<td>Constraints of the ba-NP; constraints of the ba-VP; practice using various ba-VP patterns with cards; Session 3 practice: translation task; the participants’ verbalization of the constraints of ba-NP and ba-VP, and the various ba-VP patterns</td>
</tr>
<tr>
<td>4</td>
<td>Negation and question forms of the ba-construction; practice of negation and question forms of the ba-construction; practice using the ba-construction in the Chinese ICALL environment – translation task</td>
</tr>
<tr>
<td>5</td>
<td>Posttest: translation task and cartoon description task; the participants’ verbalization of their conceptual understanding of the ba-construction; semi-structured interview</td>
</tr>
<tr>
<td>6</td>
<td>Delayed posttest: translation task and cartoon description task; the participants’ verbalization of their conceptual understanding of the ba-construction; semi-structured interview; conclusion of the enrichment program</td>
</tr>
</tbody>
</table>

The first session started with an overview of the enrichment program. The participants read and signed a consent form (Appendix A) and completed a linguistic background questionnaire. Depending on the response to the questionnaire, some follow-up questions were asked about the participants’ prior experience of foreign/second-language learning and their motivation for and objectives in regard to learning Chinese. Next, the participants completed the pretest, which consisted of five English to Chinese translation tasks and five cartoon description tasks. The tasks are described in detail in Section 4.5 on Instruments. Afterwards, the researcher and the participants went through the pretest to identify any problems that the participants might have in regard to specific linguistic features. Before the end of the first session, the participants were asked to verbalize their conceptual understanding of the various aspects of the ba-construction. The list of questions asked can be found in Appendix E.
In the second session, the participants were first introduced to the concepts of topic and comment, their relation to the flow of information, and cross-linguistic differences between English and Chinese. Then, the participants were shown an animated PowerPoint presentation focusing on the differences between SVO, OSV, and the ba-construction. See Section 4.3 for a detailed description of the concept explanation and the pedagogical diagrams used in this study. Immediately after the presentation, the participants were asked to arrange a series of cards to form different sentence structures, focusing on different word orders, and to verbalize the differences they perceived. Next, the participants were asked to complete two tasks for the purpose of practice. The first task involved translating an English sentence into Chinese using the three different word orders. The second task involved watching a short video clip from a Tom and Jerry cartoon and answering a question using the three different word orders. Finally, the participants were asked to verbalize their understanding of the concepts for which they had received instruction in this session and to reflect on the usefulness of the animated slides in regard to their efforts to learn the ba-construction.

The third session focused on the constraints of the fronted object (i.e., ba-NP) and the predicate (i.e., ba-VP) of the ba-construction. For the ba-NP, the participants were instructed that because it serves as a secondary topic, it must refer to old or known information, which can be definite, generic, or specific. In other words, phrases such as 某个 “some” cannot serve as a modifier for the ba-NP. For the constraints of the ba-VP, the participants were first introduced to the general concept: in order to be considered well-formed, a ba-construction must include some element other than the bare verb in the comment. Next, the participants were asked to participate in an activity that focused on the actual implementation of this rule and how it related to different ba-VP patterns. This activity was carried out using a set of cards, where the participants were
asked to pick relevant cards and form the *ba*-construction with different *ba*-VP patterns or structures (see Figure 4.1 for an illustration of the activity).

![Megan practicing *ba*-VP patterns with cards.](image)

Figure 4-1. Megan practicing *ba*-VP patterns with cards.

It is worth noting that cards as a cultural artifact were used throughout the entire enrichment program. Different sets of cards were prepared for different scenarios (e.g., washing clothes, reading books). Each card contains a Chinese word with its corresponding pinyin and English translation. The cards were randomly mixed together, and the participants were asked to pick relevant cards related to the context specified (e.g., washing clothes) from the stack and arrange them in the various *ba*-VP patterns that they knew. The researcher provided mediational assistance as appropriate. Table 4.2 summarizes the major *ba*-VP patterns practiced in the third session of the enrichment program.
Table 4-2. Major *ba*-VP patterns practiced in the third session

<table>
<thead>
<tr>
<th>VP Patterns</th>
<th>Example</th>
<th>Practiced Points</th>
</tr>
</thead>
</table>
| [adv] + V + le                      | ta ba zhejian yifu xunsu de xi le  
She BA this-CL dress quickly wash PRF  
“She washed the dress (quickly).” | (1) Perfective –le mandatory; (2) adverbs optional, and can be placed at different locations |
| [adv] + V + result (as in RVC)      | ta ba zhejian yifu xunsu de xi ganjing le  
She BA this-CL dress quickly wash clean PRF  
“She washed the dress clean (quickly)” | (1) Using the resultative verb compound (RVC); (2) adding the perfective –le to indicate completion; (3) adverbs optional, and can be placed at different locations; |
| [adv] + V + locative                | ta ba zhejian yifu xunsu de xi le sanbian  
She BA this-CL dress quickly throw PRF washer inside  
“She (quickly) threw the address into the washer.” | (1) Using locatives as a verb complement; (2) adding a directional word, e.g., li 里; (3) adding the perfective –le if the action has been completed; (4) adverbs optional, and can be placed at different locations |
| [adv] + V + quantified phrase       | ta ba zhejian yifu xunsu de xi le sanbian  
She BA this-CL dress quickly wash PRF three-CL  
“She (quickly) washed the dress for three times.” | (1) Using quantified phrases; (2) adding the perfective –le if the action has been complete; (3) placing the perfective –le in different locations; (4) adverbs optional, and can be placed at different locations |
| Adv + [+Adv] + V                   | ta ba zhejian yifu fanfu de shijin de chongxi  
She BA this-CL dress repeatedly vigorously wash  
“She (repeatedly) and vigorously washed the dress.” | (1) Adding adverbs; (2) explaining the use of de ”地”; (3) stacking multiple adverbs |
| [adv] + V + de resultative         | ta ba zhejian yifu xunsu de xi de gangan jinjin de  
She BA this-CL dress repeatedly vigorously wash  
“She (repeatedly) and vigorously washed the dress.” | (1) adding de “得” resultative as a verb complement; (2) explaining the uses of the three kinds of de; (3) explaining the verb reduplication form in Chinese (e.g., AABB); (4) explaining the use of de 的 at the end of the sentence as an indication of a specific status/condition |
| [adv] + V + yi + V                 | ta ba zhejian yifu xunsu de xi le yi xi  
She BA this-CL dress quickly wash de very-clean de  
“She washed the dress (quickly) a little.” | (1) Adding yi, and then repeating the verb; (2) adding the perfective –le to indicate completion, although its placement is fixed; (3) explaining the use of the perfective –le and the verb-yi-verb structure: done briefly or “a little bit” (e.g., she just washed it a little, but we don’t know if it’s clean or not; (4) explaining that yi in the verb-yi-verb structure can be omitted, yet the meaning of the phrase remains largely the same; (5) explaining that although “yi” can be omitted, the meaning of the verb-yi-verb form entails that the action is performed only once |
In the fourth session, the participants were introduced to the negation and question forms of the ba-construction. For the choice of negation word, a flowchart was presented in order to illustrate which negation word to use in which context. At the end of this session, the participants were asked to complete a set of exercises focusing on the negation and question forms of the ba-construction.

In the fifth session, the participants were introduced to the intelligent CALL system and were asked to practice the ba-construction on a translation task in a computerized environment (see Section 4.4 for a detailed description of the Chinese ICALL system the researcher developed for this study). To use the web-based ICALL system, each participant was assigned a separate user account so that the ICALL system could track his/her interaction with the system. After logging in, the participants were taken to a page showing a list of five English sentences that they were to translate into Simplified Chinese (Figure 4.2).

![Figure 4-2. Screenshot of the ICALL system displaying the five translation questions.](image)

Upon clicking on each of the five translation questions, the participants were taken to a web form where they were asked to type their answers in a box, select a confidence level on a scale of one to five (one

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3 Several of the participants had primarily learned Traditional Chinese, but all familiar with the Pinyin system and could without difficulty select and type Simplified Chinese characters.
being least confident, and five being most confident), and then submit their answers to the ICALL system. The ICALL system then subjected the participants’ answers to a series of NLP analyses and consulted the linguistic insights built into the system (see Section 4.4 for a detailed description of the architecture and algorithms used in the design of the ICALL system). Based on this analysis, mediational feedback was provided to the participants presented in a blue or green text box above the answering interface (see Figure 4.3 for an illustration).

![Figure 4-3. Screenshot of feedback provided by the ICALL system.](image)

After the ICALL practice, the participants took the posttest, which had been carefully constructed so as to match the pretest in regard to both form and content. A sample of the posttest can be found in Appendix D. Toward the end of the fifth session, the participants were asked to verbalize their conceptual understanding of the *ba-*construction.

In the sixth and last session, which occurred approximately two weeks after the posttest, all six of the participants took the delayed posttest, which was identical to the posttest in regard to both form and content. Before the conclusion of the entire enrichment program, the participants were once again asked to verbalize their understanding of the *ba-*construction and to reflect on the enrichment program.
4.3 Concept explanation and pedagogical diagrams

For this study in order to facilitate the participants’ conceptual understanding of the Chinese *ba*-construction, I developed a small course text comprising a combination of the following (1) animated slides (Zhang, 2014) depicting the differences between the SVO-structure, the OSV-structure and the *ba*-construction, (2) a flow chart to use in choosing negation modal verbs, and (3) an overview of the structural patterns of the *ba*-VP. The conversion from verbal representation to a pedagogical diagram is referred to as “materialization” in systemic-theoretical instruction (STI) (Gal’perin, 1989, 1992). These pedagogical diagrams, or in Gal’perin’s term, SCOBAs (Scheme of a Complete Orienting Basis of the Action), imagistically depict any given concept in a very systematic and comprehensive way. Further, SCOBAs are easily comprehensible because they are based on concrete images, rather than abstract verbiages. In this study, I used animated SCOBAs (Zhang, 2014), rather than static ones (Kim, 2013 Lee, 2012; Negueruela, 2003; van Compernolle, 2012) because animation is more suitable for illustrating the complex movements of various elements in a sentence. Before being introduced to the different word orders in Chinese, the participants were introduced to the concept of topic vs. comment. The topic refers to what is being talked about, typically too old or established information, whereas the comment refers to what is being said about the topic, typically new information (cf. Li & Thompson, 1981). An example illustrating what constitutes the topic (i.e., 这本书 “this book”) and what constitutes the comment (i.e., 我看了三遍 “I read three times”) in Chinese was presented to the participants (see Figure 4.4.)

Next, the participants were introduced to three different word orders in Chinese: the canonical SVO, the topicalization OSV, and the *ba*-construction. A set of animated PowerPoint slides were prepared for each structure, each of which described a scene in a short video clip of Wile E. Coyote and the Road Runner. The scene involves the coyote getting flattened by a train (see screenshots of the video clip in Appendix F). Three animated SCOBAs were designed to help the participants develop a conceptual understanding of the *ba*-construction to apprehend the ways in which it differs from the SVO and the OSV structures. A series of screenshots was taken for each of the three animated SCOBAs.
Because of the animated nature of these SCOBAs and their considerable length, they are not presented here; instead, they are listed in Appendices G, H, and I.

Figure 4-4. An example illustrating the topic and the comment in Chinese.

这本书，我看了三遍。  这本书，我看了三遍。  
Zhè běn shū, wǒ kàn le sān biàn.  
[This book, I read three times.]

The first SCOBA focused on the canonical SVO structure. This SCOBA includes pictures representing the train, and the verbal action and the object are laid out in sequential order, underneath which are Chinese words and their English translation in colored boxes: gray representing the subject, blue the verbal action, and orange the object. In the next two slides, the participants’ attention was directed to the resultative verb compound and then to the perfective marker –le. The verbal explanation for the addition of the resultative component is “In Chinese, the result of a verbal action is typically expressed explicitly in a resultative verb compound. So the fact that the train crushed the coyote is expressed as 压扁, or ‘crush-flat.’” The verbal explanation for the perfective or aspect marker –le is “In Chinese, the perfective marker –le ‘了’ is typically used to indicate that the action is done or completed.”
The next four slides focused on the concept of topic vs. comment. Specifically, the participants were shown that 火车 “train” serves as both the subject and the topic, whereas the complex verb constituent 压扁了 “crush-flat-perfective” and 狼 “coyote” together serve as the comment. The verbal explanation of the last slide of this animated SCOBA states that “In this SVO sentence, no element is in focus.”

The second SCOBA focused on the topicalization structure OSV. Addressing the same scene and using the same set of pictures and words in colored boxes, this SCOBA showed the participants that in order to put focus on the grammatical object, the grammatical element in question can be moved to sentence-initial position. The verbal explanation on the second slide stated that “To put the coyote (O) in focus, you move it to the topic position, to indicate what the utterance is all about.” This is followed by the movement of both the picture and the word box 狼 “coyote” to sentence-initial, i.e., the topic position. At this point, the participants were informed that a comma (or a pause in speech) is usually placed after the fronted object to indicate the boundary between the topic and the comment. The verbal explanation on the last slide of the second animated SCOBA stated that “In this OSV sentence, the topicalized object is the focus.” At this point, the picture 狼 “coyote” was enlarged, directing the participants’ attention to the very object that is in focus in the OSV structure.

The third SCOBA focused on the ba-construction. Still addressing the same scene from the short video clip and using the same set of pictures and colored word boxes as used in the first two SCOBAs, this SCOBA illustrated the specific location of focus of the ba-construction in comparison to the canonical SVO and the topicalization form OSV. The verbal explanation on the second slide stated that “Now, if you want to put the resulting state of the verb action in focus, you can do this.” The next three slides depicted the movement of the object 狼 “coyote” before the complex verb constituent 压扁了 “crush-flat-perfective.” Specifically, the picture and the words regarding the train as a whole were moved to the left of the screen, and then the picture and the word box 狼 “coyote” moved to preverbal position. The participants were instructed that these movements were necessary because the verb remains in situ. On the following slide, the ba-particle was added between the subject 火车 “train” and the fronted object
Next, the participants were instructed that “coyote” served as both the subject and the primary topic, whereas the fronted object “coyote” served as the secondary topic, for which the complex verb constituent—the part that does not move—is the comment. Finally, the verbal explanation of focus in the *ba*-construction was presented as follows: “In contrast to the OSV structure, where the focus is on the topicalized object, the focus of the *ba*-construction (S ba O V) is on the comment, i.e., the complex verb constituent (V).” At this point, the picture representing the verbal action “crush-flat-perfective” was shown in a larger format on a slide directing the participants to the elements that should receive focus in the *ba*-construction. As a conclusion, the participants were shown the following text:

In essence, the *ba*-construction is used to accentuate the cognitive saliency of the resulting state of the fronted object brought out by the verbal action.

During the enrichment program, the negation forms and the question forms of the *ba*-construction were introduced to the participants. The negation of the *ba*-construction typically involves the use of a negation word, either 不 or 没(有). A SCOBA was designed to help the participants decide which negation word to use, as illustrated in Figure 4.5. As can be seen, the negation word 不 goes with a modal verb, or present or future tense, whereas the negation word 没(有) is primarily used to negate past events.

At the beginning of the third session, the participants were introduced to the constraints of the *ba*-NP and the *ba*-VP. According to Li and Thompson (1981), the constraint of the *ba*-NP stipulates that the fronted object must be definite (e.g., 那本书 “that book”), specific (e.g., 一个朋友 “a (particular) friend”), or generic (e.g., 钱 “money”). In other words, the fronted object, or the *ba*-NP, cannot be modified by phrases denoting unspecified meanings, such as 某个 “some/certain,” as in *她把某个苹果吃了。“*She ate a certain apple.” This is because the purpose of the *ba*-construction is to describe in a vivid way the resulting state that the verbal action has brought about in the fronted object. If the fronted
object has not already been established in the discourse and is unknown to the listener/reader, it does not make sense to discuss specific verbal action involving the said fronted object.

Figure 4-5. SCOBA for selecting the negation word in Chinese.

The constraint of the ba-VP was also introduced to the participants in the third session of the enrichment program. Specifically, the constraint stipulates that the bare verb in the comment must be accompanied by at least one other element. In order to help the participants learn this constraint and to practice the many different ways in which the ba-VP can be formed, a set of cards designed to describe the context of washing clothes was used (Figure 4.6). Afterwards, the participants were given a copy of the major ba-VP patterns that they had just practiced with the cards.
Participants spent considerable time in the enrichment program learning the multiple ways in which the *ba*-VP patterns can be used (Table 4.2). The main strategy via which the participants learned these patterns was by working with cards printed with Chinese words and their corresponding pinyin and English translation. The participants were asked to select relevant cards from a stack and to arrange the selected cards into the *ba*-VP patterns they knew. The first pattern focuses on the use of the locative, the one that the participants were generally most familiar with. Playing with the cards, the participants practiced adding a locative as a verb complement, adding a directional word (e.g., 里 “inside”), adding the perfective or aspectual marker –le when action was complete, adding adverbs, and placing adverbs in different locations (e.g., before the verb or before the *ba*-particle). The second pattern focuses on the use of the RVC structure in the *ba*-construction. Points practiced for this pattern included adding a resultative as a verb complement (e.g., 干净 “clean”), adding the perfective marker –le to indicate the completion of the action, adding adverbs, and placing adverbs in different locations. The third *ba*-VP pattern is the simplest one, inasmuch as it requires only the perfective marker –le. Nevertheless, the participants still practiced adding adverbs and placing them in different locations. The fourth *ba*-VP pattern is perhaps the most challenging one, as it involves the use of the de-resultative. Points practiced in using this particular pattern included adding the 得 de-resultative as a verb complement, differentiating between the three de in Chinese (e.g., 的, 地, 得), learning the Chinese AABB verb reduplication form, and learning the use of
de 的 at sentence-final position to indicate status/condition (e.g., 干干净净的 “very clean”). Next, the participants learned how to add of quantified phrases, which turned out to be quite easy for most of the participants. Points practiced for this *ba*-VP pattern included adding quantified phrases (e.g., 三遍 “three times”), adding the perfective –le to indicate the completion of the action, placing the perfective –le in different locations (e.g., 洗了三遍 vs. 洗三遍 “washed three times”), adding adverbs, and placing adverbs in different locations. The sixth *ba*-VP pattern practiced involved the use of adverbs and the stacking of multiple adverbs. A major focus in this area is learning the “de” 地, i.e., the particle, an adverbial modifier that differs from the resultative de 得 and the possessive de 的. The seventh and last *ba*-VP pattern practiced is a special Chinese verb construction: verb-yi-verb. Points practiced in this pattern included adding yi, and then repeating the verb to form the verb-yi-verb construction and learning its meaning (i.e., doing something a little bit), and adding the perfective marker –le to indicate completion (location of –le fixed). In addition, the participants were also instructed that yi can be omitted but that under such circumstances the meaning of the phrase remains largely the same, and that the yi-verb-yi construction is mostly used in spoken Chinese.

4.4 Designing an ICALL system for Chinese

As part of this dissertation research, I developed an ICALL system for Chinese with the goal of helping the participants to learn the *ba*-construction. The principles underlying the design of the system were primarily influenced by the Vygotskyian tradition of sociocultural theory, in particular, the idea of graduated mediation (Aljaafreh & Lantolf, 1994). The ICALL system was designed to provide a series of mediations to the participants whereby the feedback progresses from very implicit and general to very explicit and specific. For instance, if the participant did not provide the correct answer the first time, the ICALL system provided the most implicit feedback it had to offer? “Hmm, can you take a look at it again?” This strategy, thus, afforded the participant an opportunity to identify and correct the answer him/herself. If the participant still did not give a correct answer, then the system provided feedback that
was a little bit more explicit and specific, such as “OK. So can you take a look at the grammatical object of the verb phrase?” Each time, the participant provides an answer, the system compares it to a set of possible correct answers constructed beforehand and stored in a database. If the answer provided by a participant does not match any of the pre-defined answers, then the ICALL system submits the participant’s answer to a series of NLP processing, which include Chinese-word segmentation and syntactic parsing in order to determine the potential problematic areas and provide relevant feedback based on the analysis. Figure 4.7 depicts the core algorithms used in the Chinese ICALL program, using a pseudo code.

Specific NLP technologies utilized in the Chinese ICALL system include Chinese-word segmentation and syntactic parsing. For Chinese-word segmentation, I originally intended to use the Stanford Chinese Word Segmenter (Tseng, Chang, Andrew, Jurafsky, & Manning, 2005). However, the initialization of the software (e.g., loading a very large dictionary file containing Chinese vocabulary information) takes a significant amount of time before it can start to provide segmentation services, such that it is not a viable solution in a web-based environment. Instead, I chose an external web-based Chinese-word segmentation service called Simple Chinese Word Segmentation (SCWS) for this phase of my research. The accuracy of this Chinese word segmenter is reported to be at a 95% level (see http://www.xunsearch.com/scws/). For syntactic parsing, the Chinese ICALL system utilizes the Stanford Chinese Parser (Levy & Manning, 2003), a statistical parser capable of providing the grammatical structure of a sentence (e.g., subject or object of a verb). To traverse the parse tree in order to identify syntactic patterns, I have utilized Tregex (Levy & Andrew, 2006), a utility software program that is also provided by the Stanford NLP group.
If the participant’s answer is already correct:
   Set mediation as “Congratulations! That’s exactly right!”
   Log meta-information into relational database
   Display mediation to the participant
Else:
   Perform Chinese Word Segmentation
   Perform Syntactic Parsing on segmented text
   If this is the first answer by the participant:
      Set mediation as “Hmm, can you take a look at it again?”
   Else:
      If it does not have the ba-particle:
         Set mediation as “Okay, so what particle do you think that we might need here?”
      If it does not have the full-stop punctuation:
         Set mediation as “A complete sentence should have a ...?”
      If it does not have the perfective marker –le:
         Set mediation as “Hmm, so has the action completed yet?”
      If it does not have the correct verb complement:
         Set mediation as “Okay, so what’s the result of the verbal action?”
      If the ba-VP is placed before the ba-NP:
         Set mediation as “Are you sure that the word order is okay?”
      If the ba-NP is correctly translated:
         Set mediation as “Can you take a closer look at the grammatical object?”
      Else:
         Set mediation as “You might be right already, but the translation you provided is not exactly what I have on file. Can you please try it one more time?”
   Log meta-information into relational database
   Display mediation to the participants

Figure 4-7. Pseudo code for the core algorithms used in the ICALL system.
The use of the Stanford Chinese Parser together with Tregex made it possible to identify important structural arrangements of grammatical elements of the *ba*-construction. For instance, a well-formed Chinese *ba*-construction stipulates that the *ba*-NP must occur before the *ba*-VP. Using the output from the Stanford Chinese Parser and the Tregex software, I have created a heuristic to identify this pattern, as shown in (1):

\[
(1) \text{ NP > (IP $ BA) & $ (VP < VRD|VP|VV) }
\]

In other words, an NP must be dominated by an IP that contains the *ba*-particle and must be located to the left of a VP that contains either a VRD, a VP, or a VV.

Other uses of the Stanford Chinese Parser include the identification of punctuation (i.e., PU). However, in my experience developing the Chinese ICALL system, I found that in some areas, the Stanford Chinese Parser was not particularly helpful in regard to identifying key structures in the *ba*-construction. For instance, the particle *ba* 把 is required for the *ba*-construction, but when the *ba*-particle is not included in an answer, the Stanford Parser is not always capable of noticing the omission of the *ba* particle (e.g., matching “BA” still yield positive match). In order to provide a pragmatic solution to this real-world situation, I decided to adopt a more direct approach: my solution was to use a regular expression to match the literal Chinese character 把 directly in the unicode format in the attempted answer (see Figure 4-7). The Stanford Parser has similar limitations in regard to the perfective or aspectual marker –*le* 了, and I adopted an approach similar to the one I devised for the *ba*-particle omission to address this issue also.

The specific task designed in this system primarily focuses on the English to Chinese translation of various sentences involving the use of the *ba*-construction. The Chinese ICALL system is capable of detecting the students’ performance and gives pertinent and immediate feedback on several grammatical aspects, including (1) the *ba*-particle, i.e., whether it is correctly present or incorrectly absent, (2) the
perfective -le, i.e., whether it is correctly present or incorrectly absent, (3) the word order, i.e., whether it is correct or incorrect, (4) the grammatical object, i.e., whether it is correctly translated, and (5) the verb complement, i.e., whether it is correct. As discussed in Subsection 4.2, the ICALL system provides feedback in a way that progresses from very implicit and general to very explicit and specific with each answer a participant gives to any single question.

Implemented in the Python programming language, using the Django Web Framework (Django, 2014), the ICALL system is web-based. Further, it is equipped with a user-registration component, which both enables each participant to interact with the system individually and allows the system to track each participant’s performance separately. This tracking capability means that it is possible to trace each participant’s microgenetic development over a short period of time when he/she interacts with the ICALL system. All the data used in the ICALL system was stored in the MySQL relational database (see http://www.mysql.com/).

4.5 Instruments

Linguistic background questionnaire

All the participants filled out a linguistic background questionnaire, which asked them about (1) demographic information, (2) current Chinese courses in which they were currently enrolled, (3) first language, (4) other languages learned, (5) number of semesters during which they had studied Chinese, (6) whether they had any study abroad experience, and (7) how frequently they used Chinese in their daily lives. This questionnaire was administered during the first session, immediately after the participant had reviewed and signed the consent form. The linguistic background questionnaire can be found in Appendix B.

Translation task
The translation tasks were used to elicit and assess the participants’ productive knowledge of the *ba-*construction. The items in the translation tasks were constructed in order to allow for various *ba*-VP variations. As the *ba*-construction was the focus of the enrichment program, glossaries pertaining to these tasks were devised and provided to the participants. In addition, the participants had the option of using pinyin for difficult words that were not in any of the glossaries. Another option provided was that of using Chinese dictionary applications on their smartphones to search for Chinese characters. Five English-to-Chinese translation tasks were designed for each test, i.e., for the pretest, posttest, and delayed posttest. Additional translation tasks were also designed for practice purposes for individual sessions.

**Cartoon description task**

In the cartoon description task, the participants were asked to watch a short video clips taken from the Tom and Jerry cartoon at least twice and then to answer a question in Chinese based on the clip; then they repeated this process for other clips and questions. The video clips all had sound and typically lasted about one minute. The questions were asked in written English, and the participants were asked to write their answers in Chinese. Five videos were included for each of the pretest, posttest, and delayed posttest. The participants were provided with a glossary for each test and were allowed to use pinyin for words that were not listed in it. The videos used in the posttest and delayed posttest were identical and were similar to the pretest videos.

It is important to note that immediately after the translation and cartoon description tasks, the participants were asked to explain their decisions. Their verbalization of their thinking processes enabled the researcher to identify the source of confusion in regard to their problematic areas, and subsequently to promote microgenetic development within each participant’s zone of proximal development. The translation and picture description tasks are provided in Appendices C and D.

This study employs a cartoon description task and a translation task to assess the participants’ performance. Both tasks assess language production rather than recognition knowledge. The use of the cartoon description task is motivated by the fact that in such a task, the demand in the phase of
conceptualization is eased, as there is no need for students to conceptualize the content of the story (Skehan, 2009). The use of the translation task is motivated by the fact that it allows for tighter control of what linguistic elements can occur in the source English sentences and target Chinese translations. The ability to manipulate various syntactic elements within a sentence plays an important part in designing mediational feedback in the ICALL system. For example, the verb complement of a sentence is given in an English source sentence and its target Chinese translation is thus known ahead of time, and can be specified into the database such that if students fail to provide equivalents of this verb complement, relevant mediational feedback can be provided.

**Interviews**

Three semi-structured interviews were conducted to gauge the participants’ conceptual understanding of various aspects of the *ba*-construction throughout the enrichment program. The first interview, administered at the beginning of the first session, was designed to assess the participants’ prior conceptual understanding of the *ba*-construction. The second and third interviews were conducted after the posttest and the delayed posttest, respectively. The purpose of these two interviews was to gauge the extent to which the participants’ conceptual understanding of the *ba*-construction had changed and how much they had retained two weeks after the posttest. During the last interview, the participants were asked to reflect on the usefulness of the various mediational tools used and to make suggestions for improving the enrichment program. These interviews were conducted in English, and they were recorded and transcribed for further analysis.

**4.6 Participants**

The participants (N = 6) were recruited primarily from third-semester Chinese courses (i.e., CHNS-003) at a large public university in the US. The rationale for recruiting from this population is because students at this level have already completed two semesters of Chinese, and thus have the
vocabulary and grammar knowledge (e.g., knowledge of the resultative verb compound) necessary to learn the Chinese ba-construction. In order to limit influences resulting from linguistic typological differences, only English-speaking learners of Chinese were selected for this study. Because this study was primarily concerned with individual developmental trajectories, no control group was used. The participants were recruited by distributing flyer information to instructors for third-semester Chinese classes during the Fall 2014 semester. Volunteers were offered $10 per hour for each session, with each session lasting approximately an hour. In order to keep the participants motivated and reduce subject attrition, an additional $20 bonus was offered to the participants if they successfully completed the entire program. In this study, all six participants completed the entire enrichment program. The participants’ identities were protected by assigning a unique alphanumeric code to each of them.

In contrast to studies that recruit participants from a homogeneous group, this study recruits participants from a heterogeneous group. The motivations behind this practice are two-fold. First, doing so allows for documentation and tracking of differential developmental trajectories of individual learners who are from diverse sociocultural background, with varying levels of proficiency in L2 Chinese. Second, a heterogeneous group is likely to require different types and amounts of mediation from the tutor and/or the ICALL system, which in turn can be beneficial to assessing the quality and sensitivity of the different levels of mediational assistance provided in the ICALL program.

In following subsections, I will discuss in detail each learner’s profile, including his or her background, language–learning history, and motivation and objectives relating to learning Chinese.

**Derrick**

Derrick was the most proficient L2 Chinese speaker among the six participants. In fact, the initial interviews were conducted mostly in Chinese just with Derrick. Derrick held a B.A in English literature and philosophy and was pursuing an MA in TESL. Derrick was a native speaker of both English and Russian, the latter because his mother was from Russia, and he had studied Spanish for three years and French for two in middle school. Derrick’s first exposure to Chinese was during his undergraduate
degree, during which he learned the Pinyin system and several dozen Chinese characters. However, he studied Chinese for less than a month before dropping it, citing difficulty as the main reason for this decision. After college, Derrick moved to Taiwan, where he lived for nine years. He worked as a language consultant for a local governmental agency, a public relations manager for a tech company, and an EFL teacher at various language schools. During this time, he took about two to three semesters of college–level Chinese. However, he did not finish those courses because he did not like the prevailing teaching style him. Now as a graduate student at a large public university, he was taking a third-year Chinese course (CHNS–401) “just for fun.”

According to the initial interview, Derrick’s first exposure to the *ba*-construction was from textbooks, not from social interactions with Taiwanese people, as one would expect, given the nine years he spent in Taiwan. During his time in Taiwan, Derrick made a hobby of collecting Chinese textbooks and studying them while drinking tea at tea houses. Derrick’s other hobby was rock climbing, which he pursued with local Taiwanese friends. In many of their rock-climbing adventures, he found that he had lots of opportunities to use the *ba*-construction in order to communicate with his teammates clearly and exactly about which body part they should move to which location in this quite dangerous activity. It is also important to note that Derrick had a Taiwanese girlfriend, with whom he spoke Chinese during about a third of the time they spent together. Before going to Taiwan, Derrick did not speak any Chinese. However, while living there, Derrick worked in a language environment that required him to speak Chinese on almost a daily basis. Initially, he answered his colleagues’ questions in English, but they replied to him only in Chinese. For the two to three years prior to participating in the present study, he had spoken Chinese to his friends and colleagues in Taiwan most of the time. Derrick also mentioned that another reason that forced him to speak more Chinese was that his American friends in Taiwan had either returned home or gone to other countries. He, therefore, had the company of only his Taiwanese friends, to whom he spoke Chinese primarily.
Megan was a sophomore majoring in Chinese with a minor in military studies. She came from a military family and was enlisted as an officer in the U.S. Air Force. Megan had been interested in languages since childhood. In high school, she had studied Spanish for three years and French for four years. Megan was at university on an eight-year scholarship (four-year studying in university, another four in active military service) that supported her studying one of the three critical languages of her choosing (i.e., Chinese, Arabic, and Russian). Despite the length of the scholarship, upon completing a B.A. degree in Chinese, she would have an opportunity to be promoted to the rank of Second Lieutenant, which meant that she would outrank others in the military who have more experience but who do not have a degree. In addition to taking Chinese courses, Megan also had a Chinese tutor, an MA TESL student at a large public university, who meet with her weekly.

Stacy

Stacy came from a Christian family and was home-schooled for her primary and secondary education. Stacy’s parents wanted to be able to teach their children in a way that included God, they also wanted their children to be subject to only good influences during their formative years. Stacy did not have any traditional public school experience; however, her local school system did allow home-schooled students to be involved with public school activities to the extent they wished. Stacy, therefore, did participate in school sports, but she did not take any academic classes.

The structure of Stacy’s home-schooling changed over time. When she was very young, her classes had more structure than they did as she grew older. Her mother taught Stacy (and her siblings who were also home-schooled) in an environment similar to a traditional classroom setting, with desks, a blackboard, and a specific curriculum designed for home-schooling. Gradually, their mother’s role became more about answering questions, assigning homework, and grading, and Stacy did, indeed, tend to teach herself. In fact, Stacy even commented that “one of the cool things about home-schooling is that it teaches you how to teach yourself.” And, she added that:
Now if I’m in a class, and I don’t understand what’s going on in the class, it doesn’t concern me as much because I can figure, I can study, and I can ask questions. I can learn, because that is what I used to—I’m used to [being] in charge of my own learning and schedules.”

Stacy started to learn Chinese during her second year in high school. She chose to study Chinese in high school because she hoped to become an English teacher in China, and she chose Chinese as her undergraduate major for the same reason. Stacy used Rosetta Stone, a computer-based language-learning software program to learn Chinese, a choice she made for a number of reasons: it offered a Chinese curriculum specifically designed for home-schooled children, it was the only option on the market at the time, and it was “a popular name.” Stacy studied Chinese with the Rosetta Stone program for three years in high school, but she only managed to cover two years out of a total of three years of materials designed for the program. However, Stacy received regular help and instruction from Chinese language partners. In addition, she had spent two and a half months in China during the summer before participating in the present study.

Elaine

Elaine was a sophomore majoring in public relations. She had studied French for two years in high school and had taken two semesters of Chinese prior to participating in the present study. When Elaine went to college, she felt that she had to learn a foreign language, and she wanted to learn one that would be useful. She started to learn French in the eighth grade, but all she could remember was how to say “My name is …” in French. She, therefore, felt that French, or at least her command of it, was “not very useful.” Elaine wanted to work for a global organization, such as a non-profit organization or a government agency. In her view, Chinese would be a very useful language in such settings.

Chris
Chris had studied Chinese for five years, beginning in the eighth grade at high school. He learned Chinese primarily through teleconferences offered by another local high school, because his local high school only offered French and Spanish. Chris commented that it was very difficult to learn Chinese that way. Because of his prior experience learning Chinese, when Chris entered college, he was able to skip Chinese 001 and was placed in Chinese 002. Despite the fact that Chris had studied Chinese for five years, he felt that he had still faced many challenges in Chinese 002. At the time of the present research study, he was enrolled in Chinese 003. He and his brother were both studying Chinese, and they would speak to each other in Chinese “in very small amounts” sometimes.

Chris commented that learning Chinese gave him “a little bit more direction” in regard to where he wants to go in life. He wanted to study abroad in China and immerse himself in the language and culture. Chris thought that Chinese would be “more useful and adventurous.” He believed deciding to study Chinese to be a better choice than taking Spanish and German, because China is a “rising economy and world power.” In his view, knowing Chinese would be useful for global business and politics and “definitely more useful” than learning German, because “German is only spoken in Germany, and people there all know English.”

Larry

Larry was a junior majoring in classics and ancient Mediterranean studies and ancient languages. Larry liked the written form of different languages. He said that although he could not speak many ancient languages, he could write them. The reason Larry had decided to study Chinese was that he liked Traditional Chinese characters. He initially learned the character biang (Figure 4.8), a type of noodle popular in Shaanxi Province in China. The Chinese character for this word has 58 strokes. He later discovered, much to his surprise, that most Chinese characters actually have many fewer strokes.

Larry had studied Spanish for six years and had also undertaken a one-semester immersion study in Modern Greek in Greece. Larry really liked the immersion program and was thinking of going to Shanghai for eight weeks in the summer, which he could use as an equivalent for taking Chinese 401 and
402. Before studying Chinese at the university, Larry had not taken any Chinese language class in any educational setting. At the university level, he had, by the time of the present research study, taken three semesters of Chinese (CHNS 001, CHNS 002, and CHNS 003). And, at the time of the present study, he was taking Chinese Film (CHNS 121) and Classical Novel Warrior, Ghost, Courtesan (CHNS 423). In this film class, Larry noted that the students watch a lot of Chinese films spoken in Chinese but with English subtitles. For the novel course, the students’ readings included five chapters from *The Three Kingdoms*, but only in English. Larry was not quite sure how Chinese would be useful in his future career. He said that upon graduation that he planned to move to Los Angeles where there is a large Chinese diaspora. But he also said that he had decided to study Chinese in order to become a pastor so that he could do ministry work with Chinese people.

![The 58-stroke Chinese character biang.](image)

Figure 4-8. The 58-stroke Chinese character *biang*.

Note that the participants’ demographic information and previous language learning experiences were not directly used in the data analyses. Rather, they served as a way to gain insights into each participant’s background in order to better understand their individual learning trajectories. For instance, Stacy’s home schooling background was helpful to understanding the specific set of strategies that she used in learning new concepts throughout the enrichment program.
Table 4-3. Participants’ information

<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Major</th>
<th>Year/Program</th>
<th>Previous Studies in Chinese</th>
<th>Other Language Background</th>
</tr>
</thead>
<tbody>
<tr>
<td>Derrick</td>
<td>Male</td>
<td>TESL</td>
<td>Master</td>
<td>2–3 semesters;</td>
<td>Russian (native-like); Spanish (2 years);</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Spent nine years in Taiwan</td>
<td>French (2 years)</td>
</tr>
<tr>
<td>Megan</td>
<td>Female</td>
<td>Chinese</td>
<td>Sophomore</td>
<td>2 semesters</td>
<td>Spanish (3 years)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>French (4 years)</td>
</tr>
<tr>
<td>Stacy</td>
<td>Female</td>
<td>Chinese</td>
<td>Freshman</td>
<td>3 years using Rosetta Stone</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Program in home school setting</td>
<td></td>
</tr>
<tr>
<td>Elaine</td>
<td>Female</td>
<td>Public relations</td>
<td>Sophomore</td>
<td>2 semesters</td>
<td>French (high school)</td>
</tr>
<tr>
<td>Chris</td>
<td>Male</td>
<td>History and political science</td>
<td>Sophomore</td>
<td>2 semesters in college;</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5 years in high school</td>
<td></td>
</tr>
<tr>
<td>Larry</td>
<td>Male</td>
<td>Classics and ancient</td>
<td>Junior</td>
<td>3 semesters (CHNS 001,</td>
<td>Spanish (6 years)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mediterranean studies and</td>
<td></td>
<td>CHNS 002, CHNS 003)</td>
<td>Modern Greek (one semester of immersion program)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ancient languages</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. The participants’ names were pseudonyms.
4.7 Data collection and analysis

All the sessions were video- and audio-recorded. In order to prevent data loss, an additional audio recorder was used to make a duplicate copy of the audio recordings for the entire enrichment program. In addition, a video screen recorder called Camtasia\(^4\) was used to record the participants’ interactions with the computer-based ICALL system.

Session 1 served as a baseline or diagnostic session designed to ascertain the participants’ pre-enrichment program conceptual understanding of as well as their ability to actually use the \(ba\)-construction, i.e. their actual development level. Sessions 2–4 together served as the enrichment program proper, in which each participant worked on an individual basis with the researcher to develop a conceptual knowledge of the \(ba\)-construction. Sessions 5 and 6 served as the final assessment of each participant’s independent performance using the \(ba\)-construction (i.e., the posttest and the delayed posttest). The delayed posttest was conducted approximately two weeks after the posttest.

The participants were asked to verbalize their understanding of the concept of the \(ba\)-construction throughout the enrichment program. These verbalization tasks enabled the researcher to document microgenetic changes in the participants’ conceptual understanding of the \(ba\)-construction. The interactions between each of the participants and the researcher during the concept-based instruction were audio- and video-recorded using a high-quality video camera. These interactions were transcribed for further analysis of the microgenetic development shown by each participant.

The computer-based ICALL system tracked a range of key information pertaining to the participants’ interactions with the system. Figure 4.9 provides a screenshot of this tracking, which

\(^{4}\) See http://www.techsmith.com/camtasia.html
is an aspect of the backend of the ICALL system. This information allowed the researcher to
document in detail the changes the participants made to every answer during the ICALL practice.
In particular, answers to the following questions could be determined from the information
tracked:

- Who is answering the question?
- What is the question being answered?
- What is the participant’s answer?
- What is the participant’s confidence level for his or her answer?
- How long does it take for the participant to provide an answer?
- What is the feedback provided to the participant for his/her answer?
- What is the IP address of the computer from which the participant is interacting with the
  ICALL system?

![Table](image)

Figure 4-9. Screenshot of the ICALL system tracking capabilities.
The data were analyzed using various methods (see below) in order to answer the two major research questions: (1) To what extent does concept-based instruction promote L2 development of the Chinese *ba*-construction? (2) To what extent can meaningful and appropriate mediation be provided to learners to facilitate L2 development in an intelligent computer-assisted language learning (ICALL) environment?

The translation and picture description tasks were first qualitatively analyzed to determine the extent and type of assistance L2 learners needed in order to complete these tasks. Levels of mediation were coded based on an adaptation of Aljaafreh and Lantolf’s (1994) 13–level regulatory scale, which enabled the researcher to document whether and to what extent learners were progressively capable of regulating their own performance. In addition, these tasks were also quantitatively analyzed to determine the accuracy and variations of the diverse syntactic forms of the *ba*-construction used at various stages of the enrichment program (i.e., pretest, posttest, delayed posttest).

The participants’ verbalizations of their understanding of the *ba*-construction at various stages of the enrichment program were qualitatively coded and analyzed based on Swain, Lapkin, Knouzi, Suzuki and Brooks’s (2009) typology of languaging units: (1) paraphrasing the concepts; (2) inferencing (e.g. elaborating knowledge, forming a hypothesis); (3) analyzing (e.g., applying conceptual knowledge to concrete examples); and (4) engaging in self-assessment. This coding scheme enabled the researcher to document microgenetic development in terms of each participant’s conceptual understanding of *ba*-construction. In addition, a quantitative analysis (i.e., Wilcoxon Matched Pairs Signed Rank Tests) was conducted based on the pretest, posttest, and delayed posttest on the L2 learners’ performance in order to determine the effects of the pedagogical intervention.
Further, the ICALL system provided data on the participants’ interactions with the system during the computer-based ICALL translation tasks. These data were analyzed to determine the extent and type of mediational assistance the learners needed in order to establish an acceptable well-formed *ba*-construction.

### 4.8 Summary

This dissertation research investigated the effects of concept-based instruction coupled with an ICALL approach on the L2 development of the Chinese *ba*-construction. In this methodology chapter, I discussed (1) the enrichment program, (2) the concept explanation and pedagogical diagrams, (3) the ICALL system, (4) the instruments, (5) the learner profiles of the six focal participants, and (6) the data collection and analysis. In the next three chapters, I will first present the group results of the participants’ test scores in the pretest, posttest, and delayed posttest. Then, I will document the participants’ conceptual development of the functional purpose of the *ba*-construction and the ways in which it differs from the canonical SVO and topicalization OSV word order. Following that, I present an analysis of the participants’ performance in terms of their improvement in specific areas related to the *ba*-construction, as evidenced in paper-based tests, card-play activities, and interactions with the ICALL system.
Chapter 5

Results and Analysis of Test Scores

5.1 Introduction

In this and the next two chapters, I analyze the data for evidence relating to six focal participants’ L2 development of the Chinese ba-construction. In this chapter, I report quantitative results pertaining to the participants’ performance on the translation task, and the cartoon description task in the pretest, posttest, and delayed posttest. In the following two chapters, I analyze the participants’ conceptual development and improvement in terms of their performance on various aspects of this grammatical construction.

5.2 Grading policy

Before I present group results pertaining to the participants’ performance on the translation and cartoon description tasks across the pretest, posttest, and delayed posttest, a description of the scoring or grading policy is in order. The basic unit of analysis was each participant’s written answers to the five questions in each of three tasks, i.e., fifteen questions in total. For each question, a full point (i.e., 1 point) was awarded to a participant when (1) all the major elements directly related to the ba-construction were correct or appropriate and (2) the basic idea as communicated in the cartoon was properly expressed or the meaning of the source English text was properly translated (see below). One fifth of a point (i.e., 0.2 points) was deducted for each instance of the following ten error types:

1. Omission or misplacement of the mandatory perfective marker –le
Baba ba zhezhang xiangpian gua le zai qiangshang
爸爸把这张相片挂了在墙上。
Father BA this-CL picture hang PRF on wall
“Dad hung this picture on the wall.”

Note: The perfective marker –le 了 should occur not before, but after, the preposition 在 “at” or at sentence-final position.

2. **Omission or misuse of directional words in the locative phrase**

(1) la zai dong li
拉在洞里
Drag at cave inside
“Drag at the cave”

Note: The directional word 进 “into” should be used, i.e., 拉进洞里.

(2) baba ba zhezhang xiangpian gua zai qiang le
爸爸把这张相片挂在墙上了。
Father BA this-CL picture hang at wall PRF
“Dad hung this picture on the wall.”

Note: The directional word 上 “on/onto” is missing, i.e., 挂在墙上了.

3. **Omission or absence of the required ba particle**

Wo dangzuo ta wode pengyou
我当作他我的朋友。
1SG consider him my friend
“I consider him my friend.”

Note: The ba particle 把 is missing, i.e., 我把他当作我的朋友。
4. **Word-order issue related to verb phrases and their objects**

Wo dangzuo ta wode pengyou  
我当作他我的朋友。  
1SG consider him my friend  
“I consider him my friend.”

Note: The fronted object 他 “him” should occur before the verb 当作 “consider,” not after.

5. **Misplacement of the complement of the verb phrase**

Ta ba nage pingguo sikuai de qie  
他把那个苹果四块地切。  
He BA that-CL apple four-CL de cut  
“He cut the apple into four pieces.”

Note: 四块 “four pieces” should occur after the verb 切 (qie) “cut,” not before.

6. **Omission, redundancy, or other misuse of a preposition**

Ta ba yibei shui sa le di shang  
他把一杯水洒了地上。  
He BA one-CL water spill PRF floor onto  
“He spilled a cup of water on the floor.”

Note: The preposition 在 “at/on” is missing, i.e., 他把一杯水洒在了地上。

Wo ba nage cidian huan guo wode pengyou  
我把那个词典还过我的朋友。  
1SG BA that-CL dictionary return past my friend
“I have returned that dictionary to my friend.”

Note: The preposition should be 给 “to,” not 过, which is the “past tense marker.”

7. **Misplacement of the locative prepositional phrase**

Ta zai ditan shang ba nabei jiu sa wan le
他 在 地上 把 那杯 酒 洒 wan 了。
3SG at carpet onto BA that-CL wine spill finish PRF
“He spilled that glass of wine on the carpet.”

Note: The locative 在地 tan 上 “on the carpet” should be placed after the verb 洒 “spill,” not before it.

8. **Misuse of the de-resulative (得)**

Wo ba naben cidian huan de wode pengyou
我 把 那本 字典 还 得 我的 朋友。
1SG BA that-CL dictionary return de my friend
“I have returned that dictionary to my friend.”

Note: The de-resultative is misused as a complement to the verb 还 “return.”

9. **Omission or misuse of the main verb**

Wo zuotian zai tushuguan hui na liangben shu le
我 昨天 在 图书馆 回 那 两本 书 了。
1SG yesterday at library return that two-CL book PRF
“I returned those two books at library yesterday.”

Note: The correct verb in this case is 还 “return,” not the preposition/verb 回.

10. **Failure to provide a verbal complement at all**
Tom ba Spike ti le  
Tom 把 Spike 踢 了。
Tom BA Spike kick PRF  
“Tom kicked Spike.”

Note: Although this ba-construction has all the required key components, it nevertheless lacks the complement component detailing the results of the verbal action, i.e., “Spike is now in the water.” The lack of this key information greatly reduces the informativeness and also the effectiveness of the ba-construction and does not properly answer the question: What did Tom do to Spike?

It is important to note that as a group the participants made a variety of errors as listed above; however, they generally committed errors of no more than two to three types at a time. As this dissertation focuses on L2 acquisition of the Chinese ba-construction, errors not directly pertaining to the key components of the ba-construction were not included in the analysis. Such errors include (1) typos, (2) incorrect diction (e.g., 杯 vs. 杯子), and (3) omission or misuse of classifier/measuring words. Participants were permitted to use Simplified Chinese characters, Traditional Chinese characters, pinyin, or even English words for proper nouns (e.g., Tom, Spike). For the cartoon description task, the participants were asked relatively open-ended questions (e.g., “What did the little cat do to the gold fish?”) that could be answered in any number of ways. Thus, the participants were not penalized if they failed to provide every piece of information presented in the cartoon video clips. In addition, as indicated in the literature, the Chinese resultative verb compound (RVC) structure itself is a very challenging area for L2 learners (Zhang 2012). Therefore, I decided not to put a strict requirement on the use of a proper complement in RVC if the meaning of the sentence were already clear. For example, if the participants failed to produce the transformative 成 “becoming,” they were not penalized, as I did not consider this to be directly related to the ba-construction. For each task, the participants
indicated their confidence level in regard to their answer to each question on a five-point scale, with 1 indicating a very weak level of confidence and 5 indicating a high level of confidence.

### 5.2 Translation task

Table 5.1 summarizes the six participants’ overall performance on the translation task. As can be seen, the participants’ mean score on the pretest was 3.83 out of a total of five points. This is not surprising, given that they had all received instruction on the Chinese *ba*-construction before taking part in the enrichment program. In fact, several participants had even received instruction on the *ba*-construction in their Level 3 of college–level Chinese course (CHNS-003) just weeks before participating in the present study. Second, the participants’ mean score on both the posttest and the delayed

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th></th>
<th>Posttest</th>
<th></th>
<th>Delayed posttest</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Correctness</td>
<td>Confidence</td>
<td>Correctness</td>
<td>Confidence</td>
<td>Correctness</td>
<td>Confidence</td>
</tr>
<tr>
<td>Derrick</td>
<td>4.6/5</td>
<td>22.5/25</td>
<td>4.8/5</td>
<td>21/25</td>
<td>4.8/5</td>
<td>24.7/25</td>
</tr>
<tr>
<td>Megan</td>
<td>3.6/5</td>
<td>NA/25*</td>
<td>4.0/5</td>
<td>20/25</td>
<td>4.4/5</td>
<td>18/25</td>
</tr>
<tr>
<td>Stacy</td>
<td>3.4/5</td>
<td>12/25</td>
<td>5.0/5</td>
<td>15/25</td>
<td>4.4/5</td>
<td>15/25</td>
</tr>
<tr>
<td>Elaine</td>
<td>3.8/5</td>
<td>12/25</td>
<td>3.8/5</td>
<td>16/25</td>
<td>4.2/5</td>
<td>10/25</td>
</tr>
<tr>
<td>Chris</td>
<td>3.4/5</td>
<td>17/25</td>
<td>4.4/5</td>
<td>26/25</td>
<td>4.6/5</td>
<td>20/25</td>
</tr>
<tr>
<td>Larry</td>
<td>4.2/5</td>
<td>22/25</td>
<td>4.2/5</td>
<td>21/25</td>
<td>4.6/5</td>
<td>22/25</td>
</tr>
<tr>
<td>Mean</td>
<td>3.83/5</td>
<td>17.10/25</td>
<td>4.37/5</td>
<td>19.83/25</td>
<td>4.50/5</td>
<td>18.28/25</td>
</tr>
</tbody>
</table>

*Note.* *Participant failed to supply confidence level on the translation task during the pretest.*
Figure 5-1. Group mean of the participants’ overall performance on the translation task.

posttest was higher than that on the pretest, indicating that they made progress on various aspects of the *ba*-construction during the enrichment program. As a group, the six participants made progress on the translation task from pretest to posttest and from posttest to delayed posttest. However, the improvement from pretest to posttest was much more extensive than that from posttest to delayed posttest (Figure 5.1).

As can be seen in Figure 5.2, compared with the other five participants, Stacy made the most progress from pretest to posttest. However, she was also the one who scored lower on her posttest than on her delayed posttest. On her delayed posttest, Stacy continued to struggle in regard to where to put the perfective marker –le. On the other hand, Derrick made the least progress from pretest to posttest. However, this was to be expected given his advanced L2 proficiency accruing in part from the lengthy period he had spent in Taiwan; i.e., he made the least progress from pretest to posttest because he had the least progress to make. Even though the mean score on Derrick’s performance on the translation task from pretest to posttest did not
improve significantly, a careful comparison of his results on the three tests shows that he indeed learned things that he did not know before. Specifically, Derrick’s posttest shows that he learned the variable placement of the perfective marker –le. A detailed account of Derrick’s progress in terms of his conceptual understanding of the ba-construction will be provided in Chapter 6.

Elaine did not make any progress from pretest to posttest. Yet, a closer examination shows that the types of errors she made on the posttest differed from the types of errors she made in the pretest.

Three Wilcoxon Matched Pairs Signed Rank Tests were conducted to determine whether there were any statistically significant differences in how the participants’ performed on the translation task between (1) the pretest and the posttest, (2) the pretest and the delayed posttest, and (3) the posttest and the delayed posttest. The descriptive statistics for the three groups are summarized in Table 5.2, and the statistical results for the three comparisons are summarized in Table 5.3.

The results indicate that participants’ performed significantly better on the posttest than on the pretest ($Z = -2.993$, $p < .001$). Similarly, the participants performed significantly better on the delayed posttest than that on the pretest ($Z = -3.394$, $p < .001$).
Table 5-2. Descriptive statistics of the participants’ performance on the translation task

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>30</td>
<td>.7667</td>
<td>.15830</td>
<td>.40</td>
<td>1.00</td>
</tr>
<tr>
<td>Posttest</td>
<td>30</td>
<td>.8733</td>
<td>.16174</td>
<td>.60</td>
<td>1.00</td>
</tr>
<tr>
<td>Delayed posttest</td>
<td>30</td>
<td>.9000</td>
<td>.12594</td>
<td>.60</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 5-3. Wilcoxon Paired Signed Rank Tests on the participants’ performance on the translation task

<table>
<thead>
<tr>
<th></th>
<th>Posttest–pretest</th>
<th>Delayed posttest–pretest</th>
<th>Delayed posttest–posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>-2.069</td>
<td>-3.061</td>
<td>-.915</td>
</tr>
<tr>
<td>P</td>
<td>.039**</td>
<td>.002***</td>
<td>.360</td>
</tr>
</tbody>
</table>

*Note.* *** denotes the p-value significant at the .001 level (2-tailed); ** denotes the p-value significant at the .05 level (2-tailed).

Although the participants’ performed better on the delayed posttest than on the posttest (.9267 vs .9067), this difference did not reach statistical significance (Z = -1.134, p > .05). The results show...
that through the enrichment program, the participants became more competent users of the ba-construction. Further, they retained this improved competence two weeks after the posttest.

5.3 Cartoon description task

Table 5.4 summarizes the six participants’ overall performance on the cartoon description task. The results indicate that, as a group, the six participants became increasingly able to answer the questions based on the content of the video clips using the ba-construction. In addition, the participants made increasingly fewer errors on key components of the various aspects of the syntactic structural requirements. Perhaps more surprisingly, their performance on the delayed posttest was even better than their performance on their posttest (Figure 5.5).

Table 5-4. Participants’ overall performance on the cartoon description task

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th>Posttest</th>
<th>Delayed posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Correctness</td>
<td>Confidence</td>
<td>Correctness</td>
</tr>
<tr>
<td>Derrick</td>
<td>4.4/5</td>
<td>19/25</td>
<td>5.0/5</td>
</tr>
<tr>
<td>Megan</td>
<td>4.4/5</td>
<td>15/25</td>
<td>4.2/4</td>
</tr>
<tr>
<td>Stacy</td>
<td>3.8/5</td>
<td>11/25</td>
<td>4.4/5</td>
</tr>
<tr>
<td>Elaine</td>
<td>3.6/5</td>
<td>12/25</td>
<td>4.6/5</td>
</tr>
<tr>
<td>Chris</td>
<td>3.2/5</td>
<td>15/25</td>
<td>4.6/5</td>
</tr>
<tr>
<td>Larry</td>
<td>4.0/5</td>
<td>20/25</td>
<td>4.4/5</td>
</tr>
<tr>
<td>Mean</td>
<td>3.90/5</td>
<td>15.33/25</td>
<td>4.53/5</td>
</tr>
</tbody>
</table>

* denotes a conversion from a percentage-based confidence level to 5-point scale. This is done for comparison purposes.

As can be seen in Figure 5.3, overall, and as a group, the results indicate that the participants’ scores remained stable in the delayed posttest in comparison to the posttest. This
result indicates that they retained what they learned in the enrichment program two weeks after the instruction.

Figure 5-3. Group mean of overall performance on the cartoon description task.

Three Wilcoxon Matched Pairs Signed Rank Tests were conducted to determine whether there were any differences in the rankings of the participants’ scores on the cartoon description task between (1) the pretest and the posttest, (2) the pretest and the delayed posttest, and (3) the
Figure 5-4. Individual participants’ performance results on the cartoon description task.

Table 5-5. Descriptive statistics of the participants’ performance on the cartoon description task

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. deviation</th>
<th>Minimum</th>
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<td>1.00</td>
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<tr>
<td>Delayed posttest</td>
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<td>.09803</td>
<td>.80</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 5-6. Wilcoxon Paired Signed Rank Tests on the participants’ performance on the cartoon description task

<table>
<thead>
<tr>
<th></th>
<th>Posttest–Pretest</th>
<th>Delayed posttest–pretest</th>
<th>Delayed posttest–posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>-2.993</td>
<td>-3.394</td>
<td>-1.134</td>
</tr>
<tr>
<td>P</td>
<td>.003***</td>
<td>.001***</td>
<td>.257</td>
</tr>
</tbody>
</table>

Note. *** denotes the p-value significant at the .001 level (2-tailed).

posttest and the delayed posttest. The descriptive statistics are summarized in Table 5.5, and the statistical results are summarized in Table 5.6.
The results indicate that the participants performed significantly better on the posttest than on the pretest ($Z = -2.993, p < .001$). Similarly, the participants performed significantly better on the delayed posttest than on the pretest ($Z = -3.394, p < .001$). Although the participants performed better on the delayed posttest than on the posttest (.9267 vs. .9067), this difference did not reach statistical significance ($Z = -1.134, p > .05$). This result suggests that the enrichment program had a positive effect on the participants’ acquisition of the *ba*-construction, and over two weeks the participants retained much of what they had learned in that program.

### 5.4 Individual learner variation

Table 5.7 summarizes the participants’ performance on the two tasks over time. As can be seen, the participants varied considerably in regard to the extent to which each showed an improvement in performance ability. For instance, in the translation task, Stacy scored the lowest of all the participants in the pretest, but the highest of all the participants in the posttest, making her the biggest gainer, whereas the scores for Elaine and Larry did not change from pretest to posttest at all. As another example, in the cartoon description task, Chris made significant progress from pretest to posttest (i.e., progressing from 3.2 to 4.6), whereas Megan performed worse in her posttest than in her pretest (i.e., dropping from 4.4 to 4.2).

As can be seen in Figure 5.5, compared with the five other participants, Chris made the greatest progress from pretest to posttest. By comparison, Megan performed worse on the posttest than on the pretest. A closer examination of Megan’s test items shows that in the pretest, her main issue was that she failed to provide the resultative component explicitly. In her posttest, however, she struggled with a different set of problems, mainly involving the perfective marker –*le* and directional words.
Table 5-7. Participants' performance on the translation task and cartoon description task

<table>
<thead>
<tr>
<th></th>
<th>Derrick</th>
<th>Megan</th>
<th>Stacy</th>
<th>Elaine</th>
<th>Chris</th>
<th>Larry</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Translation Task</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
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<td>3.6</td>
<td>3.4</td>
<td>3.8</td>
<td>3.4</td>
<td>4.2</td>
</tr>
<tr>
<td>Posttest</td>
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<td>5.0</td>
<td>3.8</td>
<td>4.4</td>
<td>4.2</td>
</tr>
<tr>
<td>Delayed posttest</td>
<td>4.8</td>
<td>4.4</td>
<td>4.4</td>
<td>4.2</td>
<td>4.6</td>
<td>4.6</td>
</tr>
<tr>
<td><strong>Cartoon Description Task</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>4.4</td>
<td>4.4</td>
<td>3.8</td>
<td>3.6</td>
<td>3.2</td>
<td>4.0</td>
</tr>
<tr>
<td>Posttest</td>
<td>5.0</td>
<td>4.2</td>
<td>4.4</td>
<td>4.6</td>
<td>4.6</td>
<td>4.4</td>
</tr>
<tr>
<td>Delayed posttest</td>
<td>5.0</td>
<td>4.4</td>
<td>4.4</td>
<td>4.6</td>
<td>4.8</td>
<td>4.6</td>
</tr>
</tbody>
</table>

*Note.* Shaded areas with the same color indicate examples of individual learner variations observed in the same task.

5.4 Summary

In this chapter, I presented quantitative findings based on the performance of the six participants’ as a group on the translation task and the cartoon description task across the pretest, posttest, and delayed posttest. Overall, the results show that the participants correctly identified examples of well-formed *ba*-constructions but struggled with ill-formed ones. Findings from the translation task and the cartoon description task suggest that the performance of the participants as a group improved significantly between the pretest and the posttest. The results also show that the participants had a good retention rate two weeks after the concept-based instruction program, which suggests, in turn, that the program had a positive effect on the participants’ acquisition of the *ba*-construction specifically. In the next chapter, I will describe in greater detail the six focal participants’ progress in terms of developing a conceptual understanding of the various aspects of the Chinese *ba*-construction as evidenced in their verbalizations before and after the enrichment program.
Chapter 6

Results and Analysis of Conceptual Development

6.1 Introduction

In this chapter, I present the results and analysis of the participants’ development of a conceptual understanding of the *ba*-construction, as evidenced in the verbalization data (i.e., interviews and in-class discussions). The analysis centers on two major areas: (1) the functional purpose of the *ba*-construction and (2) the differences in the location of focus between the canonical SVO word order, the topicalization OSV word order, and the *ba*-construction. Because multiple types of data from multiple sources were collected and analyzed, the assessment of the participants’ conceptual development is necessarily multidimensional in nature. Superior to the approach of using a single type of data collection instrument, a multidimensional approach allows the researcher to gauge the participants’ ability in a fine-grained way (cf. Kinginger, 2008). Communication between the researcher and the participants was primarily in English, and excerpts from the data were transcribed in accordance with the conventions listed in Appendix K.

6.2 The functional purpose of the *ba*-construction

6.2.1 Before the enrichment program

Before the enrichment program, the participants’ conceptual understanding of the purpose of the Chinese *ba*-construction was quite limited in terms of the contexts where this grammatical device can be used. For most of the participants, the primary context in which the construction can be used involves the physical movement of an object, i.e., an action whereby an
object is moved to some place. For example, according to Megan, the *ba*-construction is used to “put stuff into places.”

*Excerpt 6.1*

Tutor: This is your third semester [of learning Chinese]. I guess you must have already learned the *ba*-construction. Is it already covered?

Megan: Yeah, we just learned it last week actually. I mean, a lot of the structures, we just touched base on, and we are supposed to know it, but, um, sometimes it is confusing ’cause if I wanna say like wash clothes, I don’t think that using *ba*, because when I use *ba*, when *ba* popped up in my mind to use, I wanna use it to *put stuff into places*, and the room. Not like, taking my cloth[es], and washing them. I guess it make[s] sense to put it that way, but washing cloth[es]. The action is to take it down, or whatever, taking it, and washing them. But I forget *ba* a lot when I wash clothes.

(Megan, pre-enrichment interview)

As can be seen in Excerpt 6.1, given her initial conceptual understanding of the *ba*-construction, Megan immediately ran into trouble in terms of comprehending why the *ba*-construction can also be used in situations such as washing clothes. Clearly, as she verbalized, one could certainly put clothes into a washer, but the action of washing them is indeed different from placing them in the washer. As such, the notion of “putting stuff into places” does not really apply to this clothes-washing scenario. In other words, characterizing the purpose of the *ba*-construction as “the movement to or placement of physical objects in a different location” is inadequate to describe the many uses of this grammatical structure. Certainly, Megan’s challenge originated from a textbook account of the construction, as discussed in Chapter 3, which focused students’ attention primarily on cleaning and rearranging rooms.

Elaine had also only just received instruction on the *ba*-construction. The context in which she learned the *ba*-construction was that of reorganizing a room. As can be seen in Excerpt
6.2, compared to Megan’s description, Elaine’s discussion of the purpose of the *ba*-construction is slightly more abstract. That is, Elaine mentions that the construction is used to change an object in some way. Her understanding of the actual context in which the *ba*-construction is used, however, is limited to expressing a change in the physical location of an object. Indeed, the example she gives in Excerpt 6.2 我把书放在桌子 “I put the book on the table” aligns well with her conceptual understanding.

*Excerpt 6.2*

Tutor: I guess the *ba*-construction has just been covered, right?  
Elaine: Ah, *ba* as in like, you take something, and changing, like we just learned to reorganize room or something, like 我把(+)这本书(+)放在(++)周末 oh 周末 is weekend, 桌子, 桌子 ((haha)) “I took this book and put it on the weekend, oh, table, table.”  
Tutor: Can you tell me a little bit about what you know about the *ba*-construction?  
Elaine: Well, pretty much like I said. What we learned is that it is used whenever you’re changing, like the way an object is, where it’s placed, whether you’re opening a door, or something like that.  
Tutor: Okay, so like physical movement.  
Elaine: Yeah.

(Elaine, pre-enrichment interview)

Having received instruction on Chinese for five years in high school and also having just received instruction on the *ba*-construction in his third semester of a Chinese course at university, Chris’s initial understanding of the purpose of the *ba*-construction before the enrichment program differed somewhat from those of Megan and Elaine. In Excerpt 6.3, Chris explains that the *ba*-construction is used in the context of “asking someone to do something” or of “dealing with [a] physical object, and physically doing something to it.” This conceptual understanding of the *ba*-construction differs from the notion of physically placing things in a different location. However,
the example Chris provides still involves the physical movement of an object to a different location.

*Excerpt 6.3*

Tutor: So when do you think that we need to use the *ba*-construction?
Chris: Um, I’d say, when you’re kind of saying you did something, or saying you’re asking someone to do something.
Tutor: For example?
Chris: Well, when you’re taking something somewhere, so when you are actually physically moving, ah, moving, ah.
Tutor: Can you give me an example?
Chris: Like, you’re moving the book to the shelf. 你 (+) 把 (+) 书 (+) 放在 (+) 书架 “You take the book and put it [on/onto] the bookshelf.”
Tutor: 书架上 “onto the bookshelf.”
Chris: 书架上 “onto the bookshelf,” yeah.
Tutor: Well, what I intend to ask, or probe further, is that, what’s the purpose of the *ba*-construction? In other words, what’s the difference between the *ba*-construction, and the normal word order?
Chris: My understanding is that the *ba*-construction is dealing with [a] physical object, and physically doing something to it.

(Chris, pre-enrichment interview)

Larry had completed three semesters of a college—level Chinese course and was taking advanced Chinese courses in film and novel studies. Yet, for Larry, the purpose of the *ba*-construction is to “place things somewhere.” The example he provided 我把你的衣服放在柜子里 “I took your clothes, and put them into the drawer” aligns well with this understanding. As can be seen in Excerpt 6.4, Larry suspected that there are “plenty of other cases” where the *ba*-construction can be used, but he admitted that “he just doesn’t know.” Another interesting aspect
evident in the excerpt is that Larry associated the *ba*-construction with the specific lesson (i.e., Lesson 20 in “The Routledge Course in Modern Mandarin Chinese, Level 2”) from which he had learned it. He also associated it with the quizzes and unit tests he had taken immediately after reading the lesson. This indicates that Larry’s conceptual understanding of the *ba*-construction was limited to the specific context in which he had learned this grammatical structure, such that he was not aware of the other contexts in which the construction could be used.

*Excerpt 6.4*

Tutor: Can you tell me a little bit about what you know about the *ba*-construction?

Larry: Well, I know it has to do with placing things somewhere. So it’s like, ah, part of my tone is not good, it’s like, 我把 (+) 你的衣服 (+) 放在 (+) 柜子 (+) 里 “I took your clothes and put them into the drawer,” like that for example, I’m putting something. I think *ba* is kind of like indicator of the object that you’re doing something with. However, that’s the only case that I can remember it for. I’m sure there’s plenty of other cases. I just don’t know.

Tutor: Okay, so when do we use the *ba*-construction?

Larry: When it shows up in Lesson 20 in the Chinese textbook.

Tutor: ((laugh))

Larry: Seriously, when you have to use in your exam ((laugh)). The only example (+) it has been almost a year since I took Chinese Three, but the one I can remember was 我把你的衣服放在柜子里 “I took your clothes, and put them into the drawer.” That’s the only one I can remember. I’m sure there are plenty others.

Tutor: So you’re saying that the *ba*-construction is used to placing things.

Larry: Placing, and, um, anything that has to do with an object and a location, my guess. I’m sure there are many other examples, I just don’t know ((laugh)).

(Larry, pre-enrichment interview)

In fact, Derrick, as shown in Excerpt 6.5, was the only participant to provide a fairly close approximation of the pedagogical model (see Appendices F, G, H and I for pedagogical
diagrams) in regard to the functional purpose of the *ba*-construction. In Excerpt 6.5, Derrick explains that the end of the *ba* sentence “feels like the most important point” and that the *ba*-construction is used to “put the outcome of a process in focus.” The example Derrick provides 把那个水果切成几块 “cut that fruit into several pieces” as well as 把那些词汇记住 “Take these vocabulary and memorize them.” align well with his conceptual understanding of the purpose of the *ba*-construction not as focused on physically moving or placing things, as in the other participants’ accounts but as focused on the outcome of a verbal action. Derrick’s advanced conceptual understanding of the functional purpose of the *ba*-construction arises from his advanced L2 Chinese proficiency, the result of his extended nine-year stay in Taiwan.

*Excerpt 6.5*

Tutor: Can you tell me a little bit of what you understand about the *ba*-construction?
Derrick: It’s like, in English, if you said I’m gonna take it, and do something with it. The principle is like grasping something with your hand, and then doing something with it.
And, in English, actually, sometimes we might say, you know, take the fruit, and cut it into several pieces.
Tutor: mhm
Derrick: 把那个水果切成 (+) 几块 “cut that fruit into several pieces.”
Tutor: mhm
Derrick: 这样子 “Just like that.” So it’s not totally, not totally alien to English.
Tutor: But you wouldn’t say to take the apple and cut it into pieces. You would just say “Can you cut this apple into three pieces?”
Derrick: Well, colloquially, in some (++), you know, I heard people say, take the thing and do something with it. So this construction (++ similar construction does exist in some forms of English. It’s not common, but (++), it’s not, it’s not totally strange.
Derrick: And, it makes some kind of conceptual sense, with *ba*, you, you take an object, and complete some action with it—you use the object to complete some action.
Tutor: Okay.
Derrick: But it doesn’t need to be a physical object. I started learning it with physical object, first. But then, from there, it’s pretty easy to extend the concept to more abstract things. For example, 把这些，把这些词汇记住 “Take these vocabulary and memorize them.”
Tutor: So, it’s not physical.
Derrick: But, it definitely starts from physical object. You use it to describe very physical action. Then I tried to extend to other areas where it can be used.
Tutor: Okay. What else? I’d like to know more.
Derrick: That’s basically it. I just remembered a very vivid image. It’s like taking control of something, and then using that thing in some way. It’s very intentional. Well, I don’t know if it’s intentional, but it definitely feels like intentional.
Tutor: When do you want to use the ba-construction?
Derrick: When you want to focus, when you want to focus on the outcome, of using some, an object in some kind of process, because, when you use the ba-construction, the subject, or the actor is first in the sentence, and you have a ba-particle, and then, no, it’s not a particle, right?
Tutor: You can call it a particle.
Derrick: Okay, yeah the ba-particle, and then you have the object that is being acted upon or acted with. And, finally, at the end of the sentence, which feels like the most important point, you have some kind of, what is that called, resultative compound?
Tutor: mhm, that’s right.
Derrick: So, I would say it’s used when you want to focus on the outcome of the process.
Tutor: Okay.

(Derrick, pre-enrichment interview)

Note that in explaining his understanding of the ba-construction, Derrick draws on his linguistic knowledge in English, his first language, to find conceptual similarities between the ba-construction and aspects in English. The use of L1 in mediating L2 learning has been observed in the literature. Vygotsky (1986) highlighted the role L1 plays in learning L2 semantics. He maintained that the acquisition of an additional language is mediated by the learner’s L1 in that the learner uses the semantics of the L1 as the foundation.
Overall, the pre-enrichment interview data reveals that although the participants had all received instruction on the Chinese *ba*-construction before participating in this dissertation study, the majority expressed a very basic conceptual understanding of the functional purpose of the *ba*-construction that was largely limited to the context of physically moving or placing a physical object. In line with their conceptual understanding, the participants provided examples focused on the physical movement of physical objects to some specific physical location. Although the *ba*-construction can certainly be used in situations such as that of moving an object to a different place, this understanding is both limiting and unsystematic. For instance, Megan immediately encountered difficulty in her account of using the *ba*-construction in the context of washing clothes, which does not align well with the concept of placing or moving an object. The only exception in this cohort is Derrick, whose conceptual understanding approximates the pedagogical model prepared for this study. In the following sections, I present findings relating to how the participants came to conceptually understand the *ba*-construction after the enrichment program.

### 6.2.2 After the enrichment program

The results indicate that after the enrichment program, each participant showed a significant improvement in his or her conceptual understanding of the functional purpose of the *ba*-construction. Almost all the participants were able to extend the use of the *ba*-construction from the physical movement of an object to or placement in a specific physical location to situations where the focus is on the result of a verbal action. For instance, Megan’s conceptual understanding had changed by the time she completed the enrichment program. Specifically, she mentioned that the *ba*-construction is used to indicate that “something has changed from some
form or state into another one.” Clearly, this conceptual understanding is much broader than her pre-program understanding of the construction as relating to “putting stuff into places.”

**Excerpt 6.6**

Tutor: Can you tell me a little bit about what you understand about the *ba*-construction?

Megan: So the *ba*-construction is to like indicate that something has changed, so I guess it changed from some form or state into another one. The verb can’t be by itself, (after or precedes the *ba*, and then noun) if you use adverbs, or adjective, it has to go before the noun or the verb, or it could go adverbs, like slowly, quickly can go before *ba*, if you’re negating *ba*, then [you] can use bu, then modal verbs, or mei, meiyou, or bie, the noun always goes after *ba*, and the subject always goes before *ba*, and the verbs [are] always after, the subject, the *ba*, noun, the *ba*-construction usually has a –le, and if you ask a question, you can [have] ma at the end, you can use like a verb-bu-verb structure, or you can use a question word, like, 小王 “Xiao Wang,” for example, so you can say shei instead of 小王 “Xiao Wang,” but then you won’t use ma.

Similarly, Stacy extended her conceptual understanding of the *ba*-construction from “just a way of saying I took this and put it here” to “a grammatical device that put the result in focus.” Further, at the post-enrichment interview, Stacy used a hand gesture to express her conceptual understanding of the functional purpose of the *ba*-construction. That is, she throws her hands in the air and slightly shrugging her shoulders indicating that there is really no need to use the *ba*-construction in this context.

**Excerpt 6.7**

Tutor: We have learned the *ba*-construction for quite a while now. I am curious, like, in what aspects your understanding about the *ba*-construction has changed? Anything new that you think you have learned?

Stacy: I definitely learned that *ba*-construction is not just about, talking about placement of something. I used to think that it’s just location. So I learned that it is a grammatical
device that put the result in focus, rather than just a way of saying I took this and put it here ((haha)), 'cause that’s my understanding before the study. That was good.

Tutor: Okay.

Stacy: I also learned a little bit about when and why you would use a ba-construction. I learned that you use it with something definite, a definite object, and you would use it to put the result in focus. So, if you’re not talking about the result +++ ((throwing her hands in the air and slightly shrugging her shoulders to indicate that there is really no need to use the ba-construction in such context.))

(Stacy, post-enrichment interview)

Larry’s conceptual understanding of the ba-construction before the enrichment program was limited to placing things. In fact, the only situation in which he knew how to use the construction related to putting clothes in drawers. After the enrichment program, he understood that the ba-construction can be used to place focus on the verb. This new understanding is not entirely correct: the purpose of the ba-construction is not to “place focus on the verb” per se, but to highlight the cognitive saliency of the resultative component of the verbal action. However, this understanding that the ba-construction can be used to purposefully change the focus in a sentence both differs significantly from his previous conceptual understanding and does show meaningful development in regard to the grammatical construction over the course of the study.

Excerpt 6.8

Tutor: If you’re going to describe the ba-construction to somebody else, to someone who is learning Chinese, who haven’t actually been introduced to this grammatical structure, what would you say?

Larry: I would say, ah, if you want to, if you’re planning on, changing the focus of the sentence, then, you can use the ba-construction, (+) in order to express focus in different things. So with the ba-construction, I believe it puts focus on the verb, if I recall, whereas, well we typically went, in Chinese class, subject, verb, object, and that doesn’t put focus anywhere. So just, I’d probably say that.
Tutor: Okay. Now you mentioned Subject Verb Object. We also learned object, subject, verb, right?
Larry: Yeah.
Tutor: And also the *ba*-construction, what’s the difference between these three?
Larry: Well, the object, subject, verb puts focus on the object, like 衣服 (++她 (+)洗, “Clothes, she wash” like she washed those clothes, like that.
Tutor: 衣服, 他洗了 “Clothes, she washed.”
Larry: Yeah.

Likewise in their post-enrichment interviews, both Chris and Elaine mentioned that the primary purpose of the *ba*-construction is to focus on the result of the verb, not just an action whereby things are put somewhere, as they had originally thought.

*Excerpt 6.9*
Tutor: Can you tell me a little bit about what you understand about the *ba*-construction?
Chris: Now I understand that it, that the main point of the *ba*-construction is to put the results of the verb in focus, especially as it pertains to the object, it changes the, it significantly changes the focus of the sentence, which would otherwise be on the subject or object.
Tutor: Okay (+) Anything else?
Chris: Um +++
Tutor: I said a little bit, but maybe ((laugh)).
Chris: It’s really important ((laugh)), it’s really important.
Tutor: Okay (+) So now we learned about the SVO, OSV, and the *ba*-construction, (+) what’s the difference between these three?
Chris: Well, the SVO is kind of the standard way of putting other sentences, standard practice of putting other sentences, Subject Verb Object, the focus is on the Subject.
Tutor: Okay.
Chris: Then you change it to OSV, the object to the front, that put focus on the object, or you can use the *ba*-construction, where you put Subject, *ba*, Object, Verb ((left hand tapping on the table once for each element representing the card play)), and the focus goes to the Verb, specifically the result of the verb.
Tutor: Okay.  

(Chris, post-enrichment interview)

_Excerpt 6.10_

Tutor: So, can you now tell me a little bit about what you understand about the *ba*-construction?  
Elaine: Well, when I came here, I thought the *ba*-construction is just taking things, and putting it somewhere else, but it’s really, if it changes in any way, not just, if you move something, yeah.  
Tutor: Okay. That’s a big change, right?  
Elaine: mhm.  
Tutor: Now, we (+) learned about the SVO, OSV, and the *ba*-construction. So can you (+) tell me a little bit about the differences of these three?  
Elaine: Yeah. SVO, ah, Subject, Verb, Object, there isn’t really any focus on anything. What was the other?  
Tutor: OSV.  
Elaine: Oh, OSV, *ba*, right? OSV, Object Subject Verb, the focus is on the object, and with *ba*, the focus is on what happened, the completed action.  
Tutor: Okay.  

(Elaine, post-enrichment interview)

Derrick, the most advanced L2 learner among the participants, already had a good understanding of the purpose of the *ba*-construction before the study. Yet, his conceptual understanding of the functional purpose of the *ba*-construction nevertheless improved after the six-session enrichment program. In Excerpt 6.11, Derrick integrates some of the auxiliary concepts (e.g., topic vs. comment, new information vs. old information) into his existing understanding. Moreover, he discusses the meaning of the *ba*-construction in a way that not only goes far beyond textbook accounts, but also connects to the theoretical discussions of the *ba*-construction in the Chinese linguistics literature. That is, Derrick avers that the resulting state must be stable and unambiguous.
Excerpt 6.11
Tutor: So can you tell me a little bit about what you understand about the ba-construction?
Derrick: I want to come back to the metaphor that we referred to earlier, which is like, someone is taking hold of something, and completing an action with it, both physically, and as I said, metaphorically. And typically that means that the object, which is being acted upon, has to reach some kind of steady state, or unchanging state at the end. And the word I used before is equilibrium. And even more generally, it puts more focus on the process that is done to the object, or the object undergoes.
[[In this discussion of the directional word and the placement of the perfective marker – le, Derrick shows that this is his main problematic area.]]
Derrick: So back to your earlier questions. A principal use of the ba-construction is to talk about some new information itself. It’s an agent, or grammatical subject, that is known, acting on an object, which is known, and ah, the new information is the state, which is the result of the process undertaken.
Tutor: Which is changing to some kind of new state, right?
Derrick: That’s right.
Tutor: OK.
Derrick: And the changes must be completed. It can’t, it can’t be ambiguous, the final condition must be known, and it must be stable.
Tutor: Okay.

(Derrick, post-enrichment interview)

Overall, the participants’ conceptual understanding of the functional purpose of the ba-construction improved significantly over the course of the enrichment program. In the post-enrichment interviews, nearly all the participants were able to explain that the purpose of the ba-construction is not just about physically moving or placing an object, but rather, and more broadly, to place focus on the result of the verbal action. Based on this understanding, the participants extended their use of the ba-construction beyond such limited situations as cleaning a room or rearranging things in a room to a variety of instances. As the most proficient L2 Chinese
speaker, Derrick also improved his understanding of the ba-construction even beyond the pedagogical model presented in the enrichment program. The development of the participants’ conceptual understanding of the functional purpose of the ba-construction suggests that the concept-based instruction of the ba-construction enrichment program was successful in promoting the participants’ development of a conceptual understanding of the functional purpose of the focal construction.

6.3 SVO, OSV and the ba-construction

In this section, I present the results and analysis of the participants’ development of a conceptual understanding in regard to the differing foci of the SVO, OSV, and the ba-construction in Chinese. As discussed in Chapter 4, the ba-construction involves the movement of the grammatical object to pre-verbal position. Thus, the word order of this construction resembles that of the topicalization form of OSV. The results as evidenced in the pre-enrichment verbalizations indicate that, in general, the participants were not able to articulate the differences between SVO, OSV, and the ba-construction before the enrichment program, despite being repeatedly probed and given many opportunities and even concrete examples. After the enrichment program, however, they were able to verbalize these differences precisely and succinctly. In the following subsections, I present three focal participants’ conceptual understanding before and after the enrichment program in regard to the differences in focus between the SVO, OSV, and the ba-construction.
6.3.1 Megan

Megan, as shown in Excerpt 6.12, was almost entirely lost in explicating the differences between the SVO, OSV, and the *ba-*construction. She recognized that the OSV structure puts more focus on the topicalized object, but she believed that the OSV structure and the SVO structure are basically the same in terms of the location of focus. As for the difference between OSV and the *ba-*construction, Megan thought that both structures put focus on the fronted object. After further probing, Megan was still unable to indicate where the focus for the *ba-*construction is located. When given a concrete example that involved drinking a bottle of water, Megan had trouble using the *ba-*construction to describe this situation, because it did not fit into her conceptual model of putting things into places. In fact, she failed to repeat correctly the *ba-*construction the tutor had only just mentioned. She incorrectly switched the *ba* particle and the subject: “*把这瓶水，我喝完了*” “*Ba this bottle of water, I drank finished –le.*”

*Excerpt 6.12*

Tutor: In Chinese, the canonical word order is Subject Verb Object. But we can also put the object in front. To give you an example (+++), “this cellphone, I don’t like it. 这个手机 (+++) 不喜欢.” So “this cellphone” (+++) is actually placed (+) to the front of the sentence. So (+++) my question is, do you see any differences?

Megan: Yeah, because when you say “this cellphone,” it serves as the subject now, and not just the object, actually, isn’t the object “I” now?

Tutor: I guess the subject is still “I” - I don’t like the cell phone. 这个手机 “this cellphone” (+++) 我不喜欢 “I don’t like” (+++) 喜欢 “like,” is still the verb, and 我 “I” is the one who is perform[ing] the action.

Megan: Okay, so you switched the verb phrase and the noun phrase.

Tutor: Yeah, you can put the object in front of the sentence. So do you see any differences in terms of the SVO Subject Verb Object and OSV Object Subject Verb, the OSV structure?
Megan: I think 这个手机(+我不喜欢 “this cellphone, I don’t like (it),” you put focus on the phone, rather than, if you said, 我不喜欢这个手机 “I don’t like this cellphone,” you put more focus on the fact that you don’t like it. But, I don’t know. It’s just the placement of focus, I guess. I don’t know. I guess they both mean the same thing. It just, well, I don’t know, it brings up my linguistic stuff, depending on where you put things at different places, like, I don’t know another example, given another sentence, it could lead to ambiguity as to what you meant, like, um, I don’t know.

Tutor: We mentioned the SVO, OSV, but the ba-construction also involves the movement of the object in front of the verb, right?
Megan: mhm.
Tutor: So do you see any difference between the OSV structure and the ba-construction?
Megan: um, I guess both are putting focus on the object, because in the ba-construction the subject still comes first, but for ba, you’re taking, kind of taking what you’re doing with, I don’t know, the importance is more like, I don’t know, like what you’re taking, because you’re using ba=.
Tutor: =What do you mean by the importance of taking?
Megan: um, like, you’re taking something and putting it somewhere else. That’s what you are trying to get across in a sentence, so like what you’re taking, to do with what, um, I don’t know. I don’t know. I guess the importance of the sentence is you want to get across the object more than, I don’t know.
Tutor: It’s difficult to talk about it in abstract. Let me give you an example. For example, I could say, (+++) 这瓶水,我喝完了 “This bottle of water, I drank it all.” You could also say 我把这瓶水喝完了 “I took the bottle of water, and drank it all.” So like, what’s the difference?
Megan: (+++)*把这瓶水，我喝完了 “* ba this bottle of water, I drank them all.” I don’t know, I never, I never really learned ba that way, that’s why I said we only touched base on ((unintelligible)) we learned it as a particle, and also a verb, I guess not that many sides of ba, what it turned into ((unintelligible)).
Tutor: That’s alright. That’s the purpose of our study, and hopefully, you, by the end of this program=
Megan: =Yeah, I mean I know what you’re saying when you say it, but like, we just learned one, two, like when you finished something, but yeah, I don’t know, I don’t know what’s the
difference between them, I don’t know how to explain the difference between, I don’t
even know I know the difference, cause=
Tutor: =You suspect that there is a difference.
Megan: Yeah. I don’t know if it’s a way of, maybe ba is more colloquial, like, it’s just um, not
necessarily colloquial, but like you know, like native speakers know to put it there
because that’s always how they’ve done it kind of thing, whereas we wouldn’t know to
put it there, we would use some formal structures, I guess it’s informal maybe=
Tutor: =like register differences (++) okay, okay.
Megan: I think about it there, like, if I drink the water, I wouldn’t even use ba. I wouldn’t have
even known to use ba.
Tutor: How do you, how do you describe it?
Megan: Ba?
Tutor: Without the ba=
Megan: =I would use the first example like 这瓶水，我喝完了 “This bottle of water, I finished
it” (OSV) I would have just said, I wouldn’t have even known to use ba in that sentence.
Tutor: What about 我喝完了这瓶水 “I drank this bottle of water” (SVO), right? 我喝完了这瓶
水，Subject Verb Object?
Megan: Yeah. I mean. Yeah. That’s one of the things we have in the online assignments, they
have different structures, they ask the questions, and they tell us what’s supposed to say
in English, and then, they have multiple ways of saying it, and it’s on the tests too, and I
don’t know, I get to the point where I’m like, I would always put the object at the end,
’cause that’s where I learned in Chinese, but then I get really frustrated, because
depending on who the teacher is, they might put it somewhere else, so I’ll get it wrong,
even if it’s not wrong, according to how the teacher interprets these. So it’s kind of
frustrating for us, because I would always, if I was given to put it like, say I drank the
bottle of water in English, and if I would have it translated in Chinese, I would always
put the object at the end, just because that’s what I learned.
Tutor: Okay. It’s the safest ((laugh)).
Megan: It’s the safest, yeah ((laugh)).
Tutor: That’s understandable. It’s actually the canonical word order. So, don’t worry about all
these probing questions. I’d like to compare before and after, you know ((laugh)).
Megan: Yeah, I totally understand that.
Near the end of this rather extended conversation, Megan reflected on her Chinese learning experience and admitted that she “always put the object at the end,” because that’s what she had learned to do in Chinese. In addition, she expressed a sense of frustration because the differences between these structures are not explicitly taught in Chinese classes and yet she realized that she could expect to be called on to negotiate them both in tests and in real life.

After the enrichment program, Megan’s conceptual knowledge of the differences in focus between SVO, OSV, and the ba-construction had improved significantly. As can be seen in Excerpt 6.13, she was able to explain that the canonical word order SVO “does not put focus on any part of the word,” which differs from her pre-enrichment understanding whereby she considered the SVO and OSV as basically the same. As for the ba-construction, Megan now recognized that its focus was not the same as that of the OSV structure. Instead, she understood that the ba-construction actually put emphasis on the verb, particularly its resultative part. Note that Megan was capable of integrating other auxiliary concepts, such as topic and comment, in verbalizing her conceptual understanding of the ba-construction and that she needed fewer probing questions from the tutor during the post-enrichment interview.

Excerpt 6.13
Tutor: Okay, so my next question is, in Chinese, we have the Subject Verb Object, and also the Object Subject Verb, and then the ba-construction. So what are the differences between these three types of word orders?
Megan: OK. So Subject Verb Object is the most basic one, um, it also does not put focus on any particular part of the word, it just follows the basic topic comment structure, so the topic would be (+++) the subject, and the comment would be the verb phrase following it. And,
um, so Object Subject Verb, is the focus on the Object, and it’s kind of like topicalization

Tutor: =So, you mean the OSV structure.
Megan: Yeah, the OSV structure, kind of almost like topicalization that is found in a lot of
languages actually. So it is just a focus on the fact that, you wanna to be known to your
audience that, it’s, ah, this object that is is doing whatever. And in doing so, that object is
the topic of the sentence, and the rest of it is comment. And then the ba-structure is
obviously, the focus is on the verb, and the verb has changed.

Tutor: So the results part.
Megan: Yeah, the resultative part.

(Megan, post-enrichment interview)

6.3.2 Elaine

Before the enrichment program, Elaine had some understanding of the placement of
focus for the OSV structure. In the example used by the tutor, 这瓶水, 我喜欢 “This bottle of
water, I like [it],” she was able to explain that the OSV structure “placed focus on that water
bottle.” However, she was unable to explain the location of focus in the canonical SVO word
order. Elaine also had some understanding of the focus of the ba-construction. She commented
that to use the ba-construction, it was necessary to change something about the object with the
verbal action. However, the type of changes she was comfortable with were limited to placing a
physical object in a specific location, and she was unable to explain the differences in focus
between OSV and the ba-construction. Toward the end of the interview in Excerpt 6.14, Elaine
comments that subtle linguistic differences like these are not generally taught in her Chinese
classes.

Excerpt 6.14
Tutor: Can you say something about the *ba*-construction versus other types of syntactic structures? So we know the typical syntactic structure is Subject Verb Object, right?

Elaine: mhm

Tutor: 我喜欢这张桌子 “I like this table,” Subject Verb Object. So what’s the difference, the typical SVO, the *ba*-construction, and also we have, we can put the object in front right, 这杯水，我不喜欢 “this bottle of water, I don’t like.”

Elaine: mhm

Tutor: You can put 这杯水 “this bottle of water” to the front of the sentence. So can you say something about the similarities, differences between=

Elaine: =Well, like you said, you can switch, from my understanding, you can switch a normal sentence around, where you can put the subject, then you can put the object, then the verb, and things like that, like what you’ve said, about switching it with the water, but for *ba*, the way we’ve been taught is that you have to do the subject, *ba*, object, verb, pretty much like=

Tutor: =Okay. That’s right, you can=

Elaine: =You can’t take the *ba*, and put it in the middle, or something.

Tutor: That’s right. In terms of the meaning, are there any differences, in the meaning of those, (+++) for example, 我喜欢这瓶水 “I like this bottle of water,”这瓶水，我喜欢 “this bottle of water, I like.”

Elaine: Ah, I guess you’re placing, if you say 我喜欢 “I like,” you’re saying I like something, you’re placing the focus on yourself ((with both hands pointing to herself), versus you say, 这瓶水 you’re placing focus on that water bottle.

Tutor: What about the *ba*-construction? Can we say something like 我把这瓶水喜欢 “*I take this bottle of water, and like it.”

Elaine: No, I don’t think so.

Tutor: Why?

Elaine: Well, because you didn’t change anything (++) about the water bottle. If you would have said something like you took it and you moved it somewhere, but you didn’t change anything about the=

Tutor: =So I can say 我把这瓶水(+)放在桌子上 “I put this bottle of water on the table.” Would that be okay?
Elaine: I don’t know what you said ((haha)).
Tutor: 我 (++) 把 (++) 这瓶水 (++) 放在 (++) 桌子上 “I put this bottle of water on the table.”
Elaine: Yes, that you can say.
Tutor: Okay, then what’s the difference between 这瓶水, 我放在桌子上 “This bottle of water, I put it on the table.”
Elaine: hmm (+++) I do not know. I guess, by using ba, you’re placing focus on the fact that you did something to the object. I really don’t know, like that was one of my questions when we learned it, like why, ’cause we learned it, you can if you want to say you finished something, but in Chinese II, we learned that you can use –le to show that something has been completed, so it’s like, what’s the difference, and she’s like they’re just it, and I was like, okay.
Tutor: Okay.

(Elaine, pre-enrichment interview)

By comparison, Elaine’s conceptual understanding of the differences in focus between SVO, OSV, and the ba-construction showed development. In particular, she was able to explain that for the SVO structure “there isn’t really any focus on anything.” Also note that during the post-enrichment interview, Elaine was able to explain the differences between the three structures succinctly and quickly, without many prompts or specific examples from the tutor in contrast with her pre-enrichment interview.

Excerpt 6.15
Tutor: Now, we (+) learned about the SVO, OSV, and the ba-construction. So can you (+) tell me a little bit about the differences of these three?
Elaine: Yeah. SVO, ah, Subject Verb Object, there isn’t really any focus on anything. What was the other?
Tutor: OSV.
Elaine: Oh, OSV, ba, right? OSV, Object Subject Verb, the focus is on the object, and with ba, the focus is on what happened, the completed action.
Tutor: Okay.
6.3.3 Chris

For Chris, the biggest change in his conceptual understanding of the differences in focus between SVO, OSV, and the ba-construction before and after the enrichment program was in regard to the location of focus for the ba-construction. In particular, his conceptual understanding of the ba-construction changed from a focus on the verbal action itself to a focus specifically on the result of the verbal action. Based on his verbalizations before and after the enrichment program, as shown in Excerpt 6.16 and Excerpt 6.17, respectively, however, it appears that Chris has yet to understand that there is no focus on any element in the canonical word order SVO.

Excerpt 6.16

Tutor: What’s the difference between the ba-construction and the normal word order?
Chris: um, my understanding is that it deals with physical (++) object, and physically doing something to it.
Tutor: So, in Chinese, we could put the object in front of the subject, something like, 这本书, 我读了好几遍, I read several times, right?
Chris: mhm.
Tutor: So you could say 这本书, 我读了好几遍 “This book, I read several times.” Do you see any differences?
Chris: That would put the book in focus.
Tutor: Because the same meaning, you could say, 我把这本书读了好几遍 “I took the book and read it several times,” right? You can use the ba-construction. So do you see any differences?
Chris: I, I feel the first one, 这本书 “this book” put focus (++) on the book, and the ba-construction put the action in focus.
Tutor: What action?
Chris: The reading.
Tutor: The reading. Okay, what about the normal word order like 我读了这本书好几遍 “I read this book several times.”
Chris: I don’t know ((laugh)).
Tutor: ((laugh)) Okay, alright. So that’s the points that we’re going to cover.
Chris: Okay.

(Chris, pre-enrichment interview)

Excerpt 6.17
Tutor: So now we learned about the SVO, OSV, and the ba-construction, (++) what’s the difference between these three?
Chris: Well, the SVO is kind of the standard way of putting other sentences, standard practice of putting other sentences, Subject Verb Object, the focus is on the Subject.
Tutor: Okay.
Chris: Then you change it to OSV, the object to the front, that put focus on the object, or you can use the ba-construction, where you put Subject ba Object Verb ((left hand tapping on the table once for each element representing card play)), and the focus goes to the Verb, specifically the result of the verb.
Tutor: Okay.

(Chris, post-enrichment interview)

Overall, the analysis presented in this chapter of the three focal participants’ development of a conceptual understanding of the differences between the SVO, OSV, and the ba-construction shows that the enrichment program had a significant impact on the participants’ ability to differentiate between the three forms in regard to the location of focus of each. By comparing the ways in which the participants conceptually understood these forms before and after the enrichment program, we can see that the participants became increasingly capable of concisely pointing out the differences between the three grammatical structures and likewise increasingly capable of explaining these differences in a direct way without the need for any clarification, examples, or repeated prodding on the part of the tutor. It is also worth noting that some
participants integrated other auxiliary concepts, such as topic and comment, in verbalizing their conceptual understanding of the *ba*-construction.

### 6.4 Effectiveness of the enrichment program

In this section, I consider the effectiveness of the enrichment program by examining the participants’ verbalization data focusing on three different areas: (1) the concept-based approach, (2) the animated SCOBAs, and (3) the card-play activities.

Overall, the participants acknowledges that the concept-based approach to the instruction of the *ba*-construction is new but effective in guiding them in regard to the syntactic features and functional purpose of this particular grammatical structure. For example, when asked for her views on the effectiveness of all the activities and tools used in the enrichment program and which she liked best, Stacy commented as follows:

*Excerpt 6.18*

Well, I think it-, it’s a lot of pieces working together. Um, *my* favorite was the cards, because I think, when you have them like that, you really are *creating* the sentence *yourself*. But, sometimes, I tend to forget vocabularies and stuff I don’t know. So, sometimes, it’s like having to arrange it from scratch, but having the options in front of you. Um, but that’s not something that’s going to *help* me, if I don’t do it with you first. So like having someone *here* who understands the language structure and is guiding me through that process, um, is, is essential to, the card process. I think having the animations on the PowerPoint at the very beginning, especially when I had no idea, how to move things around, that was really helpful. Like first step to moving to the cards, because it helped me to see this is how the sentence mo:ve ((both hands raised in front of her as if she were moving cards in the air)). And, you said, okay, now, *you* move the sentences. And it got complicated from there. So I think that was a good way to introduce the cards.

(Stacy’s post-enrichment program interview)
Like the other participants, Stacy liked the card-play activity the most. However, she recognized that the mediational feedback provided by the researcher played an essential role in this activity. In Stacy’s view, “having someone here who understands the language structure and is guiding me through the process” was critical in promoting her development of a conceptual understanding of the *ba-*construction.

For Derrick, the “nuanced discussions” in which he and the researcher engaged was the part he liked best about this activity. In his view, the discussion related to the various concepts associated with the *ba-*construction, including auxiliary concepts such as the topic and comment, helped him “tremendously” and pushed him to “learn Chinese better.”

*Excerpt 6.19*

Tutor: How do all this things help you to learn in general? Which one do you like the best?

Derrick: Um, okay, so out of all the things we’ve done, I like our nuanced discussion *tremendously*, because I never had this opportunity to talk about Chinese in this way, and it’s stimulating, it’s exciting. And, I have to confess, I found a lot of Chinese study that I’ve done in the classroom is, very formulaic, very conservative, very boring. But *this* is actually very exciting and challenging and pushes me to learn Chinese better, to learn more, so I appreciate that tremendously.

In addition, the effectiveness of the pedagogical approach used herein is affirmed by the participants’ verbalization data in the post-enrichment interviews. As illustrated in Excerpt 6.20, Derrick described the animated SCOBAs as “very vivid” and “contextualized,” even commenting that they “worked *really, really well*” for him.

*Excerpt 6.20*
Derrick: So then, on top of that, um, I like the describing-, I really like the work with animation, because, it’s very vivid, and it’s very contextualized, like, to seeing it, and to try to describe what was happening, worked really well for me.

Tutor: Okay.

Derrick: I think the sentence patterns on PowerPoint slides or on paper work less well for me, because there’s kind of a gap, um, as you, as you probably feel from this interview, or previous interviews. You know, describing grammatical features, in terms of, well, um, SVO or RVC, like I, I have trouble using the grammatical terms (+) to talk about the language, or to go from the grammatical terms, to actually-, I have trouble going from talking about the language, in that way, to producing the language.

Tutor: Okay.

By contrast, Derrick remarked that the sentence patterns (i.e., the summary sheet of the various ba-VP patterns) were somewhat abstract and less useful than the SCOBAs in linking grammatical terms to actual language production. As Excerpt 6.21 illustrates, in the process of physically manipulating the cards to explore the various subtleties of the ba-construction, Derrick reported feeling changes taking place in his “mental circuitry.”

Excerpt 6.21

Derrick: Um, I think the cards are very helpful, somehow I felt- I could feel, you know, mental circuitry (+) changing while I was manipulating the physical objects. So I think that works well, too. I’m actually going to try that. When I have to learn new sentence patterns, I’m going to have a variety of cards, and try physically arranging them to produce sentences.

Tutor: Okay, okay, so (+++) I guess what you’re trying to say is, like, it’s a combination of different techniques, that worked, you know, and helped you learn, right?

Derrick: And, I think, in general, techniques that are (++), um, techniques that are (+) closer to the world in some way, um, seem to (+) help more with production.

Tutor: Mhm, (+) like the cards, right=

Derrick: =Yes.
Derrick attributed the highly effective nature of the card-play activity to the fact that it models the real-world situations closely. In fact, this technique is so effective that Derrick was considering using it to teach himself new sentence patterns. Toward the end of the excerpt, Derrick remarked that in his opinion the card-play activity is particularly useful for eliciting language production.

6.5 Summary

In this chapter, I analyzed the participants’ development of a conceptual understanding of the functional purpose of the \textit{ba}-construction including an understanding of the various locations of focus of the canonical SVO word order, the topicalization word order, and the \textit{ba}-construction. The analysis showed that over the course of the two-month enrichment program, the participants showed improvement in their conceptual understanding of the two aforementioned aspects of the \textit{ba}-construction. Specifically, they broadened their conceptual understanding of the purpose of the \textit{ba}-construction from one centered on the physical movement of an object to a specific location to one that encompasses situations in which the focus should be placed on the results of a verbal action. In addition, they developed in terms of their ability to differentiate between the locations of focus of the three focal grammatical structures in regard to word order.

The pre- and post-enrichment program interviews clearly show changes in how the participants conceptually understood the functional purpose of the \textit{ba}-construction and the ways in which it differs from the SVO and OSV forms. It may well be that they simply memorized what they had explicitly been taught during the program. In the next chapter, I will provide more
evidence to illustrate the participants’ improvement in terms of their actual performance, as
evidenced in various contexts, with different types of activities, including paper-based tests, card
play activities, and interactions with the ICALL system.
Chapter 7

Analyses of Improvements in Performance Ability

7.1 Introduction

All the participants showed improvements in terms of their performance ability in regard to various aspects of the *ba*-construction over the course of the study. In this chapter, therefore, I analyze the ways in which the participants improved and the extent to which they did so. Because presenting a series of analyses pertaining to everything each participant did during the five-week program (over 40 hours of video-recorded data) is practically impossible, I have carefully selected some cases representative of the participants’ actual improvement. This chapter is organized around the three major components of the enrichment program. First, I examine improvements in performance ability as evidenced in the translation and cartoon description tasks in both the pretest and the posttest. In the next section, I present an analysis of the participants’ improvement as evidenced in the card play activities, in which the primary focus is the conceptual understanding of the functional purpose of the *ba*-construction and the differences in word order among the canonical SVO, the topicalization OSV, and the *ba*-construction. Last, I present an analysis of improvement in performance ability in terms of the participants’ interactions with the computerized ICALL program. The analyses allow for the “particularization” (van Lier, 2005) of learning experiences that may be representative of the group but simultaneously unique to the individual. As such, the improvements in performance ability presented in this chapter in concert with Chapters 5 and 6 provide a holistic view of the outcomes of the pedagogical enrichment program in both macro- and micro-dimensions and in both quantitative and qualitative terms.
7.2 Improvements as evidenced in major tests

7.2.1 Perfective marker –le

Analyses of the participants’ pretest performance and interview data show that the notion of boundedness in the predicate of the ba-construction and its primary realization through the use of the perfective marker –le was not apparent to some of the participants. Stacy, for example, failed to produce the perfective marker –le in virtually all the cases in the translation task and the cartoon description task in the pretest. Immediately after the pretest, the tutor talked with Stacy about her answer sheet and all the issues it presented. After this discussion with the tutor, Stacy correctly added the omitted perfective marker –le 了 to the respective sentences with a pink highlighter (Figure 7.1). Excerpt 7.1 shows the interaction between the tutor and Stacy regarding her performance on one of the translation tasks in the pretest.

As Excerpt 7.1 illustrates, Stacy acknowledged that she was uncomfortable using the ba-construction to describe the event (i.e., to spill wine on the carpet) as indicated in Figure 7.1, because this use did not align with what she had learned about the purpose of the ba-construction: to take something and put it somewhere (lines 9–12). That was also why she assigned a confidence level of only two out of a maximum of five to her answers. When first given an implicit prompt (line 5), Stacy showed that she was unaware of the need for a perfective marker –le in the sentence.

When the tutor asked further probing questions (i.e., “What are you suspecting? What kind of additional word?”) regarding the potential issue in the sentence (lines 8 and 13), Stacy ventured a guess regarding the possibility that in order to render it correct the problematic sentence required a preposition (lines 14–17). Although Stacy was not quite sure about her judgment, her intuition regarding the preposition 在 “at” was correct (line 16). However, in this
particular case, the preposition 在 “at” is optional, particularly in spoken Chinese. Therefore, the tutor decided to focus on a more

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**Figure 7-1.** Stacy’s performance on the cartoon description task in the pretest.

**Table 7-1.** Transliteration of the answers in Figure 7.1.

<table>
<thead>
<tr>
<th></th>
<th>What did Jerry do to the glass cup? (episode2.avi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jerry ba na bei zi ren gai dishang</td>
</tr>
<tr>
<td></td>
<td>Jerry 把 那 杯 子 仍 在 地上。</td>
</tr>
<tr>
<td></td>
<td>Jerry BA that cup throw onto floor</td>
</tr>
<tr>
<td></td>
<td>“Jerry threw that cup onto floor.”</td>
</tr>
</tbody>
</table>

Jerry 把 那 杯 子 仍 在 地上。
2. **What did Tom do with his tail?** (episode3.avi)
   Tom 把 Jerry 重新 在 废墟 里。
   "Tom threw Jerry to mid-air."
   Note: The above answer is missing the perfective marker –le, and has a redundant “inside” at sentence-final position.

3. **What did Jerry do to the plates?** (episode4.avi)
   Jerry 把 一些 碟子 抛 在 地上。
   "Jerry threw some plates on the floor."
   Note: The above answer is missing the perfective marker –le.

4. **What did Tom do with the slices of bread?** (episode5.avi)
   Tom 把 一些 面包 堆 起 子。
   "Tom piled up some bread [as] a stair."
   Note: The above answer is missing 成 “becoming” and the perfective marker –le.

5. **What did Jerry do to the cheese?** (episode6.avi)
   Jerry 把 奶酪 放 在 冰箱 里。
   "Jerry placed the cheese into the refrigerator."
   Note: The above answer is missing the perfective marker –le.

Figure 7-2. Stacy’s performance on the translation task in the pretest.
significant issue directly related to the well-formedness of the ba-construction. Through the use of a leading question (lines 20–22), the tutor focused Stacy’s attention on the link between aspectual marking and the ba-construction. Only at this point was Stacy finally able to identify the real issue in the problematic sentence, and she promptly supplied the correct answer—the perfective marker –le. The prefacing of the discourse marker “oh” in her utterance in line 24 indicates that she had some knowledge of the perfective marker in Chinese, but was unable to establish the link between the perfective marker –le and the ba-construction. In lines 27–28, Stacy admitted that she was often confused regarding where to put the perfective marker –le. She knew that she could either put it post-verbal or at sentence-final position. However, she preferred sentence-final position so that she would not have to establish the exact boundary between the verb phrase and the other elements.

**Excerpt 7.1**

1. Tutor: I want to start with this one ((pointing to the first question in the translation task)). Can you read this?
2. Stacy: ((Reading out aloud word by word 他把那个酒杯 sa 地 tan 上。 “He took that cup and spilled onto floor”)).
3. Tutor: Mhm (++) do you see any problem with this? ((pointing to the entire sentence)).
4. Stacy: I’m not very comfortable putting it together.
Tutor: So you give it a 2 ((out of a maximum of 5 for confidence level)).
What are you suspecting?
Stacy: I have pretty much only learned the ba-structure of taking something
and putting it somewhere else. And so I had the idea of using it in the sense that
he took the glass of wine and (+) spilled it on the carpet, but, especially I think
there should be an additional word to describe the glass of wine, and then, um=
Tutor: =What, what kind of additional word?
Stacy: Um, like something, that represent the glass of wine, maybe (++)
洒 to spill, um, there is another (+) word, I know sometimes action have,
like I’m interested. We need 在 “at” somewhere, or like (+) perhaps,
I’m not sure what word, I think there’s something else=
Tutor: =You mentioned 在 “at.” Where do you wanna put 在?
Stacy: Um, 在, maybe before 酒 “spill,” > either before 酒 “spill”< or after (++)
Tutor: Well, let me ask you this question=
Stacy: Maybe before ba.
Tutor: (++) Well, let me ask you this question first ((using pen to slide over the
sentence)). Has the action completed?
Stacy: Oh, –le ((laughing)) 对不起 “Sorry.”
Tutor: 没关系，没关系 “That’s alright.” So if you want to put –le, where do you want
to put it? 放在什么地方? “Where to put it?”
Stacy: Um, I sometimes get confused as whether to put it after the verb, or at the end of
the sentence. I think I’ll put it all the way at the end here.
Tutor: Okay.

By the third session of the enrichment program, Stacy had demonstrated her ability to use
the perfective marker –le in the ba-construction in a class activity (Figure 7.3). As Figure 7.3
illustrates, in six out of seven cases (the exception was question 7), Stacy was able to provide the
needed perfective marker –le in her Chinese translations.5 Note that in question 5, although Stacy

5 In Figure 7.3, the tutor’s annotations (written in red) were primarily directed to linguistic aspects other
than the perfective marker -le.
provided the perfective marker –le, its location was incorrect—it should occur immediately after the first verb in the verb-yi-verb construction, not in sentence-final position. By the time Stacy took the posttest, she was able to correctly supply the perfective marker –le as required. In one case, however, she chose the de-resultative (e.g., 切得很好 “cut up the apple nicely”), which already indicates a completed action, such that the perfective marker –le was unnecessary.

Figure 7-3. Stacy’s performance on a translation task at the end of session three.
Table 7-3. Transliteration of the answers in Figure 7.3.

<table>
<thead>
<tr>
<th></th>
<th>Sentence</th>
<th>Transcription</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>I ate this apple.</strong></td>
<td>Wo ba nage pingguo chi wan le</td>
<td>I ate this apple.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>我把那个苹果吃完了。</td>
<td>1SG BA that-CL apple eat finish PRF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I finished that apple.”</td>
<td>Note: The translation uses the complement <em>wan</em> “finished” to mark the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>completeness of the verb action, which is incorrectly, because the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>original English sentence does not necessarily imply that the whole</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>apple was eaten.</td>
</tr>
<tr>
<td>2</td>
<td><strong>I finished this apple.</strong></td>
<td>Wo ba nage pingguo chi wan le</td>
<td>I finished this apple.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>我把那个苹果吃完了。</td>
<td>1SG BA that-CL apple eat finish PRF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I finished that apple.”</td>
<td>Note: This translation is correct.</td>
</tr>
<tr>
<td>3</td>
<td><strong>I didn’t throw the apple into that trash bin.</strong></td>
<td>Wo bie ba pingguo zai lajitong li reng wan le</td>
<td>I didn’t throw the apple into that trash bin.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>我别把苹果在垃圾桶里扔完了。</td>
<td>1SG NEG BA apple at trash-bin inside throw finish PRF.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I don’t finish throwing apple at the trash bin.”</td>
<td>Note: The translation is incorrect for two places: (1) the verbal complement <em>wan</em> “finish” is unnecessary; (2) the locative <em>dao lajitong li</em> “to the trash bin” is not correctly used and placed.</td>
</tr>
<tr>
<td>4</td>
<td><strong>She took a bite of that apple.</strong></td>
<td>Ta ba nage pingguo yao guang le</td>
<td>She took a bite of that apple.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>她把那个苹果咬光了。</td>
<td>3SG BA that-CL apple bite gone PRF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“She finished that apple.”</td>
<td>Note: The translation is incorrect because it does not convey the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>original meaning, i.e., she only took a bite. So instead of <em>guang</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“gone; complete”, one can say <em>yikou</em> “a mouth full” or <em>yixia</em> a</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>little bit” after the perfective marker –le.</td>
</tr>
<tr>
<td>5</td>
<td><strong>She took a bite of that apple.</strong> (V-yi-V)</td>
<td>Ta ba nage pingguo yao yi yao le</td>
<td>She took a bite of that apple.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>她把那个苹果咬了一口。</td>
<td>3SG BA that-CL apple bite one bite PRF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“She took a bite of that apple.”</td>
<td>Note: The translation is incorrect because the perfective marker –le</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>can only be placed after the first verb in the V-yi-V form.</td>
</tr>
<tr>
<td>6</td>
<td><strong>We ate that pile of apple very fast.</strong> (de-resultative)</td>
<td>Women ba nadui pingguo kuai de chi wan le</td>
<td>We ate that pile of apple very fast.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>我们把那堆苹果快吃得完了。</td>
<td>131</td>
</tr>
</tbody>
</table>
Stacy’s command of the perfective marker –le in the ba-construction was also reflected in her performance in the cartoon description task in the delayed posttest. This time, she supplied the perfective marker –le for all the cases (Figure 7.4). However, in her performance in the delayed posttest, she misused the perfective marker –le on one occasion. As Figure 7.5 illustrates, Stacy initially placed it at sentence-final position, which was correct, and was also her preferred way to place it. It needs to be noted that in addition to this location, another location for the perfective marker –le was introduced in the enrichment program. There are subtle distinctions in meaning between the two different placements of the perfective marker –le. In short, placing it post-verbal indicates a completed action, whereas placing it at sentence-final position indicates the projection of new information. In the delayed posttest, Stacy decided to try the less usual and more difficult placement, i.e., after the verb phrase. As can be seen in Figure 7.5, she did not place –le in exactly the right location: She placed it before the preposition 在 “at,” whereas the correct placement is after the verbal phrase 洒在 “spill at.”

The variable location of the perfective marker –le in the ba-construction was also new to Derrick before the enrichment program, despite his relatively advanced proficiency in L2 Chinese. For example, in Derrick’s pretest, all uses of the perfective marker –le occurred at
sentence-final position. By comparison, he correctly used the perfective marker –le immediately after the verb phrase in at least four cases in the posttest, an example of which is shown in Figure 7.6.

![Image of text]

Figure 7-4. Stacy’s performance on the cartoon description task in the posttest.

Table 7-4. Transliteration of the answers in Figure 7.4.

<table>
<thead>
<tr>
<th></th>
<th>What did Tom do to the apple?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tom ba nage pingguo qie de liangban</td>
</tr>
<tr>
<td></td>
<td>Tom 把 那个 苹果 切 得 两半。</td>
</tr>
<tr>
<td></td>
<td>Tom BA that-CL apple cut DE two-half</td>
</tr>
<tr>
<td></td>
<td>“Tom cut that apple into halves.”</td>
</tr>
</tbody>
</table>

Note: The above answer is missing the perfective marker –le, and misuses the de
2. **What did Tom do to the tomato?**
Tom  ba  nage  xihongshi  fang  zai  le  ditan  xiamian
Tom  把  那个  西红  炮  放  在了  地毯  下面。
“Tom placed the tomato underneath the carpet.”

Note: The above answer is correct.

3. **What did the little cat do to the golden fish?**
Xiaomao  ba  jinyu  renge  zai  le  Tom  de  niaobu  li
小  貓  把  金  鱼  仍  在了  Tom  的  尿  布  里。
Little  cat  BA  gold-fish  throw  at  PRF  Tom  de  diaper  inside

Note: The above answer is correct.

4. **What did the yellow duck do to Jerry?**
Huang  yazi  ba  Jerry  la  zai  le  dongli
Yellow  Duck  把  Jerry  拉  在了  洞  里。
Yellow  duck  BA  Jerry  drag  at  PRF  cave  inside
“The yellow duck dragged Jerry at the cave.”

Note: The above answer misuses the preposition zai  “at”; the correct one should be jin  “into.”

5. **What did Tom do to Spike (the dog)?**
Tom  ba  Spike  ti  zai  le  hu  li
Tom  把  Spike  踢  在了  湖  里。
Tom  BA  Spike  kick  at  PRF  lake  inside.
“Tom kicked Tom at the lake.”

Note: The above answer misuses the preposition zai  “at”; the correct one should be jin  “into.”

---

Figure 7-5. Stacy’s performance on the translation task in the delayed posttest.

Table 7-5. Transliteration of the answers in Figure 7.5.

<table>
<thead>
<tr>
<th></th>
<th>He spilled a cup of water on the floor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>He spilled a cup of water on the floor.</td>
</tr>
</tbody>
</table>

1. 他把一bei水洒在了地上。
He spilled a cup of water onto the floor.”

Note: The above answer misplaces the perfective marker –le; the correct place should be after the verbal phrase sazai 洒在 “spill at.”

Figure 7-6. Derrick’s performance on the translation task in the posttest (question 2).

Table 7-6. Transliteration of the answers in Figure 7.6.

<table>
<thead>
<tr>
<th>2</th>
<th>What did Tom do to the tomato?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tom ba xihongshi fang dao le ditan xiamian</td>
</tr>
<tr>
<td></td>
<td>Tom 把西红柿 放 到 了 地毯 下面。</td>
</tr>
<tr>
<td></td>
<td>Tom BA tomato place arrive PRF carpet underneath</td>
</tr>
<tr>
<td></td>
<td>“Tom placed the tomato underneath the carpet.”</td>
</tr>
</tbody>
</table>

Note: The above answer is correct.

Note that in Figure 7.6, Derrick initially placed the perfective marker at sentence-final position. However, he later decided to try the more challenging location (放到了 “place-arrive-perfective”), which he executed correctly. The change in Derrick’s placement of the perfective marker –le in the ba-construction provides evidence that even an advanced L2 Chinese speaker who already possessed a fairly good conceptual understanding of the functional purpose of the ba-construction and who was already skilled at using the ba-construction in daily life (see
Chapter 4 for a discussion of Derrick’s learner profile), still benefited from participating in the five-week enrichment program.

7.2.2 Use of directional words

Another area that all the participants found challenging was the use of directional words (e.g., 上 “onto”) in the ba-construction. In his independent performance on the pretest, Derrick did not produce a directional word in all the contexts that required one, an example of which is illustrated in Figure 7.7.

Figure 7-7. Derrick’s performance on the translation task in the pretest (question 1).

Table 7-7. Transliteration of the answers in Figure 7.7.

<table>
<thead>
<tr>
<th></th>
<th>He spilled that glass of wine on the carpet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ta ba nabei hongjiu sai dao ditan shang le</td>
</tr>
<tr>
<td></td>
<td>他把那杯红酒洒到地毯上了。</td>
</tr>
<tr>
<td></td>
<td>3SG BA that-CL red-wine spill arrive carpet onto PRF</td>
</tr>
<tr>
<td></td>
<td>“He spilled that glass of red wine onto the carpet.”</td>
</tr>
</tbody>
</table>

Note: The above translation is missing the directional word shang 上 “onto.”

As Excerpt 7.2 illustrates, when the tutor initially asked Derrick about his relatively low confidence level on his translation, Derrick indicated that he was not aware of the need for the directional word 上 “onto.” He also expressed doubts regarding the verb phrase (灑到 “spilled
onto,” lines 3–5). (It should be noted here that Derek, who used percentages to indicate his confidence level, indicated 70% confidence on the first translation task in the pretest.) However, when the tutor made it clear that the directional word 上 “onto” (lines 11–12) was needed in this particular context, Derrick emphatically agreed with this suggestion, exclaiming “nice,” “yes,” and “that works” twice. Therefore, even though Derrick failed to supply the necessary directional word in his independent performance, he nevertheless recognized the need to add the directional word to the ba-construction after receiving explicit mediation from the tutor.

Excerpt 7.2

1 Tutor: ((Tutor reading out loud about Derrick’s translation))
2 You have only 70% confidence?
3 Derrick: I don’t feel good about 漏到 “spilled onto” because 漏 “spill” seems to talk about the glass of wine. But, but it spilled onto the carpet.
4 So, I, I don’t feel good about it ((laughing)).
5 Tutor: But 到 “onto” here means onto the carpet, and –le, what does –le indicate?
6 Derrick: Um, (+) the wine has been spilled, we can’t, can’t put it back
7 into the glass ((laughing)).
8 Tutor: It’s like (+) it’s already done, completed=
9 Derrick: =Yes.
10 Tutor: (+++) So I think it’s the directional verb (+) that you really need here,
11 you can say 上 “onto” right?
12 Derrick: (+++) Oh, 漏到地毯上了 “spilled onto the carpet.”
13 Nice, nice, yes, yes, that works, that works.
14 Tutor: Okay.

By comparison, in his independent performance on the posttest, Derrick was able to produce an appropriate directional word in all six contexts that required one. For example, the directional words 下面 “underneath” in Figure 7.6 and 上 “onto” in Figure 7.8 provide evidence
that Derrick became increasingly capable of producing appropriate directional words in the ba-construction in obligatory contexts, e.g., when the predicate of the ba-construction involves the use of a locative.

Figure 7-8. Derrick’s performance on the translation task in the posttest (question 3).

Table 7-8. Transliteration of the answers in Figure 7.8.

<table>
<thead>
<tr>
<th>1</th>
<th>Dad hung this picture on the wall.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baba ba zhezhang xiangpian gua zai qiang shang le</td>
</tr>
<tr>
<td></td>
<td>爸爸 把 这张 像片 挂 在 墙 上 了。</td>
</tr>
<tr>
<td></td>
<td>Dad BA this-CL photo hang at wall onto PRF</td>
</tr>
<tr>
<td></td>
<td>“Dad hung this picture on the wall.”</td>
</tr>
<tr>
<td></td>
<td>Note: The above translation is correct.</td>
</tr>
</tbody>
</table>

The preceding analyses document the improvements made by two focal participants’ in terms of their performance on specific linguistic features related to the ba-construction. Over the course of the study, as the excerpts and figures show, Stacy became increasingly aware of the link between the perfective marker –le, which shows completion of an action, and the ba-construction, which requires its predicate to express a bounded event. In addition, Derrick demonstrated improvement in his independent performance regarding the use of directional words in contexts where a locative is used in the ba-construction.

These analyses also show the role the tutor played in promoting the participants’ conceptual understanding of specific aspects of the ba-construction (i.e., the link between the
perfective marker –le and directional words in locatives). As the excerpts show, when left to their own devices, both Stacy and Derrick were unable to identify, let alone self-correct, the problematic areas of their performance data. However, through interacting with the tutor, Stacy did quickly identify the issue and then self-corrected her error.

7.3 Improvements as evidenced in card-play activities

As discussed in Chapter 4, a card-play activity was employed in the enrichment program to help the participants develop a conceptual understanding of the various aspects of the ba-construction. In this activity, the participants were asked to draw relevant cards from a large set of cards (a Chinese word and its pinyin and English translations were written on each card), and then arrange different syntactic structures in order to focus on different aspects of the ba-construction. The card-play activity was used multiple times throughout the enrichment program: It was first used during the second session of the program, immediately after the concept-based instruction focused on the word order forms of SVO, OSV and the ba-construction. Then, the activity was used during the third session, where the focus was on the different ba-VP patterns (see Table 4.2 in Chapter 4 for an overview of the various ba-VP patterns practiced with the cards). The third card play activity took place during the fourth session with the focus again on practicing various ba-VP patterns. In what follows, I analyze three episodes to illustrate the ways in which and the extent to which the participants showed improvement in their conceptual understanding of the functional purpose of the ba-construction and how it differs from the canonical SVO word order and the topicalization OSV word order, as evidenced in the card-play activity.

The interaction in Excerpt 7.3 between the tutor and Derrick took place in the second session, where animated SCOBAs (see Appendices F, G, H and I for details) were introduced to
the participants for the first time. Both the concepts of topicalization and animated SCOBAs are inspired by and based on Zhang’s (2014) work in his dissertation study. As the Excerpt 7.3 shows, Derrick was capable of using relevant cards, arranging the three different word orders, and pointing out the differential focus depending on location. For each word order, Derrick was asked to specifically point out the location of the (primary/secondary) topic, comment, subject, and object, as well as to specify the differential location of focus. He completed these tasks very quickly and accurately. Although the scenario involved in this card-play activity was the same as those in the animated SCOBAs (i.e., 火车压扁了狼 “The train crushed the coyote”), Derrick completed the assigned tasks without any reference to the animated SCOBAs. Thus, it appeared that Derrick appropriated the conceptual knowledge presented in the animated slides and understood the meaning underlying the imagistic SCOBAs.

Excerpt 7.3

1 Tutor: ((Giving Derrick a stack of cards)). Now what I want you to do, um, let me
2 get this out of the way ((putting some fruit and snacks away to make
3 more space)). Try to do the first one, the SVO structure.
4 Derrick: Okay ((arranging cards on the desk)). Okay, I think we got our SVO
5 sentence here ((reading out aloud 火车压扁了狼 “The train crushed the
6 coyote”).
7 Tutor: Do you need punctuation here? ((pointing to the end of the sentence)).
8 Derrick: Yep ((adding a card containing the punctuation of full stop)).
9 Tutor: So in this one, what is the topic?
10 Derrick: 火车 “The train.”
11 Tutor: 火车 “The train.” And, what is the comment?
12 Derrick: 压扁了狼 “Crush-flat-perfective coyote”
   ((discussing location of the subject, verb, and object)).
13 Tutor: Now what receive the focus?
Derrick: It seems like a neutral statement of fact, the train might be a little bit more important discursively, if we’re talking about the train, rather than the coyote, this might be the structure to use. But overall, it’s pretty neutral. It doesn’t seem to particularly put the train or the coyote in focus.

Tutor: Okay, that’s very good. Now let’s move to the second one, the OSV structure, as we learned.

Derrick: ((Moving the card 狼 “coyote” to sentence-initial position, and adding another card containing a comma)). Okay, we need our pause here ((read out load, 狼，火车压扁了。“Coyote, the train crushed [it]).”

Tutor: Now, which one is topic?

Derrick: Now the coyote, 狼 is the topic.

Tutor: So in terms of the categories, like subject, verb, object, what is this one? ((pointing to 狼 “coyote”).)

Derrick: This is the grammatical object, but it is, it is still the grammatical object, even though it’s topicalized.

Tutor: So what received the focus?

Derrick: The coyote received the focus.

Tutor: Now can you do the third pattern we learned today?

Derrick: With ba? Sure ((arranging the cards as 火车把狼压扁了。 “The train crushed the coyote”)).

Tutor: So what is the primary topic?

Derrick: 火车 “The train” is the primary topic.

Tutor: What is the secondary topic?

Derrick: 狼 “The coyote.”

Tutor: So for the primary topic, what is the comment?

Derrick: This whole part starting with ba ((sliding underneath the cards 把狼压扁了)) is the comment.

Tutor: What is the comment for the secondary topic?

Derrick: Specifically, just the complex verb (+) constituent.

Tutor: So in this sentence, what received the focus?

Derrick: The part, complex verb constituent, particularly the resultative component
Because the scenario described in Excerpt 7.3 is identical to the one depicted in the animated SCOBAs (i.e., 火车压扁了狼 “The train crushed the coyote”), it is worth considering whether the participants completed the task primarily through memorization, without any real understanding of the underlying conceptual knowledge. Therefore, it was necessary to ask the participants to perform the same tasks, but on a totally different scenario (using a different set of cards). By doing so, it was possible to ascertain whether the participants had indeed internalized the conceptual knowledge underlying the imagistic SCOBAs such that they were capable of applying this knowledge in new contexts.

As illustrated in Excerpt 7.4, Elaine was asked to perform this very task. She was given a complete new set of cards describing a clothes-washing activity. The result: Not only did Elaine produce the three different word orders, i.e., the canonical OSV structure (lines 5–7), the canonical SVO structure (lines 18–26), and the ba-construction (lines 27–30), but she also pointed out the location of focus between these three structures, i.e., “nothing” for the SVO, “the clothes” for the OSV, and “right here ((stretching out all five fingers and tapping underneath the cards for洗干净了 “washed clean”)), >these three here” (lines 35–36) for the ba-construction. In explaining the focus for the three different structures, note that Elaine also used a hand gesture to indicate the location of the focus. The overlapping or synchronization between her gesture and her verbal explanation, together with the fact that she successfully applied the concepts to a completely different context, provide evidence that she had, indeed, internalized the concept depicted in the animated SCOBAs and that her performance, therefore, was not the result of mere memorization.
Excerpt 7.4

1 Tutor: Now (+++) I want to change this into a different scenario, ((Tutor distributes a new set of cards to Elaine)), so “to wash the clothes clean,” alright?

2 Elaine: Mhm.

3 ((Tutor removes some old cards and shuffles a new set of cards)).

4 Tutor: Now, can you do the first one (++), um, the SVO.

5 Elaine: Okay, so she cleaned ((Elaine quickly arranges the cards to form the SVO structure 她洗干净了衣服。 “She washed the clothes clean”)).

6 Tutor: So now which one received the focus?

7 Elaine: Nothing.

8 Tutor: Okay.

9 Tutor: ((Tutor reads out load 她 (+++) 洗干净了衣服 “She washed the clothes clean.”)) That’s right. Um (+++), so in this case, what is the topic now?

10 Elaine: Ah (+), I guess it would just be like (+) her ((tapping on the card 她 “she”)) and what she did is the comment ((sliding her right hand underneath the rest of the cards)).

11 Tutor: So all this is the comment ((sliding his right hand above the same cards)).

12 Elaine: Mhm.

13 Tutor: Now can you do the OSV structure?

14 Elaine: ((Moving the card for the object to the front, adding a card for comma)).

15 Tutor: Now, what is the topic (+) for this case?

16 Elaine: The clothes ((tapping underneath the card for 衣服 “clothes”)).

17 Tutor: And what is the comment?

18 Elaine: That she washed them clean ((sliding her right hand underneath the rest of the cards)).

19 Tutor: Okay, that’s correct. Now which one receives the focus here?

20 Elaine: The clothes ((tapping heavily underneath the card 衣服 “clothes”)).

21 Tutor: Okay, now can you do the ba-construction?

22 Elaine: ((Switching the cards for 衣服 “clothes” and 她 “she,” then adding the card for 把 “ba” between those two cards, and finally moving the rest of the cards, as a whole block, immediately after the three cards)).
Tutor: So what’s the difference between the previous one (+) and this one?
Elaine: The focus on the action (+) and its result ((holding her right hand above
the cards for 洗干净了 “washed clean” and pressing downwards slightly)).
Tutor: Which part? Can you point?=
Elaine: Right here ((stretching out all five fingers and tapping underneath the cards
for 洗干净了 “washed clean”)), >these three here.
Tutor: Okay, these three ((pointing to the same three cards)).
Tutor: (+++) What is the secondary topic (+) here?
Elaine: >The clothes< ((pointing to the card 衣服 “clothes”)).
Tutor: What is the primary topic?
Elaine: >She< ((tapping quickly and heavily on the card 她 “she”)).
Tutor: Okay. (+) I think you got it ((laughing)).
Elaine: ((Laughing)) I think (+) >this is actually very helpful, because I have a quiz
today, and I think this would be very helpful.
Tutor: Okay. (+++) in what way I-, how, how does this help you?
Elaine: Ah, I guess because (+++) it’s different than sitting in class and her going
over it, and ah, this helps me understand a lot why we use ba, ‘cause I
really didn’t-, I’ve been-, like I said, >I thought it was like you take
something, and you change something about it<, but the focus on
((tapping quickly the cards 洗干净了 “washed clean”)) the resulting verb,
and even like ((picking up and raising the card 了 “perfective marker –le”))
you taught me how to use –le, right?
Tutor: Okay.

Toward the end of the interaction in Excerpt 7.4, Elaine acknowledged that the card-play
activity was “actually very helpful” to her in preparing for an upcoming quiz in her Level 3
Chinese course (line 43–44). When asked to explain, Elaine commented that the concept-based
language instruction approach differed from approaches she had experienced in classroom
settings, and that it had helped her to understand the functional purpose of the ba-construction.
She also contrasted her prior knowledge of the ba-construction (i.e., take something and change
something about it) with her new understanding (i.e., to place focus on the resulting verb). It is also worth mentioning that in Excerpt 7.4, Elaine demonstrated her ability to integrate several auxiliary concepts related to the *ba*-construction (e.g., topic vs. comment, the perfective marker –*le*).

The third card-play activity, which took place in the fourth session of the enrichment program, was employed to gauge the participants’ knowledge of the various *ba*-VP patterns. Excerpt 7.5 illustrates Derrick’s encounter with directional words in the *ba*-construction, an area that he struggled with as documented in previous analyses (Section 7.2). As shown in Figure 7.10, Derrick produced 我把这一堆书放到了书包 “I took this pile of books and put it to the backpack.” The lack of the directional word 里 “inside” after the locative 书包 “backpack” renders the *ba*-construction ungrammatical. This shows that Derrick was still having problems with directional words in the *ba*-construction.

As Excerpt 7.5 illustrates, the tutor confirmed Derrick’s arrangement of the cards, but still gave Derrick an implicit mediational feedback on his performance: “That is very close. Can you take a look at it again?” (line 4). At this point, Derrick read his cards out aloud one by one in order to identify any potential issues. And, very quickly, he was able to self-identify the problematic area and self-correct the error by picking up the directional word 里 “inside” and correctly placing it after the noun phrase indicating location 书包 “backpack” (lines 5–7).
Figure 7-9. Derrick’s card-play activity in the fourth session.

Excerpt 7.5

Derrick: ((produced a ba-construction using locatives))

How about that? ((reading out loud word by word 我把这一堆书放到了
书包。 “I took this pile of books and put it backpack”)).

Tutor: That’s very close. Can you take a look at it again?

Derrick: ((Reads the words out to himself, then moves the period to the
right, and picks the card for a directional word 里, and places it before the
period.))

Tutor: Okay. That’s right. Why, why do you need this 里 “inside”? ((pointing to
the card)).

Derrick: Um (+), well, I haven’t studied this formally, but based on our work today,
and a little bit of last time (++) um, I guess (+) we need some kind of
preposition to really bring closure. I guess it’s not enough just, um, to just
close the verb with some kind of, like 到 “to,” 进 “into,” um, like the 到
“to” and 进 “into” isn’t really complete until we have some kind of
preposition ((right-hand index finger pointing to the directional
word/preposition 里 “inside”), prepositional phrase.

Tutor: That’s right. That’s right. Like 放到桌子上 “placed onto the desk,” you
have 上 “onto.”

Derrick: That’s right.

Tutor: 房间里 “Inside a room,” 书包里 “inside a backpack.”

Derrick: That’s right.

This brief episode shows that by the fourth session, even though Derrick still had
difficulty with the use of directional words in the ba-construction, he was able to address this
without much explicit mediation from external sources. The decrease in the amount and
explicitness of the support from the tutor is evidence that Derrick developed increasing control
over his use of directional words in the ba-construction (see Aljaafreh & Lantolf, 1994 on shifts
in mediation as an indication of development). More importantly, Derrick demonstrated his
ability in explicating the general reason why a directional word is needed in the ba-construction,
i.e., to bring “closure” in order to satisfy the boundedness requirement for the predicate in the ba-
construction (lines 8–16). As discussed in Chapter 6, before participating in the enrichment
program, Derrick acknowledged that he was not quite comfortable using directional words in the
ba-construction. As such, the ability to self-identify and self-correct an area he was struggling
with, and also the ability to explicitly explain why a preposition or directional word is needed in
the ba-construction suggest that Derrick’s performance improved in terms of his use of the ba-
construction (particularly in the area of directional words) over the course of the five-week
enrichment program.
7.4 Improvements as evidenced in ICALL interactions

In this section, I analyze the microgenetic development of three focal participants (Derrick, Stacy, and Chris) in regard to using the *ba*-construction as evidenced on the translation task in the computerized ICALL system. The data presented in the following subsections illustrate how mediational feedback provided both by the ICALL system and by the tutor helped the participants to navigate through the different aspects of the *ba*-construction in their efforts to complete five translation questions in the computerized ICALL environment. In addition, all six of the participants are compared in terms of performance on the five translation questions in the computerized ICALL system and the performance of each analyzed in order to identify the learning trajectory of each.

7.4.1 Derrick’s interaction with the ICALL system

Derrick completed the translation task in the computerized ICALL environment more quickly that any of the other participants did (see Table 7.12 for an overview of how all six participants performed on this task). Next, I present one episode from Derrick’s interaction with
Table 7-9. Moment-by-moment changes via Derrick’s interaction with the ICALL system

<table>
<thead>
<tr>
<th>#</th>
<th>Attempted Answer</th>
<th>Problematic Area(s)</th>
<th>ICALL Mediation</th>
<th>Tutor Mediation</th>
<th>Intermediate Changes</th>
<th>Final Changes</th>
<th>Time Elapsed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>张老师很快地把那个问题的答案写在黑板上了</td>
<td>Missing punctuation; incorrect determiner</td>
<td>Hmm, can you take a look at it again?</td>
<td>N/A</td>
<td>Deleting adverb “quickly”</td>
<td>Changed 那个“that” to 那些“those”; Restored adverb “quickly” to original place</td>
<td>71</td>
</tr>
<tr>
<td>2</td>
<td>张老师很快地把那些问题的答案写在黑板上了。</td>
<td>Missing punctuation</td>
<td>A complete sentence should have a ... ?</td>
<td>N/A</td>
<td>N/A</td>
<td>Added period at sentence-final position</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>张老师很快地把那些问题的答案写在黑板上了。</td>
<td>N/A</td>
<td>Congratulations! That's exactly right!</td>
<td>That’s right!</td>
<td>N/A</td>
<td>N/A</td>
<td>9</td>
</tr>
</tbody>
</table>
the ICALL system and illustrate how the feedback it provided helped him complete his first translation task.

As illustrated in Table 7.9, upon clicking the link to the first translation task, Derrick quickly switched to a Chinese input method (i.e., a pinyin input method on a Mac computer) and immediately began to type Chinese characters into the yellow box (see Figure 4.2 and Figure 4.3 in Chapter 4 for an illustration of the interface for the computerized ICALL system). When he had finished typing the characters, Derrick said to himself, “Okay, I feel good about that.” He then selected the highest confidence level (i.e., level 5) and submitted his answer. However, the ICALL system rejected this answer as incorrect. The first mediational prompt given to him was the most implicit one: “Hmm, can you take a look at it again?” Derrick immediately responded by revising his answer, by reading his previous attempted answer out loud, word by word, in an effort to identify any error(s). His first revision was to take out the adverb 那个 “very”.

However, he then realized that the English sentence specified those questions, so he changed 那个 “that” to 那些 “those,” and restored the adverb to its original place. He then immediately selected the highest confidence level and submitted his answer again. Unfortunately, his second attempt was still unsuccessful. The second mediational feedback given to him was more explicit than for his first answer, specifying a lack of necessary punctuation: “A complete sentence should have a …?” In response, Derrick thought for a moment, pointed the cursor to the end of his second answer and typed a full stop (i.e., .), and then smiled. Choosing again the highest confidence level and saying “Picky, Picky,” Derrick submitted his answer for the third time. This time, the system accepted his answer as correct and even offered a congratulatory message—“Congratulations! That’s exactly right!”—presented with a green check icon next to it on a green background. Derrick smiled and said to himself, “Alright! Third time is the charm!”
These analyses show that the two rounds of mediational feedback provided by the computerized ICALL system helped Derrick to iteratively revise his answer until it was accepted as correct. As discussed in Chapter 4, the ICALL system relies on predefined correct answers in assessing answers given by participants, yet the system is nevertheless capable of “noticing” several key aspects of the ba-construction, including word order, relative correctness of the resultative component, and the presence or absence of the ba-particle, as well as minor issues, such as the relative correctness of the grammatical object and omitted punctuation. In the two mediational feedback responses that Derrick received, the second was considerably more explicit than the first. This design is intentional and reflects the concept of “graduated mediation” (Aljaafreh & Lantolf, 1994). In response to the first implicit feedback, Derrick initially moved the adverb 很快地 “quickly” to a different location. However, after identifying a mistake regarding the use of the demonstrative, he swiftly restored the adverb to its original location, and instead corrected the error in regard to the demonstrative. This indicates that Derrick was, in fact, able to self-identify and self-correct the mistake without much explicit mediation. In other words, he already had the relevant knowledge in his repertoire; he just needed a little external mediation before addressing the error independently. The interaction between Derrick and the computerized ICALL system, and the tutor, also collaboratively created a ZPD that promoted Derrick’s development in using the Chinese ba-construction.

7.4.2 Stacy’s interaction with the ICALL system

Table 7.10 captures some important moments in Stacy’s interaction with the ICALL system on the first translation task. The information tracked includes Stacy’s answers, the problematic area or error evident in her answers, feedback provided by the ICALL system,
feedback provided by the tutor, Stacy’s intermediate changes, her final answers, and the time she spent on providing an answer in each iteration. As Table 7.10 shows, Stacy’s production of the 

*ba*-construction in her first translation appeared to be grammatical. “Yesterday afternoon, my roommate fixed my bicycle,” and satisfied all the major syntactic requirements of the *ba*-construction (e.g., the word order is correct, the predicate includes an RVC, and the use of the perfective marker –*le* is also correct). The problem is related to the proper selection of the resultative component in the RVC structure. Stacy’s choice of RVC “fix-complete” does not express the idea that the bicycle has been fully fixed and restored to good working condition. Instead, the choice of RVC merely indicates that the roommate has finished working on the bike. In other words, the bicycle may or may not be in good working condition. The correct RVC in this situation is “fix-good,” as both the implied meaning of the original English sentence (“My roommate fixed my bicycle yesterday afternoon”) and the *ba*-construction call for the desired outcome of the verbal action to be made explicit.

Excerpt 7.6 documents Stacy’s interaction with both the ICALL system and the tutor during the translation task. As Excerpt 7.6 illustrates, Stacy was confident in her first attempt at this task (line 2). In fact, she was a little surprised that it was not accepted by the ICALL system (lines 6–7). Stacy’s two initial attempts to revise her answer were relocating the temporal adverbial “yesterday afternoon” and changing the grammatical object “my roommate.” As discussed, Stacy’s real problem is the resultative component of the RVC, not either of the two points that she looked at first. This means that the most implicit and general mediation provided by the ICALL system was not enough to enable Stacy to identify the incorrect element in her answer. Even though she suspected that the issue might be related to the verb phrase, she nevertheless still looked at other locations, such as the possibility of taking out
Table 7-10. Moment-by-moment changes via Stacy’s interaction with the ICALL system

<table>
<thead>
<tr>
<th>#</th>
<th>Attempted Answer</th>
<th>Problematic Area(s)</th>
<th>ICALL Mediation</th>
<th>Tutor Mediation</th>
<th>Intermediate Changes</th>
<th>Final Changes</th>
<th>Time Elapsed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>昨天下午我的同屋把我的自行车修完了。</td>
<td>Proper choice of RVC</td>
<td>Hmm, can you take a look at it again?</td>
<td>Answering Stacy’s clarification question regarding vocabulary “afternoon”</td>
<td>Clarifying 下午</td>
<td>N/A</td>
<td>114</td>
</tr>
<tr>
<td></td>
<td>我的同屋昨天下午把我的自行车修完了。</td>
<td>Proper choice of RVC</td>
<td>Okay, so what’s the result of the verbal action?</td>
<td>Tried to take out possessive 的</td>
<td>Moved temporal adverbial 昨天下午 “Yesterday afternoon” after subject.</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>我的同屋昨天下午把我的自行车修好了。</td>
<td>N/A</td>
<td>Congratulations! That's exactly right!</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>33</td>
</tr>
</tbody>
</table>
the  “possessive de” (line 16), a direction the tutor explicitly instructed Stacy not to pursue (line 17). Before submitting her second answer, Stacy did reflect that the real issue might be related to the verb phrase: “Oh, it’s probably with the verb again; this is the part I usually mess up” (lines 13–15). At this point, Stacy’s second answer was still not accepted by the ICALL system. However, the mediational feedback provided by the system was more explicit and specific than in the previous round of feedback and directed Stacy’s attention specifically to the results of the verbal action: “So what is the result of the verbal action?” (line 21). At this point, Stacy was fully convinced that the real issue was related to the verb phrase, particularly the RVC structure. She said to herself, “Okay, so the result is not right” (line 22). This is significant because the mediational assistance offered by the ICALL system correctly targeted the real challenge Stacy faced, and thus was capable of providing highly relevant mediational feedback that pointed Stacy to the right direction.

Sensing that Stacy was on the right track in regard to finding the correct resultative word for the RVC structure, the tutor followed up with the leading question “What could it be?” (line 23), in response to which Stacy produced the correct answer (好 “good”) and revised her answer accordingly (lines 24–25). In addition to coming up with the right answer, more importantly, Stacy was able to explain why her choice of the resultative word was appropriate: “The bicycle is fixed so that it’s good now.” Based on this understanding, Stacy submitted her third revision, which the ICALL system accepted as correct. A congratulatory message appeared on the computer screen, and Stacy expressed great pleasure in regard to her interaction with the ICALL system and in the fact that she had persisted and ultimately worked out the correct answer based on a more complete understanding of the ba-construction.
Stacy: ((Upon finishing and reviewing her first answer))
I’m pretty confident about this ((chooses the highest confidence level and
then submitted her answer)).
Tutor: ((Smile)).
Stacy: ((The computer did not accept her answer. It throws out an implicit prompt:
“Hmm, can you take a look at it again?”)) Oh, my gosh, haha
((Stacy shows a little disappointment)).
Stacy: ((Highlighted 昨天下午 “yesterday afternoon”)).
Um (+++) do I need to move this here?
Tutor: You could try.
Stacy: 我的同屋 “My roommate,” maybe 我的同屋昨天下午
“my roommate yesterday afternoon.”
Stacy: ((Highlights 修完了 “fix-complete-perfective”).
Um, oh, it’s probably with the verb again ((laughs)).
This is the part I usually mess up ((looking toward the tutor)).
Stacy: I can probably take this 的 “possessive de” out.
Tutor: No, here you can’t.
Stacy: Okay.
Stacy: ((Stacy chooses confidence level 4 and submitted her second answer.
However, the computer still did not accept her answer as correct and provides
feedback: “Okay, so what’s the result of the verbal action?”)).
Okay. So the result is not right.
Tutor: What could it be?
Stacy: >Oh, could it be 好:: “good.”
((Stacy changes 修完 “fix-complete” into 修好 “fix-good”))?
Tutor: Why, why do you think so?
Stacy: Because it’s like, fixed it, so that, it’s (++) good, like …
Tutor: It’s working?
Stacy: Yeah. Let me try that.
((Stacy selects confidence level 4, and submits her answer)).
Stacy: ((The computer accepts Stacy’s answer as correct and displays this message: “Congratulations! That’s exactly right!” Stacy is very excited and smiles.))

Tutor: That’s exactly right! It’s not finished, it’s fixed well.

Stacy: Okay. So my resultative verb is a little bit shaky at the moment ((then Stacy moves on to the next question)).

It is important to note that throughout her interaction with the ICALL system, Stacy was careful not to submit her translations immediately upon completion. Rather, she took the time to read what she had composed out loud to herself word-by-word in an effort to identify errors.

Stacy’s use of her L2 Chinese served not only as a means to focus her attention on the challenging task at hand, but also as a self-regulation tool for her own thinking in order to work out the various aspects that a grammatical and well-formed *ba*-construction requires.

### 7.4.3 Chris’s interaction with the ICALL system

Compared to Derrick’s and Stacy’s interactions with the computerized ICALL system, Chris’s experience with the ICALL computer program was somewhat different. Chris spent more time completing the five translation questions, tried the most times, and required the most extensive feedback both from the ICALL system and the tutor. Table 7.11 summarizes the moment-by-moment changes that Chris makes in his effort to translate the first English sentence: “Teacher Zhang quickly wrote answers to those questions on the blackboard.”

As can be seen in Table 7.11, it was not until Chris’s tenth attempt that the ICALL system accepted his answer as correct. It should be noted, however, that his ninth answer was correct, but the ICALL system failed to recognize it as such as it was not among the predefined acceptable answers. Further, Chris’s process of entertaining multiple revisions before submitting
his “final version” reveals an important limitation of the ICALL system. For instance, for his first version of the translation, Chris was uncertain about the resultative component of the verb action 写 “write,” so he tried 写放 “write-place.” However, he then quickly decided that this answer was incorrect, and replaced it with 写上 “write-onto,” before submitting his “final answer” during this first interaction with the ICALL system. This limitation of the ICALL system thus revealed is that it is only capable of capturing a portion of the data. The complete interaction between each participant and the computerized ICALL system was recorded using video screen recording software (see Chapter 4 for details).

Many of Chris’s answers contained multiple errors; however, the ICALL system is designed to take an iterative approach and to thus provide feedback on only one point at a time. This design was intentional: the idea was to enable the participants to focus their attention on one linguistic aspect related to the ba-construct at any given time (see Figure 4.7 in Chapter 4 for the core algorithms underlying the design of the ICALL system). However, the participants corrected multiple linguistic issues at multiple locations during each iteration or interaction with the ICALL system.

As Table 7.11 shows, Chris was among the participants who were able to correct some of their errors during each interaction with the ICALL system. This means that as he moved forward in the process of producing a correct translation, his answers showed a reduction in the total number of errors present. However, during this process, he also introduced some new errors into his answers. This indicates that his understanding regarding the various aspects of the ba-construct was still in the process of development.
Table 7-11. Iteration-by-iteration changes in Chris’s attempts to answer the first translation question

<table>
<thead>
<tr>
<th>#</th>
<th>Attempted Answer</th>
<th>Problematic Areas</th>
<th>ICALL Mediation</th>
<th>Tutor Mediation</th>
<th>Intermediate Changes</th>
<th>Final Changes</th>
<th>Time Elapsed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>张老师把那些问题快速的写上在黑板</td>
<td>(1) grammatical object incorrect; (2) de in adverb incorrect; (3) directional word 上 misplaced * (4) need punctuation; (5) lacking perfective marker –le *;</td>
<td>Hmm, can you take a look at it again?</td>
<td>N/A</td>
<td>Attempted 写放在 &quot;write-place-onto&quot;</td>
<td>Replaced 写放在 with 写上在 “write-up-onto”</td>
<td>108</td>
</tr>
<tr>
<td>2</td>
<td>张老师把那些问题快速的写上在黑板了。</td>
<td>(1) grammatical object incorrect; (2) de in adverb incorrect; (3) directional word 上 misplaced</td>
<td>Okay, so what’s the result of the verbal action?</td>
<td>N/A</td>
<td>N/A</td>
<td>Added the perfective marker 了 “–le” and full stop “.”</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>张老师把那些问题快速的写完上在黑板了。</td>
<td>(1) grammatical object incorrect; (2) adverb de “的” incorrect; (3) directional word 上 misplaced *</td>
<td>Okay, so what’s the result of the verbal action?</td>
<td>N/A</td>
<td>Attempted 写晚 “write-complete” (晚 is a typo for 完)</td>
<td>Added complement 完 “finished “ to verb 写 “write”</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>张老师把那些问题快速的写上在黑板了。</td>
<td>(1) grammatical object incorrect; (2) adverb de “的” incorrect; (3) directional word 上 misplaced *</td>
<td>Okay, so what’s the result of the verbal action?</td>
<td>Draw participants’ attention to the fact that “on the blackboard” is the result, not “finished writing.”</td>
<td>N/A</td>
<td>Removed 完 “finished”</td>
<td>45</td>
</tr>
<tr>
<td>5</td>
<td>张老师把那些问题的答案快速的写上在黑板了。</td>
<td>(1) adverb de “的” incorrect; (3) directional word 上 misplaced *</td>
<td>Okay, so what’s the result of the verbal action?</td>
<td>Points out that what is written is “answers to the question,” not “question” itself.</td>
<td>N/A</td>
<td>Changed 问题 into 问题的答案</td>
<td>32</td>
</tr>
<tr>
<td>6</td>
<td>张老师把那些问题的答案快速地写</td>
<td>(1) directional word 上 misplaced *</td>
<td>Okay, so what’s the result of the verbal action?</td>
<td>Draw Chris’s attention to “快速的”</td>
<td>N/A</td>
<td>Changed 快速的 into 快速地</td>
<td>23</td>
</tr>
<tr>
<td>#</td>
<td>Attempted Answer</td>
<td>Problematic Areas</td>
<td>ICALL Mediation</td>
<td>Tutor Mediation</td>
<td>Intermediate Changes</td>
<td>Final Changes</td>
<td>Time Elapsed</td>
</tr>
<tr>
<td>----</td>
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<td>--------------</td>
</tr>
<tr>
<td>7</td>
<td>张老师把那些问题的答案快速地写在了上黑板。</td>
<td>(1) directional word 上 misplaced *</td>
<td>Okay, so what’s the result of the verbal action?</td>
<td>Tutor apologized that the computer prompt is not very helpful here, and asked Chris to try to move something. Also directed Chris’s attention to directional word.</td>
<td>Moved –le from sentence-final position to the post-verbal position 写“write”。</td>
<td>Attempted 写在了上黑板</td>
<td>69</td>
</tr>
<tr>
<td>8</td>
<td>张老师把那些问题的答案快速地写在了黑板上。</td>
<td>(1) directional word 上 misplaced *</td>
<td>I’m afraid I don’t fully understand your answer :-( Please consult with your instructor.</td>
<td>Focusing on the location of the directional word. Give an example of “Inside the backpack.”</td>
<td>Orally attempted 写在上了 and 写在上到; Placed –le again after 写</td>
<td>Attempted 写在了黑板上</td>
<td>64</td>
</tr>
<tr>
<td>9</td>
<td>张老师把那些问题的答案快速地写在黑板上了。</td>
<td>N/A</td>
<td>Has the action completed?</td>
<td>Can you try it again?</td>
<td>N/A</td>
<td>Relocated –le to sentence-final position</td>
<td>17</td>
</tr>
<tr>
<td>10</td>
<td>张老师把那些问题的答案快速地写在了黑板上。</td>
<td>N/A</td>
<td>Congratulations! That’s exactly right!</td>
<td>Can you put the –le at a different place?</td>
<td>N/A</td>
<td>Relocated –le after the preposition 在</td>
<td>17</td>
</tr>
</tbody>
</table>

Note: * denotes areas directly related to the *ba*-construction; dark shaded areas indicate the places where changes were made.
After completing the first translation question, the tutor and Chris reviewed the main linguistic issues relevant to this exercise, including (1) two possible locations of the perfective marker –le, and (2) the location of the directional word 里 “inside.” The tutor used 书包里 “inside the backpack” as an analogy for the location of the directional word.

As can be seen in Table 7.11, the iteration-by-iteration data show that mediation provided by the ICALL system was helpful in some aspects (e.g., the first implicit prompt helped Chris to self-correct some linguistic issues), but not in others. For instance, for Chris’s third attempt in providing an acceptable answer, the mediation provided by the ICALL system was not very helpful. In fact, it confused Chris because he knew that he needed to remove the resultative 完 “complete” However, if he had made changes based on the feedback provided by the ICALL system, then he would have arrived at the exact same answer as in his second attempt. Indeed, after Chris had completed this particular translation task, the tutor apologized to him for the ICALL system’s failure to be “intelligent” enough to always provide helpful appropriate mediational feedback.

7.4.4 Participants’ overall performance on the ICALL system

Table 7.12 summarizes the participants’ answers and confidence level together with the time they spent on each of the five questions. Note that the participants’ answers were considered correct when they were well-formed and expressed the meaning correctly, as judged by the tutor, rather than when they matched one of the pre-specified answers. This practice was adopted in this analysis because there was more than one way to answer the question, and it is simply impossible to predict all the answers that could be given (Meurers, 2012).

As Table 7.12 shows, Derrick spent only 10 minutes completing the five translation exercises—considerably less than the time taken by the other participants. To put it in perspective, Elaine, the slowest
in this cohort in regard to completing the same set of tasks, spent almost three times longer than Derrick. Further, compared with the other participants, Derrick arrived at each correct answer through far fewer attempts (i.e., only nine attempts). Indeed, he correctly answered three out of the five translation questions on his first attempt. A performance of this nature on Derrick’s part was predictable given that he had a strong command of L2 Chinese based on a nine-year period of study and work experiences in Taiwan. On the other hand, Stacy appeared to be struggling with the same set of translation tasks. She spent more than twice as long as Derrick on the tasks and tried three to four times to answer four out of the five the questions correctly. The comparison, however, is hardly a fair one given that Derrick and Stacy were at very different levels of proficiency. It is more interesting to compare Stacy with Megan, as both of these participants were enrolled in a Level 3 Chinese course and both had chosen Chinese as their undergraduate major. If we compare Stacy’s performance with Megan’s, we notice that while their confidence level is about the same, and that Stacy spent 22.6% more time and made 66% more attempts than Megan did. This can be considered in relation to Stacy’s history learning Chinese. As discussed in the learner profile section of Chapter 4, Stacy was home-schooled and primarily relied on a computer program called Rosetta Stone to learn Chinese. This computer program was designed in such a way that it focused almost exclusively on fostering students’ communicative abilities, without any explicit instruction at all on Chinese grammar. Stacy admitted that her knowledge of Chinese grammar was limited. Finally, in respect to confidence, Chris was the most confident of the participants. Despite making some errors, he was characteristically sure of all the answers he attempted. Interestingly, though, he also had the most attempts, particularly for the first translation questions as discussed earlier.

In summary, the preceding analyses of the participants’ interactions with the ICALL system illustrates the role of cooperative support from both the ICALL system and the tutor in mediating the participants’ progress in terms of developing an understanding of the various aspects of the ba-construction. As the excerpts show, the “graduated mediation” (Aljaafreh & Lantolf, 1994) provided by the ICALL system was useful in helping Derrick self-identify and self-correct the problematic areas in
Table 7-12. Participants’ overall performance on the translation task in the ICALL system

<table>
<thead>
<tr>
<th></th>
<th>Derrick</th>
<th>Megan</th>
<th>Stacy</th>
<th>Elaine</th>
<th>Chris</th>
<th>Larry</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>A</td>
<td>C</td>
<td>T*</td>
<td>A</td>
<td>C</td>
<td>T*</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>5</td>
<td>115</td>
<td>3</td>
<td>4</td>
<td>514</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>5</td>
<td>77</td>
<td>1</td>
<td>4</td>
<td>129</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>5</td>
<td>228</td>
<td>2</td>
<td>3</td>
<td>315</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>4</td>
<td>84</td>
<td>2</td>
<td>4.5</td>
<td>186</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>3</td>
<td>125</td>
<td>1</td>
<td>4</td>
<td>166</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>22</td>
<td>629</td>
<td>9</td>
<td>19.5</td>
<td>1310</td>
</tr>
</tbody>
</table>

Note: “A” denotes the number of times participants attempted to provide an acceptable answer; “C” denotes the mean confidence level for each item; “T” denotes the total time (in seconds) that participants took to submit an acceptable answer to the ICALL system.

* It is important to note that in the above table, the time spent on any given item only accounts for the actual time the participants spent attempting to provide an answer. It does not include the time spent continuing working to improve the answer after an acceptable answer was already reached, or the time during which the participant and the tutor discussed various linguistic and technical issues related to the ICALL system after submitting an appropriate and acceptable answer.
in his production of the \textit{ba}-construction in the translation task. In addition, the mediation provided by the ICALL system was also instrumental in helping Stacy to correctly determine the problems in her performance, and helped her to subsequently identify the appropriate resultative word in the RVC structure. However, analyses of Chris’s interaction with the ICALL system underlined ICALL’s limitations in regard to its ability to provide relevant and appropriate mediational feedback. At the critical junctures, the tutor proved timely and valuable feedback based on which Chris was able to identify the location of the directional word in his production of the \textit{ba}-construction. Finally, the analyses of the six participants’ overall performance on completing the five translation tasks in the ICALL system revealed differences in the learning trajectory of each: The participants differed in regard to degree of confidence, time spent, and number of answers attempted. There were also differences in the extent to which the participants needed explicit mediation from both the ICALL system and the tutor in order to producing a well-formed and acceptable answer. This finding lends support to the claim that language development is not linear, because each learner has a distinct social, cultural, and linguistic background.

### 7.4.5 Participants’ reflection on the effectiveness of the ICALL system

Overall, the ICALL system served as an effective pedagogical tool in regard to mediating the participants’ progress in understanding and using the \textit{ba}-construction. The participants’ generally expressed a positive attitude toward the ICALL system, viewing it as very effective overall. As Excerpt 7.7 shows, among all the different mediational tools used in this study, Larry liked the ICALL system best because he felt that the feedback provided by the computer program was very “personal,” and functioned like “a teacher on the Internet” with whom he could communicate by typing “back and forth”. Even though Larry pointed out that the program had
room for improvement, he nonetheless acknowledged that the computerized ICALL system has pedagogical value—especially for students who want to learn Chinese on their own.

Excerpt 7.7

1 Tutor: So you, you definitely like the computer-based exercises=
2 Larry: =The most, yes.
3 Tutor: >Can, can you elaborate on that,< How-, Why, why do you like it the most?
4 Larry: Um, I think it (++ um, it was more personal, ah, perhaps the messages that came
5 in the dialog box, when you didn’t do it right, it was like, “Hmm, that’s not it,
6 look at the verb phrase.” I think it was almost like having a teacher on the
7 Internet ((laughing)) that you’re typing back and forth. And, sure, the program
8 needs like, more work on it, so it can get more answers that are potential. But it
9 was still-, it seems to me, if I wanted to learn Chinese (+) on my own, and I
10 didn’t want to take [a] class, I would use the program, and it could really, I think
11 teach me=
12 Tutor: =Okay.

In the post-enrichment program interview, some of the participants mentioned that the implicit feedback provided by the ICALL system was particularly useful in that it provided an opportunity for them to locate and revise the problems in their answers themselves. Chris, for example, felt strongly about the pedagogical value of using implicit feedback as it afforded him the opportunity to search for the correct answer himself. Excerpt 7.8 captures Chris’s view when asked whether and how the progressive nature of the ICALL system’s feedback, i.e., from very implicit to very explicit, had helped him to learn the ba-construction.
Excerpt 7.8

Ah, yeah, ((intelligible)) for a shot to get it right. If you say, look at it again, even just looking at it the second time, rings something. You can--. Half the time, you’ll find your mistakes: “Oh, I forgot the –le at the end, I’m so dumb.” And, then, if you really don’t get it, you really can’t see it, having [a] computer point to it, and say “This is where you should look. What’s wrong here?” And, you say, “Oh, what is wrong here?” “Oh::, and I got it.” But it is--; I think it is good not to point to it right away, because instead of kind of giving you the answer like: “Look at the end of the sentence, do you have –le?” ((laughing)), like, let me look at it again, and let me figure out it myself. If I can figure [it] out myself, that’s gonna be more beneficial than having it pointed [out] to me. [Tutor: Why, why was that?] I, I have found, for anything, languages, math, anything, writings, when you have, when you’ve gotten something wrong, for me, the best teachers have said “Look at it again” without saying “This is what’s wrong,” and said “Go look at that again.” Um, and just by making me to look at it the second time, and me now knowing something is wrong, I have been able to pick out what is wrong. And, now that I know that is, now I can see it the next time I do it.

The ICALL system is not without challenges. Some were linguistic in nature, whereas others were more technical. Specifically, predicting all the correct answers to open-ended questions proved to be a particularly challenging task. As an example, Excerpt 7.9 shows that even a seemingly stable or fixed grammatical object such as 她的钥匙 “her keys” can be expressed in more than one way. In this example, Derrick’s translation 她又把钥匙锁在车里面了吗? “Did she lock the keys in the car again?” was not accepted by the ICALL system as correct, because the computer program was looking for 她的钥匙 “her keys” for the grammatical object slot (i.e., Derrick only provided 钥匙 “keys”). However, the translation provided by Derrick was, in fact, correct because the pronoun “her” can be inferred and thus omitted from the context—a practice that is not uncommon in Chinese.
Excerpt 7.9

Derrick: I feel like just saying 她又把钥匙锁在车里面了吗? “Did she lock the keys in the car again?” is pretty close. Um 她的 “hers” seems unnecessary, like (+) contextually, we would guess it would probably be her keys, and not someone else’s keys that have been locked in the car.

Tutor: You’re right. you’re right (+++) so I would probably say that what you have here is already correct.

The prompt Derrick received from the ICALL system for this particular iteration was not particularly helpful: “You might be right already, but the translation you provided is not exactly what I have on file. Can you please try it one more time?” Derrick looked at the feedback for a while, and eventually said “I have no idea how to translate this.”

7.6 Summary

In the preceding analyses, I showed that over the course of the enrichment program, the participants became increasingly able to use the ba-construction correctly in various contexts. In this section, I focus on their improvements in correctly determining when this grammatical construction should be used. Before the enrichment program, the participants’ conceptual understandings of the functional purpose of the ba-construction were largely limited to physical placement or movement of an object to a different location, and they generally cannot provide a clear account of the differences between the canonical SVO, topicalization OSV, and the ba-construction, despite repeated probing, examples, and clarifications on the part of the tutor. As discussed in Chapter 6, Megan (Excerpt 6.12) and Elaine (Excerpt 6.14) required extensive prodding, examples, and clarifications on the part of the tutor just to understand the questions in regard to the differences between the three different grammatical structures. This is taken as
evidence that before the enrichment program, the participants did not fully understand when the ba-construction should be used, and when the other two word orders should be used.

By the end of the third session of the enrichment program, the participants all understood when the ba-construction should be used, and when the other two word orders should be used, as discussed in the preceding analyses. In addition, the participants’ improvement in correctly determining when the ba-construction should be used can also be gleaned from the card-play activities. As illustrated in Excerpt 7.4, Elaine produced SVO, OSV and the ba-construction using a set of cards. Further, she correctly point out the location of focus among these three structures. That is, “nothing” for the SVO, “the clothes” for the OSV, and “right here ((stretching out all five fingers and tapping underneath the cards for洗干净了 “washed clean”)), >these three here” (lines 35–36) for the ba-construction. To reiterate, Elaine used a different set of cards describing a completely different scenario than the one presented by the tutor (i.e., the train crushed and flattened the coyote), suggesting her ability to apply newly learned conceptual knowledge to a completely new context.

Taken together, the analyses of the in-session practice and the card-play activity show that the participants not only improved their ability in using the ba-construction correctly, but also improved their ability of correctly determining when this grammatical construction, as opposed to the canonical SVO and topicalization OSV word orders, should be used.

To summarize, this chapter offered an analysis of the extent and nature of the participants’ improvement in performance ability in regard to using the ba-construction in various contexts and in various tasks throughout the five-week enrichment program. In the first section, I analyzed the ways in which and the extent to which Stacy and Derrick each showed an improvement in performance as evidenced in the translation task. The analyses have shown that over the course of the study, Stacy became increasingly aware of the link between the perfective
marker –le and the ba-construction and Derrick gained improvement in his independent performance regarding the use of directional words in contexts where the locative is used. The analyses underscore the important role played by the tutor in promoting the participants’ conceptual understanding of specific aspects of the ba-construction.

In the second section, I analyzed the ways in which and the extent to which the participants showed an improvement in performance in the card play activities. According to the analyses, Stacy was capable both of producing the three different word orders (canonical SVO, topicalization OSV, and the ba-construction) and of explaining the differential foci in location among these three word orders. Critically, Stacy demonstrated her ability to apply this conceptual knowledge to a completely different scenario with a different set of cards. The analysis of Derrick’s card play in the fourth session of the enrichment program has shown that he was able to remedy his own issue without much explicit mediation from external sources and to explain why the directional word was needed in the ba-construction. As discussed, the decrease in the amount and explicitness of support from the tutor suggests that Derrick developed increasing control over his use of the directional word in the ba-construction (Aljaafreh & Lantolf, 1994).

Finally, I documented improvements in the performance of each of the three focal participants as evidenced in their interaction with the computerized ICALL program. The analyses illustrate the role of cooperative support from both the ICALL system and from the tutor in mediating the participants’ understanding of various aspects of the ba-construction. In particular, the results show that the “graduated mediation” provided by the ICALL system was useful in helping Derrick to self-identify and self-correct the problematic areas in his production of the ba-construction in the translation task. Similarly, the findings show that the mediation provided by the ICALL system was highly instrumental in helping Stacy to correctly identify the problems in her performance, and (in collaboration with the mediation from the tutor), enabled her to subsequently identify the appropriate resultative word in the RVC structure. However, the
analyses of Chris’s experience with the ICALL system indicate some of the limitations associated with the ICALL system: it is difficult for the ICALL system to predict all the possible errors that participants could produce, making it difficult to design an intelligent system capable of always providing relevant and appropriate mediational feedback. It has been suggested that at those critical points, the human teacher should intervene and assume the primary responsibility of mediating the learner’s language development. Lastly, the analyses of the six participants’ overall performance in completing the five translation tasks in the ICALL system reveal differences in the learning trajectory of each and show, too, that language learning is not linear such that learners can be expected to differ from each other in regard to their language-development patterns.

The results presented in this chapter have illustrated the participants’ improvement in performance abilities on various tasks. As discussed in the beginning of the chapter, the results presented in this chapter serve in concert with Chapter 5 on the quantitative analyses of group results, and chapter 6 on the analyses of participants’ conceptual development to provide a holistic view of the outcome of the pedagogical enrichment program.
Chapter 8
Discussion

8.1 Introduction

In this chapter, I discuss four major issues: (1) the effectiveness of the concept-based instruction approach to promoting L2 development of the ba-construction; (2) my approach to the ba-construction, focusing on the conceptual understanding of the functional purpose of this grammatical structure, the effectiveness of the pedagogical model and the animated SCOBAs, and the mediational effects of the participants’ favorite card-play activity; (3) the variations between individual learners; and (4) the development of a socioculturally informed ICALL system, focusing on the development of the ICALL system, the effectiveness of the ICALL system in helping the participants improve their performance ability in regard to various aspects of the ba-construction, and the various challenges that I encountered in developing this system. A proposal for a reconceptualization of the notion of “intelligence” in ICALL research is also presented.

8.2 Effectiveness of the concept-based instruction approach

The first research question asked in this dissertation research project is concerned with the effectiveness of the concept-based instruction approach in promoting L2 development of the Chinese ba-construction. In this section, I specifically address this research question. Prior to participating in the concept-based enrichment program, all six participants had some knowledge of the ba-construction: some had received instruction pertaining to this construct during high school whereas others had not received such instruction until they reached college. As the pre-
enrichment interview data indicate, all the participants were capable of producing at least a basic form of this grammatical construction, mostly with the locative as the verbal complement (e.g., 把书放到桌子上 “BA the book place table onto” or “[I] put the book on the table”). However, their conceptual understanding of this construction were unsystematic and generally limited to the notion of placing a physical object in or moving one to a different location.

After the five-week enrichment program, as reported in Chapter 6, all the participants showed significant improvement in their conceptual understanding of the functional purpose of the ba-construction and the ways in which it differs from the canonical SVO and the topicalization OSV word orders. As a group, the participants became increasingly aware that the ba-construction is, in fact, less about physically placing or moving things, and more about emphasizing the result of the verbal action. This improvement in conceptual understanding constitutes evidence that the concept-based instruction approach is effective in promoting L2 development.

The second piece of evidence is associated with the participants’ improved performance ability. As reported in Chapter 5, the participants as a group scored significantly higher on the translation task and the cartoon description task in the posttest and delayed posttest than in the pretest. Further, the participants’ improvement in performance ability manifested in several specific linguistic features (e.g., the perfective marker –le, and directional words) in tests, card-play activities, and the computerized ICALL practice sessions (Chapter 7). It is worth noting that even Derrick, the most proficient speaker of L2 Chinese in the cohort, made progress with aspects of the ba-construction, some of which he had struggled with previously (i.e., directional words) and some of which he had not even been aware of before the enrichment program (i.e., variable placement of the perfective marker –le). This improvement in performance ability at both the
group level and the individual level shows that the concept-based approach is an effective way to promote L2 development.

During the five-week enrichment program, I included a wide variety of activities and used many different kinds of mediational tools to help the participants learn different aspects of the *ba*-construction. These included PowerPoint-based animated SCOBAs, flowcharts, glossaries, a summary of *ba*-VP patterns, discussions, tests, paper-based practices, and computer-based practices. Most of the participants even acknowledged the pedagogical value of the combination of these activities and mediational tools during their post-enrichment interviews. Collectively, these findings, as reported in Chapters 5, 6, and 7, constitute evidence that the concept-based instruction enrichment program was, indeed, effective and instrumental in mediating the participants’ development of a conceptual understanding of the focal structure and in helping them to improve their performance using the *structure* over the course of the study.

### 8.3 Effectiveness of the my approach to the *ba*-construction

#### 8.3.1 Refining the functional purpose of the *ba*-construction

Previous theoretical analyses of the *ba*-construction, while illuminating, each has its own limitations. For the disposal analysis, although Li and Thompson (1981) extend the sense of disposal beyond physical effect, the notion of disposal appears to be too narrow (see the counterexample provided in Example 3.6.) to cover the *ba*-construction in its many forms (Chao, 1968). For the discourse-dramaticity analysis, while Jing-Schmidt (2005) brings a unique discourse-pragmatic perspective to bear on the study of the *ba*-construction, the basis of her analysis depends perhaps too heavily on literary texts from a single author, and therefore presents a challenge in generalizing the findings across diverse registers. The aspectual analysis links the
ba-construction to the Chinese aspect system, particularly the notion of telicity (Liu, 1997; Mei, 1978; Sezto, 1988; Yong, 1993). However, as shown in the counterexample in Example 3.7, the notion of telicity does not constitute a necessary or sufficient condition for the use of the ba-construction. Finally, the topic-comment analysis focuses on information structure and maintains that the ba-construction represents a break-down between what constitutes the topic and what constitutes the comment (Chen, 1983; Ho, 1993; Hsueh, 1987; Mei, 1978; Tsao, 1987). However, as Chinese is classified as a topic-prominent language (Li & Thompson, 1981), the topic-comment structure is very common in this language, not specific only to the ba-construction.

Perhaps due to the lack of a coherent and comprehensive explanation of the essential meaning and functional purpose of the ba-construction in the Chinese theoretical linguistics literature, most textbook treatments of the ba-construction tend to be superficial. As discussed in Chapter 3, explanations and examples provided for the ba-construction in most textbooks primarily focus on the notion of “taking something and doing something with it.” Students are typically encouraged to practice this construction in the contexts of physically placing an object in a specific location or rearranging or cleaning a room. Some other textbooks apply the “disposal” approach to the ba-construction in instruction. However, as also discussed in Chapter 3, the disposal analysis itself is not general enough to account for many use cases of the ba-construction. Emphasis on the notion of disposal, as Hu (2011) noted, does little to help students understand the semantic focus of the ba-construction. In addition, most textbooks do not offer explanations in regard to the ba-construction’s semantic meanings and syntactic and pragmatic constraints, nor are any comparisons offered between the ba-construction and either SVO or OSV forms. To make matters worse, most textbooks devote no further pedagogical attention after the initial introduction, despite the fact that the ba-construction itself occurs frequently in various places (Hu, 2011).
In practice, classroom-based instruction of the *ba*-construction tends to focus on structural–level practice, rather than on the construction’s function (Yu, 2000). For example, it is not uncommon for language teachers to set exercises that involve the word order drill of changing SVO structures to the *ba*-construction, without working with students to ensure that they understand the differences between these two structures and the underlying functional purpose of the *ba*-construction. Consequently, and as a popular strategy, it has been found that L2 learners tend to avoid the *ba*-construction whenever possible (Jin, 1992; Kim, 2010; Liu, 2003; Xiong, 1996; Yu, 2000).

The conceptual understanding of the functional purpose of the *ba*-construction proposed in this study differs from how the construction is characterized in most pedagogical materials, including textbooks, on this topic. As discussed in Chapter 3, this new understanding is based on careful analyses of at least four major theoretical analyses of the *ba*-construction as discussed in Chinese linguistics over the past 70 years. As such, the proposed conceptual understanding of this grammatical construction focuses on increasing the learner’s awareness of the cognitive saliency of the resulting state that the verbal action brings to the fronted object. This approach is in contrast with the standard textbook approach, which characterizes the *ba*-construction based on a small subset of its functionalities: placing a physical object in a new location, moving such an object to a new location, or taking something and doing something to it. It is evident, however, that such an approach considerably limits its scope of use. Indeed, as the pre-enrichment interview data show, the participants quickly encountered difficulty using the *ba*-construction to describe events that do not align with that context, such as washing clothes—an instance that is clearly not about moving an object to a different location.

Even the characterization of “taking something and doing something with it”, despite being relatively abstract and generalizable, is by no means adequate as a description of all the ways in which the construction can be used. Consider 我把钥匙忘在家里了 “I forgot that I left
the keys at home.” As the keys have been left at home, a place that is most likely away from the speaker’s current physical location, it makes little sense to talk about “taking something and doing something to it.” To put it another way, how can one take something that is out of his or her immediate reach and then subject it to a “forget” mental activity?

In contrast, my approach to fostering a conceptual understanding of the ba-construction can be used to explain the very same use case. That is, the ba-construction is used to accentuate cognitive saliency by emphasizing the resulting state of the verbal action, i.e., that the key has been left at home. In other words, in using this particular grammatical structure, the speaker means to put the result of the verbal action in focus (i.e., the keys have been left at home). There is nothing to take, and there is no “forget” action to perform. The focus is on the result (and its various implications), i.e., the key has been left at home—now what do we do?

To reiterate, my approach to the functional purpose of the ba-construction is essentially a meaning-based account, which is more systematic and comprehensive than most traditional pedagogical approaches in the sense that it is generalizable enough to explain a wide range of the use cases, and as such and represents a major new theoretical statement on the ba-construction. As such, this proposed understanding of the functional purpose of the ba-construction represents a useful contribution to the Chinese linguistics literature on the theoretical analysis of this grammatical device. In addition, the pedagogical model of the functional purpose of the ba-construction proposed in this study, therefore, constitutes a meaningful and significant contribution to the field of teaching Chinese as a second or foreign Language (CFL).

8.3.2 Effectiveness of the animated SCOBAs

Based on the proposed pedagogical model, I designed three sets of animated pedagogical diagrams depicting the functional purpose of the ba-construction and the ways in which it differs
from the canonical SVO and the topicalization OSV word orders (Appendices F, G, H, and I). The effectiveness of the pedagogical model and the animated SCOBAs, similar to the effectiveness of the concept-based approach, as discussed in the previous section, is mainly supported by (1) the participants’ improved performance as evidenced in their improved test scores on both the posttest, and the delayed posttest as compared to their lower scores on the pretest (Chapter 5); (2) the participants’ development of a conceptual understanding of the functional purpose of the ba-construction and the ways in which it differs from the SVO and OSV word orders (Chapter 6); and (3) the participants’ improved performance in specific linguistic areas as evidenced in the card-play activities, the tests, and their interactions with the ICALL system.

8.3.3 Effectiveness of the card-play activity

In addition to the computerized ICALL system, which is detailed in Section 8.5, the analyses of the data show that the card-play activity emerged as a highly effective tool for mediating the participants’ L2 development relating to learning the various aspects of the ba-construction. In the post-enrichment interviews, a number of participants stated that they considered the card play to be their favorite way to learn the ba-construction. For example, Elaine stated that she would rather be tested using the card-play activity, rather than with traditional paper-based exercises.

In the post-enrichment interviews, the majority of the participants acknowledged the pedagogical value of this apparently fun activity. For example, Stacy commented that the animated SCOBAs served as a very good introduction to the card-play activities. Yet, she emphasized that it was the card-play activity itself that afforded her opportunities to practice the arrangements of different cards whereby she came to understand the subtleties involved in using
the *ba*-construction fully and accurately. Similarly, Derrick considered the card-play activities as particularly effective in his learning of the *ba*-construction. Derrick attributed the highly effective nature of the card-play activity to the fact that it models the real-world situations closely. In fact, this technique is so effective that Derrick was considering using it to teach himself new sentence patterns. In his opinion, Derrick remarked that the card-play activity is particularly useful for eliciting language production.

**8.4 Individual learner variability**

Taken in their entirety, the analyses presented in Chapters 5, 6, and 7 show that over the course of the study, the six focal participants not only became increasingly able to explain the functional purpose of the *ba*-construction and the ways in which it differs from the canonical SVO and topicalization OSV word orders, but they also made significant progress in terms of their performance using the *ba*-construction in various contexts. However, a comparison between the participants shows considerable variations between learners in both conceptual development and performance ability. Specifically, the participants varied considerably in regard to the extent to which each showed an improvement in performance ability. For instance, as reported in Chapter 5, in the translation task, Stacy scored the lowest of all the participants in the pretest, but the highest of all the participants in the posttest, making her the biggest gainer, whereas the scores for Elaine and Larry did not change from pretest to posttest at all.

Analyses of the participants’ interactions with the computerized ICALL system also show evidence of variations between the individual learners in regard to learning trajectory. The ICALL system was designed on an iteration-by-iteration basis to help the participants to identify and revise any errors they may make. However, the results show that the route to an acceptable answer does always move linearly from more errors to fewer errors or from one error rendered
progressively closer to a correct answer with each iteration. For instance, on the translation task in the computerized ICALL system, Chris was eventually able to provide correct answers to all the questions. However, as he worked toward these correct answers, he tended to address an error in his previous answer to some extent only to introduce another error. In such instances, his journey toward a correct response was hardly linear, and it became evident that the ICALL system was not designed to negotiate such a trajectory.

In respect to developing a conceptual understanding of the functional purpose of the *ba*-construction and the ways in which it differs from the canonical SVO and topicalization OSV word orders, the interview data showed less variation than performance data (i.e., the three major tests). As discussed in Chapter 6, over the course of the study, the participants as a group improved their conceptual understanding of the functional purpose of the *ba*-construction from “the movement or placement of physical objects” to a broader understanding of its purpose as “emphasizing the result of the verbal action.” Although all the participants made significant progress, even at the end of the program, I still found that in terms of their conceptual understanding, several of the participants deviated to some extent from the pedagogical model and, indeed, there were also differences among the participants on this point. For instance, in his post-enrichment interview, Larry mentioned that in the *ba*-construction the focus is on the “verb,” instead of the resultative component of the verb phrase, as other participants remarked in the post-enrichment interview.

Collectively, these findings show that the group as a whole made significant progress in regard to developing a conceptual understanding of the construction and in regard to their ability to use it accurately and fully. However, the finding also show that in individual terms, variations were evident among the participants on both of these points and in terms of the participants’ respective developmental processes. As such, these findings provide support for the claim that individual learner variability is an intrinsic property of the L2 developmental process (van Dijk,
However, this individual learner variability should not be perceived as noise in the data to be averaged away. Instead, it should be viewed as a useful source of information in understanding and promoting effective L2 developmental processes (Larsen-Freeman, 2006; van Dijk et al., 2011; van Geert & Steenbeek, 2005).

8.5 Computerized ICALL system

8.5.1 Developing a socioculturally informed ICALL system

The second central research question asked in this study focuses on the interdisciplinary synergy between sociocultural theory (Lantolf & Thorne, 2006; Vygotsky 1978, 2012) and intelligent computer-assisted language learning. Specifically, I asked, “To what extent can meaningful and appropriate mediation be provided to learners to facilitate L2 development in an intelligent computer-assisted language learning (ICALL) environment?” To address this issue, I created a computerized ICALL system for Chinese—the first of its kind. As detailed in Chapter 4, this ICALL system not only integrates a wide variety of NLP technologies (e.g., Chinese-word segmentation and syntactic parsing), but more importantly, its underlying principles reflect a theoretical understanding of L2 development from the perspective of sociocultural theory. For instance, I developed core algorithms (Figure 4.7 in Chapter 4) that are capable of providing “graduated mediation” (Aljaafreh & Lantolf, 1994) based on the participants’ responses to questions in an English-to-Chinese translation task. The mediational feedback progresses from very implicit and general (“Hmm, can you take a look at it again?”) to very explicit and specific (“Okay, so has the action completed?”). As such, the ICALL system affords opportunities to assess a learner’s understanding of the various aspects of the ba-construction and simultaneously
promotes his/her progress toward developing a conceptual understanding of this grammatical device.

Designed to take an iterative approach to providing feedback, the ICALL system is also capable of documenting and tracking all the answers provided by a participant prior to the provision of a correct answer and other critical information (e.g., feedback given by the ICALL system and the time the participant spent on arriving at a correct answer through various attempts to get there) at each iteration. Thus, the ICALL system “assesses” (i.e., identifies the participant’s problematic areas by comparing his/her answers to all the predetermined correct answers programmed into the system. More specifically, the ICALL system focuses on such key aspects of the *ba*-construction as the perfective marker, the grammatical object, and the RVC. Further, the ICALL system is effective in assessing the participant’s performance at each juncture and also simultaneously and collaboratively constructs a ZPD whereby the participant iteratively works out the locations of the problematic areas and self-corrects them in an effort to complete the translation task. This process enabled the participants to gradually and iteratively modify their own understanding of the various aspects of the *ba*-construction.

Thus, to answer my second research question more directly: It is possible to design an ICALL system that adopts the theoretical framework of Vygotskyian sociocultural theory and provides meaningful and appropriate mediation to learners thereby facilitating L2 development in a web-based computerized environment.

Two decades ago, Oxford (1993) called for ICALL researchers to pay attention both to exciting state-of-the art (NLP) technologies and to sound language learning/teaching principles. To date, this call continues to have great relevance for ICALL research in general. My work in the present research study responds to this call by exploiting cutting-edge technologies to create an effective language–learning environment—an environment that is based on a solid theoretical foundation pertaining to second-language development.
The significance of the ICALL system presented herein is twofold. First and foremost, my study reconceptualizes the notion of intelligence in ICALL research as not simply the utilization of NLP technology, but also as how such technology can be used creatively to provide meaningful and appropriate mediation to language learners in order to promote second-language (L2) development. Second, although ICALL systems have been developed for some languages (e.g., WERTi for English; TAGARELA for Portuguese; E-Tutor for German; ROBO-SENSEI for Japanese), there is no such system for Chinese. Thus, The ICALL system I have developed for this study represents a first—and a first successful—effort to develop an ICALL system for Chinese.

The ICALL system developed in this study shows similarities as well as differences to the C-DA project discussed in Chapter 2. Both systems draw on theoretical insights about L2 development from Vygotsky’s sociocultural theory, particularly on mediation and ZPD. For example, both systems are designed to assess how much mediational assistance a student needs in order to complete a specific task. However, the type and nature of mediation provided by the two systems differ from each other. The mediational feedback C-DA provides is not predicated on specific linguistic features in the learner’s answer, but rather on the sequential order of the learner’s interaction with the system. In contrast, feedback provides by the ICALL system is largely based on the learner’s language production and is directly relevant to specific linguistic aspects of the target grammatical construction. Thus, it would be beneficial for future C-DA projects to consider the types and natures of students’ error in designing the feedback mechanisms. It would be equally useful for future development of the ICALL system to include calculation of weighted score.

The ICALL system developed in this study also relates to computer-adaptive testing (CAT). CAT is a form of computer-based test that adapts to the student’s ability level. The ICALL system is similar to a CAT test in the sense that both systems utilize iterative algorithms
to probe the students ability in a step-wise successive manner. However, there are some significant differences between the two systems too. First, while the ICALL system provides mediational feedback to students, CAT does not. Second, the ICALL system designed in the present study focuses on open-ended questions, but most CAT tests use multiple choice questions. Third, most CAT tests begin with the items of medium difficulty, whereas the ICALL system starts with the most implicit prompt. Future research in CAT might benefit from theoretical insights from Vygotskian sociocultural theory, particularly in the area of Dynamic Assessment (see Lantolf & Poehner, 2011; Poehner, 2008, Poehner & Lantolf, 2013; Poehner, Zhang, & Lu, 2015).

8.5.2 Effectiveness of the ICALL system

Having created a socioculturally informed computerized ICALL system capable of providing graduated mediation based on a learner’s language production, I ask the next logical question: To what extent is the ICALL system effective in promoting L2 development? In this subsection, I specifically address this issue.

In general, the ICALL system served as an effective pedagogical tool in regard to mediating the participants’ progress in understanding and using the ba-construction. As analyzed in Chapter 7, the ICALL system targeted Stacy’s problematic area accurately and provided appropriate mediation whereby Stacy and Derrick were each able to work out acceptable answers that included the ba-construction. However, the analyses also indicated that at times the system was not “intelligent” enough to detect every problem expressed in the participants’ answers. As a result, the system was not able to provide useful mediation in such instances.

Nevertheless, the participants’ generally expressed a positive attitude toward the ICALL system, viewing it as very effective overall. As reported in Chapter 7, among all the different
mediational tools used in this study, Larry liked the ICALL system best. Even though Larry pointed out that the program had room for improvement, he nonetheless acknowledged that the computerized ICALL system has pedagogical value—especially for students who want to learn Chinese on their own.

Larry’s perception of the computerized ICALL program is representative of the whole group cohort in this study. All the participants commented that the ICALL system could be improved. In particular, they noted that sometimes the system could not recognize answers that were actually correct because they were not among the predefined potential correct answers stored in the system. Yet, all the participants nevertheless acknowledged its pedagogical value and expressed their appreciation for the system’s ability to providing tailored feedback on a variety of linguistic features related to the *ba*-construction—a feature that they had not experienced in the many other computer-based exercises they had used, which offered either dichotomous feedback (correct or incorrect) or no feedback at all.

In the post-enrichment program interview, some of the participants mentioned that the implicit feedback provided by the ICALL system was particularly useful in that it provided an opportunity for them to locate and revise the problems in their answers themselves.

8.5.3 Major challenges encountered

In this subsection, I discuss some of the challenges that I encountered and overcame in developing the computerized ICALL system. Some of the challenges were linguistic in nature, whereas others were more technical. In this discussion, I focus on three major challenges: (1) the difficulties involved in predicting all the correct answers to open-ended questions; (2) technical challenges associated with integrating diverse NLP software programs and making the resulting
system viable in a web-based environment; and (3) difficulties encountered in detecting problematic areas faced by the learner.

The first major challenge that I encountered in designing the ICALL system pertained to the difficulties involved in predicting all the correct answers to open-ended questions. In the design of my ICALL system, I did not choose a task with close-ended questions (e.g., multiple choice) because these are not very effective for assessing the participants’ productive ability. Instead, I chose a translation task that allowed for more open-ended questions. However, in this task, there was more than one acceptable answer to each question. Thus, in order to be able to analyze the participants’ production and provide relevant mediational feedback, it was necessary to predict, with reasonable accuracy, the answers the participants were likely to produce.

For the ba-construction, in order to predict all the potential translation answers, we need to consider at least the following eight aspects: (1) the perfective –le can be placed either at sentence-final position or post-verbal position; (2) the manner adverbs can be placed either before the ba particle or in pre-verbal position; (3) the temporal or locative adverbs can be placed at sentence-initial or post-subject position; (4) multiple verbs (i.e., synonyms) can be used to describe more or less the same verbal action; (5) different complements can be used to indicate more or less the same results; (6) different directional words/prepositions can be used in the complement (e.g., 放到了 “placed on,” 放在了 “placed at,” 放进了 “placed into”); (7) multiple ba-VP patterns can be used to express more or less the same meaning (see Table 4.2 in Chapter 4 for an illustration); (8) different adjectives can be used to describe more or less the same thing (e.g., 大的 “big” vs. 大大的 “very big”).

Considering the possible combinations of different variations of linguistic items discussed above, we can quickly arrive at a rather long list of acceptable answers (see Appendix L for an illustration). Indeed, as we consider more factors, so the number of potentially correct
The explosion of potentially correct answers is vividly illustrated in Nagata’s (2009) study. Using the Japanese tutor ROBO-SENSEI system, she shows that to account for all the possible well-formed lexical, orthographical, and word-order variants that could arise from a short answer to a question about a short communicative text, 6,048 sentences would have to be programmed into a system and identified as correct. If incorrect answers or ill-formed patterns (e.g., an incorrect particle or conjugation) were to be considered, the possible sentences could reach an astonishing one million combinations. As such, providing a direct and complete mapping between potential learner input and intended feedback is not feasible (Heift, 2010a; Meurers, 2012). It should be pointed out that the number of correct answers that my ICALL system failed to recognize as such was small. Further, these few failures did not adversely affect the implementation of theoretical principles drawn from Vygotskian sociocultural theory in providing meaningful and pertinent mediational feedback in order to promote L2 development—a focus of the present study.

The second major challenge involved in designing the ICALL system was that of integrating a diverse range of (NLP) technologies and rendering the resulting system viable in a web-based environment. Some of the technical challenges were related to the integration of NLP software programs. For example, as Chinese is written without any spaces between words, the very first step for any NLP processing a Chinese text must focus on word segmentation. In this area, Stanford NLP tools stand out as a very reliable software packages, which has the virtues of both being regularly updated and freely available. However, the initialization of the Stanford Chinese Word Segmenter (Tseng et al., 2005) software requires the loading of a rather large file-based dictionary (i.e., over 150MB) into the computer memory before performing any segmentation task. This initialization process alone takes more than 15 seconds, making it unbearably slow in a web-based environment. Further, the Stanford NLP software is written in Java, a compiled programming language, but the rest of my web-based ICALL system is
implemented in Python, an interpretive programming language. The communication between the two programming languages, particularly at run time (or in real time) represents a significant challenge and requires extensive expertise in the area of computer science. This again speaks to the interdisciplinary nature of ICALL research in general. My solution to this challenging problem was (1) to use an alternative and much faster segmenter and (2) to run two separate servers—a Java Virtual Machine (JVM) server running the Stanford NLP software, and the Apache web server serving Python—and then use a bridging package called py4j\(^6\) to bridge the communication between the two very different programming languages. Through this approach, I was able to reduce the time between the provision of an answer and the mediational feedback offered in response to two to three seconds, thus making the system viable in a web-based environment.

Finally, and perhaps more generally, it is difficult to design an ICALL system capable of approximating the high-quality mediation expected of a human teacher. Part of the reason for this is that the ICALL system must rely on the learner’s written production, whereas a human teacher can perceive a learner’s difficulties through a variety of channels (e.g., facial expressions, gestures, speech). However, this does not mean that there is no value in the type of mediation an ICALL system can provide. In fact, as Chapter 7 illustrated, the participants benefited from the mediational feedback generated in the ICALL system. Approaching the quality of human mediation may constitute an ultimate if elusive goal of ICALL research, yet the present study nevertheless represents a successful first endeavor to move in exactly that direction based on the theoretical framework of the Vygotskyian tradition of sociocultural theory.

The discussion herein shows that designing such an ICALL system requires interdisciplinary efforts drawing on expertise and collaboration from such fields as (1) second-language acquisition, (2) computational linguistics (e.g., NLP software), (3) programming (e.g.,

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communication between different programming languages at run time), and (4) human–computer interaction (e.g., web interface design).

As shown in Chapter 7, the ICALL system requires the tutor to be present with the participants. This is because the system in its current state is not able to handle participants’ correct answers that were not pre-specified in the system. To some extent, the tutor’s presence affects the ICALL system’s usefulness in the sense that it cannot function independently and provide services to a large number of students without the participation of a human tutor. However, there are also some benefits of having the student, the ICALL system, and the tutor interacting together. Although the ICALL system is able to identify and provide meaningful and appropriate mediational feedback to students, it relies on a pre-specified inventory of correct answers, and as the analysis shows, it occasionally breaks down when a student provides a correct answer outside of the original list of possible answers. At this critical juncture, it is important for the human tutor to intervene, and ensure that the student understands what happened with the ICALL system, so that his or her confidence toward the ICALL system is not unduly affected.

Second, it is not unusual for students to receive mediational assistance from a combination of sources. For instance, the interaction between students, ICALL system, and a human tutor can be carried out in a computer classroom where each student is working on his or her own computer, but simultaneously have access to the human tutor who is walking around the classroom and responding to students’ questions as they arise. However, it needs to point out that this arrangement also has a downside. That is, it is difficult to determine the specific contribution of each pedagogical activity (ICALL or interactions with tutor) to learner development.

As I continue developing the system, several areas are especially worth noting. From a linguistic perspective, more grammatical features (e.g., related grammatical structure such as the bei-construction) and practice activities (e.g., discourse completion task) can be included in the ICALL system. In addition, based on the results of this study, the correct answers generated by
the participants can be included in the repository if they have not already been included. From a technical perspective, NLP technologies with better accuracy rate (particularly part-of-speech tagger) should be utilized in the system. Finally, it would be useful to make the system available to more students (perhaps in an in classroom environment), and obtain their feedback in order to further improve various aspects of the Chinese ICALL system.

8.6 Summary

In this chapter, I presented a discussion of various aspects of this study, including the effectiveness of the concept-based approach, the effectiveness of my approach to the ba-construction, variations among individual learners, and the development of a computerized ICALL system. One of the major contributions of this dissertation research project is the development of an ICALL system by drawing on theoretical insights from the Vygotskyian tradition of sociocultural theory. I have shown in Chapter 7 that the ICALL system is capable both of providing graduated mediation (Aljafreerh & Lantolf, 1994) based on the participants’ responses to open-ended questions and of collaboratively co-constructing a ZPD with each participant in an iteration-by-iteration fashion, in order to promote L2 acquisition of the various aspects of the ba-construction in a computerized environment. In addition, I posited an alternative conceptualization of the notion of intelligence in ICALL research. My proposed conceptualization foregrounds the learner and language development and down-plays the emphasis on the use of NLP technology.
Chapter 9

Conclusion

9.1 Summary of key findings

The goal of this study was to help intermediate-level American students develop a conceptual understanding of the Chinese ba-construction through instructional intervention focusing on (1) promoting the internalization of the functional purpose of the ba-construction and (2) apprehending the differences between the ba-construction and the canonical SVO and topicalization OSV in regard to word order. Through this investigation, the researcher sought to answer two principal questions: To what extent does concept-based approach to language instruction promote L2 development of the Chinese ba-construction? And, to what extent can meaningful and appropriate mediation be provided to learners to facilitate L2 development in an ICALL environment?

Over the course of the study, as documented in Chapter 6, all six participants made marked improvements in their conceptual understanding of both the functional purpose of the ba-construction and the ways in which it differs from the SVO and OSV structures. For instance, the participants realized that the ba-construction is not so much about physical movement or placement of an object as they had originally thought, but to place focus on the resulting state of the fronted object described by the verb phrase. In addition to improvement in conceptual understanding, the participants also made significant progress in terms of their performance of various aspects related to the ba-construction both as a group (Chapter 5) and as individuals (Chapter 7) on the translation and cartoon description tasks.

Analyses of individual participant’s performance on (1) the major tests (pre-test, post-test, and delayed post-test), (2) the card-play activities, and (3) the ICALL practice also show
progress on specific linguistic aspects related to the *ba*-construction. For instance, the analyses presented in Chapter 7 show that the participants became increasingly aware of the link between the perfective marker *–le* and the *ba*-construction. Collectively, the results show that the concept-based approach to language instruction is indeed effective in promoting the participants’ L2 development both in regard to their conceptual knowledge and their actual performance of the *ba*-construction.

In order to answer the second major research question, I designed and implemented an ICALL system that not only utilizes state-of-the-art NLP technologies (e.g., Chinese-word segmentation and syntactic parsing), but also draws on theoretical insights into L2 development from Vygotskian sociocultural theory (Lantolf & Thorne, 2006). The ICALL system developed for this study is capable of automatically analyzing learners’ actual language production and providing “graduated mediation” (Aljaafreh & Lantolf, 1994) to learners. Specifically, the mediational feedback progresses from very general and implicit to very specific and explicit (e.g., from “Hmm, can you take a look at it again?” to “Okay, so has the action completed yet?”). The underlying assumption is that the amount of mediation learners need reveals the extent to which they have internalized a given concept and simultaneously indicates their potential for future development (Poehner, 2008).

Analyses of the participants’ performance on the translation task in the ICALL system show that mediational feedback provided by the ICALL system helped Derrick to self-identify and self-correct the problematic areas in his production of the *ba*-construction. The analyses also show that the ICALL system helped Stacy to determine the real location of her problematic area and subsequently to identify the appropriate resultative word in the RVC structure. In addition, the analyses also illustrated the role of cooperative support from both the ICALL system and from the tutor in mediating the participants’ development of various aspects of the *ba*-construction during the ICALL practice.
To be sure, the results of the study show that the participants continued to struggle with some aspects of the *ba*-construction. For example, in both the posttest and the delayed posttest, a number of participants still had problems with directional words, prepositions (e.g., 拉近 “drag into” vs. 拉住 “drag at”), as well as the placement of the perfective marker –*le* immediately after the verb phrase. This is not surprising, though, as conceptual knowledge typically develops before performance ability does (Valsiner, 2001).

Lastly, the analyses of the participants’ overall performance in the paper-based tests and in the computerized ICALL environment revealed differences in learning trajectory and considerable variations between the individual learners in regard to their progress they made in the enrichment program. Specifically, analyses of the results of the pretest and the posttest show that some participants’ performance abilities improved to a greater extent than did others’. For instance, in the translation task, Stacy showed the greatest positive difference from the pretest to the posttest, whereas the scores for Elaine and Larry did not change from pretest to posttest at all. Interesting learning patterns were also found in the ICALL practice. In Chris’s performance on the translation task in the ICALL system, he was able to fix some errors, thus reducing the total number of errors present in his answers. However, in his revisions, he also introduced new errors to his answers, thus increasing the total number of errors present in his work toward a correct answer. On this point, it is worth noting that the ICALL system is designed to help learners identify and correct various issues with the *ba*-construction in an iterative fashion; however, it is not designed to negotiate a process such as that shown by Chris, whereby he did not progress toward a correct answer in a linear way. Lantolf and Aljaafreh’s (1994) noted that mental systems, including language learning, are longitudinally “not a smooth and linear process, but simultaneously entail forward movement and regression” (p. 619). My analyses of Chris’s ICALL interaction show that even on a microgenetic scale, this is also the case. Collectively, these
findings show that the group as a whole made significant progress in terms of both conceptual understanding and performance, but that there was significant inter- and intra-learner variability between the participants’ development in individual terms.

9.2 Implications of this study

9.2.1 Theoretical implications

The study reported in this dissertation project has theoretical implications for two areas: (1) theoretical understanding of the functional purpose of the *ba*-construction in Chinese linguistics, and (2) the conceptualization of the very notion of “intelligence” in ICALL research. In the first area—theoretical understanding of the functional purpose of the *ba*-construction in Chinese linguistics—this study proposes a systematic and comprehensive conceptual understanding of the functional purpose of the *ba*-construction. This characterization of the *ba*-construction is essentially meaning-based, and it is generalizable enough to explain a wide range of the use cases. As such, this proposed understanding of the functional purpose of the *ba*-construction represents a useful contribution to the Chinese linguistics literature on the theoretical analysis of this grammatical device.

In the second area—the conceptualization of the notion of “intelligence” in ICALL research—this study has important theoretical implications for the field of ICALL research. Specifically, I have proposed an alternative definition for the notion of intelligence in ICALL. I argue that although it is important to take advantage of state-of-the-art NLP (and other non-NLP) technologies in the ICALL system, these alone do not make an ICALL system intelligent. Instead, the creative use of technologies to provide learning opportunities and to provide meaningful and appropriate mediational feedback to language learners that promotes L2
development is what makes an ICALL system intelligent. In short, this reconceptualization of intelligence puts more focus on learners and their language development, rather than on the use of technology. It echoes Lian’s (1992) claim that human beings (i.e., the learners) “must occupy the central role and must be the ultimate beneficiaries of any intelligent programming” (p. 73).

9.2.2 Pedagogical implications

The pedagogical model of the functional purpose of the *ba*-construction and its differences from the canonical SVO and topicalization OSV forms, together with its materialized form (animated SCOBAs) that I have developed for this dissertation study have implications for textbook preparation and material development in the field of teaching Chinese as a Foreign/Second Language (CFL). As discussed in Chapter 3, the account of the *ba*-construction in most current textbooks is inadequate, as it covers only a limited set of uses (i.e., the physical placement or movement of an object to a different location or the action of “taking something and doing something with it”). As discussed in Chapter 6, this account had confused a number of participants such that they did not know how to use the construction for other purposes, such as in the context of washing clothes. Thus, it is necessary for the CFL field in general—in regard to textbook preparation in particular—to present a fuller and more carefully worked out account of the functional purpose of the *ba*-construction. The pedagogical model and diagrams presented in this study offer a sound empirical basis for moving forward effectively in this area.

Second, this study presents a socioculturally informed ICALL system for Chinese—the very first of its kind. Although this web-based computerized system still needs improvement, including the addition of new features (see the next section), it nevertheless has potential pedagogical value to the CFL field as a whole. In addition, because this system is widely available, it is highly functional inasmuch as it can support instruction for an unlimited number
of students and it can be used beyond the face-to-face classroom to thus extend the classroom in time and space.

9.2.3 Methodological implications

The computerized ICALL system I have developed for this study has several methodological implications for interdisciplinary research into developing ICALL systems that draw on theoretical insights from Vygotskian sociocultural theory. It demonstrates that designing a socioculturally informed ICALL system is indeed possible. The core algorithms (Figure 4.7 in Chapter 4) that I developed for the ICALL system mean that it can analyze learners’ actual language production and provide graduated mediation iteratively to help learners identify and self-correct errors. In doing so, the ICALL system assesses the participants’ performance and simultaneously creates a ZPD to promote further development. This is not to say, though, that the approach presented is the only way to create a socioculturally informed ICALL system. Nevertheless, this study serves as a demonstration of its feasibility and effectiveness, and it also serves as an open call for more studies in this line of research (e.g., providing more fine-grained mediational feedback).

Heift (2010) pointed out that the development of ICALL systems is a “very complex, onerous, and extremely time-consuming endeavor” (p. 443). This study echoes that observation and serves as a reminder of the need for an interdisciplinary effort that integrates expertise from such fields as (1) second-language acquisition (e.g., Vygotskian sociocultural theory), (2) computational linguistics (e.g., NLP software), (3) computer science (e.g., communication between different programming languages at run time), and (4) human–computer interaction (e.g., web-interface design), as well as (5) database design and management (e.g., relational databases).
9.3 Limitations and future directions

This dissertation has clear limitations. A major limitation is the limited size of the task used in the quantitative part of the study. Second, the sample size of the participants is small (N = 6). However, the limited number of participants and the careful selection of representative cases allowed for a relatively in-depth look at the participants’ conceptual development and their performance ability from multiple angles. Future studies will benefit from expanding the breadth of the research design to include a greater number of participants (e.g., in a classroom environment or at different program levels).

The participants in this study had all received instruction about the ba-construction before participating in this study. Additional insights can be gained if students with no prior exposure to this grammatical construction were also included. For instance, it would allow for comparing and contrasting differential developmental trajectories between students who have received instruction and those who have not, with the assumption that the latter group might actually find it easier because they do not have to re–learn the functional purpose of the ba-construction.

While the present study has employed a variety of data collection instruments (e.g., translation task, cartoon description task, audio/video recordings, interviews, ICALL), other types of performance data collection methods can be used to provide further evidence of L2 development. For example, a discourse completion task could be used to select appropriate grammatical constructions depending on situations described. Another type of data collection method is a translation task which includes contexts where either the ba-construction or non ba-construction can be used. These instruments allow for gathering of data that provide further evidence of students’ improved ability to determine when and when not to use the ba-construction.
Second, the videos used in the posttest and the delayed posttest were identical. It is important to note that the main comparison drawn in this study was between the pretest and the posttest, for the purpose of assessing the effectiveness of the concept-based instructional approach. That is, I am interested in assessing how much the participants still retain after the posttest, not how much they further improve in this area since the posttest. With that said, future studies will benefit from using a different set of videos in the delayed posttest than those used in the posttest, in order to gauge the participants’ ability in applying what they learned to a different context to show further development.

Third, the ICALL system requires further improvement. Compared to other ICALL systems designed for other languages, the ICALL system I developed in this study focuses primarily on the ba-construction and does not include activities other than a translation task. Future studies on Chinese ICALL systems would benefit from including more grammatical features and more practice activities. In addition, due to the difficulty of predicting all the answers that participants might provide, the ICALL system cannot identify problematic areas in some students’ answers and thus could not provide useful mediational feedback. Perhaps with time and enough learners, it is possible to build a corpus of empirically predictable correct answers and potential errors for each feature of the target language under study. Nevertheless, this is indeed a challenging area, and more research is needed to identify solutions. Third, the accuracy of the underlying NLP software also has room for improvement. For the current research, the Stanford Parser did not always provide accurate results in regard to identifying the perfective marker –le, and the resultative component in the RVC. Thus, it would be useful for future research to specifically train the NLP software in those areas. Finally, although the mediational feedback provided by the ICALL system is useful, it requires improvement in the area of providing fine-grained hinting systems and/or easier-to-understand feedback (e.g., highlighting problematic areas in order to help learners identify their errors). However, providing
such feedback would be difficult with open-ended questions. Future studies would benefit from placing some limitations on the participants’ options. For example, instead of using open-ended questions, future research could model a system following the card play and perhaps create computerized versions of this activity (e.g., allowing students to drag and drop cards from a random set to arrange different $ba$-VP patterns).

9.4 Concluding remarks

This study explored how a concept-based approach to language instruction, coupled with an ICALL system, helps promote six focal participants’ conceptual development of and performance in regard to the $ba$-construction. As part of the study, I created a socioculturally informed ICALL system for Chinese. In this regard, this study represents an extension of concept-based approaches to language instruction to the emerging field of ICALL. In particular, I have posited a reconceptualization of the very notion of intelligence in ICALL research: what makes ICALL intelligent is not simply the utilization of NLP technology, as traditionally defined and conceptualized; more importantly, it is about how such NLP technologies (and in collaboration with other non-NLP technologies) can be creatively used to provide meaningful and appropriate mediation to language learners in order to promote L2 development. As such, the new conceptualization of intelligence in ICALL puts more focus on learners and their language development, rather than simply the use of a technology, NLP or otherwise.

Although this study has a number of important implications for interdisciplinary research (i.e., by making connections between sociocultural theory and ICALL) in regard to the theoretical understanding of the $ba$-construction in Chinese linguistics and to preparing instructional materials for Chinese courses (i.e., in regard to the characterization of the $ba$-construction), there are also a number of limitations and questions left unanswered. Overall, this research constitutes
an initial successful effort to investigate the concept-based approach coupled with a socioculturally informed ICALL system to teaching the *ba*-construction. My hope is that this study will serve as a starting point for future research that seeks to explore the interdisciplinary synergy between second-language acquisition (particularly from the Vygotskian perspective) and intelligent computer-assisted language learning.
Appendix A

Informed Consent

Informed Consent Form for Social Science Research
The Pennsylvania State University

Title of Project: Concept-based instruction and the acquisition of the ba-construction in Chinese: Integrating intelligent computer-assisted language learning

Principal Investigator: Haiyang Ai
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1. **Purpose of the Study:** The purpose of this research is to help you develop your abilities in using the ba-construction in Chinese through a teaching method called *concept-based instruction*. Learning to speak a foreign language is not easy, particularly for those linguistic categories that requires cognitive attention to particular aspect which is different from your first language. This study help you to develop conceptual understanding of the ba-construction in Chinese from concept-based instruction coupled with an intelligent computer-assisted language learning (ICALL) system.

2. **Procedures to be followed:** You will be asked to participate in a six (6) video and audio-recorded one-on-one sessions with the researcher/teacher. The focus is on learning the essential meaning and function of the ba-construction in Chinese. During teaching sessions, you will participate in a number of tasks in collaboration with the researcher and the ICALL system. These tasks are similar to the activities you regularly do in the classroom, including explicit instruction and discussion about the concepts and language forms, translation task and picture description task. All of these tasks are designed to help you improve your ability in using the ba-construction in Chinese in a range of contexts.

3. **Discomforts and Risks:** There are no risks in participating in this research beyond those experienced in everyday life.
4. **Benefits:** The benefits to you include learning more about the Chinese language and grammar. The benefits to society include learning more about how languages are learned and the role of instruction and ICALL system in foreign language education.

5. **Duration/Time:** You will be asked to participate in six (6) sessions with the researcher at your convenience over the course of not more than six (6) weeks. Each session will last approximately 45 minutes to one hour, for a total of 6-8 hours if you complete the study.

6. **Statement of Confidentiality:** Your participation in this research is confidential. The videotapes will be stored and secured in password-protected digital files. In the event of a publication or presentation resulting from the research, video clips and/or written transcripts may be employed to exemplify how concept-based instruction works and/or how the various tasks and teaching activities were carried out (see below). Other forms of data (e.g., worksheets) collected during the study will also be stored in electronic (scanned) password-protected files and archived for future research projects, educational, and/or training purposes. Your name and any other personally identifiable information will never be used. Instead, pseudonyms will be used when referring to specific participants. Only the Principle Investigator, Haiyang Ai, and his Advisor, Dr. Xiaofei Lu, will have access to the recordings. The Pennsylvania State University’s Office for Research Protections, the Institutional Review Board and the Office for Human Research Protections in the Department of Health and Human Services may review records related to this research study.

Please indicate below whether or not you agree that segments (clips) of the recordings made of your participation may be used for the following purposes:

- Clips may be used for **conference presentations:**  ____ YES  ____ NO
- Clips may be used for **publications:**  ____ YES  ____ NO
- Clips may be used for **educational/teaching purposes:**  ____ YES  ____ NO
- Clips may be used for **training purposes:**  ____ YES  ____ NO

7. **Data Archiving for Future Use:** Normally, video and audio files will be destroyed five (5) years after your participation in this study. However, video and audio files can be valuable resources for research, educational, and training purposes. Please indicate whether or not you agree to allow the researcher to archive video and audio files of your participation in this research for future research, educational, and/or training purposes in the field of second language learning and teaching. In all cases, your data will remain password-protected and confidential.

- Video/audio files may be archived for **future research:**  ____ YES  ____ NO
- Video/audio files may be archived for **educational purposes:**  ____ YES  ____ NO
- Video/audio files may be archived for **training purposes:**  ____ YES  ____ NO

If you do not wish for your video and audio files to be archived, please indicate so here  ____ . By so doing, your data will be destroyed within five (5) years of completion of this study and will not be used for future research, educational purposes, or training purposes.
8. **Right to Ask Questions:** Please contact the researcher, Haiyang Ai (hua126@psu.edu; 814-321-7474), or his advisor, Dr. Xiaofei Lu (XXL13@psu.edu), with questions, complaints or concerns about this research. You can also contact the researcher or his advisor if you feel this study has harmed you. If you have any questions, concerns, or problems about your rights as a research participant or would like to offer input, please contact The Pennsylvania State University’s Office for Research Protections (ORP) at (814) 865-1775. The ORP cannot answer questions about research procedures. Questions about research procedures can be answered by the research team.

9. **Voluntary Participation:** Your decision to participate in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer or participate in any activities you do not want to participate in. Refusal to take part in or withdrawing from this study will involve no penalty or loss of benefits you would receive otherwise.

10. **Compensation:** You will receive financial compensation for your time in the amount of $10 per session, for a total of $60 for six sessions. You will receive an additional bonus of $20 if you complete the entire six-session program. You will receive compensation in cash at the end of each session you attend. You will be compensated only for the sessions you attend.

   You must be 18 years of age or older to consent to take part in this research study. If you agree to take part in this research study and the information outlined above, please sign your name and indicate the date below.

   You will be given a copy of this consent form for your records.

   ___________________________________________________________ ____________________
   Participant Signature     Date

   ___________________________________________________________ _____________________
   Person Obtaining Consent     Date
Appendix B

Linguistic Background Questionnaire

This questionnaire is designed to give us a better understanding of your Chinese language learning experience. We ask that you be as accurate and as thorough as possible when answering the following questions.

1. Name: __________________   2. Gender: M___ or   F____
3. Age: __________________   4. Academic Year: _________________
7. Semester: Fall/Spring/Summer ________
8. Course number: Chinese _____
9. Language experience:
   (1) What is your first language?
   (2) What other languages do you know?
   (3) Including the current semester, how many semesters of Chinese have you studied at this university?
   (4) Prior to taking Chinese at this university, have you ever taken a Chinese language class in any educational institution (high school, college, language school, etc)? If so, when, where, and for how long did you study Chinese?
   (5) Have you lived in a Chinese speaking area or country (such as: a period of residence or school attendance, or study abroad)? If so, when, where and for how long?
   (6) Do you have family members who regularly speak Mandarin Chinese with you? How is it used and how regularly is it used? If you speak a dialect of Mandarin, please indicate the dialect you speak.
Appendix C

The Pretest

The pretest consists of two tasks: a translation task and a picture description task. There is also a glossary for your reference. For each item, please use one to five to indicate your confidence level regarding the correctness of your answer (1=least confident; 5=most confident)

I. Please translate the following sentences into Chinese. You may use Chinese characters or Pinyin in your translation. Please also indicate your confidence level.

1. He spilled that glass of wine on the carpet.
2. I returned those two books to the library yesterday.
3. I consider him my friend.
4. He cut the cake into six pieces.
5. Mom placed the book on the desk.

II. For each item in this section, you will watch a short video taken from the Tom and Jerry cartoon. Please answer the following question based on the situation described in each episode. Consult the glossary for difficult words. You may also use Pinyin. Please also indicate your confidence level.

1. What did Jerry do to the glass cup?
2. What did Tom do with his tail?
3. What did Jerry do to the plates?
4. What did Tom do with the slices of bread?
5. What did Jerry do to the cheese?
Appendix D

The Posttest/Delayed posttest

The posttest/delayed posttest consists of two tasks: a translation task and a picture description task. There is also a glossary for your reference. For each item, please use one to five to indicate your confidence level regarding the correctness of your answer (1=least confident; 5=most confident)

I. Please translate the following sentences into Chinese. You may use Chinese characters or Pinyin in your translation. Please also indicate your confidence level.

1. He spilled a cup of water on the floor.

2. She cut that apple into four pieces.

3. Dad hung this picture on the wall.

4. I consider him my brother.

5. I have returned that dictionary to my friend.

II. For each item in this section, you will watch a short video taken from the Tom and Jerry cartoon. Please answer the following question based on the situation described in each episode. Consult the glossary for difficult words. You may also use Pinyin. Please also indicate your confidence level.

1. What did Tom do to the apple?

2. What did Tom do to the tomato?

3. What did the little cat do to the golden fish?

4. What did the yellow duck do to Jerry?

5. What did Tom do to Spike (the dog)?
Appendix E

List of the Interview Questions

1. Can you tell me a little bit about what you understand about the _ba_-construction in Mandarin Chinese?
2. So when do you need to use the _ba_-construction? When do you use other types of constructions (i.e., SVO, OSV)
3. Can you tell me a little bit about what you understand about the restrictions of the fronted noun phrase of the _ba_-construction construction?
4. Can you tell me a little bit about what you understand about the requirement of the verb phrase in the _ba_-construction?
5. Can you tell me a little bit about what you understand about the various forms of the verb phrases in the _ba_-construction?
Appendix F

Screenshot of the video clip (train crushed coyote, 3 slides)
Appendix G

SCOBA for the SVO structure (10 slides)

In Chinese, you can describe the previous scene like this:
In Chinese, the result of a verbal action is typically expressed explicitly in a resultative verb compound. So the fact that the train crushed the coyote is expressed as "压扁", or "crush-flat".

In Chinese, the perfective marker -le "了" is typically used to indicate that the action is done or completed.
This is the subject (S) and the topic (what is being talked about) of the sentence.

In Chinese, the result of a verbal action is typically expressed explicitly in a resultative verb compound. So the fact that the train crushed the coyote is expressed as “压扁”, or “crush-flat”.
This is the complex verb constituent (V).

This is the object (O).
Together, they serve as the comment (what is said about the topic) of the sentence.

In this SVO sentence, no element is in focus.
Appendix H

SCOBA for the OSV structure (7 slides)

To put the coyote (O) in focus, you move it to the topic position, to indicate what the utterance is all about:
A comma (or a pause in speech) is usually placed after the fronted object.

In this OSV sentence, the topicalized object is in focus.
Appendix I

SCOBA for the *ba*-construction (12 slides)

Now, if you want to put the resulting state of the verb action in focus, you can do this:
First move the object (O) before the complex verb constituent (V)

train  crushed  coyote

火车  压 扁 了  狼

First move the object (O) before the complex verb constituent (V)

train  crushed  coyote

火车  压 扁 了  狼
First move the object (O) before the complex verb constituent (V)

Then add the object marker *ba* “把” before the object.
This remains the subject and serves as primary topic.

The fronted object (O) becomes the secondary topic.
The complex verb constituent (V) serves as the comment.

In contrast to the OSV structure, where the focus is on the topicalized object, the focus of the ba-construction (S ba O V) is on the comment, i.e. the complex verb constituent (V).
In contrast to the OSV structure, where the focus is on the topicalized object, the focus of the ba-construction (S ba O V) is on the comment, i.e. the complex verb constituent (V).

In essence, the ba-construction is used to accentuate the cognitive saliency of the resulting state of the fronted object brought out by the verbal action.
Appendix J

Abbreviations

CL: Classifier
GEN - genitive(-de)
PFV - perfective aspect (–le)
3sg - third person singular pronoun
NOM - nominalizer (de)
RVC - resultative verb compound
1SG  first person singular
1PL  first person plural
2SG  second person singular
2PL  second person plural
3SG  third person singular
3PL  third person plural
ADV  adverb
CLF  classifier
COP  complementizer
COP  copular
INT  interjection
MOD  modifier
NEG  negative
PRF  perfective
PRT  particle
PRP  preposition
GEN  genitive
Appendix K

Transcription Conventions

+  short pause
++ long pause
+++ Very long pause
.  Full stop marks falling intonation
,  Slightly rising intonation
?  Raised intonation (not necessarily a question)
(xxx) unable to transcribe
((comment)) double parentheses contain transcriber’s comments or descriptions
-  Abrupt cutoff with level pitch
underline indicates stress through pitch or amplitude
=  Latched utterances
[. . .] indicates that a section of the transcript has been omitted
[ The onset of overlapping speech
] End of overlapping speech
CAPITALS capital letters indicate markedly loud speech
Appendix L

Multiple Possible Translation Answers

English Sentence:

Teach Zhang quickly wrote the answers to those questions on the blackboard.

Potential Chinese Translation:

1. 张老师快速地把那些问题的答案写在了黑板上。
2. 张老师迅速地把那些问题的答案写在了黑板上。
3. 张老师很快地把那些问题的答案写在了黑板上。
4. 张老师快速地把那些问题的答案写在了黑板上面。
5. 张老师迅速地把那些问题的答案写在了黑板上面。
6. 张老师很快地把那些问题的答案写在了黑板上面。
7. 张老师快速地把那些问题的答案写在黑板上了。
8. 张老师迅速地把那些问题的答案写在黑板上了。
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Bibliography


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