The Effect of Implicit vs. Explicit Instruction on Learning Form-based vs. Meaning-based Language Features

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Second language researchers and teachers are greatly interested in whether or not—and how—the effect of different instructional approaches varies depending on different language features (Doughty, 1991; Dekeyser, 1995; Robinson, 1996; de Graaff, 1997; Housen, Pierrard & Van Daele, 2005). The present study investigates whether implicit meaning-based instruction benefits meaning-based language features more and explicit rule-based instruction benefits form-based language features more. The Chinese relative clause (RC), a form-based complex grammatical feature, and the distinction between the Chinese negative forms *bu* and *mei* (*you*), a meaning-based complex grammatical feature, are the target structures in the present study.

Thirty-four first-year native speakers of English in the Chinese program at the University of Pittsburgh were randomly assigned into implicit and explicit training groups. The implicit group was provided with the context and meaning of a sentence including the target structures, while the explicit group was provided with the rule explanation and examples of target structures during the training. Participants had three 50-minute computer-based training sessions and five tests: a pretest, a posttest immediately after each training session (three times), and a delayed posttest 2 weeks after the last training session. Their accuracy and reaction time (RT) were recorded by the program Paradigm. The effect of implicit and explicit teaching on different language features was compared in terms of four aspects: accuracy, reaction time, knowledge durability, and speed of learning (the time for the teaching effect to show up). The results show

that meaning-based implicit teaching is more beneficial for meaning-based language features, and rule-based explicit teaching is more beneficial for form-based language features. In addition, the present study also shows that syntactic cues, such as grammatical relations, affect the production, but not comprehension, of Chinese RCs, whereas semantic cues, such as animacy, affect the comprehension, but not production, of Chinese RCs. This result partially supports the prediction of the Noun Phrase Accessibility Hierarchy (NPAH).

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PREFACE

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1.0 INTRODUCTION

1.1 ISSUES OF PREVIOUS RESEARCH

Second language researchers and teachers are greatly interested in whether or not—and how—the effect of different instructional approaches varies depending on different language features (Doughty, 1991; Dekeyser, 1995; Robinson, 1996; de Graaff, 1997; Housen, Pierrard & Van Daele, 2005). In previous studies, most researchers have focused on what kind of instructional approaches work better based on whether language features are simple or complex (Dekeyser, 1995; Robinson, 1996; de Graaff, 1997; Housen, Pierrard & Van Daele, 2005). Some researchers (Krashen, 1982, 1994; Reber, 1989) have claimed that complex rules are too complex to be successfully learned with rule explanation and drills, and should be best taught implicitly, embodied in meaning-based practice. Other researchers (Hulstijn & de Graaff, 1994) have claimed the opposite—complex rules are best introduced with explicit instruction.

The different claims are supported in different degrees by existing experimental studies. Most studies support that explicit teaching is more effective than implicit teaching of both simple and complex rules (Spada & Tomita, 2010; Robinson, 1996; de Graaff, 1997; Yabuki-Soh, 2007); a few studies show a tendency that implicit teaching has an advantage over explicit teaching of complex rules (Doughty, 1991; Dekeyser, 1995; Sanz & Morgan, 2004). However, due to the critical limitations of these studies with regard to training

duration and to the measurements of results, it is hard to claim that implicit teaching is less effective than explicit teaching (Spada & Tomita, 2010).

In addition, most previous studies focus on form-based language features (i.e., the complexity of a language feature is due to the formal changes) and ignore meaning-based language features (i.e., the complexity of a language feature is due to the subtle difference in meaning). Previous research comparing differential effects of meaning/implicit vs. form/explicit teaching mostly focuses on syntactic language features, such as plurals (Mackey, 2006), past tense (Ellis, Loewen, & Erlam, 2006; Benati, 2005), question formation (Mackey, 1999; Mackey & Philp, 1998; Spada & Lightbown, 1999), relative clauses (Doughty, 1991; Yabuki-Soh, 2007), pseudo-clefts of location (Robinson, 1996), and dative alternation (Robinson, 1997). They show that explicit teaching generally has a better effect than implicit teaching. However, language complexity can be distinguished between meaning-based complexity and form-based complexity (Krashen, 1982; Dekeyser, 2005). Besides syntactic features, semantic complex features also need to be addressed in second language teaching.

In reality, whether language instructors choose implicit instruction or explicit instruction may not be determined by whether the language feature is simple or complex, but determined by whether the complexity of language feature is caused by form or by meaning. Different teaching methods may have their own strengths. Implicit teaching tends to focus on meaning and be meaning-based, and explicit teaching tends to focus on rules and be rule/form-based (Spada & Lightbown, 2008), while implicit teaching may be more effective than explicit teaching in meaning-based language features and explicit teaching may be more effective than implicit teaching in form-based language features. Previous research compared implicit teaching and explicit teaching mostly by focusing on form-based language features

and did not consider the natural association of instructional approaches and language features, which could be a crucial reason for the inconsistent results of previous studies. The present study is designed to find a clear picture for various teaching effects on various language features and test how implicit teaching and explicit teaching work differently on meaning-based versus form-based complex features. This research would show whether the effect of different kinds of teaching varies on meaning-based versus form-based features as opposed to simple versus complex rules.

1.2 MOTIVATION OF CURRENT STUDY

Teaching effectiveness could be affected by multiple factors. Much to the interest of the present study, some clues of the effects of implicit teaching and explicit teaching varying on the form-based versus meaning-based language features can be drawn from de Graaff (1997), who showed that explicit instruction is more effective than implicit instruction only for syntactic complexity (i.e., position of the object), but not for the meaning-based complexity (i.e., inflection of the imperative mode is determined by formal/informal and affirmative/negative).

Building on de Graaf (1997), the present study attempts to investigate the effects of different instructional approaches on learning form- and meaning-based complex language features. The study chooses complex grammatical features for training based on whether the feature is complex due to the meaning or due to the form. The Chinese¹ relative clause (RC), a form-based complex grammatical feature, and the distinction between negative forms bu

¹ Chinese in this study refers to Mandarin.

and *mei* (you) of Chinese, a meaning-based complex grammatical feature, are the target structures in the present study. Theoretically, this study will provide a new perspective (distinguishing form-based and meaning-based language features) from which to investigate the effect of instructional approaches; pedagogically, this study may provide some direction to instructors on how to teach different language features.

This dissertation is structured as follows: In the second chapter, relevant terminologies are introduced and defined; literature related to implicit and explicit teaching on different language features is reviewed; in the third chapter, I introduce the two target language features of the present study and review studies related to the acquisition of these two target language features; in the fourth and fifth chapters, the design and the analysis of the present study are presented, followed by discussion and conclusion.

2.0 LITERATURE REVIEW ON THE EFFECT OF IMPLICIT VS. EXPLICIT INSTRUCTION ON DIFFERENT LANGUAGE FEATURES

2.1 INTRODUCTION

2.1.1 Implicit instruction vs. explicit instruction

Much research has classified the different instructional options in terms of the degree of "explicitness." Dekeyser (1995, p. 385) defines explicit instruction as "rule explanation comprised part of instruction" or "if learners were directly asked to attend to particular forms and to try to arrive at metalinguistic generalizations on their own." Thus the instructions such as rule explanation, overt error correction, L1/L2 contrast, and metalinguistic rules are considered explicit teaching. Explicit teaching focuses on the rule explanation and the forms, therefore it can be referred to as rule- or form-based teaching (Spada & Lightbown, 2008).

Instruction is defined as implicit if "neither rule presentation nor directions to attend to particular forms were part of treatment" (Norris & Ortega, 2000, p. 437). Thus instruction such as input flood (i.e., high-frequency input), interaction, and recasts (i.e., "rephrasing an erroneous learner utterance while still referring to its central meaning," Long [1996, p. 434]) are considered implicit teaching.

In real classroom teaching, however, purely implicit teaching or purely explicit teaching rarely happens. It is difficult for teachers to solely focus on meaning by only

providing the natural input without pointing out what forms are the training targets. It is also impossible for the instructors to solely focus on forms by only providing forms and sentences containing the forms without explaining what the forms and the sentences mean. Also, several research studies (Day & Shapson, 1991; Doughty & Varela, 1998; White, Spada, Lightbown, & Ranta, 1991; Lyster, 2004; Sheen, 2005) shared a conclusion that instruction is most effective when it draws attention to both form and meaning (Spada & Lightbown, 2008). Therefore, in the present study, I classify explicit teaching and implicit teaching based on the primary focus of the training. If the training primarily focuses on meaning or only focuses on form within meaning-focused instruction, such as the forms arising incidentally as in Focus on Form (Long, 1991) and structured input (i.e., the input is manipulated to make the form more salient or the task is designed to make learners attend to the target grammatical structures in order to understand the meaning) (Van Patten & Oikkeenon, 1996), I classify it as implicit instruction. If the training primarily focuses on form and only provides the meaning as the translation of the target forms and sentences, I classify it into explicit instruction.

2.1.2 Simple vs. complex language features

There is no consensus regarding the definition and classification of simple versus complex language features. Several representative classifications are reviewed below.

Lightbown (1980) and Pienemann (1989) defined complex as those features which are acquired late or are more difficult to process. The Processability Theory (Pienemann, 1989) reflects this idea. Learners need to go through a predictable stage in their L2 development, and they cannot acquire grammatical structures until they are developmentally "ready" to

learn. Hulstijn and deGraaff (1994) defined complexity from a cognitive perspective other than the acquisition order: "the degree of complexity is contingent not so much on the number of forms in a paradigm, but rather, on the number (and/or the type) of more criteria to be applied in order to arrive at the correct form" (p. 103). Examples are given such as X and Y languages have the same two forms for plural inflection. One form is for vowel-ending nouns and the other for consonant-ending nouns in X language; one form is for nouns ending on a vowel and on a consonant containing a front vowel in the penultimate syllable, and the other for nouns ending on a consonant and containing a back vowel in the penultimate syllable in Y language. Learners need to process more steps in Y language in order to arrive at the correct plural form; therefore, language Y is more complex than language X.

Dekeyser (2005) defined complexity based on three factors of linguistic complexity: complexity of form, complexity of meaning, and complexity of form-meaning mapping. "Difficulty of form could be described as the number of choices involved in picking all the right morphemes and allomorphs to express these meanings and putting them in the right place" (DeKeyser, 2005, p. 5). Form difficulty can cause the phenomenon that although learners know what meaning they want to express, due to the complex forms, such as relative clauses, they cannot correctly choose all the morphemes and allomorphs and put them in the right places. Meaning can be difficult due to the abstractness and novelty, such as the case with English articles. Therefore, learning problems are endless for English articles. The form-meaning mapping is complex if "the link between form and meaning is not transparent" (p. 7). Due to form-meaning mapping complexity, some language features—such as the English —s suffix, which can mean the plural of the noun, third-person singular of the verb, or the genitive of the noun—are hard to learn.

Pedagogically, complexity is mainly identified by asking teachers and observing learners' production errors (Spada & Tomita, 2010). Robinson (1996), for example, determined complexity by directly asking experienced teachers to rate the rule complexity.

In order to avoid the disagreement of different perspectives, I chose two features—Chinese relative clauses and the sentential negation markers *bu* versus *mei* (*you*)—which can be classified as complex features from different perspectives. The target grammatical items need more than three criteria to be applied in order to get the right form. Several steps—such as identifying the head of RC, placing the relative clause before the head, and inserting a relativization marker—are needed in order to form a relative clause in Chinese. And the structural organization of relative clauses is also complex: although learners know what they want to express, it is hard for them to put all components in the right places. For the negation markers *bu* or *mei* (*you*), several semantic features ([±dynamic], [±habitual], [±realized], etc.) are needed in order to correctly choose *bu* or *mei* (*you*) (Nie, 2001; Li, 2004). Furthermore, these two grammatical features are difficult for learners to acquire and are foci in the classroom of teaching Chinese as a second language. Even advanced learners continually make errors with them (Wang, 1997; Wang, 2001; Li, 2004). Therefore, these two language features should be considered as complex language features from different perspectives.

2.2 PREVIOUS RESEARCH ON IMPLICIT OR EXPLICIT INSTRUCTION OF DIFFERENT LANGUAGE FEATURES

Spada and Tomita (2010) conducted a meta-analysis to investigate the various effects of implicit or explicit instruction on simple or complex language features in English. Thirty

articles were included in their review. The grammatical features were categorized into simple and complex based on Hulstijn and de Graaff (1994), in which the degree of the complexity is determined by the number or criteria applied in order to reach the target form. Therefore, simple grammatical features include tense, articles, plurals, prepositions, subject-verb inversion, and possessive determiners; complex grammatical features include dative alternation, question formation, relativization, passive, and pseudo-cleft sentences. The instructional approaches were categorized into implicit and explicit based on Norris and Ortega (2000), in which explicit instruction includes rule explanation, L1/L2 contrast and metalinguistic feedback; and implicit instruction means no rule explanation and no intention to direct learner's attention to the target form such as input flood and high frequent input, etc. Effect size of each study was calculated. The results show that the effect size of explicit instruction is consistently larger than implicit instruction for both simple and complex language features in immediate and posttests. The overall finding of the meta-analysis indicated that explicit instruction is more effective than implicit instruction. However, most studies (90%) in this meta-analysis focused on form-based language features (e.g., relativization, dative, questions, past tense, passive, and pseudo-cleft) and only three studies investigated the acquisition of meaning-based language features, which were English articles.

In this section, I will review past studies related to instruction on complex features in two divisions: instruction on form-based language features and instruction on meaning-based language features. Krashen (1982, pp. 97-98) distinguished complex features between form-based and function-based (formal complexity vs. functional complexity). Wh-questions are considered form-based complexity because of the extensive permutations of word order; the usage of definite and indefinite articles is claimed as functional complexity because of the subtle meaning differences. Dekeyser (2005) also distinguished the complexity between

form- and meaning-based language features. Therefore, I follow this distinction (form-based language feature and meaning-based language feature) and review previous related studies in order to justify the classification in the present study.

2.2.1 Previous research on implicit or explicit instruction of simple or complex formbased language features

Past studies related to implicit or explicit teaching on simple or complex form-based features were reviewed in three sections: those comparing implicit with explicit teaching on simple versus complex features; those comparing implicit with explicit teaching on the same language structure; and those comparing the same training method on simple versus complex features. These studies will provide us with a comprehensive understanding of the current research on the effect of implicit and explicit instruction and provide us with a context for the present study.

2.2.1.1 Studies comparing implicit with explicit teaching of simple versus complex features

Most studies focused on whether or not the advantage of implicit and explicit instruction is contingent on simple or complex language features. All in all, research shows that (1) explicit teaching is more effective than implicit teaching on simple language features (Robinson 1996; de Graaff, 1997; Dekeyser, 1995); (2) in terms of complex features, the results are mixed. Some studies showed that explicit teaching is more effective than implicit teaching (de Graaff, 1997; Yabuki-Soh, 2007), whereas some showed that implicit teaching is as

effective as (Robinson, 1996; Dekeyser, 1995) or even more effective (Doughty, 1991; Vanpatten & Oikkenon, 1996) than explicit teaching.

Robinson (1996) divided 104 native Japanese speakers who were learning English in Japan as a foreign language into four groups trained with different methods: implicit, incidental, rule search, and explicit instructed training. The target training grammars were subject-verb inversion for the simple feature, and pseudo-clefts of location for the complex feature. Results showed that (1) explicit instructed training conditions were more effective than all others in learning simple rules; (2) implicit teaching was not significantly more effective than explicit teaching for complex rules. These results were not consistent with Krashen's hypothesis (1982; 1994) that complex rules should be taught implicitly.

De Graaff (1997) investigated the effectiveness of implicit and explicit instruction by training monolingual native speakers of Dutch on two morphological features (simple vs. hard/complex) and two syntactic features (simple vs. hard/complex) of an artificial language modified from Esperanto. The results displayed the significant advantage of explicit training in both immediate and delayed posttests; however, that explicit instruction is significantly better for learning complex than simple features was partially supported only on syntactic structures, but not on morphological structures. This means that explicit instruction works better for syntactic complex features than implicit instruction does; however, explicit instruction doesn't show any advantage for complex morphological structures than implicit instruction.

The study of Dekeyser (1995) seemed to show some advantage of implicit instruction on complex rules (prototypical rules), but the advantage was not statistically significant. He taught categorical (simple) rules and fuzzy (complex) rules of an artificial language with explicit deductive and implicit inductive methods for about 10 hours (20 sessions of 25

minutes each). The results demonstrated that the explicit method is significantly better than the implicit for simple rules; implicit is better than explicit for complex rules, but the difference is not statistically significant.

2.2.1.2 Studies comparing implicit with explicit teaching of the same language structure Some studies focused on comparing implicit with explicit instruction by teaching the same grammatical feature. The results were mixed. Ellis, Loewen, and Erlam (2006) trained low-intermediate ESL learners on the English past tense with implicit feedback (in the form of recast) and explicit feedback (in the form of metalinguistic information). The majority of learners (77%) were from East Asian countries and learned English in a private language school in New Zealand. Their study showed that learners trained with explicit feedback scored higher than those with implicit feedback in delayed posttests, but this difference did not manifest in immediate posttests. Carroll and Swain (1993) also showed the same result that explicit feedback on English dative alternation has a larger effect than implicit feedback in delayed posttests but not in the immediate posttests. These studies suggested that explicit teaching is more durable than implicit teaching for form-based language features.

The research of VanPatten and Oikkenon (1996) and Sanz and Morgan-Short (2004), however, showed that explicit information may not necessarily facilitate second language acquisition. Exposing learners to structured input is sufficient to promote acquisition. VanPatten and Oikkenon focused on the training of object pronouns and word order in Spanish. Fifty-nine participants were divided into three groups: one with explanation and structured input activities; one with explanation only; one with structured input only. Results showed that the two groups with structured input activities performed significantly better than the group with explanation only, but showed no difference between themselves. Sanz and

Morgan-Short investigated the effect of explicit information (i.e., explanation and explicit feedback) on the acquisition of Spanish word order. The results displayed that all groups with or without explicit information improved similarly on the tests, which means that providing explicit information is neither a necessity nor a more effective way for second language teaching.

Studies also yielded different results even when they used the same language feature, such as relative clauses. Doughty (1991) trained 20 ESL learners of various L1 backgrounds on English relative clauses with explicit (rule-oriented) or implicit (meaning-based) instruction, for 10 hours of computer-based training (10 sessions of 1 hour each). Although explicit and implicit instructions were equally effective with respect to gains in relativization, the implicit group demonstrated significantly better comprehension of the context than the explicit group.

Yabuki-Soh (2007) found different results. She conducted three hours of classroom training on Japanese relative clauses with 60 JFL learners of various L1 backgrounds at the end of the first-year university course. Learners were divided into three training groups: form, meaning, and the combination of form and meaning. The results showed that explicit form/rule-based teaching is significantly better than the other two groups of participants on both production and comprehension of relative clauses.

2.2.1.3 Studies comparing the same training method on simple versus complex features

Housen, Pierrard, and Van Daele (2005) used only explicit training on different language features (simple: French sentence negation vs. complex: French passive constructions). Participants were 69 Dutch-speaking learners of French as a foreign language, who were from three intact classes of a secondary school in Flanders. They were assigned to three

different conditions: one class received explicit instruction on the simple structure; one received explicit instruction on the complex structure; the third one did not receive instruction on either structure and followed the regular French language lessons. The training consisted of four 20-minute training sessions in 4 consecutive weeks. Before and after training, they took the test containing three tasks varying in the degree of detecting explicit vs. implicit language knowledge: a grammaticality judgment task, a controlled written production task, and an unplanned oral production task. These three tasks were assumed to invoke explicit and implicit knowledge at different degrees: the first two tasks primarily involve explicit knowledge and the third task primarily involves implicit knowledge. The results showed that explicit training groups gained significantly more than the control group in three tasks in terms of both simple and complex grammars, which indicated that explicit training was advantageous to both simple and complex grammars. In addition explicit training also promoted implicit knowledge as well as explicit knowledge because treatment groups made significant progresses on unplanned oral production task as well as grammatical judgment task and written production task.

Summary tables of studies reviewed above are shown below.

Table 1. Implicit vs. explicit teaching of simple vs. complex rules

Author	Teaching	Target grammars	Methodology	Results
	approaches			
Robinson	Implicit,	Simple: subject-	Computer-based training; two training session: 40	Explicit and implicit
(1996)	incidental, rule	verb inversion;	sentences (20 simple + 20 complex) of 10 seconds each	equally effective with
	search,	complex: pseudo	Test: transfer set sentences (novel tokens of 20	respect to gains in
	instructed	clefts of location	grammatical and 20 ungrammatical sentences on simple	relativization; however,
			and hard rules) measured with time and accuracy (no	the meaning group
			delayed posttest).	demonstrated better
				comprehension of the
				contexts than other
				groups.
De Graaff	Explicit	Artificial	Computer-based training;	Explicit is better than
(1997)	instruction	language: two	Aptitude test + three times tests (once halfway, immediate	implicit in both immediate
	(received	morphological	posttest and delayed posttest conducted 5 weeks later after	and delayed posttests;

	explanation on	features (simple	treatment) with the same items consisting of 4 parts.	That explicit is better on
	structures),	vs. hard) and two		complex than on simple is
	implicit	syntactic features		partially supported only
		(simple vs. hard)		on syntactic structure not
				on morphological
				structure.
DeKeyser	Explicit	Artificial	Computer based training; 61 students into 3 groups;	Explicit is better than
(1995)	deductive vs.	language:	20 sessions of 25 minutes each; explicit (traditional rule	implicit for simple rule;
	implicit	straightforward	explanation) vs. implicit (pairing sentences with colored	implicit is better than
	inductive	rules (categorical)	pictures); test: judgment and production tests (no delayed	explicit for fuzzy rules,
		vs. fuzzy rules	posttest)	but not statistically
		(prototypicality		significant.
		patterns)		
i				

Table 2. Implicit vs. explicit instruction on a same language feature

Author	Teaching	Target grammars	Methodology	Results
	approaches			
Doughty	Explicit (rule-	English relative	10 hours computer based training in 10 times; 20	Implicit learning is not
(1991)	oriented	clause	participants into 3 groups (rule, meaning, control) TEST:	more effective than
	instruction) vs.		comprehension and production (no delayed posttest)	explicit learning on
	Implicit			complex rules; instructed
	(meaning-based			conditions are more
	instruction)			effective than all others in
				learning simple rules.
Yabuki-Soh	Form, meaning,	Japanese relative	3 hours class-room training; 60 learners into 3 groups: FG	Explicit teaching is better
(2007)	and combination	clause	vs. MG vs. FMG	for participants to
	of form and		Test: comprehension test and sentence-combination test	accurately comprehend
	meaning		(no delayed posttest)	and produce RCs (FG >
				FMG > MG)

Sanz &	Four training	Spanish word	Computer based training; 69 students into 4 groups;	Explicit information may
Morgan	groups (+/-	order(Him kissed	Practice (written or oral sentences) →explanation →	not necessary facilitate
(2004)	explanation) and	the girl OVS	Feedback; test (interpret and production tests) (no delayed	SLA and exposing
	(+/- explicit	order)	posttest)	learners to task-essential
	feedback)			practice is sufficient to
				promote acquisition.
VanPatten	Explanation +	Object pronoun	3 groups; 4 class period training; test (interpretation and	Explanation only doesn't
& Oikkenon	structured input	and word order in	production tests); no delayed posttest	work better. Groups 1 & 3
(1996)	activities vs.	Spanish		performed better than
	only explanation			Group 2.
	vs. structured			
	input activities			
Ellis,	Implicit	English regular	1 hour training over 2 consecutive days;	No difference in
Loewen and	feedback	past tense	Tests: oral imitation test; untimed grammatical judgment	immediate posttests
Rosemary	(recast) vs.		test; metalinguistic knowledge test.	between implicit and

(2007)	explicit			explicit feedback; explicit
	feedback			is better than implicit in
	(metalinguistic			delayed posttests.
	explanation)			
Carroll &	Implicit vs.	English dative	4 training groups based on the feedback participants	No significant difference
Swain	explicit	alternation	received when they made an error (Group A: explicit	in immediate posttests
(1993)	feedback		feedback; Group B, C, D: implicit feedback) and control	between implicit and
			groupTest: recall the training sentences in immediate and	explicit feedback; explicit
			delayed posttests.	is better than implicit in
				delayed posttests.

Table 3. Explicit instruction on simple vs. complex language features

Author	Teaching	Target grammars	Methodology	Results
	approaches			
Housen	Explicit training	French sentence	4 sessions of 20-minute classroom explicit training; test:	Structural complexity
(2005)		negation (simple)	GJ, controlled written production task, and unplanned oral	doesn't affect the efficacy
		vs. French passive	production (no delayed posttest)	of explicit training.
		constructions		Explicit instruction
		(complex)		promotes not only explicit
				knowledge but also
				implicit knowledge.

2.2.2 Previous research on implicit or explicit instruction of complex meaning-based language features

Compared to studies on instruction of form-based language features, studies on instruction of meaning-based language features are much fewer, let alone studies comparing different types of instruction on them. Master (1994) investigated whether a complex language feature—English articles—is teachable. In the study, high-intermediate second language learners of English from 12 native languages (14 experimental subjects and 33 control subjects) at the University of California, Los Angeles were tested on definite and indefinite article use. The experimental group received explicit teaching (rule explanation) during the 9-week training and the control group only focused on the writing process and product in producing four essays during the 10-week quarter and teachers consciously refrained from teaching the article system. The results showed that experimental group made statistically significant gains after explicit teaching whereas the control group did not.

Muranoi (2000) examined the teaching effect of two different interaction enhancements (IE), which are IE plus formal debriefing (IEF) and IE plus meaning-focused debriefing (IEM), on the instruction of English articles. IE is "a treatment that guides learners to focus on form by providing interactional modifications and leads learners to produce modified output within a problem-solving task" (Muronoi, p. 617). Participants

were EFL learners in Japan and the data of 91 participants (IEF = 31; IEM = 30; Non-enhanced interaction group = 30) were analyzed. The results showed that Japanese EFL learners in both teaching groups performed better than those in the control group with non-enhanced interaction; the group of IE plus grammar explanation was more effective than the one of IE plus meaning-focused debriefing in the posttests.

Another study related to instruction on meaning-based language features is de Graaff (1997). As mentioned before, he investigated the effect of implicit and explicit instruction by training monolingual native speakers of Dutch on two morphological features (plural forms as simple vs. inflection of imperative mode as hard/complex) and two syntactic features (position of the negation forms as simple vs. position of the object as hard/complex) of an artificial language. Among the four training target grammars, the morphological feature—the inflection of imperative mode—is a complex meaning-based feature, because it is controlled by functional difference (formal vs. informal and affirmative vs. negative) instead of by surface structural features. The study showed that explicit instruction works better for syntactic complex features than implicit instruction does; however, explicit instruction did not show any advantage for complex morphological structures over implicit instruction. This result is different from Muranoi (2000), which could be due to the different degree of explicitness of the instruction. The IE is meaning-

focused training and the IE plus explicit explanation is much more implicit than the explicit training (rule explanation for each item) in de Graaff (1997).

The studies comparing two instructional approaches and related to the meaningbased language features are summarized in the table below.

Table 4. Implict vs. explicit instruction on meaning-based language features

Author	Teaching	Target grammars	Methodology	Results
	approaches			
Muranoi	IE plus formal	English articles	Classroom training based; 91 first-year Japanese	Both IEF and IEM groups
(2000)	debriefing		EFL learners into 3 groups: IEF; IEM; Control.	performed better than control
	(IEF) vs. IE		Three training session: 3 x 30 minutes	group; IEF group was more
	plus meaning-		Test: one protest and two posttests (5 weeks apart	effective than IEM group in both
	focused		between two immediate and delayed posttests)	posttests.
	debriefing		consisting of oral/written production tasks and a	
	(IEM)		grammaticality judgment task.	
de Graaff	Explicit	Artificial language:	Computer based training; aptitude test + three	Explicit is better than implicit in
(1997)	instruction	two morphological	times tests (once halfway, immediate posttest and	both immediate and delayed
	(received	features (simple vs.	delayed posttest conducted 5 weeks later after	posttests; That explicit is better

explanation or	hard) and two	treatment) with the same items consisting of 4	on complex than on simple is
structures),	syntactic features	parts.	partially supported only on
implicit	(simple vs. hard)		syntactic structure not on
			morphological structure.

2.3 SUMMARY

In this chapter, I reviewed the studies investigating the implicit vs. explicit teaching on different language features. Most previous research only focused on form-based language features, which showed that explicit instruction worked better than implicit instruction on both simple and complex language features. However, a few studies (Doughty, 1991; DeKeyser, 1995; VanPatten & Oikkenon, 1996) showed some benefits for implicit teaching on complex form-based language features. In terms of meaning-based language features, studies can rarely be found on the comparison of different instructional approaches. The only two studies of this kind (Muranoi, 2000 and de Graaff, 1997) showed inconsistent results. To my knowledge, no study has investigated simple meaning-based language features yet.

The summary table of the results regarding the implicit/explicit training on meaning/form-based language feature is shown below.

Table 5. Summary of implicit vs. explicit instruction on different language features

	Meaning-based language	Form-based language
	feature	feature
Simple language feature	No study found	Explicit > implicit
		(Robinson, 1996; de
		Graaff, 1997; Dekeyser,
		1995; Ellis, Loewen &
		Rosemary, 2007)
Complex language feature	Explicit ≥ implicit	Mixed results
	Muranoi, 2000; de Graaff,	EX > IM: Yabuki-Soh;
	1997	Carroll & Swain
		EX = IM: Dekeyser, 1995;
		Robinson, 1996; de Graaff,
		1997
		EX < IM: Doughty, 1991;
		Sanz & Morgan, 2004;
		VanPatten & Oikkenon,
		1996.

("≥" means "better than" or "equal to"; ">" means "better than"; "<" means "worse than".)

From the table above, we can see that the previous research primarily focused on the interaction of implicit/explicit instruction with simple/complex language features and disregarded the natural connection between the focus of various forms of instruction and the cause of the complexity of various language features. Therefore, previous research cannot give us a clear picture about the various effects of rule- or form-based explicit teaching and meaning-based implicit teaching on simple vs. complex language features.

3.0 MEANING-BASED AND FORM-BASED COMPLEX LANGUAGE FEATURES IN CHINESE

3.1 INTRODUCTION

Before introducing the design of the study, it is necessary to discuss the two target language features of this study and their acquisition in L1 and L2. The distinction between these two language features that serves the purpose of this study is that one is a meaning-based and the other is a form-based language feature. The essential factor for correctly choosing one of the two negative forms—bu and mei (you)—is distinguishing some semantic features, such as [±dynamic], [±habitual], [±realized], etc. (Li, 2005; Nie, 2001), based on the event situation denoted in the sentence. The complexity of using bu and mei (you) is caused by semantic features and is a meaning-based grammatical feature. On the other hand, the essential factor for correctly producing a relative clause is organizing the structural components within the clause and sub-clause. Because syntactic rules primarily control the formation of RC, RC is classified as a form-based complex grammatical feature.

$3.2 \quad BU \text{ AND } MEI (YOU)$

3.2.1 Theoretical discussion of bu and mei (you)

Unlike English—which has only one sentential negation marker, *not*, that can be used with any verb or adjective—Chinese has two sentential negation markers: *bu* and *mei* (*you*). The formation of negative sentences in Chinese requires one or the other negative form. The use of different Chinese negative forms in different situations is one of the most difficult grammatical challenges for second language learners (Li, 2004; Li & Xu 2009). Previous research (Li, 2004; Li & Xu 2009) shows that the learners' production consistently demonstrates errors related to negative forms, and the error rate does not go down with the increase of the learners' proficiency (to be discussed in detail below). These difficulties can be attributed to several factors: the complexity of the distribution of the two negative forms; the unclear and inconsistent results of theoretical research; the weakness of the classroom instruction; etc.

In terms of their complex distribution, both *bu* and *mei* (*you*) occur after the subject and before the verb or adjective to negate a sentence. However, for some verbs and adjectives, they can have a contrastive distribution, i.e., they can occur before the same verb or adjective and indicate different meanings. For example:

(1) 我不去北京/我没去北京。

a. wo bu qu Beijing.

I not go location.

"I will not go to Beijing/I do not want to go Beijing"

b. wo mei (you) qu Beijing.

I not go location

"I did not go to Beijing."

- (2) 我不吃肉/我没吃肉。
 - a. wo bu chi rou.

I not eat meat

"I do not eat meat."

b. wo mei chi rou.

I not eat meat

"I did not eat meat."

- (3) 去年直到12月还不冷/去年直到12月还没冷。
 - a. qunian zhidao 12 yue hai bu leng.

Last year until December still not cold

"It was not cold until December last year."

b. qunian zhidao 12 yue hai mei leng.

Last year until December still not cold

"It had not been cold until December last year."

Sentences (1a) and (1b), (2a) and (2b), (3a) and (3b) form minimal pairs, respectively, since the only difference between (a) and (b) sentences is the negative markers: *bu* is used in the (a) sentences; *mei* (*you*) is used in the (b) sentences. Sentence (1a) states a future fact—I will not go to Beijing—or negates a volition—I want to go to Beijing; sentence (1b) states a past fact—I

did not go to Beijing. Sentence (2a) expresses a habitual meaning—I do not eat meat; sentence (2b) indicates the past episodic meaning—I did not eat meat. Sentence (3a) emphasizes the negation of the cold status; sentence (3b) emphasizes the negation of the change to the cold status.

For some verbs and adjectives, *bu* and *mei* (*you*) can only be complementarily distributed, i.e., for some verbs, only one of them can be applied. For example:

(4) 我不知道这件事/*我没知道这件事。

wo bu/*mei (you) zhidao zhe jian shi.

I not know this CL business

"I don't/*didn't know this."

(5) 我没看到那个人/*我不看到那个人。

wo mei (you)/*bu kandao na ge ren

I not see that CL person

"I didn't/*don't see that person."

(6) 她长得不漂亮/*她长得没漂亮。

Ta zhangde bu/*mei piaoliang.

She look not pretty.

"She is not pretty./*She has not become prettier."

Example (4) shows that only bu can be used to negate stative verbs. Example (5) shows that only mei (you) can be used to negate a verb phrase containing a resultative complement. Example (6) shows that only bu can negate adjectives presenting a state.

Which characteristics of *bu* and *mei* (*you*) cause the complex distribution is one of the heated debates among Chinese linguists (Wang, 1965; Chao, 1968; Teng, 1973, Li & Thompson, 1981; Lü, 1980; Huang, 1988; Chiu, 1993; Ernst, 1995; Yeh, 1995; Hsieh, 2001; Nie, 2001; Ma, 2004, among others). Specifically, the co-ocurrence requirement between the negative forms and verb/aspect has been a research focus for a long time; numerous proposals have been discussed to explain the distinction between these two negative markers. So far researchers have not reached a consensus on the best way to characterize the markers. The proposals for distinguishing *bu* and *mei* (*you*) include past vs. non-past; dynamic vs. non-dynamic; completion vs. incompletion; perfective vs. imperfective; telic vs. atelic; etc.

The difference between *bu* and *mei* (*you*) of sentences (1a) and (1b) discussed above seems like a past vs. non-past distinction as suggested by Chiu (1993) and Li (2005). *Bu* is used in a non-past situation (future and volition) as in (1a) and *mei* (*you*) is used in a past situation as in (1b). However, when you add temporal adverbs in the sentence, *bu* can also refer to a past event and *mei* (*you*) can refer to a future event. For example:

(7) Yiqian ta bu chi rou.

Before he not eat meat

"He did not eat meat before."

(8) Mingtian zhe ge shihou wo hai mei qichuang.

Tomorrow this CL time I still not get up

"I won't get up tomorrow at this time."

So past vs. non-past can only characterize the difference between *bu* and *mei* (*you*) when there is no overt temporal marker.

From sentences (2a) and (2b) above, we can infer that the difference between *bu* and *mei* (*you*) is habitual vs. episodic. *Bu* negates a habitual situation and *mei* (*you*) negates a one-time action as suggested by Li (2005). This explanation covers only part of the function. For example, *bu* is used in example (1a) even though the sentence does not involve habitual action.

From sentences (3a) and (3b) above, the inference is that the difference between *bu* and *mei* (*you*) is dynamic vs. non-dynamic as suggested by Hsieh (2001). *Bu* negates the state and *mei* (*you*) negates the change of the state. *Bu* denies the existence of a certain status when it occurs before stative verbs and adjectives, which clearly shows that *bu* negates non-dynamic properties. However, before many other verbs, it is hard to determine whether an event expressed by the verb is dynamic. In example (1a), it is hard to say that *go to Beijing* negated by *bu* indicates a non-dynamic situation.

Li and Thompson (1981) proposed that the central difference between *bu* and *mei* (*you*) is whether completion is indicated (completion vs. non-completion). *Mei* (*you*) negates the completion of an event. Li and Thompson gave the following example (p.417).

(9) Wo mei (you) kanjian ni

I not see you

"I didn't see you."

They argued that *mei* (*you*) negates the completion of "see you". However, this proposal is challenged by the example below.

(10) Ta mei (you) chi fan.

He not eat meal.

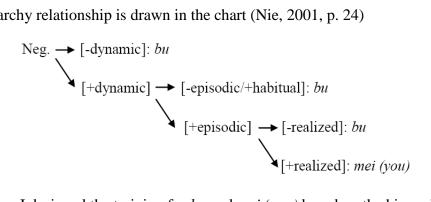
"He did not eat a meal."

When *mei* (*you*) combines with activity verbs, it suggests that the action never happened at all, not that it was not completed (Liu, 1988).

Similar to Li and Thompson (1981), Li (1999) and Xu (1997) argued that the different meanings denoted by the two negation markers are related to aspect. *Mei* (*you*) is the negation of the perfective aspect (Wang, 1965), and thus gives the episodic reading in example (2); *bu* is the negation of the imperfective, and thus gives the habitual reading in example (2) and the future reading in example (1). In this discussion, the contrast of *bu* and *mei* (*you*) is imperfective vs. perfective. However, *mei* can also negate affirmative sentences with the durative marker *zhe* besides perfective markers *le* and *guo* (Chao, 1968, p. 664), which poses a problem for the perfective vs. imperfective distinction.

The ongoing discussion of the theoretical characterization of these two negative markers leads to a difficulty for second language teaching and learning. Generally, pedagogical rules are presented as simplified versions of linguistic rules, because exhaustive and complicated theoretical explanations of linguistic rules are not suitable for presenting information to second language learners (Faerch, 1986). Pedagogically, some grammar textbooks for second language learners basically introduce the difference between *bu* and *mei* (*you*) as stative vs. dynamic, habitual vs. episodic, realized vs. non-realized, objective statement vs. volition (Li, 2005; Nie, 2001). According to Nie (2001), the semantic distinction of *bu* and *mei* (*you*) has a hierarchy:

stative vs. dynamic should be applied first, and then habitual and episodic, past vs. non-past. The hierarchy relationship is drawn in the chart (Nie, 2001, p. 24)



I designed the training for bu and mei (you) based on the hierarchy from Nie.

3.2.2 The acquisition of Chinese negative markers

3.2.2.1 First language acquisition of Chinese negative markers

The past studies on child language acquisition of negative forms show that children generally start to use negative form after one and half years old (Yu & Zhang, 1999; Zhou, 2002). Most children use *bu* earlier than *mei* (Fan, 2007; Peng & Yi, 2011). Children often misuse the two negative forms by using one for the other and they finally acquire them around three and half years old (Zhou, 2002).

Fan (2007) longitudinally recorded three children's data from 0;10 to 2;05, from 1;02 to 1;11, and from 0;11 to 2;06, respectively. The children lived in Beijing and spoke Mandarin in their families. She found that two of these children started to use *bu* first and *mei* occurred 2 months or 4 months later, while one of them used *mei* 1 month earlier than *bu*. Two of these children used *mei* more frequently than *bu*, and the third one used *bu* and *mei* at a similar frequency. The data from Fan is different from those of Peng and Yi (2011), which longitudinally recorded two children from their 1;6 to 2;11 and the children lived in Hunan

province and spoke Mandarin in their families. Peng and Yi (2011) found that both of the two children started to use *bu* earlier than *mei* and the frequency of *bu* is much higher than *mei*. The frequency difference of *bu* and *mei* between Fan and Peng and Yi's studies could be due to children's age difference. The children's age in Peng and Yi's study is about 6 months older than that in Fan's study. The children's data in Peng and Yi's study is more like adults' data in which *bu* is much more frequent than *mei* (Zhou, 2002). Peng and Yi also analyzed the errors that children made in using the two negation markers and found children often overgeneralized *bu* to *mei*.

In sum, children tend to use *bu* earlier than *mei* and often overgeneralize *bu* for *mei* in previous research.

3.2.2.2 Second language acquisition of Chinese negative markers

Most studies devoted to the acquisition of *bu* and *mei* (*you*) by adult learners of Chinese have focused on the analysis of errors that learners made in using the two negation markers, such as J. Wang (1997); B. Wang (2001); Li (2004); Li and Xu (2009); etc. These studies show that *bu* appears earlier than *mei* (*you*) in learners' data and learners misused these two negation markers for a long period.

J. Wang (1997) investigated the development of the two negation markers based on the Chinese interlanguage corpus from Beijing Language and Cultural University. The sentences containing *bu* and *mei* (*you*) were extracted from native English speakers' written data and were divided into six levels based on learners' grades (One semester's learning represents one level of improvement). The production data showed that the emergence of *mei* (*you*) occurs in the second term and later than *bu*. Furthermore, the data displayed four developmental stages: from the *bu*-

only stage to the second stage in which bu is more overgeneralized than mei (you) to the third stage in which mei (you) is more overgeneralized than bu, and to the final stage in which the error rate of using these two negation markers is very low, which means learners have generally acquired the distinction between the two markers at the end of second year (4^{th} semester). This developmental trend is not consistent with Li (2004) regarding the overgeneralization direction of bu and mei (you) and the error status at the final stage.

Li (2004) designed a grammar test to measure the acquisition of *bu* and *mei* (*you*). The participants were 17 beginning learners of Chinese at Zhongshan University in China with unknown L1 background. The learners over-used *mei* (*you*) in *bu*'s context largely when they had recently learned *mei* (*you*) negation markers first, then *bu* replaced *mei* (*you*) later and these errors remained stable for a long period. The inconsistency between Wang's and Li's study could be due to two major factors. First, Wang conducted a corpus study and the data covers 3 years, which means the four stages he analyzed lasted 3 years; while Li conducted four tests within one semester, which means the data of four stages she analyzed can only provide information regarding one semester. This shows us that Wang and Li analyzed data which are at different periods and display different details of *bu/mei* development. Second, the errors can be biased by the types of verbs and temporal words designed in the test in Li's study. Learners tend to use *mei* when past temporal words were present and learners tend to make errors on psych-verbs. In different tests, Li did not control the ratio of different types of verbs and the temporal words, which can bias the error rate of *bu/mei*.

B. Wang (2001) longitudinally recorded the spontaneous conversation of three English-speaking learners of Chinese over a year. These three learners were native speakers of English and were zero-proficiency-level Chinese-as-a-second-language students living in Beijing. Three

learners were taking 24-hour-per-week language classes and data were collected face-to-face and one-to-one conversational interviews on a biweekly basis. The collected data showed that "bu + verb" negation is the most general form and appears the earliest among all the negation forms in the data. "Mei (you) +verb" negation did not emerge at all by the end of one year of investigation.

Li and Xu (2009) did a similar study by recording spontaneous conversations longitudinally with two learners from Australia who studied in Guangzhou, China. The error analysis showed that learners made most errors of intermixing these two negation markers when they expressed the activities and events that happened in the past.

Instead of analyzing learners' production errors, Li (2011) investigated whether learners can correctly comprehend the aspectual meaning (habitual reading vs. episodic reading) of these two negation markers and whether the comprehension is related to the acquisition of their corresponding positive forms. The results showed that except for the beginning learners, participants correctly comprehended the aspectual meaning of *bu* and *mei* (*you*), and Li argued that the consistent errors in the production data of advanced learners are not due to the lack of the understanding of *bu* and *mei* (*you*). In fact, the aspectual meaning difference is part of the meaning distinction between *bu* and *mei* (*you*); thus this study showed only that advanced learners can comprehend the aspectual meaning difference between *bu* and *mei* (*you*), but not other meaning differences between them.

In sum, previous acquisition studies of *bu* and *mei* (*you*) consistently showed that learners intermix the two negation markers for a long period after the second negative form *mei* is introduced in class. Learners' errors are related to tense-aspect: learners made most errors of intermixing these two negation makers when the activities and events denoted in the past (Li,

2004; Li & Xu, 2009). Thus, the exploration of the effective training for these two negation markers is important both theoretically and pedagogically.

3.3 CHINESE RELATIVE CLAUSES (RCS)

3.3.1 Chinese and East Asian RCs and the Noun Phrase Accesibility Hierarchy (NPAH)

Relative clauses have received a great deal of attention in acquisition studies because of their structural complexity and the difficulty children and second language learners have in acquiring them. A relative clause is an embedded sentence modifying a noun within a matrix sentence. RCs are difficult for learners to master mostly due to the complex syntactic structure. Unlike English, which has postnominal RCs, Chinese has prenominal RCs (i.e., the relative clause precedes the head noun that it modifies), and *de* is the relative marker before the head noun. For example,

(11) Ta du de shu hen youyisi

He read DE book very interesting

"The book that he read is very interesting."

Shu "book" is the head noun and ta du "he read" is the RC modifying the book, de is the relativization marker. The RC precedes the head noun it modifies in Chinese RCs, as shown in the example. However, types of RCs in Chinese are similar to those in English: subject RC, object RC, indirect object RC, object of preposition RC, and genetive RC, and object of comparison RC. Examples are as follows.

(12)

a. Subject RC (SU)

Gei wo shu de na ge ren shi wo tongxue

Give me book DE that CL person is my classmate

"The person who gave me a book is my classmate".

b. Direct object RC (DO)

Ta tanlun de shi hen qiguai.

He talk about DE thing very strange

"The thing that he talked about is very strange."

c. Indirect object RC (IO)

Wo song ta yi ben shu de na ge ren hen gaoxing.

I give him one CL book DE that CL person very happy

"The person who I give a book to is very happy."

d. Object of preposition RC (OP)

He ta shuohua de na ge ren hui shuo fayu

With him talk DE that CL person can speak French

"The person who he talked with can speak French."

e. Genitive

Si le baba de na ge ren hen shangxin.

Die PERF father DE that CL person very sad "The person whose father died is very sad."

f. Object of comparison RC

Wo bi ta gao de na ge ren hen shangxin.

I than he (resumptive) tall DE that CL person very sad

"The person who I am taller than is very sad."

Analyzing and comparing the data of RC structures from about fifty typologically different languages, Keenan and Comrie (1977) claimed that the relativizability of certain positions is universal. The hierarchy of relative accessibility to relativization of NP positions is expressed in the Noun Phrase Accessibility Hierarchy (NPAH) hypothesis below.

Subject > direct Object > indirect Object > object of Preposition > genitive > object of comparison (">" means easier to relativize)

Based on the NPAH hypothesis, relativization of subject NPs (e.g., the girl who came) is more basic than that of object NPs (e.g., the girl who I like). This hierarchy has been used to predict the difficulty of L2 learners acquiring RC. A considerable number of psycholinguistic studies on RCs of English and some European languages found that the processing hierarchy is consistent with the NPAH (Ford, 1983; Gibson, Desmet, Grodner, Watson, & Ko, 2005; Keenan & Hawkins, 1987; Wanner & Maratsos, 1978). Studies of L1 and L2 acquisition that tested the applicability of the NPAH indicated that processing ease may predict acquisition ease. Studies on

postnominal RCs in L1(Hamburger & Crain, 1982; McKee, McDaniel & Snedeker, 1998) and L2 acquisition (Gass, 1979; 1982) found that the hierarchy is in effect, and most of L1 studies only focus on comparing subject and object RCs. This acquisition order is consistent even if the instructional order varies (Doughty, 1988; 1991). However, studies of RCs on East Asian languages cast doubt on this hierarchy.

Ozeki and Shirai (2007) found that subject RCs are not necessarily easier than object RCs for L2 learners of Japanese by analyzing corpus data and production data from a sentence combination task. In their first study, they analyzed 1005 RCs from OPI (oral proficiency interview) corpus of 90 nonnative speakers (30 Mandarin Chinese speakers, 30 English speakers and 30 Korean speakers). The data indicated that subject relatives are not easier than direct object and oblique relatives in terms of production frequency, and that learners showed strong association of subject relative with animate head noun and of object relative with inanimate head noun. Their second study was a sentence combination task. Of 24 pairs of sentences, each of 8 pairs were designed to elicit subject, direct object and oblique relatives. For each type of relatives, four items were included for animate head nouns and four for inanimate head nouns. The results showed that subject relatives were not significantly easier than object relatives and that overall there is no animacy effect in the sentence combination task, however, the error patterns of lower level learners were obviously guided more by the animacy of the head noun than the syntactic types of RCs.

The animacy effect also showed in Kanno's (2007) sentence-picture matching task, the results showed that semantic cues (reversible condition with animate subject and object; irreversible condition with animate subject and inanimate object) affect the comprehension of relatives more than syntactic order (subject vs. object relatives) for second language learners of

Japanese with various L1 background. Yabuki-Soh (2007), as reviewed in previous chapter, also showed that for second language learners of Japanese with various language background, the difficulty order of different types of RCs did not follow NPAH's prediction in learners' comprehension task.

Yip and Matthews (2007) investigated the development of three bilingual children (age range: 1;03–6;00 for Timmy, 1;06–5;06 for Sophie, and 1;00–5;04 for Alicia) acquiring Cantonese and English in Hong Kong. They found that the acquisition of Cantonese direct object RCs emerges earlier than the acquisition of subject RCs and that although children erroneously transferred the prenominal RC order from Cantonese to their English, their direct object prenominal RCs in English also emerged earlier than their prenominal subject RCs. The results of this study go against the NPAH.

O'Grady, Lee and Choo (2003) investigated the sentence-mapping comprehension of the subject and object relatives (external RCs, see below) of Korean as a foreign language. Fifty-three participants were nonheritage learners with unknown L1 background and enrolled in three universities of United States. The results showed that learners performed far better on subject RCs than object RCs, which is consistent with NPAH. Jeon and Kim (2007) examined how the use of different types of RCs interacts with the NPAH in L2 Korean. Korean has two types of RCs: head external RCs (The head is in the right of RC) and head internal RCs (The head is in the RC and marked by a complementizer kes). Elicited data were collected from 40 learners of Korean who enrolled in a university Korean language program in the United States. Of the 40 native or near-native speakers of English, 34 were heritage speakers of Korean and 6 were nonheritage students. To elicit RCs, they asked learners to describe where the circle was drawn. The results indicated that for head external RCs, subject relatives were more frequently used than

object relatives, which supports NPAH and is consistent with the results of O'Grady et al. (2003), whereas for head internal RCs, object relatives were more frequently used than subject relatives, which is not consistent with the prediction of NPAH. In addition, the error analysis in this study also showed that learners tended to associate subject RCs with animate heads and object RCs with inanimate heads.

The explanation of the contradiction between East Asian language RCs with the prediction of NPAH is that the grammaticalization of RCs varies from language to language (Comrie, 1998, 2002; Shirai & Ozeki, 2007). Comrie classified languages into relative clauses (with gaps and coindexation between the gap and the head noun) and attributive clauses such as Chinese, Japanese, and Korean, in which it is difficult to postulate gaps and the head noun and the clause are loosely adjointed and pragmatically interpreted without syntactic operation. Due to the characteristics of attributive clauses, Chinese and Japanese are not predicted by NPAH. In terms of Korean, head external construction was claimed as a RC and consequently supports NPAH; while head internal construction was claimed as attributive clauses and hence not consistent with the NPAH (Jeon & Kim, 2007).

In sum, the studies on European languages generally support the prediction of NPAH; however, the studies on East Asian languages yielded mixed results and some studies show that the animacy effect influenced the acquisition of RCs (Kanno, 2007; Ozeki & Shirai, 2007) instead of grammatical relations. The studies of Chinese RCs also showed mixed results in terms of NPAH, and few studies have investigated the animacy effect, more detailed information is in next section.

3.3.2 Previous research on the acquisition of Chinese RCs

Most previous research on Chinese RCs focused on the processing of RCs, since the uniqueness among world languages of the Chinese prenominal RC structure with canonical SVO word order (Hawkins, 1990; Dryer, 1992) provides insight for evaluating different processing theories. The processing results of the different RC types are mixed. Some studies (Kuo & Vasishth, 2006; Lin, 2006) showed that the subject RC is easier to process than the object RC and supported NPAH; some (Hsiao & Gibson, 2003; Wu & Gibson, 2008) claimed the opposite.

A few studies focused on the acquisition of RCs. For first language acquisition, results were mixed in terms of NPAH. Some studies (Lee, 1992, act-out comprehension; Cheng, 1995, recall production; Hsu, 2006, elicited production) support that subject RCs are easier for children to comprehend and produce than object RCs. Some studies (e.g. Chen & Shirai, 2014) suggested that object RCs are easier than subject RCs. Chen and Shirai analyzed four children's longitudinal data from Fang Corpus. Children's ages ranged from 0;11 to 3;5 and all data were collected in natural situations at the children's homes. All sentences containing RCs were extracted and coded and analyzed by using the program CLAN (MacWhinney, 2000). The results showed that the frequency of object RC (84.2%) was much higher than the subject RCs at the first stage and continued to predominate the RC production until the last stage. Chen and Shirai suggested that the predominance of object RCs could be explained from two aspects: (1) object RC has the same SVO order as canonical simple sentences except for inserting the relative marker de between verbs and head nouns, thus, it is the easiest type for learners (Diessel, 2007); (2) object RCs in the caregivers' input is more frequent than subject RCs, and children's speech reflects the distributional pattern in adults' input. Accordingly, the author suggested a multiplefactorial, usage-based approach to explain the acquisition of RCs and rejected the NPAH, which only takes syntactic structure as the predictor.

Even fewer studies (Chen, 1999; Xu, 2009) were devoted to second language acquisition of Chinese RCs, and we could not draw a clear picture regarding the NPAH hypothesis based on these studies. The studies of second language acquisition of RCs are reviewed below.

Chen (1999) tested Chinese RCs with 24 Japanese-speaking and 24 English-speaking learners of Chinese, who generally had learned Chinese for 2 years at a Chinese program of college level, with two tasks: an ordering task and a preference task. Twenty-four Chinese native speakers were also included as a control group. The ordering task asked participants to order components such as a demonstrative, classifier, NP, RC, and main predicate into a sentence; the preference task asked participants to rate different types of RCs on a 1-5 scale. The accuracy data from the ordering task showed that subject RCs are easier than object RCs; the data from the preference task showed the opposite. However, all the differences reported in the study were not statistically significant. Therefore, her study is inconclusive in terms of NPAH.

Xu (2009) recruited 30-40 intermediate Chinese learners who are English native speakers and enrolled in intensive Chinese language classes at the U.S. Defense Language Institute for her three experiments: a self-paced word order judgment task, a sentence completion task, and a sentence combination task. The self-paced word order judgment task asked participants to read a whole sentence, which showed that subject RCs are read significantly faster than object RCs. A sentence completion task asked participants to complete a sentence by filling the blank with the word given in brackets. The results showed some preference for subject RCs under certain circumstances (without inferential statistic analysis). The third experiment, a sentence combination task, tested the hypothesis of NPAH. The results showed that subject RCs and

object RCs appear to be similar and they are easier than indirect object and object of preposition RCs, which are inconclusive in terms of NPAH.

To sum up, the studies of first and second language acquisition of Chinese RCs provides mixed results for the NPAH hypothesis. More research needs to be done on second language acquisition of Chinese RCs in order to reach a more certain conclusion. The present study will provide more information on the second language acquisition of Chinese RCs in terms of the NPAH hypothesis in addition to the major purpose of investigating the effect of different teaching methods on meaning-based vs. form-based language features.

The literature review of the two Chinese negative markers and RCs revealed that researchers have not done any teaching experiments on them, and therefore no study to date focused on comparing different teaching approaches for these two kinds of language features. What we can tell from previous research is that learners intermix the two negation markers for a long period, and there is no clear conclusion on whether or not the second language acquisition of Chinese RCs supports the NPAH hypothesis. Therefore, the investigation of the effect of different instructional approaches on different language features in the present study will provide valuable direction (primarily implicit teaching or primarily explicit teaching) on how to train the complex form-based and meaning-based language features effectively and efficiently, and whether the acquisition of Chinese RCs conforms to the NPAH prediction or not.

3.4 SUMMARY

In this chapter, I introduced two target language features of this study—Chinese RCs (a form-base complex language feature) and Chinese negative forms *bu/mei* (*you*) (a meaning-based complex language feature). Meanwhile, previous studies related to the acquisition of these two language features were reviewed in this chapter. For the acquisition of RCs, NPAH hypothesis was specifically discussed in this chapter. Although previous research showed some developmental characteristics of these two language features, no study has investigated which is the better way, implicit or explicit, to teach them. The present study addresses this problem.

4.0 CURRENT STUDY

The present study attempts to connect the characteristics of instructional approaches with those of language features and investigates whether the implicit meaning-based instruction benefits meaning-based more than form-based language features and explicit rule-based instruction benefits form-based more than meaning-based language features. The Chinese relative clause (RC), a form-based complex grammatical feature, and the distinction between the Chinese negative forms *bu* and *mei* (*you*), a meaning-based complex grammatical feature, are the target structures in the present study. The effect of two instructional approaches on two different language features will be compared after each training session.

4.1 DESIGN

The following variables are involved in the present study. Independent variables are (1) training conditions, with two levels—implicit and explicit training—a between-subject factor; (2) language features, with two levels—form-based language feature and meaning-based language feature—a within-subject factor; (3) task types, with two levels—comprehension task and fill-in-the-blank /production task—a within-subject factor; (4) time, with five levels—pretest, posttest

1, posttest 2, posttest 3, and delayed posttest—a within-subject factor. Dependent variables are accuracy and reaction time of comprehension and fill-in-the-blank/production tests.

4.2 RESEARCH QUESTIONS

The present study investigates the effect of different instructional approaches (implicit teaching vs. explicit teaching) on learning different types of complex language features (meaning-based vs. form-based). Is implicit teaching more effective than explicit teaching on meaning-based language features and is explicit teaching more effective than implicit teaching on rule-based language features? If one connects training foci (meaning vs. form) with language features (semantic complexity vs. structural complexity), the prediction is that implicit teaching will work better for semantically complex language features, such as negative forms. Explicit teaching, however, will work better for syntactically complicated language features, such as RCs.

Specifically, this dissertation study compares implicit teaching with explicit teaching on different language features from four aspects: accuracy, reaction time, durability, and speed of learning.

The following are the research questions addressed in this study:

Research question 1: Is implicit teaching more effective than explicit teaching on meaning-based language features and is explicit teaching more effective than implicit teaching on form-based language features in terms of accuracy?

Hypothesis 1: The implicit teaching group performs better than explicit teaching group on meaning-based language features and the explicit teaching group performs better than the implicit teaching group on form-based language features in terms of accuracy. Previous research primarily focused on form-based language features and generally showed the advantage of explicit teaching over implicit teaching (Spada & Tomita, 2010).

Research question 2: Is implicit teaching more effective than explicit teaching on meaning-based language features and is explicit teaching more effective than implicit teaching on form-based language features in terms of reaction time?

Hypothesis 2: Implicit teaching is more effective than explicit teaching on meaning-based language features and explicit teaching is more effective than implicit teaching on form-based language features in terms of reaction time. Only a few studies (Robinson, 1996; de Graaff, 1997) compared the reaction time under implicit training and explicit training and have not shown any advantage of one over the other.

Research question 3: Is implicit teaching more effective than explicit teaching on meaning-based language features and is explicit teaching more effective than implicit teaching on form-based language features in terms of knowledge durability?

Hypothesis 3: The effect of implicit teaching lasts longer than explicit teaching on meaning-based language features and the effect of explicit teaching lasts longer than implicit teaching on form-based language features in terms of knowledge durability. Previous research generally showed that both explicit teaching and implicit teaching had increased effect size on the delayed posttest and that explicit teaching yielded larger effect size than implicit teaching (Spada & Tomita, 2010).

Research question 4: Does explicit teaching take less time to show the effect of teaching than implicit teaching?

Hypothesis 4: Explicit teaching takes less time to show the effect of teaching than implicit teaching. Ellis (1993) suggested that implicit learning is "laboriously slow" and learners need to encounter and notice a huge number of instances in order to acquire the grammar. This suggests that implicit teaching might take longer to show effects.

4.2.1 Accuracy

Schmidt (1992) refers to accuracy and speed as the two underlying components of second language fluency. Accuracy is one of the important goals of second language teaching and is often a focus of language assessment. In this study, accuracy is recorded and provides the base for comparing other aspects. Speed between two groups is compared only for accurate items; knowledge durability and speed of learning between two groups are compared by comparing accuracies of different stages. Therefore, the first research questions for comparing implicit teaching and explicit teaching asks which kind of instructional approaches will produce higher accuracy and whether accuracy improvement varies based on the language features. As discussed in literature review above, previous research showed mixed results in terms of accuracy results and the meta-analysis article of Spada and Tomita (2010) showed bigger effect size of explicit teaching than that of implicit teaching. The first question in this study is addressed by comparing the accuracy of different training groups at different stages.

4.2.2 Speed (reaction time)

Improving learners' ability to communicate fluently is one crucial goal of second language instruction. Fluency is an essential characteristic of implicit knowledge. Form/rule-based explicit teaching can only contribute to explicit knowledge (Krashen, 1982, 1994). Therefore, implicit teaching is more closely associated with implicit knowledge than explicit teaching. A few studies (Robinson, 1996; de Graaff, 1997) compared the reaction time under different instructional approaches and showed no advantage of one over another appraach. Another interest of the present study is to find which instructional approach is more effective in helping with learners' reaction speed (implicit knowledge). The second research questions for comparing implicit teaching and explicit teaching is which kind of instructional approaches will produce faster speed and whether the speed improvement varies based on the language features. The question is addressed by comparing the speed of different training groups at different stages.

4.2.3 Durability

Comparing the effect for different instructional approaches cannot exclude investigating whether the effect is lasting. The meta-analysis of Spada and Tomita (2010) showed that explicit teaching also has a bigger effect size than implicit teaching in delayed posttests in studies such as Carroll and Swain, 1993; de Graaff, 1997; Spada and Lightbown, 1999; Takashima and Ellis, 1999; Muranoi, 2000; Izumi, 2002; Ellis et al., 2006; etc. However, some studies indicated that implicit teaching is more durable than explicit teaching. Mackey and Goo's meta-analysis (2007) showed that implicit feedback (recast) has larger effect sizes than explicit feedback (metalinguistic) in

delayed posttests (12-day interval between delayed and immediate posttests). Muranoi's study (2000) indicated that the implicit teaching group performed better in the delayed posttest than in the immediate posttest. The gains increased over a five-week interval between two tests, which implies that implicit teaching produces longer durability of knowledge. The third research question for comparing implicit teaching and explicit teaching is which instructional approach will produce longer durability of knowledge and whether or not the durability effect varies based on language features. Differences between delayed posttest scores will be examined to address this research question.

4.2.4 Speed of learning

Implicit L2 learning is characterized as a data-driven memory-based process instead of abstract rule-based (Perruchet & Pacteau, 1990; Robinson, 1996). Implicit learning is "laboriously slow" (Ellis, 1993). Learners need to encounter and notice a huge number of instances in order to acquire the grammar. This suggests that implicit teaching might take longer to show effects. In contrast, rule-based explicit teaching is more generalizable and effective. No studies have compared the speed of learning under different instructional approaches so far. The fourth research question for comparing implicit and explicit teaching is whether the effect of implicit teaching takes longer to manifest than that of explicit teaching. In order to answer this question, the accuracy and reaction time for each test (test after first training session, test after the second training session, and test after the third training session) between the two training groups will be compared.

4.2.5 Testing of NPAH

Besides the four research questions discussed above for comparing implicit and explicit instruction, the present study will also address the fifth question: whether or not the second language acquisition of Chinese subject and object RCs supports the NPAH hypothesis. This can be inferred from the accuracy and reaction time of different types of RCs. If the accuracy rate is higher and the reaction time is faster for subject RCs than object RCs, then it supports NPAH; otherwise, it goes against NPAH. Meanwhile, previous research (Gass, 1987; Sasaki, 1991, 1994; Ozeke & Shirai, 2007) also showed that semantic strategies such as animacy cues often influence more than the grammar-based cues such as word order on the accuracy and processing of RCs. In the present study, two types of sentences are included: a reversible pattern with two animate arguments and a nonreversible pattern with one animate and one inanimate argument. In the reversible sentences, the grammatical role of each argument cannot be determined by the lexical and pragmatic clues. Grammatical features (subject vs. object RCs) and semantic features (reversible vs. nonreversible arguments) are considered as two factors affecting the acquisition of RCs in a regression analysis.

4.3 PARTICIPANTS

A flier (Appendix B) was distributed and 5 minutes of class time were used to briefly instroduce the study to first-year Chinese students at the University of Pittsburgh. Forty-one out of 44 students from the first year of the Chinese program at the University of Pittsburgh were recruited

and they were at the end of the first-year university course when the experiment was conducted. Six students who are Chinese heritage learners and one student who is a native Japanese speaker were excluded. Thirty-four native English speakers were included in the present study. Their ages range from 18 to 24 (average 20). The number of male and female participants were 15 and 19, respectively. The length of learning Chinese ranges from 7 months (true beginners) to 5 years (average 1 year, 2 months). By the time that they participated in the experiment, they had learned 17 lessons of the textbook of *Integrated Chinese* (Liu & Yao, 2008) level one and had received two half-class-hour's training (2 x 25 minutes) on relative clauses and some incidental input in classes on negative forms. The Chinese language program consists of two 50-minute lecture classes and five 50-minute recitation classes per week. Namely, there are seven 50-minute sessions per week for a student who registers in the Chinese program. Participants were randomly assigned to two groups: implicit teaching and explicit teaching groups. The vocabulary items involved in this test are all from the first 17 lessons of Integrated Chinese (Liu & Yao, 2008) level one. Participants were given a word list with Pinyin and English translation to make sure that they know all the words before the tests. Each participant received \$100 as compensation at the end of the experiment.

4.4 MATERIALS AND PROCEDURE

4.4.1 Training

Five second-year students in the Chinese program of the University of Pittsburgh voluntarily took the training before the experiment was conducted. The time they spent on implicit training of negative forms was twice as long as on explicit training of negative forms and on explicit training of RCs twice as long as on implicit training of RCs. Based on the time period of each task participants spent in the pilot study of the training session, and in order to keep the training duration consistent for each language feature between implicit and explicit training, I doubled the training time of implicit training on RCs and explicit training on negative forms by setting the program to randomly run two cycles of the training items.

4.4.1.1 *Bu/mei* (*you*) training

As discussed previously, there is no complete theoretical consensus on the characteristics of distinguishing between bu and mei (you). We therefore designed our instruction of bu and mei (you) based on current research on the pedagogical rules of distinguishing between bu and mei (you). Due to the limit of training time, we only chose three contrasts [\pm dynamic], [\pm episodic], and [\pm realized] in the training and tests for bu/mei (you).

Sixty pairs of *bu/mei* sentences were designed based on participants' textbooks and were divided into 3 training sessions: 21 pairs for [±dynamic] rule, 20 pairs for [±episodic] rule, and 19 pairs for [±realized] rule.

4.4.1.1.1 Implicit teaching: meaning-based high-frequency input

High-frequency input and meaning-based training is a typical implicit teaching method based on the definition and previous research (e.g. Dekeyser, 1995, p. 385; Doughty, 2003, p.266). In the present study, the context and the meaning in English were provided with the target sentence. Since the three rules are hierarchical, the first 7 pairs of sentences for the first level of rule (stative vs. dynamic) were presented, and then 6-7 pairs for the second level of rule (habitual vs. episodic) and 6-7 pairs for the third level of rule (realized vs. unrealized) in each training session. A sample of the training items is shown below. The complete list of training and test sentences are in Appendix A.

The following instruction was given to the students on the computer screen with no sound. The underlined parts are what participants saw on the screen.

Instruction: In the coming section, you will read 20 pairs of sentences for distinction between 不/ 没. After every 3 or 4 pairs of sentences, you will be asked to choose the correct negative form for the sentences you just read in the format of multiple-choice questions.

a. This pair of shoes is only \$10. So I feel this pair of shoes is not expensive. In Chinese we can say...

这双鞋不贵 (This pair of shoes is not expensive)

Zhe shuang xie bu gui.

This pair shoes BU expensive.

"This pair of shoes is not expensive."

b. This pair of shoes was \$30 two weeks ago on Black Friday; they are still \$30 now. So

this pair of shoes has not gotten more expensive. In Chinese we can say...

这双鞋没贵。(This pair of shoes has not gotten more expensive.)

Zhe shuang xie mei gui.

This pair shoes MEI expensive

"This pair of shoes has not gotten more expensive."

Participants read 20 pairs of sentences as in the example above, in which the bu sentence

was presented first (the gloss part was not shown on the screen). After every 3 or 4 pairs of

training sentences, they were asked to make the negative form distinction by choosing the correct

negative form for the same sentences through multiple-choice questions. Among the three

choices, two were negative forms; another was a filler—copula "shi (是)". The order for the

choices was fixed as in the sample below; however, the order of the sentence presentation was

randomized by the program. A sample of the practice items is shown below.

This pair of shoes was \$10 two weeks ago on Black Friday; they are still \$10 now. So we

can say 这双鞋___贵

<u>a. 不</u>

<u>b. 没</u>

c. 是

60

During the practice of 30 pairs of sentences, 12 filler sentences were mixed in with them (5 pairs of training sentences with 2 filler sentences). A sample of the filler sentence is included below.

Little Wang is a first-year college student; little Li came to the same college two years earlier than little Wang. So we can say 小李___三年级的学生。

a. 不

b. 没

c. 是

Feedback was provided to the participants after each question by displaying either "correct" or "X." If the participants made mistakes, the program would have them redo the question until they did it correctly.

4.4.1.1.2 Explicit teaching: rule explanation

Rule explanation is a typical method of explicit training used in previous research (e.g. Doughty, 1991; Yabuki-Soh, 2007). One rule for distinguishing *bu/mei* (*you*) is stative vs. dynamic. *Bu* is used to negate in a stative situation, whereas *mei* (*you*) is used to negate in a dynamic situation. A sample of the explicit training items is shown below.

The following instruction (underlined parts only) was given to the students on the computer screen.

Instruction: You will read 20 pairs of sentences to distinguish the usage 不/没 with the rules.

After every 3 or 4 pairs of sentences, you will be asked to choose the correct answer for the sentences you just read.

1. One rule for distinguishing bu/mei (you) is static vs. changing state (stative vs. dynamic).

a. 她身体不好. (static)

Ta shenti bu hao.

Her health BU good

"Her health condition is not good."

b. 她身体没好. (changing state)

Ta shenti mei hao.

Her health MEI good

"She has not recovered yet."

Participants read 7 pairs of sentences with the first rule as in the examples above (the gloss part was not shown on the screen during the training). After every 3 or 4 pairs of training sentences, they practiced the negative form distinction by choosing the correct answer based on the rules. The format was multiple-choice questions. A sample of explicit practice items is included below.

Static: 她身体___好。

a. 不

b. 没

c. 是

A sample of the filler sentence is as below.

小李___三年级的学生。

<u>a. 不</u>

<u>b. 没</u>

c. 是

Four filler sentences were provided during the practice of 7 pairs of target sentences.

Feedback was provided after each question. If the participants made mistakes, the program would have them redo the question until they chose the correct answer.

2. Habitual vs. episodic: within dynamic situations, *bu* must be used for habitual situations whereas *mei* must be used for episodic situations. An example of explicit training of habitual vs. episodic is shown below.

One rule for distinguishing *bu/mei* (*you*) is habit vs. single event.

a. 他不喝酒。(habit)

Ta bu he jiu.

He BU drink alcohol

"He doesn't drink alcohol."

b. 他没喝酒。(single event)

Ta mei he jiu.

He MEI drink alcohol

"He didn't drink alcohol."

Participants read 6 or 7 pairs of sentences with the second rule as in the examples above (the gloss part was not shown on the screen during the training). After every 3 or four pairs of

training sentences, they practiced the negative form distinction by choosing the correct answer based on the rules through multiple-choice questions. A sample of explicit practice items is included below.

Single event: 他___喝酒。

a. 不

<u>b. 没</u>

c. 是

Again, feedback was provided after each question. If the participants made mistakes, the program would have them redo the question until they did it correctly. Four filler sentences were provided during the practice of 7 pairs of target sentences.

3. Realized vs. unrealized: within episodic situations, *bu* must be used for unrealized situations. An example of training items is shown below.

One rule for distinguishing *bu/mei* is realized vs. unrealized.

a. 我今天中午不回家吃饭。 (Unrealized)

Wo jintian zhongwu bu hui jia chi fan

I today noon BU back home eat meal

"I won't go back for lunch today."

b. 我今天中午没回家吃饭。(Realized)

Wo jintian zhongwu mei hui jia chi fan.

I today noon MEI back home eat meal

"I didn't go back for lunch today."

Participants read 6 or 7 pairs of sentences with rules as in the examples above (the gloss part was not shown on the screen). After every 3 or 4 pairs of training sentences, they practiced the negative form distinction by choosing the correct answer based on the rules through multiple-choice questions. An example of practice items is included below.

Realized: 我今天中午___回家吃饭。

a. 不

b. 没

c. 是

Feedback was provided after each question. If the participants made mistakes, the program would have them redo the question until they did it correctly. As before, four filler sentences were mixed in during the practice of 7 pairs of target sentences.

4.4.1.2 RC training

Due to the limit of training time and the limit of dative verbs that the first-year students had learned, I only focused on the subject and object RCs during the training and testing. Also, the embedded sentence was always in the subject position. Forty-eight RC sentences were designed based on the textbooks that participants had learned by the time they participated in the present study. Each participant was trained with 16 sentences in each training session (8 subject clauses containing 4 reversible and 4 nonreversible patterns; 8 object clauses containing 4 reversible and 4 nonreversible patterns). Examples of four patterns are displayed below.

a. subject nonreversible

吃苹果的那个人是我的哥哥。 Chi pingguo de na ge ren shi wo de gege. Eat apple DE that CL person is IDE older brother. "The person who is eating/ate an apple is my brother."

b. subject reversible

认识小王的那个老师对历史很有兴趣。 Renshi xiao Wang de na ge laoshi dui lishi hen youxingqu. Know little Wang DE that CL teacher in history very interested "The teacher who knows little Wang is very interested in history."

c. object nonreversible

她穿的那件衣服很漂亮。 Ta chuan de na jian yifu hen piaoliang. She wear DE that CL clothing very pretty "The clothing she is/was wearing is very pretty."

d. object reversible

他喜欢的那个女孩儿很酷。 Ta xihuan de na ge nvhaier hen ku. He like De that CL girl very cool "The girl he likes is very cool."

4.4.1.2.1 Implicit training: meaning-based high-frequency input

High-frequency input and meaning-based training is a typical implicit teaching method used in previous research (Doughty, 1991; Yabuki-Soh, 2007), as noted above. A context provided in English with the corresponding RC sentence in Chinese was used for the implicit RC training. A sample of implicit training of RC sentences is shown below. The following instruction (only the underlined parts) was given to the students on the computer screen.

Instruction: You will see 16 short descriptions in English with their corresponding Chinese

sentences. After every 4 descriptions, you will be asked to choose the correct Chinese sentence to match the English description you just read through multiple-choice questions.

Yesterday we went to a book store. I bought a Chinese book. So we can say:

我买的书是中文书。

Wo mai DE shu shi zhongwen shu.

I bought DE book is Chinese book.

"The book I bought is a Chinese book."

Participants read 16 sentences as in the example above (the gloss part was not shown on the screen). After every 4 training sentences, they practiced relative clauses by choosing the correct sentence to match the description provided in English through multiple-choice questions. Three choices were designed by changing the order of words among relative clause and head noun without adding any new words: one was correct, one was switching the head noun and the relative clause, and one was changing the order by using other components to modify the noun contained in relative clause. A sample is as below.

There are many people at a party. People are chatting while eating and drinking. My brother is also there and he is eating an apple in a corner. In Chinese we can say

- a. <u>吃苹果的那个人是我的哥哥。</u>(The person who is eating an apple is my brother.)
- b. 那个人吃苹果的是我哥哥。
- c. 那个人吃的苹果是我哥哥。

In the example above, the first choice is correct; the second choice is designed by switching the order of head noun "那个人 (that person)"and the relative clause "吃苹果的 (eating apple DE)"; the third choice is designed by modifying the noun within relative clause "苹果 (apple)" with the other components. Feedback was provided after each question. If the participants made mistakes, the program would have them redo the question until they did it correctly.

4.4.1.2.2 Explicit training: structure analysis

Structure analysis focusing on the form is used as explicit training in previous research (Doughty, 1991; Yabuki-Soh, 2007). The steps for Chinese RC training adopted for this study are as follows.

First step: Identify the shared noun for the two simple sentences.

Second step: Combine two sentences into one by deleting the shared noun in the two sentences.

Third step: Put the relativization marker "de" after the secondary sentence to modify the shared noun.

Participants will see the following information on the computer screen.

Instruction: You will see 16 pairs of simple sentences in Chinese and will be presented with some rules and examples to explain how to make the relative clauses (RCs) based on two simple sentences. After every 4 pairs of sentences, you will be asked to choose the correct answer based on the explanation you just read through multiple-choice questions.

a. 我买了一本书。

b. 那本书很有意思。

Combining two sentences by three steps:

- 1. Finding out the shared component of these two simple sentences: 一本书/那本书
- 2. Deleting the shared component in the sub-clause sentence, so we get: "我买"
- 3. Use "我买" to modify the shared component "那本书" by adding "的 (de)". So we get the RC sentence: "我买的那本书很有意思".

Participants read 16 pairs of sentences formatted as in the example above. After every four training sentences, they practiced RC by choosing the correct answer for each step. An example is shown below.

1. (a. 我买了一本书。b. 那本书很有意思。) the shared component of these two sentences is:

a. 我

b. 书

<u>c. 买</u>

2. (a. 我买了一本书。b. 那本书很有意思。) Combining these two sentences first by deleting the shared component from sentence (a) and add "的", you get:

<u>a. 我买的</u>

b. 一本书的

c. 很有意思的

3. (a. 我买了一本书。b. 那本书很有意思。) Use transformed sentence (a) to modify the shared component in sentence (b), you get:

a. 那本书我买的很有意思。_

b. 买那本书的我很有意思。_

c. 我买的那本书很有意思。

Three choices are designed as in the implicit training by changing order without adding any new words. Feedback is provided after each question. When the participants make mistakes, the program will have them redo the question until they do it correctly.

4.4.2 Tests

Doughty (2003) pointed out that in instructional research in SLA, there was a tendency to use explicit metalinguistic measurements, which favors explicit knowledge from explicit teaching, to compare implicit and explicit instructional effectiveness. In the present study, I avoid the use of explicit metalinguistic measurement and test two basic abilities—comprehension and production on the target grammars. Two hundred sentences (120 sentences for *bu/mei* distinction and 80 sentences for RCs) were designed based on participants' textbooks and divided into five tests. Each test consists of four parts with 40 sentences: 12 sentences for the comprehension test of negative forms; 12 sentences for the fill-in-the-blank test of negative forms; eight sentences for

RC comprehension test; eight sentences for RC production test. The difficulty of these tests is carefully controlled by sentence structures and the number of characters. For example, for the negative sentences, the sentences generally contain subject, negative form, and predicate or at most with one easy and highly frequent time or location preposition phrase added. Participants read through a word list for each test before they take the test. Due to the limited language and vocabulary knowledge of first-year learners in the Chinese program, it was hard to design hundreds of sentences for the target grammars, and therefore I repeatedly used some sentences of tests in the training sessions without affecting the test results. Since the pretest was done before the first training session, the test sentences in the pretest were presented as training sentences in training 1. Likewise, the sentences in posttest 1 and posttest 2 were presented as training sentences in training 2 and 3, respectively. Sentences in posttest 3 and the delayed posttest were not shown in training sessions. In the pretest, there were eight practice sentences presented before the test, which allowed the participants to familiarize themselves with the test format.

4.4.2.1 Test of *bu/mei* (*you*)

We tested learners' knowledge of the target structures from two aspects: comprehension (in the format of translation) and fill-in-the-blank questions (in the format of typing *bu* or *mei* (*you*)), and recorded the accuracy and response time on the computer for *bu/mei* (*you*). The vocabulary involved in the training and tests were all from the first-year textbook. In addition, some low frequency words for participants were glossed in English and participants were always allowed to ask questions related to vocabulary in the training. Example questions include the following.

a. Comprehension test by typing the meaning in L1

The goal of this test was to determine whether participants can comprehend the meaning difference between *bu* and *mei* (*you*). They were asked to write out the meaning, as they understand it, of a Chinese sentence into English as quickly as possible. The following instruction was given to the students on the computer screen.

Instruction: During this following test you will be typing in English to best reflect the meaning of Chinese sentences as quickly and as accurately as possible.

她身体没好。

Ta shenti mei hao. (She has not recovered from sickness)

b. Fill-in-the-blank test by typing bu or mei

This test determines whether participants can correctly use *bu* and *mei* (*you*) based on the meaning of contexts. Participants will be asked to type *bu* or *mei* as quickly as possible. The following instruction will be given to the students on the computer screen.

Instruction: During this following test you will be typing either *bu* or *mei* in Pinyin depending on which better indicates the meaning of the conversation as quickly and as accurately as possible.

A: Do you watch Chinese movies?

B: I never watch any Chinese movies. I cannot understand them.

We can say that person B () 看中国电影。

A: Did you go to the Chinese movie yesterday?

B: I planned to go, but I needed to prepare for today's exam and could not go to the movie.

We can say that person B () 看中国电影。

4.4.2.2 Test of RCs

We tested comprehension and production of the target structures and also recorded the response time on the computer for RCs. 16 items were given in the tests.

a. Comprehension test by typing the meaning in L1

Participants will be asked to type the meaning of the given sentences in English. The following instruction will be given to the students on the computer screen.

Instruction: please type the meaning of the given sentences in English as quickly as possible.

<u>看书的女孩儿是我的朋友。</u>(The girl who is reading a book is my friend.)

b. Production test by answering questions

After participants see two simple sentences, they were asked to answer a question, which required the use of a RC. The question was presented in Chinese character. They were asked to type Pinyin based on the two simple sentences. The following instruction was given to the students on the computer screen.

Instruction: Please answer questions by typing Pinyin based on the given sentences as quickly as possible.

我看了一本书。那本书很有意思。

Wo kan le yi ben shu. Na ben shu hen youyisi.

I read Perf. One CL book. That CL book very interesting

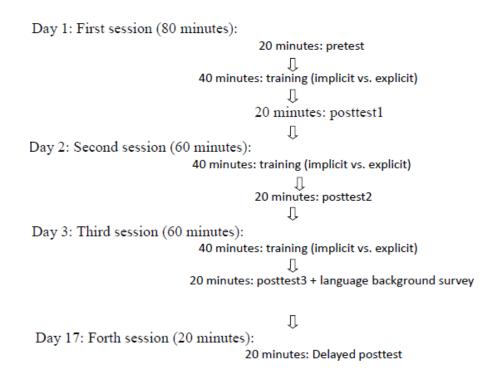
"The book I read is very interesting."

Q: 哪本书很有意思? (which book is interesting?)

The correct answer they were supposed to type is "wo kan de na ben shu (hen you yisi)". Thus this task required the production of RC.

4.4.3 Procedure

The study includes three 40-minute training sessions and five 20-minute tests: a pretest, a test after the first training session, a test after the second training session, a test after the third training session, and a delayed posttest 2 weeks after the third training session. A language background survey (Appendix C) was conducted at the end of the third day. The schedule is as follows:



Participants first came to the lab 3 days in a row for four tests and three training sessions. They came the fourth time 2 weeks later and spent about 20 minutes doing the delayed posttests. All training and tests were conducted on computer with the program Paradigm and the accuracy and reaction time in the tests were collected by Paradigm. The reaction time was measured from the sentences were shown on the screen to participants' pressing the button. Participants could always ask questions related to vocabulary during the training sessions and they went through a word list before each test.

4.5 SUMMARY

In this chapter, I introduced the design and procedure of the present study. The research question—whether the implicit meaning-based instruction benefits meaning-based language

features more and explicit instruction benefits meaning-based language features more—was designed to be investigated from four aspects: accuracy, speed (RT), knowledge durability, and speed of learning. In terms of the NPAH hypothesis, four types of RC conditions (subject irreversible RCs, subject reversible RCs, object irreversible RCs, and object reversible RCs) were designed to investigate which factor—semantic or syntactic—affect the acquisition difficulty of Chinese RCs. The procedure was a pretest, a posttest immediately after each 50-minute computer-based training session (three times), and a delayed posttest 2 weeks after the last training session. The accuracy and reaction time (RT) were recorded by the program Paradigm.

5.0 RESULTS

5.1 ACCURACY DATA ANALYSIS

5.1.1 Data coding

Data were mostly collected in the PC lab of the Language Media Center (LMC) at the University of Pittsburgh and were also collected in an office across from the PC lab when the lab was not available. Accuracy data were coded by two native Chinese speakers whose English is above advanced level and by two native English speakers whose Chinese is around intermediate level.

For each question, participants were given either one point for a correct answer or zero points for an incorrect answer. The coding mainly focused on the target grammars and other errors were ignored. For example, grammar errors such as redundant predicate in the main clause, "jiaoshou bangzhu de xue sheng *shi* hen yonggong," and the vocabulary-related errors, "today we won't throw a party," instead of the correct one, "today we won't have a meeting." were ignored. The items without typing anything were coded as missing data, which were 18 sentences and less than .3 % of the data. However, three participants typed Pinyin when they were asked to type in English during comprehension tasks and two participants typed English when they were asked to type Pinyin in production tasks. These data were coded as missing data, too. Also, two students in the first production test did not understand the instruction and

answered all the questions with demonstrative pronouns instead of RCs, which were also coded as missing data. In addition, I lost the pretest data for one participant and posttest 2 data for one participant, which were also coded as missing data. The missing data altogether account for 2.7% of all data. The accuracy rates of the remaining data were calculated.

5.1.2 Statistical analysis for accuracy data

5.1.2.1 Negative forms: bu and mei

Mean scores and standard deviations (SD) of accuracy for four tasks of two different training groups across five tests are presented in Table 6.

Table 6. Descriptive statistics of the average accuracy and standard deviation (SD) for negative forms

Task	Group	Pretest	Post-	Post-	Post-	Delayed
			test 1	test 2	test 3	posttest
	Implicit	56.0%	78.8%	85.3%	91.7%	84.2%
Comprehension	(N = 14)	.112	.185	.165	.098	.149
of bu/mei	Explicit	56.2%	78.2%	81.6%	83.3%	88.2%
	(N = 17)	.156	.214	.170	.190	.164
	Implicit	52.6%	81.3%	87.9%	94.1%	87.3%
Fill-in-the-blank	(N = 16)	.166	.183	.100	.087	.169
of bu/mei	Explicit	44.6%	72.6%	81.3%	82.8%	78.0%
	(N=17)	.184	.176	.137	.170	.230

From the descriptive statistics, we can see clearly that in terms of the negative forms *bu/mei*, both implicit training and explicit training were effective on both comprehension and fill-in-the-blank tasks. In the comprehension task, the accuracy improved from the pretest 56.0% to 78.8% after the first training and to 85.3% after the second training and to 91.7% after the third training for the implicit group, and from 56.2% to 78.2% to 81.6% to 83.3% for the explicit group. In the fill-in-the-blank task, the accuracy improved from the pretest 52.6% to 81.3% after the first training and to 87.9% after the second training and to 94.6% after the third training for the implicit group, and from 44.6% to 72.6% to 81.3% to 82.8% for the explicit group. Also, from the data, we can notice that the implicit training (from 56.0% to 91.7% for comprehension task; from 52.6% to 94.1% for the fill-in-the-blank task) improved more than the explicit training (from 56.2% to 83.3% for comprehension task; from 44.6% to 82.8% for the fill-in-the-blank task) on both the comprehension and fill-in-the-blank questions of negative forms.

In terms of the inferential statistics, first, independent t-tests were run to show that there were no significant differences between the two groups in each task of the pretest: t(29) = .036, p = .971 for the comprehension test and t(31) = 1.310, p = .200 for the fill-in-the-blank test.

In order to investigate the effect of each instructional approach on meaning-based language feature negative forms, four one-way within-subjects ANOVAs were performed for each training condition at each task. The within-subjects independent variable was the test with five levels, and Bonferroni adjustment was performed for all of pairwise comparisons below. The results of the implicit training effect on the comprehension task of *bu/mei* showed that the differences among the tests were significantly different, F (4, 48) = 17.248, p < .001, partial η^2 = .590. Pairwise comparisons of comprehension tests for implicit training of *bu/mei* showed that pretest (M = 56.0%, SD = .112) was significantly lower than other tests (posttest 1: M = 78.8%,

SD = .185, p = .013; posttest 2: M = 85.3%, SD = .165, p < .001; posttest 3: M = 91.7%, SD = .001.098, p < .001; delayed posttest: M = 84.2%, SD = .149, p = .001). No significant difference was found between all possible pairs of posttest 1, posttest 2, posttest 3, and delayed posttest. The results of the implicit training effect on the fill-in-the-blank task of bu/mei showed that the differences among the tests were significantly different, F (4, 56) = 44.555, p < .001, partial η^2 = .761. Pairwise comparisons of fill-in-the-blank tests for implicit training of bu/mei showed that the pretest (M = 52.6%, SD = .166) was significantly lower than other tests (posttest 1: M =81.3%, SD = .183, p < .001; posttest 2: M = 87.9%, SD = .100, p < .001; posttest 3: M = 94.1%, SD = .087, p < .001; delayed posttest: M = 87.3%, SD = .169, p < .001). No significant difference was found between all possible pairs of posttest 1, posttest 2, posttest 3, and delayed posttest except for between posttest 1 and posttest 3, p = .016. The results of the explicit training effect on the comprehension task of bu/mei showed that the differences among the tests were significantly different, F (4, 64) = 20.067, p < .001, partial η^2 = .556. The results of simple pairwise comparisons of bu/mei comprehension tests for the explicit group showed that the pretest (M = 56.2%, SD = .156) was significantly lower than other tests (posttest 1: M = 78.2%, SD = .214, p = .006; posttest 2: M = 81.6%, SD = .170, p = .001; posttest 3: M = 83.3%, SD = .001.190, p < .001; delayed posttest: M = 88.2%, SD = .164, p < .001). No significant difference was found between all possible pairs of posttest 1, posttest 2, posttest 3, and delayed posttest (delayed posttest) except for between posttest 1 and delayed posttest, in which delayed posttest is significantly better than posttest 1, p = .027. The results of the explicit training effect on the fillin-the-blank task of bu/mei showed that the difference on the tests were significantly different, F (4, 64) = 20.152, p < .001, partial $\eta^2 = .557$. The results of simple pairwise comparisons of fill-inthe-blank tests for the explicit group showed that the pretest (M = 44.6%, SD = .184) was

significant lower than other tests (posttest 1: M = 72.6%, SD = .176, p < .001; posttest 2: M = 81.3%, SD = .137, p < .001; posttest 3: M = 82.8%, SD = .170, p < .001; delayed posttest: M = 78.0%, SD = .230, p = .002). No significant difference was found between the pairs of posttest 1, posttest 2, posttest 3, and delayed posttest except for between posttest 1 and posttest 3, which was significantly different, p = .006. The accuracy rates of implicit and explicit instruction on negative forms are summarized in Figure 1.

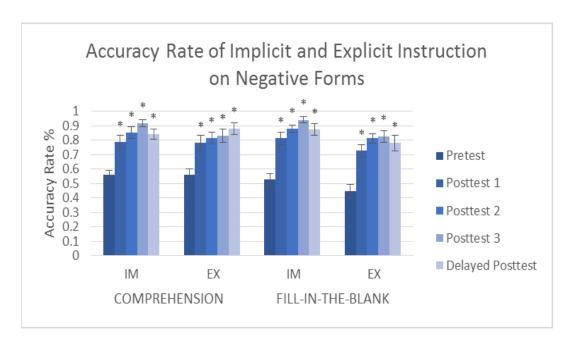


Figure 1. Accuracies of implicit and explicit instruction on negative forms

("*" means significantly different from the pretest, p = .05.)

The results on the comprehension and fill-in-the-blank tests of *bu/mei* showed that both implicit and explicit trainings significantly improved the comprehension and fill-in-the-blank of *bu/mei* as early as after the first training session. It indicated that both implicit and explicit teaching work effectively on the acquisition of meaning-based language feature *bu/mei*.

In order to find which instruction is more effective, 10 one-way between-subjects ANOVAs were conducted for each task at each test. The group differences only showed in the *bu/mei* fill-in-the-blank task of posttest 3, in which the implicit group performed significantly better than the explicit group, F (1, 32) = 5.898, p = .021, partial η^2 = .156. The results may suggest that implicit training works better for the meaning-based language feature *bu/mei*.

5.1.2.2 RCs

Mean scores and standard deviations (SD) of accuracy for four tasks of two different training groups across five tests are presented in Table 7.

Table 7. Descriptive statistics of the average accuracy and standard deviation (SD) for RCs

Task	Group	Pretest	Post-	Post-	Post-	Delayed
			test 1	test 2	test 3	posttest
	Implicit	85.0%	77.0%	84.4%	87.5%	83.1%
Comprehension	(N = 15)	.190	.243	.148	.207	.165
of RCs	Explicit	73.9%	72.1%	77.8%	78.5%	75.9%
	(N = 17)	.250	.248	.293	.233	.253
	Implicit	75.7%	78.9%	76.5%	82.4%	83.1%
Production of	(N = 15)	.279	.341	.316	.325	.328
RCs	Explicit	62.0%	88.5%	95.6%	94.1%	84.1%
	(N = 16)	.223	.253	.144	.126	.284

The descriptive statistics of RCs only clearly showed that the production of RCs improved from 62.0% to 88.5% and to 95.6% and to 94.1% after the explicit training; implicit training did not show a clear trend of improving the comprehension and production of RCs. The accuracy rate changed from the pretest 85.0% to 77.0% after the first training and to 84.4% after the second training and to 87.5% after the third training for comprehension test of RCs and from the pretest 73.9% to 72.1% after the first training and to 77.8% after the second training and to 78.5% after the third training for production test of RCs. Furthermore, explicit training did not much improve the comprehension of RCs: from the pretest 75.7% to 78.9% after the first training and to 76.5% after the second training and to 82.4% after the third training.

In terms of the inferential statistics, first, independent t-tests were run to show that there were no significant differences between two groups in each task of pretest: t(30) = 1.393, p = .174 for comprehension tests of RCs; t(29) = .989, p = .331 for production tests of RCs.

In order to investigate the effect of each instructional approach on form-based language feature (RC) in each task, four one-way within-subjects ANOVAs were performed for each training condition at each task. The within-subjects independent variable was the test with five levels, and Bonferroni adjustment was performed for all of pairwise comparisons below. The results of the implicit training effect on the comprehension task of RCs showed that the differences on the tests were not significantly different, F (4, 52) = 1.907, p = .123, partial η^2 = .128. The results of the implicit training effect on the production task of RCs also showed that the differences on the tests were not significantly different, F (4, 52) = 1.403, p = .246, partial η^2 = .097. In terms of explicit training of RCs, the results of the explicit training effect on the comprehension task of RCs showed that the difference on the tests was not significantly different, F (4, 64) = 1.015, p = .406, partial η^2 = .060. But the results of the explicit training

effect on the production task of RCs showed that the difference on the tests was significantly different, F (4, 64) = 14.227, p < .001, partial η^2 = .487. The results of simple pairwise comparisons of production tests for the explicit group showed that the pretest (M = 62.0%, SD = .223) was significantly lower than other tests (posttest 1: M = 88.5%, SD = .253, p = .001; posttest 2: M = 95.6%, SD = .144, p < .001; posttest 3: M = 94.1%, SD = .126, p < .001; delayed posttest: M = 84.1%, SD = .284, p = .020). No significant difference was found between all possible pairs of posttest 1, posttest 2, posttest 3, and delayed posttest. The accuracy rates of implicit and explicit instruction on RCs are summarized in Figure 2.

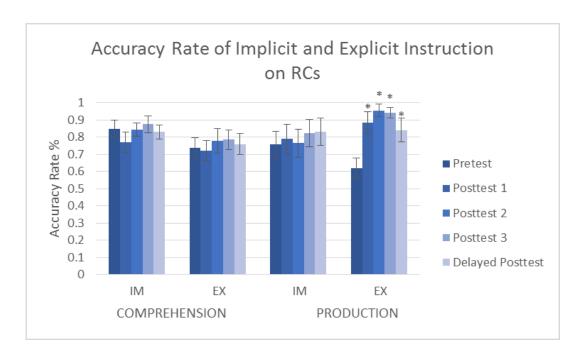


Figure 2. Accuracies of implicit and explicit instruction on RCs

("*" means significantly different from the pretest, p = .05.)

The results on the comprehension and production tests of RCs suggested that implicit training did not help with the acquisition of RCs and that explicit training significantly improved

the production of RCs but not the comprehension of RCs. However, in terms of the explanation of non-improvement in comprehension tests, the possible ceiling effect in the present data is worth noting. Participants might already be able to comprehend the RCs very well in the pretest (the accuracies were 85.0% for implicit group and 73.9% for explicit group).

In order to compare the RC accuracies of two groups, 10 one-way between-subjects ANOVAs were conducted for each task at each test. The group differences only showed in the posttest 2 of RC production task, in which the explicit group performed significantly better than the implicit group, F (1, 30) = 4.838, p = .036, partial η^2 = .139. The results may suggest that explicit training worked better than implicit training for the form-based language feature RCs.

In short, the results showed that only explicit training worked for the form-based language feature RCs in production test. In other words, explicit instruction worked better for the form-based language feature (RC) than implicit instruction in the production test but not in the comprehension test.

5.2 REACTION TIME

5.2.1 Data coding

The data of reaction time were only calculated for the correct items. The mean and standard deviation of the reaction time were calculated for each participant for five tests separately and then the reaction time data that were two standard deviations less or more than the average of his/her reaction time for that task were deleted (Ratcliff, 1993). The deleted outliers of response

data are 124 items (53 for implicit and 71 for explicit participants) and around 2.1% of the correct data.

5.2.2 Statistical analysis for reaction time data

5.2.2.1 Bu and mei

Mean reaction time and standard deviations (SD) of reaction time for negative forms in each task of 5 tests are presented in Table 8 for each training group.

Table 8. Descriptive statistics of the average reaction time (RT) and standard deviation (SD) for negative forms (second)

Task	Group	Pretest	Post-	Post-	Post-	Delayed
			test 1	test 2	test 3	posttest
	Implicit	16.871	17.236	17.895	19.205	17.146
Comprehension	(N = 14)	5.975	4.958	6.135	6.484	4.092
of bu/mei	Explicit	18.110	16.998	18.024	17.120	16.321
	(N = 17)	4.145	4.034	4.890	4.144	3.839
	Implicit	11.137	9.215	8.822	7.005	8.904
Fill-in-the-	(N = 15)	4.184	3.640	2.794	2.250	3.175
blank of bu/mei	Explicit	11.452	9.905	8.880	8.039	9.482
	(N = 17)	2.863	3.274	2.731	1.728	3.869

From the descriptive statistics, we can see that the response time did not display obvious differences for the comprehension of negative forms (*bw/mei*) under either implicit or explicit training. For the negative comprehension task, the response times changed from the pretest 16.871 seconds to 17.236 after the first training and to 17.895 after the second training and to 19.205 after the third training for the implicit group; the response times changed from 18.110 seconds to 16.998 after the first training and to 18.204 after the second training and to 17.120 after the third training for the explicit group. For the negative fill-in-the-blank task, the response times gradually shortened from the pretest 11.137 to 7.005 seconds after the third training for the implicit group and shortened from 11.452 to 8.039 seconds for the explicit group. The descriptive statistics indicate that both training approaches speed up the fill-in-the-blank tasks but not the comprehension tasks of negative forms.

In terms of inferential statistics, first, independent t-tests were run to test whether there were significant differences in reaction time between two groups in each task of pretest. The resuts were as follows: t(29) = .684, p = .499 for the comprehension of negative forms; t(31) = .254, p = .801 for the fill-in-the-blank test of negative forms. The results indicate that there was no significant difference between the two groups before the treatment.

In order to investigate the effect of different instructional approaches on the reaction time of negative forms over time, four one-way within-subjects ANOVAs were performed for each approach on each task as we did for accuracy data. The within-subjects independent variable was tested with five levels, and Bonferroni adjustment was performed for all of pairwise comparisons below. The results of implicit training and explicit training on the negative comprehension task over time showed that the reaction time differences among the tests were not significantly different, F(4, 48) = 1.139, p = .349, partial $\eta^2 = .087$ for implicit training and F(4, 64) = .842, p

= .504, partial η^2 = .050 for explicit training. The results of the implicit training on the negative fill-in-the-blank task showed that the reaction time differences among the tests were significantly different, F (4, 56) = 7.407, p < .001, partial η^2 = .346. Pairwise comparisons of fill-in-the-blank tests for implicit training of bu/mei showed that the posttest 3 (M = 7.005, SD = 2.250) was significantly shorter than other tests (pretest: M = 11.137, SD = 4.184, p = .002; posttest 1: M = .0029.215, SD = 3.640, p = .047; posttest 2: M = 8.822, SD = 2.794, p = .022). No significant difference existed between other possible pairs of tests. The results of the explicit training effect on the fill-in-the-blank task of bu/mei also showed that the differences among the tests were significantly different, F (4, 64) = 8.027, p < .001, partial η^2 = .334. The results of simple pairwise comparisons of fill-in-the-blank tests for the explicit group showed that posttest 2 (M = 8.880, SD = 2.731) and posttest 3 (M = 8.039, SD = 1.728) was significantly shorter than the pretest (M = 11.452, SD = 2.863), p = .001 and p < .001 respectively. No other significant difference was found between the other possible pairs of tests. The results on the response time of negative comprehension and fill-in-the-blank tests suggest that both implicit and explicit trainings significantly speed up the fill-in-the-blank of negative forms, but neither one speeds up the comprehension of negative forms. However, the speeding-up effect did not last till the delayed posttest. The results also showed that explicit instruction, in which the production improvement emerged after the second training session in posttest 2, produced faster speed of learning than implicit instruction, in which the improvement emerged after the third training session in posttest 3. The reaction times of implicit and explicit instruction on negative forms are shown in Figure 3.

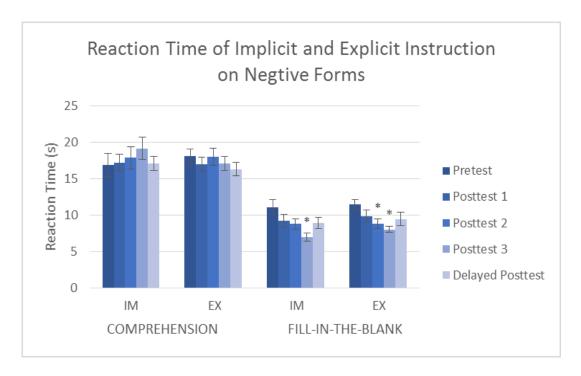


Figure 3. Reaction time of implicit and explicit instruction for negative forms

("*" means significantly different from the pretest.)

In order to compare the effect of different instructional approaches on the meaning-based language feature negative forms after each training session, 10 one-way between-subjects ANOVAs were conducted for each task of each test. No group difference on response time was found for negative forms. The results indicated that implicit training and explicit training worked equally on speeding up the response time for the meaning-based language feature *bu/mei* in this study, which means they produced the same fluency result.

In sum, implicit instruction and explicit instruction worked equally on improving fluency of the meaning-based language feature *bu/mei*. However, implicit instruction produced slower learning speed than explicit instruction.

5.2.2.2 RCs

Mean reaction time and standard deviations (SD) of reaction time for RCs in each task of five tests are presented in Table 9 for each training group.

Table 9. Descriptive statistics of the average reaction time (RT) and standard deviation (SD) for RCs (second)

Task	Group	Pretest	Post-	Post-	Post-	Delayed
			test 1	test 2	test 3	posttest
	Implicit	26.972	26.468	25.047	27.991	27.928
Comprehension	(N = 14)	9.268	7.653	8.666	10.925	10.136
of RCs	Explicit	26.103	26.888	26.037	26.120	23.262
	(N = 17)	5.202	5.963	9.758	6.326	4.538
	Implicit	41.942	32.717	27.234	24.327	25.814
Production of	(N = 12)	20.204	17.875	7.380	6.090	8.289
RCs	Explicit	38.016	23.158	20.901	20.016	20.530
	(N = 15)	6.800	5.865	5.017	5.200	4.205

The descriptive statistics showed that the response time did not display obvious differences for RC comprehension tests under either implicit or explicit training. For the RC comprehension task, the response times started from the pretest 26.972 to 26.468 to 25.047 and to 27.991 after the third training for the implicit group; they ranged from 26.103 to 26.888 to 26.037 and to 26.120 for the explicit group. However, the production data of RCs indicated a

clear change. The response times decreased from the pretest 41.942 seconds to 24.327 after the third training for the implicit group and from 38.016 to 20.016 for the explicit group. The descriptive statistics indicate that both training approaches speed up the production tasks but not the comprehension tasks of RCs

In terms of inferential statistics, first, independent t-tests were run to test whether there were significant differences in reaction time between two groups in each task of the RC pretest. The resuts were as follows: t(30) = .332, p = .742 for the RC comprehension tests; t(28) = .733, p = .470 for the RC production tests. The results indicate that there was no significant difference between the two groups before the treatment.

In order to investigate the effect of different instructional approaches on the reaction time of RCs over time, four one-way within-subjects ANOVAs were performed for each approach on each task as we did for accuracy data. The within-subjects independent variable was test with five levels, and Bonferroni adjustment was performed for all of pairwise comparisons below.

The RT results of the implicit training and explicit training on the RC comprehension task showed that the differences among the five tests were not significantly different, F (4, 52) = .595, p = .668, partial η^2 = .044 for implicit training and F (4, 64) = 1.606, p = .184, partial η^2 = .091 for explicit training. The results of the implicit training and explicit training on the RC production task showed that the difference among the tests were significantly different, F (4, 44) = 9.461, p < .001, partial η^2 = .462. Pairwise comparisons of production tests for the implicit training of RC showed that pretest (M = 41.942, SD = 20.204) was significantly longer than posttest 2 (M = 27.234, SD = 7.380, p = .030), posttest 3 (M = 24.327, SD = 6.090, p = .015), and delayed posttest (M = 25.814, SD = 8.289, p = .009). No significant difference was found between other possible pairs of tests. The results of the explicit training effect on the production

task of RC also showed that the differences among the tests were significantly different, F (4, 56) = 39.236, p < .001, partial η^2 = .737. The results of simple pairwise comparisons of production tests for the explicit group showed that the pretest (M = 38.016, SD = 6.800) was significantly longer than posttest 1 (M = 23.158, SD = 5.865, p = .001), posttest 2 (M = 20.901, SD = 5.017, p < .001), posttest 3 (M = 20.016, SD = 5.200, p < .001) and delayed posttest (M = 20.530, SD = 4.205, p < .001). No other significant difference was found between other possible pairs of tests except for between posttest 1 and posttest 3 (p = .026). The results on the response time of RC comprehension and production tests suggest that both implicit and explicit trainings significantly speed up the production of RCs, but neither one speeds up the comprehension of RCs. The results also showed that explicit instruction, in which the production improvement emerged after the first training session in posttest 1, produced faster speed of learning than implicit instruction, in which the improvement emerged after the second training session in posttest 2. The reaction times (timed from the Chinese sentence showing on the screen to participants finishing the translation and clicking the mouse) of implicit and explicit instruction on RCs are summarized in Figure 4.

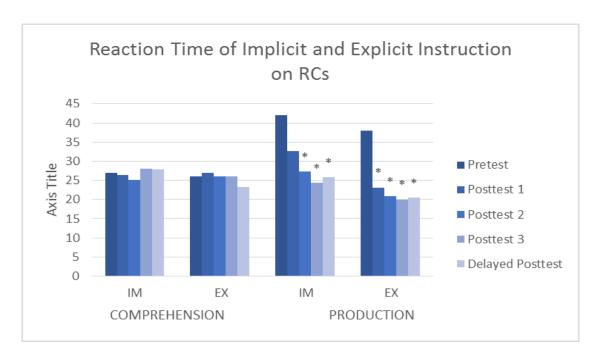


Figure 4. Reaction time (RT) of implicit and explicit instruction on RCs

("*" means significantly different from the pretest.)

In order to compare the effect of different instructional approaches on the form-based language feature RCs after each training session, 10 one-way between-subjects ANOVAs were conducted for each task of each test. Group differences showed in RC production posttest 2, posttest 3 and delayed posttest. The explicit group's RTs were significantly shorter than those of implicit group in RC production posttest 2 (F (1, 29) = 7.900, p = .009, partial η^2 = .214), posttest 3 (F (1, 30) = 4.667, p = .039, partial η^2 = .135), and delayed posttest (F (1, 30) = 5.363, p = .028, partial η^2 = .152). The results indicated that implicit training and explicit training worked equally on the response time for the meaning-based language feature *bu/mei*, while explicit training worked better than implicit teaching on speeding up the response time for form-based language feature RCs. Also, in terms of speed of learning, explicit instruction was more effective than implicit instruction for both language features.

5.3 ACCURACY AND REATION TIME DATA RELATED TO KNOWLEDGE DURABILITY AND SPEED OF LEARNING

In terms of the knowledge durability of implicit and explicit training, the results of the accuracy data indicated the same pattern for these two approaches. If there was an improvement of accuracy rate, it would last till the delayed posttest. Both instructional approaches significantly improved the accuracy of negative forms, and the improvement lasted till the delayed posttest as seen in Figure 1. Only explicit instruction significantly improved the production of RCs and the improvement lasted till the delayed posttest as seen in Figure 2. The results of reaction time data also indicated the same pattern for the two approaches. Both instructional approaches significantly reduced the reaction time for both negative forms and RCs in the production tests, whereas the improvement of reaction time lasted till the delayed posttest only for RCs' production data as in Figure 4, but not for negative forms' fill-in-the-blank data as seen in Figure 3.

In terms of speed of learning, the data showed that explicit instruction manifested advantages over implicit instruction. Although the accuracy data showed the same improvement/learning speed for both instructional approaches if there was improvement with both approaches (both instructional approaches improved the accuracies of negative forms in the first posttest, which is after the first traing session as seen in Figure 1), explicit instruction manifested advantages over implicit instruction in terms of reaction time. First, as shown in Figure 4, explicit instruction shortened the reaction time of RC's production task after the first training session, while implicit instruction shortened the reaction time of RC's production task after the second training session; in addition, the reaction times of explicit teaching in the

second, third and delayed posttests were significantly shorter than those of implicit training. Second, as seen in Figure 3, explicit instruction shortened the reaction time of negative forms in posttest 2 after the second training sessions, while implicit instruction did it in posttest 3 after the third training session.

5.4 ACCURACY AND REACTION TIME ANALYSIS FOR RCS IN TERMS OF NPAH

In this section, data analysis was conducted to investigate two questions: one is to investigate which factor(s), syntactic relation or semantic cues or both, determine the acquisition difficulty of Chinese RCs; the other is to investigate the training effect on different types of RCs.

Based on the previous research, the acquisition hierarchy of RCs can be possibly determined by two main factors: word order such as subject/object RCs and animacy cues. RCs were designed in four types (subject irreversible RCs; subject reversible RCs; object irreversible RCs; object reversible RCs). In order to find the answer for the research question—which factor(s) determine Chinese RC acquisition—RC sentences in five tests were divided into these four types as in the design. The following independent variables are included in the present study: (a) grammatical relations, with two levels—subject RCs and object RCs—a within-subject factor; (b) animacy cues, with two levels—irreversible RCs and reversible RCs—a within-subject factor; (c) tasks, with two levels—comprehension and production—a within-subject factor. Dependent variable is the accuracy and reaction time.

In order to answer the first question of this section—which factor(s), syntactic relation or semantic cues or both, determine the acquisition difficulty of Chinese RCs—the average accuracies and reaction times for different types of RCs across 5 tests were calculated. The accuracies and their standard deviations (SD) for each type of RCs are shown in Table 10.

 $\label{thm:continuous} \textbf{Table 10. Descriptive statistics of average accuracies and standard deviation (SD) for each type of \\ \textbf{RCs}$

RC types	Accuracy	
Subject irreversible RCs	.869 (.220)	Comprehension: .863 (.233)
		Production: .879 (.230)
Subject reversible RCs	.775 (.259)	Comprehension: .731 (.308)
		Production: .836 (.273)
Object irreversible RCs	.852 (.172)	Comprehension: .932 (.116)
		Production: .751 (.323)
Object reversible RCs	.754 (.252)	Comprehension:.682 (.287)
		Production: .838 (.292)

N = 34

The descriptive statistics showed that the accuracies of irreversible RCs were generally higher than those of reversible RCs: .869 vs. .775 for subject RCs and .853 vs. .754 for object RCs; whereas the accuracies of subject RCs were similar to those of object RCs: .869 vs. .852 for irreversible RCs and .775 vs. .754 for reversible RCs. Further analysis by dividing the scores of comprehension and production tests indicated that animacy effect interacts with

comprehension/production. For irreversible RCs, the accuracies of comprehension tests were similar to or higher than those of production tests, .863 vs. .879 for subject irreversible RCs and .932 vs. .751 for object irreversible RCs; whereas reversible RCs suggested the opposite situation: the accuracies of comprehension tests were lower than those of production tests, .731 vs. .836 for subject reversible RCs and .682 vs. .838 for object reversible RCs. This indicates that reversible condition interrupted comprehension tests more than production tests and made comprehension but not production of RCs even harder.

Three-way within-subject ANOVA (subject vs. object; irreversible vs. reversible; comprehension vs. production) was conducted to investigate the differences in accuracy among the four different types of RCs. The main effect of the dependent variable of accuracy showed that there was no significant difference between the accuracies of subject and object RCs, F (1, 33) = 2.954, p = .095; However, the accuracies of irreversible RCs were significantly higher than those of reversible RCs, F (1, 33) = 38.635, p < .001, partial η^2 = .539. In addition, the results showed a significant interaction between grammatical relations (subject RCs vs. object RCs) and tasks (comprehension vs. production), F (1, 33) = 7.126, p = .012, partial η^2 = .178. Bonferroni adjusted post-hoc pairwise comparisons showed that in comprehension test, the accuracies of subject RCs (M = .797, SD = .257) were not significantly different from those of object RCs (M = .807, SD = .187), p = .700, whereas in production tests, the accuracies of subject RCs (M = .858, SD = .274) were significantly higher than those of object RCs (M = .795, SD = .297). This indicated that grammatical relations only affected production rather than comprehension tests in this study. The interaction of subject/object RCs with tasks is summarized in Figure 5.

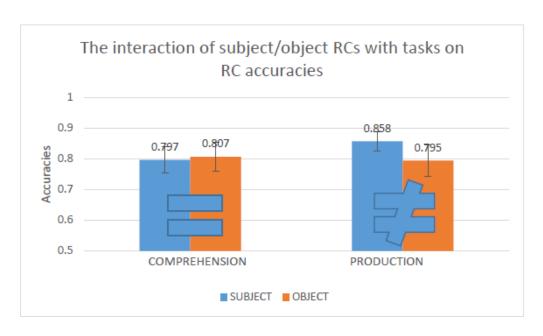


Figure 5. The interation of subject/object RCs with tasks on RC accuracies

The results also showed a significant interaction between animacy (irreversible vs. reversible) and tasks (comprehension vs. production), F (1, 33) = 30.872, p < .001, partial η^2 = .483. Post-hoc pairwise comparisons were performed using Bonferroni adjustment. In comprehension tests, the accuracies of reversible RCs (M = .707, SD = .280) were significantly lower than those of irreversible RCs (M = .898, SD = .163), p < .001; whereas in production tests, the accuracies of reversible RCs (M = .837, SD = .274) were not significantly different from those of irreversible RCs (M = .816, SD = .297). This indicated that animacy effect only affected comprehension rather than production in this study. The interaction of irreversible/reversible RCs with tasks is summarized in Figure 6.

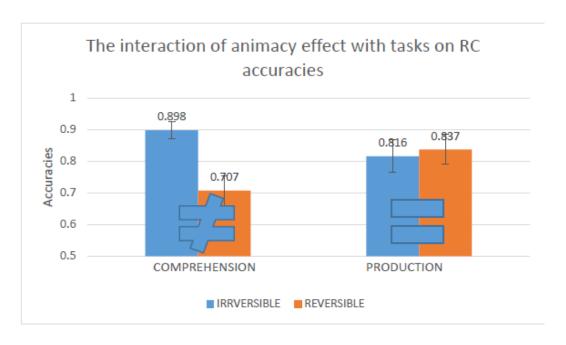


Figure 6. The interaction of irreversible/reversible RCs with tasks on RC accuracies

In order to find the training effect of different types of RCs, accuracies were examined for five tests separately. The accuracies and their standard deviations (SD) for each type of RCs in 5 tests are shown in Table 11.

Table 11. Descriptive statistics of average accuracies and standard deviation (SD) for each type of RCs in 5 tests

			Pretest	Post	Post	Post	Delayed
				test 1	test 2	test 3	posttest
Subject	Irreversible	Comprehension	.796	.823	.919	.903	.855
RCs		N = 31	(.351)	(.330)	(.187)	(.239)	(.321)
		Production	.825	.900	.950	.950	.925
		N = 20	(.373)	(.308)	(.224)	(.224)	(.245)
	Reversible	Comprehension	.833	.633	.850	.817	.600
		N = 30	(.379)	(.454)	(.325)	(.359)	(.423)
		Production	.775	.850	.800	.900	.900
		N = 20	(.380)	(.328)	(.377)	(.308)	(.262)
Object	Irreversible	Comprehension	1.000	.968	.887	.887	.968
RCs		N = 31	(.000)	(.125)	(.249)	(.249)	(.125)
		Production	.475	.825	.875	.775	.850
		N = 20	(.472)	(.335)	(.319)	(.343)	(.328)
	Reversible	Comprehension	.742	.581	.726	.774	.710
		N = 31	(.362)	(.389)	(.405)	(.311)	(.360)
		Production	.611	.889	.889	.944	.916
		N = 18	(.439)	(.323)	(.274)	(.236)	(.257)

The descriptive statistics showed that the accuracies of production tests generally increase after each training as indicated in the analysis of accuracies of RCs. However, the

comprehension tests showed an unpredictable trend along the training. In addition, the accuracy of the comprehension of object irreversible RCs reached 100% correct before training, which suggested that the comprehension of the object irreversible RCs might be the easiest type for learners. This supported a previous argument (Diessel, 2007; Yip & Matthew, 2007; Chen & Shirai, 2014): because object RCs have the same SVO order as canonical simple sentences except for inserting the relative marker *de* between verbs and head nouns, it is the easiest type for learners.

Eight one-way ANOVAs were conducted to investigate the training effect of different types of RCs under different conditions. The within-subject independent variable was a test with five levels. The results showed that there were significant training effect for the production of both object irreversible and object reversible production tests, F (4, 76) = 6.710, p < .001, partial $\eta^2 = .483$ and F (4, 68) = 5.380, P = .001, partial $\eta^2 = .483$, respectively. Surprisingly, post-hoc pairwise comparison adjusted by Bonferroni did not show any significant difference between any pairs. Paired t-test showed that the accuracy of irreversible object RCs in the production pretest (M = .475, SD = .472) was significantly lower than those of posttest 1 (M = .825, SD = .335, p =.006), posttest 2 (M = .875, SD = .319, p = .008), posttest 3 (M = .775, SD = .343, p = .024) and delayed posttest (M = .850, SD = .328, p = .003); the accuracy of reversible object RCs in the production pretest (M = .611, SD = .439) was significantly lower than those of posttest 1 (M = .611, SD = .439).889, SD = .323, p = .037), posttest 2 (M = .889, SD = .274, p = .026), posttest 3 (M = .944, SD =.236, p = .019) and delayed posttest (M = .916, SD = .257, p = .023). No other training effects were found for other types of RCs by one-way ANOVA. The results of the training effect on the accuracies of four types of RCs in five tests are summarized in Figure 7.

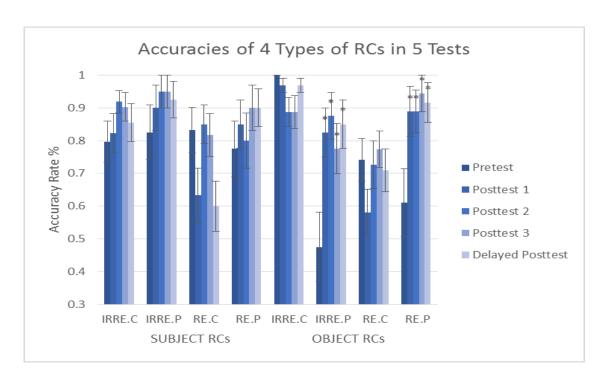


Figure 7. Accuracies of 4 types of RCs in 5 tests

("*" represents significant difference from its pretest)

In order to compare the accuracies of different types of RCs before training, one-way within-subject ANOVAs were conducted to compare four comprehension pretests and four production pretests. The results showed that there was significant effect for comprehension pretest, F (3, 90) = 6.75, p < .001, partial η^2 = .183. Bonferroni adjusted post-hoc showed that the comprehension accuracy of object irreversible RCs in the pretest (M = 1.000, SD = .000) was significantly higher than that of subject irreversible RCs (M = .796, SD = .351) and that of object reversible RCs (M = .742, SD = .362). The production results for different types of RCs in the pretest were also significantly different, F (3, 57) = 5.833, p = .002, partial η^2 = .235. Bonferroni adjusted post-hoc showed that the production accuracy of object irreversible RCs in the pretest (M = .475, SD = .472) was significantly lower than that of subject irreversible RCs (M = .825,

SD = .373) and that of subject reversible RCs (M = .775, SD = .380). This suggested that the comprehension, but not the production, of object irreversible RCs is the easiest type for learners.

Likewise, in order to test which factor affects the reaction times (RT) of RCs, the RT of each type of RCs was analyzed. The RTs and their standard deviations (SD) for each type of RC are shown in Table 12.

 $\label{eq:total_continuous_cont$

RC types	RT (second)	
Subject irreversible RCs	24.0 (6.23)	Comprehension: 24.6 (6.65)
		Production: 22.0 (6.0)
Subject reversible RCs	29.6 (7.86)	Comprehension: 27.1 (10.6)
		Production: 29.9 (10.2)
Object irreversible RCs	24.9 (6.13)	Comprehension: 24.62 (6.72)
		Production: 25.0 (9.6)
Object reversible RCs	27.2 (7.63)	Comprehension:28.5 (8.2)
		Production: 26.1 (9.6)

N = 30.

The descriptive statistics showed that the RTs of irreversible RCs were generally shorter than those of reversible RCs: 24.0 vs. 29.6 for subject RCs and 24.9 vs. 27.2 for object RCs, and that the RTs of subject irreversible RCs were similar to those of object irreversible RCs: 24.6 vs. 24.9. Further analysis by dividing the scores of comprehension and production tests indicated

that the pattern of the interaction of animacy effect with comprehension/production was not clear and no consistent pattern stood out.

A three-way within-subject ANOVA (subject vs. object; irreversible vs. reversible; 5 tests) was conducted to investigate the differences of reaction times among the four different types of RCs. The results showed that there was no significant difference between the reaction times of subject and object RCs, F (1, 29) = .112, p = .741; However, the reaction times of irreversible RCs are significantly shorter than those of reversible RCs, F (1, 29) = .112, p < .001, partial η^2 = .653. No interaction effects were found between task and irreversible/reversible RCs and between task and subject/object RCs.

In order to find the training effect of different types of RCs, accuracies were examined for five tests separately. The reaction times and their standard deviation (SD) for each type of RCs in five tests are shown in Table 13.

 $Table~13.~Descriptive~statistics~of~average~reaction~times~(RT)~and~standard~deviation~(SD)~for~each \\ type~of~RCs~in~5~tests$

			Pretest	Posttest	Posttest	Posttest	Delayed
				1	2	3	posttest
Subject	Irreversible	Comprehension	28.3	28.1	21.4	22.6	22.7
RCs		N = 27	(10.1)	(8.0)	(7.0)	(10.1)	(7.8)
		Production	36.4	24.6	21.6	21.1	19.5
		N = 19	(13.6)	(9.5)	(5.7)	(6.9)	(5.0)
	Reversible	Comprehension	29.1	29.3	22.9	22.8	32.2
		N = 16	(10.7)	(8.5)	(6.0)	(6.5)	(14.7)
		Production	43.1	27.6	32.9	23.0	25.4
		N = 18	(16.6)	(13.5)	(11.6)	(5.46)	(7.87)
Object	Irreversible	Comprehension	19.3	21.4	24.8	27.6	23.1
RCs		N = 28	(5.3)	(6.4)	(10.2)	(10.7)	(5.8)
		Production	31.9	31.7	18.9	20.6	22.8
		N = 13	(7.1)	(8.4)	(4.9)	(6.0)	(5.0)
	Reversible	Comprehension	34.8	30.2	25.8	27.9	22.6
		N = 21	(14.0)	(11.4)	(11.2)	(11.4)	(8.0)
		Production	49.2	31.6	25.8	24.2	25.7
		N = 14	(31.5)	(18.7)	(9.5)	(9.3)	(5.7)

Eight one-way within-subject ANOVAs were conducted to investigate the training effect of different types of RCs under different conditions. The within-subject independent variable was a test with five levels. The results showed that there was significant training effect for all conditions and all types of RCs except for the comprehension of object irreversible RCs. Posthoc pairwise comparisons were performed using Bonferroni adjustment. For the comprehension of subject irreversible RCs, the reaction time of pretest (M = 28.3, SD = 10.1) was significantly slower than posttests 2 and 3 and delayed posttest (posttest 2: M = 21.4, SD = 7.0; posttest 3: M = 22.6, SD = 10.1; delayed posttest: M = 22.7, SD = 7.8), F (4, 104) = 8.534, p < .001, partial η^2 = .234. For the production of subject irreversible RCs, the reaction time of pretest (M = 36.4, SD = 13.6) was significantly slower than other tests (posttest 1: M = 24.6, SD = 9.5; posttest 2: M = 21.6, SD = 5.7; posttest 3: M = 21.1, SD = 6.9; delayed posttest: M = 19.5, SD = 5.0), F (4, 72) = 20.685, p < .001, partial η^2 = .535. For the comprehension of subject reversible RCs, the reaction time of pretest (M = 29.1, SD = 10.7) was significantly slower than other posttests 2 and 3 (posttest 2: M = 22.9, SD = 6.0; posttest 3: M = 22.8, SD = 6.5), F(4, 60) = 4.934, p = .002, partial η^2 = .248. For the production of subject reversible RCs, the reaction time of pretest (M = 43.1, SD = 16.6) was significantly slower than posttest 3 and delayed posttest (posttest 3: M =23.0, SD = 5.46; delayed posttest: M = 25.4, SD = 7.87), F (4, 68) = 9.641, p < .001, partial η^2 = .362. For the production of object irreversible RCs, the reaction time of pretest (M = 31.9, SD =7.1) was significantly slower than posttest 2 and 3; and delayed posttest (posttest 2: M = 18.9, SD = 4.9; posttest 3: M = 20.6, SD = 6.0; delayed posttest: M = 22.8, SD = 5.0), F(4, 48) = 4.915.927, p < .001, partial η^2 = .510. For the comprehension of object reversible RCs, the reaction time of pretest (M = 34.8, SD = 14.0) was significantly slower than posttest 2 and delayed posttest (posttest 2: M = 25.8, SD = 11.2; delayed posttest: M = 22.6, SD = 8.0), F (4, 80) =

7.654, p < .001, partial η^2 = .277. For the production of object reversible RCs, the reaction time of pretest (M = 49.2, SD = 31.5) was significantly slower than posttest 2 and 3; and delayed posttest (posttest 2: M = 25.8, SD = 9.5; posttest 3: M = 24.2, SD = 9.3; delayed posttest: M = 24.225.7, SD = 5.7), F (4, 52) = 7.807, p < .001, partial η^2 = .375. However, for the comprehension of object irreversible RCs, the reaction time of pretest (M = 19.3, SD = 5.3) was surprisingly and significantly faster than posttest 3 (M = 27.6, SD = 10.7). In order to compare the comprehension and production tests for different types of RCs before training, one-way within-subject ANOVAs were conducted to compare the four different types of RCs in the comprehension and production pretests. Results showed that the RTs of the four types of RCs in the comprehension pretest were significantly different, F (3, 63) = 17.384, p < .001, partial $\eta^2 = .453$. Bonferroni adjusted posthoc results indicated that the comprehension RT of object irreversible RCs was significantly shorter than other types of RCs. RTs of the four types of RCs in the production pretest were not significantly different, F(3, 30) = 3.055, p = .060. As accuracy data, the RT data also suggested that the comprehension, but not the production of object irreversible RCs is the easiest condition for learners. The results of the training effect on the reaction times of four types of RCs in five tests are summarized in Figure 8.

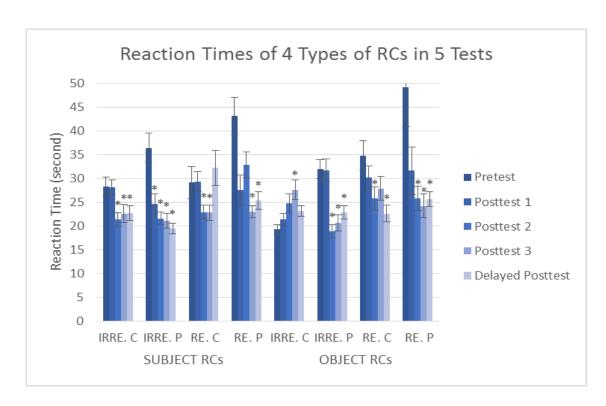


Figure 8. Reaction times (RT) of 4 types of RCs in 5 tests

("*" represents significant difference from its pretest)

In sum, the data indicated that the semantic cue of irreversible/reversible factor rather than syntactic relation determined the acquisition difficulty of Chinese RCs and the irreversible/reversible factor only affected the comprehension, but not production, of RCs. Learners made significant progress only in the production test, but not in the comprehension test of RCs along the training in terms of accuracy data and the comprehension of irreversible object RCs is the easiest type for learners in terms of both the accuracy and RT data.

5.5 DISCUSSION

Overall, the data in this study suggest that: (1) although both implicit and explicit teaching worked effectively for the acquisition of meaning-based language feature *bu/mei*, implicit training worked better for it; (2) Only explicit training worked effectively for the form-based language feature RCs and only on the production task; (3) Syntactic cues, such as grammatical relations, affect the production, but not comprehension, of Chinese RCs, whereas semantic cues, such as animacy, affect the comprehension, but not production, of Chinese RCs, which partially supports the prediction of the Noun Phrase Accessibility Hierarchy (NPAH).

The discussion of the results is organized according to the previously mentioned research questions, followed by the discussion of theoretical and pedagogical implication, the limitations of this study, and further research in the future.

5.5.1 Disscusion of research questions

In terms of the first research question—which kind of instructional approaches will produce higher accuracy and whether the accuracy effect varies based on the language features—the results indicated that the effect of instructional approaches varied depending on language features. Although both implicit and explicit instructional approaches improved the meaning-based language feature *bu/mei* significantly even after the first training session (see Figure 1 in section 5.1.2.1), the implicit instructional approach was significantly more effective than explicit approach after the third training session. In terms of form-based language feature RCs, only explicit instruction works effectively on it and implicit training does not improve the accuracy at

all (see Figure 2 in section 51.2.2). Therefore, this study suggested that implicit instructional approach works better for meaning-based language features and explicit instructional approach works much better for form-based language features. The results were consistent with the claim that the teaching effect varies on language features in some of the previous research (Krashen 1982; Dekeyser, 2005) and provide the evidence from another aspect—form-based vs. meaningbased language features. Furthermore, the results are consistent with de Graaf (1997), who also found that explicit instruction is more effective than implicit instruction only for form-based complexity (i.e., syntactic complexity, such as position of the object), but not for the meaningbased complexity (i.e., inflection of the imperative mode is determined by formal/informal and affirmative/negative). In addition, the results were also consistent with the current mainstream results that explicit training works better than implicit training (Spada & Tomita, 2010). The present study showed that explicit training can work effectively for both kinds of language features and improved the acquisition of negative forms and RCs significantly after the training, while implicit teaching only worked effectively, which was more effective than explicit teaching, for meaning-based language features (i.e., negative forms in Chinese) and did not improve the accuracy of RCs.

In terms of previous research, previous research mostly focused on form-based language features; therefore, it generally favored explicit training, which is consistent with the present study. The rationale for the present results is that learners could extract and acquire meaning-based rules from intensive input with meaningful context for meaning-based language features because meaningful context input provided rich information for meaning-based language features. However, learners could not extract form-based rules from intensive input with meaningful context for RCs because meaningful context input provided no information for form-

based language features. This result is partially consistent with the claim that complex features are too complex to be acquired implicitly (Hulstijn & de Graaff, 1994) in terms of form-based language features. There is a natural association between teaching and language features, which implies that teaching should be adjusted to and focus on the difficult aspects of language features. Based on the present study, the claims that complex rules are too complex to be acquired explicitly made by Krashen (1982, 1994), Reber (1989), and Hulstijn and de Graaff (1994) should be revised as form-based language features are too complex to be acquired implicitly and are best introduced with explicit instruction; meaning-based language features are too complex to be acquired explicitly and are best introduced implicitly.

The effect pattern of different instructional approaches on learning Chinese RCs in the present study is more consistent with Yabuki-Soh (2007) of learning Japanese RCs than Doughty (1991) of learning English RCs in that explicit instruction worked better than implicit instruction on RCs. Yabuki-Soh and the present study showed that explicit teaching benefited learning RCs more than implicit teaching for first-year language learners. However, Yabuki-Soh also showed that implicit teaching improved the learning significantly, while the present study didn't show any improvement on the accuracy of RCs with implicit teaching. One possible reason can be that in Yabuki-Soh's study, all students had a 50-minute lecture on grammatical explanation with examples of Japanese RCs before three groups received three 50-minute differential treatments. Therefore, the implicit group could achieve quite clear structural and formal features of RCs with grammatical explanation before they received meaning-focused training. This suggests that the implicit group also received explicit training in Yabuki-Soh's study; therefore, the implicit group also made significant progress on the learning of Japanese RCs. Doughty (1991) showed that generally implicit teaching worked equally with explicit teaching for the learning of English RCs

by intermediate learners, while implicit teaching worked better than explicit teaching on the comprehension task. If we look into Doughty's implicit teaching, we can find that learners' attention was also directed to the forms by highlighting and captilizing head nouns and relative clauses. According to the definition of DeKeyser (1995), which is adopted in the present study, Doughty's implicit teaching includes the component of explicit teaching. This could be a reason that Doughty's study favored implicit teaching on RCs and was different from Yabuki-Soh (2007) and the present study. Another possibility could be that the learners' proficiency in Yabuki-Soh and the present study were at the same stage: both were at the end of a first-year university course; while the proficiency of learners in Doughty's study was intermediate, and participants had learned English for many years. The effect of different instructional approaches may vary depending on learners' proficiency as suggested by Ammar and Spada (2006).

In terms of the second research question—which kind of instructional approaches will produce higher fluency (i.e., shorter RT) and whether the fluency effect varies based on the language features—the results indicated that explicit training might produce higher fluency than implicit training in terms of form-based but not of meaning-based language features, and the fluency effect varied depending on the language features. More specifically, explicit training worked better than implicit teaching on speeding up the production of form-based language feature RCs (see Figure 4 in 5.2.2.2). The reaction times of explicit training in posttest 2, posttest 3, and the delayed posttest were significantly shorter than those of implicit training. However, implicit training and explicit training worked equally well on speeding up the fill-in-the-blank of the meaning-based language feature *bu/mei* (see Figure 3 in section 5.2.2.1). Although implicit teaching shortened the reaction time on negative forms after the third training session and explicit teaching after the second training session, the reaction times of explicit training are not

significantly different from those of implicit training. Neither instructional approach speeded up the comprehension on either language feature. As I introduced in the section on research questions, fluency is an essential characteristic of implicit knowledge, and rule-based explicit teaching may only contribute to explicit knowledge (Krashen, 1982, 1994). Therefore, implicit teaching should be more closely associated with implicit knowledge than explicit teaching and should produce more fluent results. Our results do not support this claim and showed that explicit teaching brought more fluent effects in terms of the production of RCs. However, we cannot deny that the results in the present study could be biased due to the short training duration; implicit teaching needs longer time to show the flency effect than explicit training.

In terms of the third research question—which instructional approach will produce longer durability of knowledge and whether the durability effect varies based on language features—the results of delayed posttest did not show any difference between these two training approaches: if there was an improvement of accuracy rate, it can last till the delayed posttest (e.g., the implicit and explicit instruction on negative forms and RCs, see Figures 1 and 2 in section 5.1.2); the improvement of reaction time lasted till the delayed posttest only for RCs' production data, but not for negative forms' fill-in-the-blank test data with both instructions (see Figures 3 and 4 in section 5.2.2). The results were not consistent with previous research. The delayed posttests of the studies used in the meta-analysis of Spada and Tomita (2010) ranged from 1 week to 16 weeks and showed that explicit teaching had a bigger effect size than implicit teaching. However, the 5-week interval in Muranoi (2000) showed that implicit teaching produced longer durability of knowledge. Many factors can contribute to the different results, such as training methods at different levels of implicit/explicitness, measurement biased toward implicitness or explicitness, language features at different complexity levels. However, one obvious difference

between studies in Spada and Tomita (2010) and Muranoi (2000) is that most studies in Spada and Tomita (2010) focused on form-based language features and Muranoi (2000) focused on meaning-based complex language feature—English articles. The possible reason for the different results between the current study and previous research could be that the delayed posttest was two weeks after the last training, which was generally shorter than previous research and was not long enough to distinguish the durability of two approaches. The training duration was also possibly not long enough to distinguish the durability of two approaches. Certainly, more research studies are needed to get a firm conclusion regarding the delayed effect.

In terms of the fourth research question—whether the effect of implicit teaching takes longer to show up than that of explicit teaching—the accuracy data show that if there is a training effect, the effect shows as early as after the first training session for both instructional approaches. Both implicit and explicit instruction improved the accuracy of negative forms significantly after the first training session. In terms of the response time data, the results show that explicit training was faster to shorten the response time than implicit training for both formbased and meaning-based language features. Explicit training shortened the reaction time on RC production after the first training session, while implicit did after the second training session (see Figure 4 in section 5.2.2.2). Moreover, explicit teaching shortened the reaction time on negative forms after the second training session, while implicit teaching did it after the third training session (see Figure 3 in section 5.2.2.1). As we discussed before, implicit learning means that learners need to encounter and notice a huge number of instances in order to acquire the grammar, therefore implicit learning is "laboriously slow" (Ellis, 1993). This suggests that implicit teaching might take longer to show effects than explicit teaching. The results of the present study partially support this point. Implicit teaching improved the accuracy as quickly as

explicit teaching for meaning-based language features, and explicit teaching only showed more benefits on form-based language features such as RCs. This indicated that whether the effect of implicit teaching is manifested sooner or later depended on the language features to be taught.

In terms of the fifth research question, whether the second language acquisition of Chinese subject and object RCs supports the NPAH hypothesis, the results showed that the syntactic relations distinguished the acquisition difficulty in the production tests, but not in the comprehension tests of RCs. The accuracy of subject RCs is higher than that of object RCs only in the production tests, which partially support the prediction of NPAH hypothesis. This result was consistent with Izumi (2003) and Yabuki-Soh (2007). In their studies, only the production data, but not the comhension data, supported the NPAH hypothesis. Izumi (2007) argued that the task-related result is due to the processing difference between comprehension and production: there might be an extra burden on working memory in production task, and learners need to attend not only to the grammatical encoding of elements, but also to transforming the grammatical encoding to articulatable surface form. This result also confirmed the statement in Shirai and Ozeki (2007): "production studies tend to be more consistent with the NPAH" (p. 167). The results in the current study likewise showed that the semantic cues distinguished the acquisition difficulty of Chinese RCs in the comprehension tests, but not in the production tests. The RC sentences with reversible subject and object were more difficult to comprehend than the sentences with irreversible subject and object. However, the production of RCs was not affected by animacy cues. This result was consistent with Kanno (2007), which showed semantic cues affect the comprehension of relatives more than syntactic cues (subject vs. object relatives) for second language learners of Japanese with various L1 background. This asymmetry of comprehension and production can be explained by the claim of Kanno (2007): with the

facilitation of animacy clues in the irreversible condition, learners can easily comprehend the sentences without involving syntax (Kanno, 2007). However, for the production task, syntactic analysis is always involved in both irreversible and reversible conditions in order to produce the correct surface forms.

In terms of the development of RC accuracies, only the production of object RCs had significant improvement with the training; in terms of the development of RC RTs, the RTs had become shorter for the comprehension and production of all types of RCs except for the comprehension of object irreversible RCs. Since participants already reached the fastest speed before the training on object irreversible RCs, there is no room for the improvement compared to other types of RCs. The accuracy and RT of comprehension data in the pretests indicate that the comprehension of object irreversible RCs is the easiest condition for learners among all conditions. Object RC was argued to be the easiest type by previous researchers (Diessel, 2007; Yip & Matthew, 2007; Chen & Shirai, 2014), because it has the same SVO order as canonical sentences except for inserting the relative marker de between verbs and head nouns. In addition, as Kanno (2007) suggested above: with the facilitation of animacy clues in the irreversible condition, learners can easily comprehend the sentences without involving syntax. Our comprehension data of object irreversible RCs support the previous argument: the accuracy reached 100% in the pretest and the reaction time was the shortest compared to other conditions in the pretest and compared to its other tests.

In addition, the results of the present study also raised interesting points in terms of skill transfer. For the form-based language feature, explicit training (rule-based training) only improved in the production task and not in the comprehension task (see Figure 2 in section 5.1.2.2). This can be explained by the fact that explicit training, instead of engaging in the

meaning of the structure, focused on the structural and functional complexity of the grammatical features and relativization; consequently, the training only helped the production but not comprehension of RCs. Participants only made progress on the type of skill that was the focus of the instructional treatments. Furthermore, as we mentioned above, the asymmetry of comprehension and production skill is also presented in the results that semantic cues (reversible/irreversible) only affect the comprehension tests and not the production tests. The results lend support to Dekeyser (1997) and Dekeyser and Sokalski (1996), which showed that practice is skill-specific and comprehension and production skills in L2 learning, to some extent, are learned separately: learners who received comprehension practice performed better in the comprehension test and learners who received production practice performed better in the production test. In addition, the present study also showed that the effect of skill transfer between comprehension and production depends on language features. Regarding the meaning-based language feature negative forms bu/mei, either rule- or meaning-based training can improve both comprehension and fill-in-the-blank skills, (i.e., skill seems to be transferred between fill-in-theblank and comprehension tasks). It can also because in the current study, the production of negative forms tested by typing bu/mei according to the dialogues is less production-featured test.

5.5.2 Limitation and further research

Firstly, because this experimental design was based on a specific first-year textbook, the participant pool is limited to learners who were using that textbook and were in the first-year class. The small sample size of the present study may result in a lack of statistical significance.

Second, due to the limited training duration, the training effect on the reaction time did not emerge clearly. Third, the training and tests were monotonous and were limited to simple format due to practical constraints, such as human resources and the testing instrument, and the various forms of training and testing would be more convincing for the results. Fourth, this experiment was conducted at the end of March and at the end of a first-year university course, which was 20 days before the final week and before a long summer break. Due to the time limit, the delayed post test was only two weeks delayed, which may not be long enough to allow the retention difference between implicit and explicit training to show. In the future, the various effects of instructional approaches on meaning-based versus form-based language features need to be further explored with other form- and meaning-based language features. The generalization of this claim needs to be confirmed with more studies. Another issue to be investigated is the separate and combined effects of different instructional techniques that may be used in classroom teaching. Classroom teaching often employs a combination of different instructional types. How to combine different instructional approaches and how to determine the point in the continuum of explicitness based on various language features has been left to further research.

Another issue that should be investigated is that of modality: will the results be same if the modality changes from the written mode to the oral/aural mode, since in natural and classroom settings, oral/aural language use plays important roles. Previous research (e.g. Sanz, 1997) indicated that there are different effects of modality and amount of production on L2 acquisition.

Needless to say, the claim of the present study needs to be based on well-motivated theoretical consideration and waits for further controlled empirical research before it can be fully validated and substantiated.

5.5.3 Implications for L2 pedagogy and future study

The result that the effect of different instructional approaches varies on form-based versus meaning-based language features may suggest that primarily implicit teaching should be adopted for meaning-based language features and primarily explicit teaching should be adopted for form-based language features. The degree to which instructional approaches or combinations of different approaches will be successful is a matter that needs to be monitored carefully in the course of their implementation. No doubt, the result needs to be generalized to other language features and more research needs to be done with other language structures.

5.6 CONCLUSION

Following the theoretical debate whether or not explicit teaching can truly impact learners' developing L2 grammar, previous research showed mixed results in terms of the effect of implicit/explicit teaching on simple versus complex language features. However, the present study showed that the effect of implicit/explicit teaching varies depending on form-based versus meaning-based language features instead of simple versus complex features. The major findings in this study can be summarized as follows: primarily implicit teaching is more effective than primarily explicit teaching on meaning-based language features; primarily explicit teaching is more effective than primarily implicit teaching on form-based language features. In addition, the present study does not support the prediction of noun phrase accessibility hierarchy (NPAH) and shows that animacy cues (reversible/irreversible) rather than grammatical relations

(subject/object RCs) is a crucial factor affecting the comprehension of RCs; neither animacy cues nor grammatical relations affect the production of RCs in this study.

APPENDIX A: TRAINING AND TESTING MATERIALS ARRANGED IN THE SAME

ORDER AS IN THE EXPERIMENT

TEST 1 (PRETEST):

Task 1: comprehension of bu/mei

这双鞋不贵。

二年级的学生没多。

以前她不喝可乐。

她星期日不打扫房间。

今天我不回家吃晚饭。

我没练习汉语。

她没胖(fat)。

他的房间不干净。

她没看中国电影。

以前她不在网上买衣服。

我没去上课。

今年我不搬家。

Task 2: fill-in-the-blank questions of *bu/mei*

- (A: How many second-year students are in the Chinese program? B: It is just 30 students. That is not a lot.) In Chinese we can say 二年级的学生 多.
- (A: Your mother asked you to clean your room yesterday, why didn't you do that? B: Because I had an appointment with my friends and we hung out for the whole day.) In Chinese we can say 她____打扫房间.
- (A: Did you go back for dinner? B: No. I am too busy today and I need to work overnight.) In Chinese we can say 她___回家吃晚饭.
- (A: If you don't like your apartment, why didn't you move out this term? B: I was too lazy to wrap up all of my stuff.) In Chinese we can say 这个学期她____搬家.
- (A: Your parents will come this afternoon. Will you go to airport to pick them up? B: Absolutely. I cannot go to class today.) In Chinese we can say 今天他 ___去上课.
- (A: I never buy white clothes, since it does not match my face color. B: I see. That is why I never saw you wear white clothes.) In Chinese we can say 她____买白色的衣服。

(A: Did you watch Chinese movies before you learned Chinese? B: I never watched any Chinese movies before that. I could not understand them at that time.) In Chinese we can say 以前她 看中国电影.

(Mother: Your room still looks like before. It is fairly clean, but it is not clean enough. Have you cleaned it since I asked you yesterday? Son: Mom, I did.) In Chinese we can say after cleaning, 他的房间___干净.

(A: This pair of shoes looks great. It was \$50 on Black Friday. How much is it now? B: It is still \$50 and it has not gotten more expensive.) In Chinese we can say 这双鞋 贵.

(A: why did you refuse to fly before? B: Since I thought the plane was not safe at that time.) In Chinese we can say 以前她___坐飞机。

(A: Do you want to practice Chinese with me this afternoon? B: No, I need to go to a basketball game this afternoon.) in Chinese we can say 今天下午她____练习汉语。

Task 3: comprehension of RCs

常常跳舞的那个男生是一年级学生。

我认识的朋友都喜欢糖醋鱼。

问老师问题的那个学生穿红色的衬衫。

我买的那本书很有意思。

吃苹果的那个人是我的哥哥。

妈妈做的中国菜很好吃。

请小李跳舞的那个人是日本人。

他们谢的那个服务员很有意思。

Task 4: production of RCs

教授帮助那个学生 (jiaoshou bangzhu na ge xuesheng)。那个学生很用功 (na ge xuesheng hen yonggong)。Qestion: 哪个学生很用功?

那个人看书 (nage ren kan shu)。那个人是我的同学 (na ge ren shi wo de tongxue)。 Qestion: 哪个人是我的同学?

她穿那件衣服 (ta chuan na jian yifu)。那件衣服很漂亮 (na jian yifu hen piaoliang)。 Qestion: 哪件衣服很漂亮?

那个人喜欢小高 (na ge ren xihuan xiao Gao)。那个人很漂亮 (na ge ren hen piaoliang)。Qestion: Who is pretty? (na ge ren hen piaoliang?)

我问那个人 (wo wen na ge ren)。那个人去音乐会 (na ge ren qu yinyuehui)。Qestion: 哪个人去音乐会?

那个人喜欢唱歌(na ge ren xihuan changge)。那个人是法国人(na ge ren shi faguoren)。Qestion: 哪个人是法国人?

她读那个字 (ta du nage zi)。那个字很难 (nage zi hen nan) Qestion: 哪个字很难?

那个老师认识小王 (nage laoshi renshi xiao Wang)。那个老师对历史很有兴趣 (nage laoshi dui lishi hen you xingqu。Qestion: 哪个老师对历史很有兴趣?

TRAINING 1²:

For bu/mei training

• Stative vs. Dynamic

1.

Implicit:

a. The shoes she is wearing cost only \$5, so I feel this pair of shoes is not expensive. In Chinese we can say

这双鞋不贵。 (This pair of shoes is not expensive.)

b. This pair of shoes was \$50 on Black Friday; they are still \$50 now. So this pair of shoes has not gotten more expensive. In Chinese we can say...

这双鞋没贵。 (This pair of shoes has not gotten more expensive))

Explicit:

Bu is used to negate static state vs. mei (you) is used to negate dynamic state (i.e. changing state). Static: 这双鞋不贵。(This pair of shoes is not expensive.)

Changing state: 这双鞋没贵。 (This pair of shoes has not gotten more expensive.)

2.

Implicit

a. Her health is not good, and she often gets sick and misses a lot of work. In Chinese we can say...

她身体不好。 (Her health is not good.)

b. She got pneumonia last month, and she is still coughing a lot these days. Her health has not recovered. In Chinese we can say...

她身体没好。 (Her health has not recovered.)

Explicit

Bu is used to negate static situations vs. mei (you) is used to negate dynamic situations.

Static: 她身体不好。 (Her health is not good.)

Changing state: 她身体没好。 (Her health has not recovered.)

3.

Implicit

a. She is 5'6" and 110 pounds. So she is not fat at all. In Chinese we can say......

她不胖。 (She is not fat.)

training 2 and training 3 in the appendix.

² The full and real training version is only given for training 1 in the appendix. The repeated patterns are skipped for

b. She was 150 pounds before she had a baby; and she is still 150 pounds after she had a baby. So she has not gotten fatter. In Chinese we can say......

她没胖。(She has not gotten fatter.)

Explicit

Bu is used to negate static situations vs. mei (you) is used to negate dynamic situations.

Static: 她不胖。 (She is not fat.)

Changing state: 她没胖。 (She has not gotten fatter.)

4.

Implicit

- a. There are 30 second-year students in the Chinese program. So it is not a lot. In Chinese we can say.....
- 二年级的学生不多 (There are not a lot of second-year students in the Chinese program)。
- b. Last year, second-year students in the Chinese program were 30; this year, they are still 30. So the number has not increased. In Chinese we can say...
- 二年级的学生没多 (The number of second-year students in the Chinese program has not increased)。

Explicit:

Bu is used to negate static situations vs. mei (you) is used to negate dynamic situations.

Static: 二年级的学生不多。(There are not a lot of second-year students in the Chinese program.) Changing state: 二年级的学生没多。(There are not more second-year students in the Chinese program.)

5.

Implicit:

a. His room is messy and full of dust, and there are several kinds of leftovers on the desk. In Chinese we can say...

他的房间不干净 (His room is not clean)。

b. His room is messy and dirty, and he cleaned his room this morning; however, it is still messy and dirty. In Chinese we can say...

他的房间没干净 (His room has not gotten cleaner)。

Explicit:

Bu is used to negate static situations vs. mei (you) is used to negate dynamic situations.

Static: 他的房间不干净。(His room is not clean.)

Changing state: 他的房间没干净。(His room has not gotten cleaner.)

6.

Implicit:

a. Today we had our first meeting for the students in the Chinese program. Many students showed up for the meeting. In Chinese we can say...

来开会的学生不少。(Students who came to the meeting are not a few.)

b. We generally have 7 students come every day. It is snowing and very cold outside today; however, we still have 7 students come to class. In Chinese we can say...

来上课的人没少。(Students who came to class has not gotten fewer).

Explicit:

Bu is used to negate static situations vs. mei (you) is used to negate dynamic situations.

Static: 来开会的学生不少。(Students who came to the meeting are not a few.)

Changing state: 来上课的人没少。(Students who came to class has not gotten fewer.)

7.

Implicit:

a. This Dell computer cost her \$1000 and is not cheap. In Chinese we can say...

这台电脑不便宜。(This computer is not cheap.)

b. This Dell computer was \$500 last year; it is still \$500 this year. It has not gotten cheaper. In Chinese we can say...

这台电脑没便宜。(This computer has not gotten cheaper.)

Explicit:

Bu is used to negate static situations vs. mei (you) is used to negate dynamic situations.

Static: 这台电脑不便宜。(This computer is not cheap.)

Changing state: 这台电脑没便宜。(This computer has not gotten cheaper.)

• Habitual vs. Episodic

1.

Implicit:

a. She does not like sweet drinks, so she does not drink Cola. We can say

她不喝可乐。(She does not drink Cola.)

b. She likes drinking Cola a lot. But at yesterday's party, she did not drink it because they ran out of Cola. We can say

她没喝可乐。(She didn't drink Cola.)

Explicit:

Within dynamic situations, bu is used to negate habitual situations vs. mei (you) is used to negate episodic (single event) situations.

Habit: 她不喝可乐。(She does not drink Cola.)

Single event: 她没喝可乐。(She didn't drink Cola.)

2.

Implicit:

a. He didn't watch any Chinese movies three years ago because he had not started to learn Chinese at that time and he could not understand them. In Chinese we can say...

三年以前她不看中国电影。(He did not watch Chinese movies three years ago.)

b. Yesterday his friend invited him to a Chinese movie, but he needed to prepare for today's exam and could not go to the movie. In Chinese we can say...

她没看中国电影。(He didn't go to the Chinese movie.)

Explicit:

Within dynamic situations, bu is used to negate habitual situations vs. mei (you) is used to negate episodic (single event) situations.

Habit: 三年以前她不看中国电影。(He did not watch Chinese movies three years ago.)

Single event: 她没看中国电影。(He didn't go to the Chinese movie.)

3.

Implicit:

a. Every Sunday she needs to go to her part-time job, so she usually cleans her room on other days. So we can say

她星期日不打扫房间。(She does not clean her room on Sundays.)

b. On Sunday morning, her mother asked her to clean her room by the end of the day. But she had an appointment with her friends and hung out with them for a whole day. So she did not clean her room on Sunday. In Chinese we can say...

她星期日没打扫房间。(She did not clean her room on Sunday.)

Explicit:

Within dynamic situations, bu is used to negate habitual situations vs. mei (you) is used to negate episodic (single event) situations.

Habit: 她星期日不打扫房间。(She does not clean her room on Sundays.)

Single event: 她星期日没打扫房间。(She did not clean her room on Sunday.)

4.

Implicit:

a. White does not match her face color very well, so she does not buy white clothes. In Chinese we can say...

她不买白色的衣服。(She does not buy white clothes.)

b. She went shopping to buy a shirt. She saw several colors of the shirt she likes, such as white, red, green, blue, and brown. She tried them on and found the white one is too short for her. So she did not buy the white shirt. In Chinese we can say...

她没买白色的衣服。(She did not buy white clothes.)

Explicit:

Within dynamic situations, bu is used to negate habitual situations vs. mei (you) is used to negate episodic (single event) situations.

Habit: 她不买白色的衣服。(She does not buy white clothes.)

Single event: 她没买白色的衣服。(She did not buy white clothes.)

5.

Implicit:

a. She used to think that it is not a good idea to buy clothes without trying it. Nowadays, she found that the price on-line is really a good deal. She started to buy clothes on-line. So in Chinese we can say

以前她不在网上买衣服。(Before she didn't buy clothes on-line.)

b. She and her roommate searched on-line for the whole afternoon yesterday. Her roommate bought many clothes on sale due to the seasonal transition, but she didn't find a single item he likes and didn't buy anything. In Chinese we can say

她没在网上买衣服。(She didn't buy clothes on-line.)

Explicit:

Within dynamic situations, bu is used to negate habitual situations vs. mei (you) is used to negate episodic (single event) situations.

Habit: 以前她不在网上买衣服。(Before she didn't buy clothes on-line.)

Single event: 她没在网上买衣服。(She didn't buy clothes on-line.)

6.

Implicit:

a. Her husband died from a plane crash ten years ago. Since then, she refuses to fly. In Chinese we can say...

她不坐飞机。(She does not fly.)

b. She had a conference in a city five hours away but the flights were all booked. So she drove there and did not fly. In Chinese we can say...

她没坐飞机。(She did not fly.)

Explicit:

Within dynamic situations, bu is used to negate habitual situations vs. mei (you) is used to negate episodic (single event) situations.

Habit: 她不坐飞机。(She does not fly.)

Single event: 她没坐飞机。(She did not fly.)

7.

Implicit:

a. She likes to drink milk at the breakfast instead of at the night before going to bed as many people do. In Chinese we can say

她晚上不喝牛奶 (milk)。(She does not drink milk at night.)

b. She did not have a good sleep last night, since she did not get some milk before going to bed as usual. In Chinese we can say

她晚上没喝牛奶 (milk)。(She did not drink milk at night.)

Explicit:

Within dynamic situations, bu is used to negate habitual situations vs. mei (you) is used to negate episodic (single event) situations.

Habit: 她晚上不喝牛奶 (milk)。(She does not drink milk at night.)

Single event: 她晚上没喝牛奶 (milk)。(She did not drink milk at night.)

Realized vs. Unrealized

1. Implicit:

a. Today will be a long and busy day for her. Before she leaves for work in the morning, she tells her husband and children that she will not be back for dinner tonight. In Chinese she should say...

我不回家吃晚饭。(I won't be back for dinner)

b. She needs to finish an important report for tomorrow's conference. It is 10pm and she is still in her office. She did not have time to go home for dinner with her husband and children. In Chinese we can say...

她没回家吃晚饭。(She didn't went back for dinner)

Explicit:

Within the episodic situations, bu is used to negate unrealized situations vs. mei (you) is used to negate realized situations.

Realized: 我不回家吃晚饭。(I won't go back home for dinner tonight)

Unrealized: 她没回家吃晚饭。(She didn't have dinner)

2.

Implicit:

a. Yesterday I had a bad stomach ache, so I didn't go to class. In Chinese we can say...

我没去上课。(I didn't go to class.)

b. Tomorrow I need to pick up my parents at the airport, so I won't go to class. In Chinese we can say...

我不去上课。(I won't go to class.)

Explicit:

Within the episodic situations, bu is used to negate unrealized situations vs. mei (you) is used to negate realized situations.

Realized: 我没去上课。(I didn't go to class)

Unrealized: 我不去上课。(I won't go to class)

3.

Implicit:

a. I went to a basketball game and did not practice Chinese this afternoon. In Chinese we can say...

下午我没练习汉语。(I didn't practice Chinese this afternoon.)

b. I will go to a basketball game and won't practice Chinese this afternoon. In Chinese we can say...

下午她不练习汉语。(I won't practice Chinese this afternoon.)

Explicit:

Within the episodic situations, bu is used to negate unrealized situations vs. mei (you) is used to negate realized situations.

Realized: 下午我没练习汉语。(I didn't practice Chinese this afternoon.)

Unrealized: 下午她不练习汉语。(I won't practice Chinese this afternoon.)

4.

Implicit:

a. This apartment is clean and quiet, and I like it very much, so I won't move next term. In Chinese we can say...

下个学期我不搬家。(I won't move next term.)

b. I was too lazy to wrap up all of my stuff and move them to another place, so I didn't change apartments this term. In Chinese we can say...

这个学期我没搬家。(I didn't move this term.)

Explicit:

Within the episodic situations, bu is used to negate unrealized situations vs. mei (you) is used to negate realized situations.

Realized: 下个学期我不搬家。(I won't move next term.)

Unrealized: 这个学期我没搬家。(I didn't move this term.)

• Fillers:

1.

Implicit:

Little Wang is a first-year college student; little Li came to the same college two years earlier than little Wang. So we can say 小李___三年级的学生。

- a. 不
- b. 没
- c. 是

Explicit:

小李 三年级的学生。

- a. 不
- b. 没
- c. 是

2.

Implicit:

John's father is from France; his mother is from Italy; he was born in United States. So we can say 他的爸爸 ____法国人。

a. 不

h	没
υ.	12

c. 是

Explicit:

他的爸爸 ____法国人。(His father is from France)

- a. 不
- b. 没
- c. 是

3.

Implicit:

Debra and Becky are sisters and Debra is two years older than Becky. So we can say Debra___Becky 的姐姐。

- a. 不
- b. 没
- c. 是

Explicit:

Debra___Becky 的姐姐。(Debra is Becky's older sister.)

- a. 不
- b. 没
- c. 是

4.

Implicit:

I like blue and today I am wearing a blue shirt to school. So we can say 我的衣服___蓝色的。

- a. 不
- b. 没
- c. 是

Explicit:

我的衣服___蓝色的。(My shirt is blue.)

- a. 不
- b. 没
- c. 是

5.

Implicit:

She knows a lot about medical care since her father is a doctor. When her roommate gets sick, she often chats with her about possible solutions. So in Chinese we can say 她的爸爸_____医生。

- a. 不
- b. 没

c. 是

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她的爸爸___医生。(His father is a doctor.)

- a. 不
- b. 没
- c. 是

6.

Implicit:

My best friend has the same birthday as me, so we often celebrate together. She was born on Feb. 5. So in Chinese we can say 我的生日____二月五日。

- a. 不
- b. 没
- c. 是

Explicit:

我的生日____二月五日。(My birthday is Feb. 5.)

- a. 不
- b. 没
- c. 是

7.

Implicit:

She likes Chinese culture a lot. When she was very young, she travelled with her family to China. They visited many tourist sites and made a lot of Chinese friends there. When she grew up, she chose Chinese as her major. So in Chinese we can say 她的专业____中文。

- a. 不
- b. 没
- c. 是

Explicit:

她的专业____中文。(Her major is Chinese.)

- a. 不
- b. 没
- c. 是

8.

Implicit:

I have known little Li since I was little. We grew up together and eventually chose the same university. So in Chinese we can say 小李_____我的大学同学。

a. 不

- b. 没
- c. 是

小李___我的大学同学。(Little Li is my college classmate.)

- a. 不
- b. 没
- c. 是

9.

Implicit:

Everyday students are busy preparing for exams and doing their homework. Often, they will work in the school Library which is over there. So in Chinese we can say 那边___学校的图书馆。

- a. 不
- b. 没
- c. 是

Explicit:

那边___学校的图书馆。(School library is over there.)

- a. 不
- b. 没
- c. 是

10.

Implicit:

I have a mid-term on Friday that I'm not prepared for. Because the test is tomorrow I need to spend all day today preparing for my exam. So in Chinese we can say 今天___星期四。

- a. 不
- b. 没
- c. 是

Explicit:

今天___星期四。(Today is Thursday.)

- a. 不
- b. 没
- c. 是

11.

Implicit:

Everyone is having a good time at a family party. All the food is very delicious and it was all

cooked by my mother. Someone asked who cooked the food I told her that it was my mother. So in Chinese we can say 那个人____我的妈妈。

- a. 不
- b. 没
- c. 是

Explicit:

那个人____我的妈妈。(That person is my mom.)

- a. 不
- b. 没
- c. 是

12.

Implicit:

I forgot my pen on the top of a table at work. The next day I arrived and my coworker asked whose pen is it. I realized the pen on the table is mine. So in Chinese we can say 桌子上的笔_____我的。

- a. 不
- b. 没
- c. 是

Explicit:

桌子上的笔____我的。(The pen on the table is mine.)

- a. 不
- b. 没
- c. 是

For RC training

• Reversible Subject RCs

1.

Implicit

When my father gave a speech at a college last year, many Chinese students asked him questions and they wore the red T-shirts. In Chinese we can say...

问我爸爸问题的中国学生穿红色的衬衫。(The Chinese students who asked my father questions wore red T-shirts.)

Three choices in the implicit practice session for this RC sentence:

a. 问我爸爸问题的中国学生穿红色的衬衫。

- b. 问中国学生问题的我爸爸穿红色的衬衫。
- c. 中国学生问我爸爸问题穿红色的衬衫。

Making relative clauses based on simple sentences:

- a. 中国学生问我爸爸问题。
- b中国学生穿红色的衬衫。

First, find the shared component of these two simple sentences: 中国学生

Second, delete the shared component from sentence (a), you get "问我爸爸问题"; add "的"after" 问我爸爸问题", you get "问我爸爸问题的"

Third, use the part you get from the second step "问我爸爸问题的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get the relative clause "问我爸爸问题的中国学生穿红色的衬衫。(The Chinese students who asked my father wore the red T-shirts)"

Explicit practice session for this RC sentence:

(a. 中国学生问我爸爸问题。b. 中国学生穿红色的衬衫。) The shared component of these two sentences is:

- a. 我爸爸
- b. 中国学生
- c. 红色的衬衫

(a. 中国学生问我爸爸问题。b. 中国学生穿红色的衬衫。) Delete the shared component from sentence (a) and add "的", you get:

- a. 问中国学生问题的
- b. 穿红色衬衫的
- c. 问我爸爸问题的

(a. 中国学生问我爸爸问题。b. 中国学生穿红色的衬衫。) Use the part you get from the second step "问我爸爸问题的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:

- a. 问我爸爸问题的中国学生穿红色的衬衫。
- b. 问中国学生问题的我爸爸穿红色衬衫。
- c. 中国学生问我爸爸问题穿红色的衬衫。

2.

Implicit:

The dance club held an international dance party on Charistmas eve. Little Li and her roommate dressed up and went there. They had a great time there. A Japanese guy invited little Li to dance, and A French guy invited her roommate to dance. In Chinese we can say...

请小李跳舞的那个人是日本人;请她同屋跳舞的那个人是法国人。(The person who invited Li You to dance is from Japan; the person who invited you to dance is from France)

- a. 那个人请小李跳舞的是日本人。
- b. 请小李跳舞的那个人是日本人。
- c. 那个日本人请小李跳舞的。

Making relative clauses based on simple sentences:

- a. 那个人请小李跳舞。
- b那个人是日本人。

First, find the shared component of these two simple sentences: 那个人

Second, delete the shared component from sentence (a), you get "请小李跳舞"; add "的"after"请小李跳舞", you get "请小李跳舞的"

Third, use the part you get from the second step "请小李跳舞的" to modify the shared component in sentence (b), you get the relative clause "请小李跳舞的那个人是日本人。(The person who invited little Li to dance is from Japan)"

Explicit practice session for this RC sentence:

(a. 那个人请小李跳舞。b. 那个人是日本人。) The shared component of these two sentences is:

- a. 小李
- b. 那个人
- c. 日本人
- (a. 那个人请小李跳舞。b. 那个人是日本人。) Delete the shared component from sentence (a) and add "的", you get:
 - a. 请小李 跳舞的
 - b. 那个人的
 - c. 日本人的
- (a. 那个人请小李跳舞。b. 那个人是日本人。) Use the part you get from the second step "请小李跳舞的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:
 - a. 那个人请小李跳舞的是日本人。
 - b. 那个日本人是请小李跳舞。
 - c. 请小李跳舞的那个人是日本人。

3.

Implicit:

I heard that little Gao recently met a girl and that girl likes him very much. The girl who likes little Gao is very pretty. In Chinese we can say...

喜欢小高的女孩儿很漂亮。(The girl who likes little Gao is very pretty.)

- a. 喜欢小高的女孩儿很漂亮。
- b. 女孩儿喜欢小高很漂亮。
- c. 喜欢女孩儿的小高很漂亮。

Making relative clauses based on simple sentences:

- a. 那个女孩儿喜欢小高。
- b. 那个女孩儿很漂亮。

First, find the shared component of these two simple sentences: 那个女孩儿

Second, delete the shared component from sentence (a), you get "喜欢小高"; add "的"after"喜欢小高", you get "喜欢小高的"

Third, use the part you get from the second step "喜欢小高的" to modify the shared component in sentence (b), you get the relative clause "喜欢小高的那个女孩儿很漂亮。(The girl who likes little Gao is very beautiful)"

Explicit practice session for this RC sentence:

- (a. 那个女孩儿喜欢小高。b. 那个女孩儿很漂亮。) The shared component of these two sentences is:
 - a. 那个女孩儿
 - b. 小高
 - c. 喜欢
- (a. 那个女孩儿喜欢小高。b. 那个女孩儿很漂亮。) Delete the shared component from sentence (a) and add "的", you get:
 - a. 喜欢女孩儿的
 - b. 很漂亮的
 - c. 喜欢小高的
- (a. 那个女孩儿喜欢小高。b. 那个女孩儿很漂亮。) Use the part you get from the second step "喜欢小高的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:
 - a. 喜欢女孩儿的小高很漂亮。
 - b. 喜欢小高的女孩儿很漂亮。
 - c. 女孩儿喜欢小高很漂亮。

4.

Implicit:

The teacher was a neighbor of little Wang and he knows little Wang very well. The teacher is very interested in Chinese history. In Chinese we can say...

认识小王的那个老师对历史很有兴趣。(The teacher who knows little Wang is very interested in history).

- a. 认识小王的那个老师对中国历史很有兴趣。
- b. 那个老师认识小王的对中国历史很有兴趣。
- c. 认识那个老师的小王对中国历史很感兴趣。

Making relative clauses based on simple sentences:

- a. 那个老师认识小王。
- b. 那个老师对中国历史很有兴趣。

First, find the shared component of these two simple sentences: 那个老师

Second, delete the shared component from sentence (a), you get "认识小王"; add "的"after"认识小王", you get "认识小王的"

Third, use the part you get from the second step "认识小王的" to modify the shared component in sentence (b), you get the relative clause "认识小王的那个老师对历史很有兴趣。(The teacher who knows little Wang is very interested in history.)"

Explicit practice session for this RC sentence:

- (a. 那个老师认识小王。b. 那个老师对中国历史很有兴趣。) The shared component of these two sentences is:
 - a. 小王
 - b. 认识
 - c. 那个老师
- (a. 那个老师认识小王。b. 那个老师对中国历史很有兴趣。) Delete the shared component from sentence (a) and add "的", you get:
 - a. 那个老师的
 - b. 认识小王的
 - c. 历史的
- (a. 那个老师认识小王。b. 那个老师对中国历史很有兴趣。) Use the part you get from the second step "认识小王的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:
 - a. 认识小王的那个老师对历史很有兴趣。
 - b. 那个老师认识小王的对中国很有兴趣。
 - c. 认识那个老师的小王对历史很感兴趣。
- Irreversible Subject RCs:

5.

Implicit:

The boy often goes dancing on weekends and he is a freshman at Pitt. In Chinese we can say... 常常跳舞的那个男生是一年级学生。(The boy who often dances is a freshman.)

Three choices in the implicit practice session for this RC sentence:

- a. 常常跳舞的那个男生是一年级学生。
- b. 那个男生常常跳舞是一年级学生。
- c. 那个男生常常跳的舞是一年级学生。

Explicit:

Making relative clauses based on simple sentences:

- a. 那个男生常常跳舞。
- b. 那个男生是一年级学生。

First, find the shared component of these two simple sentences: 那个男生

Second, delete the shared component from sentence (a), you get "常常跳舞"; add "的"after"常常跳舞", you get "常常跳舞的"

Third, use the part you get from the second step "常常跳舞的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get the relative clause "常常跳舞的那个男生是一年级学生。" (The boy who often dances is a freshman.)

Explicit practice session for this RC sentence:

- (a. 那个男生常常跳舞。b. 那个男生是一年级学生。) The shared component of these two sentences is:
 - a. 跳舞
 - b. 那个男生
 - c. 一年级学生
- (a. 那个男生常常跳舞。b. 那个男生是一年级学生。) Deleting the shared component from sentence (a) and add "的", you get:
 - a. 那个男生的
 - b. 一年级学生的
 - c. 常常跳舞的
- (a. 那个男生常常跳舞。b. 那个男生是一年级学生。) Use the part you get from the second step "常常跳舞的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:
 - a. 常常跳舞的那个男生是一年级学生。
 - b. 那个男生常常跳的舞是一年级学生。
 - c. 那个男生常常跳舞是一年级学生。

6.

Implicit:

There are many people at a party. People are chatting while eating and drinking. My brother is also there and he is eating an apple in a corner. In Chinese we can say

吃苹果的那个人是我的哥哥。(The person who is eating an apple is my brother.)

Three choices in the implicit practice session for this RC sentence:

- a. 吃苹果的那个人是我的哥哥。
- b. 那个人吃苹果是我哥哥。
- c. 那个人吃的苹果是我哥哥。

Explicit:

Making relative clauses based on simple sentences:

- a. 那个人吃苹果。
- b. 那个人是我的哥哥。

First, find the shared component of these two simple sentences: 那个人

Second, delete the shared component from sentence (a), you get "吃苹果"; add "的" after "吃苹果", you get "吃苹果的"

Third, use the part you get from the second step "吃苹果的" to modify the shared component in sentence (b), you get the relative clause "吃苹果的那个人是我哥哥。" (The person who is eating an apple is my brother.)

Explicit practice session for this RC sentence:

- (a. 那个人吃苹果。b. 那个人是我的哥哥。) The shared component of these two sentences is:
 - a. 我哥哥
 - b. 苹果
 - c. 那个人
- (a. 那个人吃苹果。b. 那个人是我的哥哥。) Deleting the shared component from sentence (a) and add "的", you get:
 - a. 我哥哥的
 - b. 吃苹果的
 - c. 那个人的
- (a. 那个人吃苹果。b. 那个人是我的哥哥。) Use the part you get from the second step "吃苹果的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:
 - a. 吃苹果的那个人是我的哥哥。
 - b. 那个人吃的苹果是我哥哥。
 - c. 那个人吃苹果是我哥哥。

7.

Implicit:

My brother and I are walking in a park. I see two people I know: one is my classmate reading a book on a bench; the other is one of my teachers running around the track. In Chinese we can

say...

看书的那个人是我的同学. (The person who is reading a book is one of my classmates.)

Three choices in the implicit practice session for this RC sentence:

- a. 那个人看书的是我的同学。
- b. 看书的那个人是我的同学。
- c. 那个人看的书是我的同学。

Explicit:

Making relative clauses based on simple sentences:

- a. 那个人看书。
- b. 那个人是我的同学。

First, find the shared component of these two simple sentences: 那个人

Second, delete the shared component from sentence (a), you get "看书"; add "的" after "看书", you get "看书的"

Third, use the part you get from the second step "看书的" to modify the shared component in sentence (b), you get the relative clause "看书的那个人是我的同学。" (The perso who is reading a book is my classmate.)

Explicit practice session for this RC sentence:

- (a. 那个人看书。b. 那个人是我的同学。) The shared component of these two sentences is:
 - a. 那个人
 - b. 书
 - c. 我的同学
- (a. 那个人看书。b. 那个人是我的同学。) Deleting the shared component from sentence (a) and add "的", you get:
 - a. 那个人的
 - b. 我的同学的
 - c. 看书的
- (a. 那个人看书。b. 那个人是我的同学。) Use the part you get from the second step "看书的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:
 - a. 那个人看书的是我的同学。
 - b. 看书的那个人是我的同学。
 - c. 那个人看的书是我的同学。

8.

Implicit:

One of our classmates likes singing a lot and she often sings Karaoke in a bar. She is from Japan.

In Chinese we can say...

喜欢唱歌的那个女孩儿是日本人。(The girl who likes singing is from Japan.)

Three choices in the implicit practice session for this RC sentence:

- a. 那个女孩儿喜欢唱歌是日本人。
- b. 那个女孩儿喜欢唱的歌是日本人。
- c. 喜欢唱歌的那个女孩儿是日本人。

Explicit:

Making relative clauses based on simple sentences:

- a. 那个女孩儿喜欢唱歌。
- b. 那个女孩儿是日本人。

First, find the shared component of these two simple sentences: 那个女孩儿

Second, delete the shared component from sentence (a), you get "喜欢唱歌"; add "的"after"喜欢唱歌", you get "喜欢唱歌的"

Third, use the part you get from the second step "喜欢唱歌的" to modify the shared component in sentence (b), you get the relative clause "喜欢唱歌的那个女孩儿是日本人。(The girl who likes singing is from Japan.)"

Explicit practice session for this RC sentence:

- (a. 那个女孩儿喜欢唱歌。b. 那个女孩儿是日本人。) The shared component of these two sentences is:
 - a. 日本人
 - b. 那个女孩儿
 - c. 唱歌
- (a. 那个女孩儿喜欢唱歌。b. 那个女孩儿是日本人。) Deleting the shared component from sentence (a) and add "的", you get:
 - a. 喜欢唱歌的
 - b. 那个女孩儿的
 - c. 日本人的
- (a. 那个女孩儿喜欢唱歌。b. 那个女孩儿是日本人。) Use the part you get from the second step "喜欢唱歌的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:
 - a. 那个女孩儿喜欢唱的歌是日本人。
 - b. 那个女孩儿喜欢唱歌是日本人。
 - c. 喜欢唱歌的那个女孩儿是日本人。
- Irreversible Object RCs

1.

Implicit:

Sweet and sour fish is very popular. I know many Chinese friends, and all of them like sweet and sour fish. So in Chinese we can say...

我认识的中国朋友都喜欢糖醋鱼。(All of my Chinese friends that I know like sweet and sour fish.)

Three choices in the implicit practice session for this RC sentence:

- a. 中国朋友我认识的都喜欢糖醋鱼。
- b. 认识很多中国朋友的我喜欢糖醋鱼。
- c. 我认识的中国朋友都喜欢糖醋鱼。

Explicit:

Making relative clauses based on simple sentences:

- a. 我认识中国朋友。
- b. 中国朋友都喜欢糖醋鱼。

First, find the shared component of these two simple sentences: 中国朋友

Second, delete the shared component form sentence (a), you get "我认识"; add "的"after"我认识", you get "我认识的"

Third, use the part you get from the second step "我认识的" to modify the shared component in sentence (b), you get the relative clause "我认识的中国朋友都喜欢糖醋鱼。(All of my Chinese friends that I know like sweet and sour fish.)"

Practice session for this RC sentence:

- (a. 我认识中国朋友。b. 中国朋友都喜欢糖醋鱼。) The shared component of these two sentences is:
 - a. 我
 - b. 认识
 - c. 中国朋友
- (a. 我认识中国朋友。b. 中国朋友都喜欢糖醋鱼。) Delete the shared component form sentence (a) and add "的", you get:
 - a. 中国朋友的
 - b. 我认识的
 - c. 糖醋鱼的
- (a. 我认识中国朋友。b. 中国朋友都喜欢糖醋鱼。) Use the part you get from the second step "我认识的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:
 - a. 我认识的中国朋友都喜欢糖醋鱼。
 - b. 中国朋友我认识的都喜欢糖醋鱼。

c. 认识很多中国朋友的我喜欢糖醋鱼。

2.

Implicit:

They had a happy dinner in the restaurant and the service is very nice. They thank the actress and the actress is very interesting. In Chinese we can say

他们谢的那个服务员很有意思。(The actress they thank is very interesting.)

Three choices in the implicit practice session for this RC sentence:

- a. 那个服务员他们谢的很有意思。
- b. 他们谢的那个服务员很有意思。
- c. 谢那个服务员的他们很有意思。

Explicit:

Making relative clauses based on simple sentences:

- a. 他们谢那个服务员。
- b. 那个服务员很有意思。

First, find the shared component of these two simple sentences: 那个服务员

Second, delete the shared component form sentence (a), you get "他们谢"; add "的" after "他们谢", you get "他们谢的"

Third, use the part you get from the second step "他们谢的" to modify the shared component in sentence (b), you get the relative clause "他们谢的那个服务员很有意思。(The waitress they thanked is very interesting.)"

Practice session for this RC sentence:

- (a. 他们谢那个服务员。b. 那个服务员很有意思。) The shared component of these two sentences is:
 - a. 谢
 - b. 那个服务员
 - c. 他们
- (a. 他们谢那个服务员。b. 那个服务员很有意思。) Delete the shared component form sentence (a) and add "的", you get:
 - a. 他们谢的
 - b. 那个服务员的
 - c. 很有意思的

(a. 他们谢那个服务员。b. 那个服务员很有意思。) Use the part you get from the second step "我认识的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:

- a. 谢那个服务员的他们很有意思。
- b. 那个服务员他们谢的很有意思。
- c. 他们谢的那个服务员很有意思。

3.

Implicit:

The professor helped her student a lot with her research and that student works very hard. So in Chinese we can say...

教授帮助的那个学生很用功。(The student whom the professor helped studies hard.)

Three choices in the implicit practice session for this RC sentence:

- a. 教授帮助的那个学生很用功。
- b. 那个学生教授帮助的很用功。
- c. 帮助那个学生的教授很用功。

Explicit:

Making relative clauses based on simple sentences:

- a. 教授帮助那个学生。
- b. 那个学生很用功。

First, find the shared component of these two simple sentences: 那个学生

Second, delete the shared component form sentence (a), you get "教授帮助"; add "的" after "教授帮助", you get "教授帮助的"

Third, use the part you get from the second step "教授帮助的" to modify the shared component in sentence (b), you get the relative clause "教授帮助的那个学生很用功。" (The student whom the professor helped studies hard.)

Practice session for this RC sentence:

- (a. 教授帮助那个学生。b. 那个学生很用功。) The shared component of these two sentences is:
 - a. 帮助
 - b. 那个学生
 - c. 教授
- (a. 教授帮助那个学生。b. 那个学生很用功。) Delete the shared component form sentence (a) and add "的", you get:
 - a. 那个学生的
 - b. 很用功的
 - c. 教授帮助的
- (a. 教授帮助那个学生。b. 那个学生很用功。) Use the part you get from the second step "教授帮助的" to modify the shared component in sentence (b) by putting the modifier before the

shared component, you get:

- a. 教授帮助的那个学生很用功。
- b. 帮助那个学生的教授很用功。
- c. 那个学生教授帮助的很用功。

4.

Implicit:

I was heading for a concert and lost the direction after I got off the bus. I asked a lady and she told me she was also heading for that concert. So in Chinese we can say...

我问的那个人也去音乐会。(The person whom I asked was also heading for the concert.)

Three choices in the implicit practice session for this RC sentence:

- a. 我问的那个人也去音乐会。
- b. 那个人我问的也去音乐会。
- c. 那个人问的我也去音乐会。

Explicit:

Making relative clauses based on simple sentences:

- a. 我问那个人。
- b. 那个人也去音乐会。

First, find the shared component of these two simple sentences: 那个人

Second, delete the shared component form sentence (a), you get "我问"; add "的"after"我问", you get "我问的"

Third, use the part you get from the second step "我问的" to modify the shared component in sentence (b), you get the relative clause "我问的那个人也去音乐会。(The person whom I asked was also heading for that concert.)"

Practice session for this RC sentence:

- (a. 我问那个人。b. 那个人也去音乐会。) The shared component of these two sentences is:
 - a. 问
 - b. 我
 - c. 那个人
- (a. 我问那个人。b. 那个人也去音乐会。) Delete the shared component form sentence (a) and add "的", you get:
 - a. 我问的
 - b. 那个人的
 - c. 音乐会的
- (a. 我问那个人。b. 那个人也去音乐会。) Use the part you get from the second step "我问的"

to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:

- a. 那个人我问的也去音乐会。
- b. 我问的那个人也去音乐会。
- c. 那个人问的我也去音乐会。
- Irreversible Object RCs:

5.

Implicit:

Yesterday we went to a book store. I bought a book, my book is interesting. In Chinese we can say...

我买的那本书很有意思。(The book I bought is very interesting)

Three choices in the implicit practice session for this RC sentence:

- a. 我买的那本书很有意思。
- b. 那本书我买的很有意思。
- c. 买那本书的我很有意思。

Explicit:

Making relative clauses based on simple sentences:

- a. 我买了那本书。
- b. 那本书很有意思。

First, find the shared component of these two simple sentences: 那本书

Second, delete the shared component form sentence (a), you get "我买"; add "的"after"我买", you get "我买的"

Third, use the part you get from the second step "我买的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get the relative clause "我买的那本书很有意思。(The book I bought is very interesting)"

Practice session for this RC sentence:

(a. 我买了那本书。b. 那本书很有意思。) The shared component of these two sentences is:

- a. 我
- b. 买
- c. 那本书

(a. 我买了那本书。b. 那本书很有意思。) Delete the shared component from sentence (a) and add "的", you get:

- a. 那本书的
- b. 我买的
- c. 很有意思的

(a. 我买了那本书。b. 那本书很有意思。) Use the part you get from the second step "我买的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:

- a. 我买的那本书很有意思。
- b. 那本书我买的很有意思。
- c. 买那本书的我很有意思。

6.

Implicit:

The instructor lets us take turn to read the character cards. When it is her turn, a difficult character shows up. However, she read it out loudly. So in Chinese we can say... 她读的那个字很难。(The character she read is very difficult.)

Three choices in the implicit practice session for this RC sentence:

- a. 那个字她读的很难。
- b. 读那个字的她很难。
- c. 她读的那个字很难。

Explicit:

Making relative clauses based on simple sentences:

- a. 她读那个字。
- b. 那个字很难。

First, find the shared component of these two simple sentences: 那个字

Second, delete the shared component form sentence (a), you get "她读"; add "的"after"她读", you get "她读的"

Third, use the part you get from the second step "她读的" to modify the shared component in sentence (b), you get the relative clause ""她读的那个字很难。(The character she read is very difficult)"

Practice session for this RC sentence:

(a. 她读那个字。b. 那个字很难。) The shared component of these two sentences is:

- a. 读
- b. 那个字
- c. 她

(a. 她读那个字。b. 那个字很难。) Delete the shared component from sentence (a) and add "的 ", you get:

- a. 那个字的
- b. 很难的
- c. 她读的

(a. 她读那个字。b. 那个字很难。) Use the part you get from the second step "她读的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:

- a. 她读的那个字很难。
- b. 那个字她读的很难。
- c. 读那个字的她很难。
- 7. Today is a special day for her. Linda is wearing a beautiful dress. So in Chinese we can say... 她穿的那件衣服很漂亮。(The clothes she wears is very pretty.)

Three choices in the implicit practice session for this RC sentence:

- a. 那件衣服她穿的很漂亮。
- b. 穿那件衣服的她很漂亮。
- c. 她穿的那件衣服很漂亮。

Explicit:

Making relative clauses based on simple sentences:

- a. 她穿那件衣服。
- b. 那件衣服很漂亮。

First, find the shared component of these two simple sentences: 那件衣服

Second, delete the shared component form sentence (a), you get "她穿"; add "的" after "她穿", you get "她穿的"

Third, use the part you get from the second step "她穿的" to modify the shared component in sentence (b), you get the relative clause "她穿的那件衣服很漂亮。(The clothing she wears is very pretty.)"

Practice session for this RC sentence:

(a. 她穿那件衣服。b. 那件衣服很漂亮。) The shared component of these two sentences is:

- a. 漂亮
- b. 她
- c. 那件衣服

(a. 她穿那件衣服。b. 那件衣服很漂亮。) Delete the shared component from sentence (a) and add "的", you get:

- a. 她穿的
- b. 那件衣服的
- c. 漂亮的

(a. 她穿那件衣服。b. 那件衣服很漂亮。) Use the part you get from the second step "我买的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:

- a. 那件衣服她穿的很漂亮。
- b. 她穿的那件衣服很漂亮。
- c. 穿那件衣服的她很漂亮。

8.

Implicit:

Little Li's mother often cooks Chinese dishes and they are delicious. Everybody in his family likes the dishes. So in Chinese we can say...

小李妈妈做的中国菜很好吃。(The Chinese dishes little Li's mother cooks are very delicious.)

Three choices in the implicit practice session for this RC sentence:

- a. 中国菜小李妈妈做的很好吃。
- b. 小李妈妈做的中国菜很好吃。
- c. 做中国菜的小李妈妈很好吃。

Explicit:

Making relative clauses based on simple sentences:

- a. 小李妈妈做中国菜。
- b. 中国菜很好吃。

First, find the shared component of these two simple sentences: 中国菜

Second, delete the shared component form sentence (a), you get "小李妈妈做"; add "的"after"小李妈妈做", you get "小李妈妈做的"

Third, use the part you get from the second step "小李妈妈做的" to modify the shared component in sentence (b), you get the relative clause "小李妈妈做的中国菜很好吃。(The Chinese dishes little Li's mother cooks are very delicious.)"

Practice session for this RC sentence:

- (a. 小李妈妈做中国菜。b. 中国菜很好吃。) The shared component of these two sentences is:
 - a. 很好吃
 - b. 中国菜
 - c. 小李妈妈
- (a. 小李妈妈做中国菜。b. 中国菜很好吃。) Delete the shared component from sentence (a) and add "的", you get:
 - a. 很好吃的
 - b. 中国菜的
 - c. 小李妈妈做的
- (a. 小李妈妈做中国菜。b. 中国菜很好吃。) Use the part you get from the second step "小李妈妈做的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:

- a. 小李妈妈做的中国菜很好吃。
- b. 中国菜小李妈妈做的很好吃。
- c. 做中国菜的小李妈妈很好吃。

Test 2 (posttest 1):

Task 1: comprehension of bu/mei

下午我没去打球。

这个城市不干净。

她不喝酒。

他的发音没好。

以前他早上不洗澡。

以前她不运动。

今天我们不考试。

他们没坐飞机去纽约。

这个菜没贵。

今天他不去看电影。

这个苹果不酸。

他没穿绿色的衣服。

Task 2: fill-in-the-blank questions of *bu/mei*

- (A: I am so hungry and cannot wait for the food to finish cooking. I want to eat some leftovers from yesterday. Are they still good? B: Yes, it has not gone sour.) In Chinese we can say 这个菜 酸。
- (A: Do you eat meat? B: Yes, I do. However, when I was a little kid, I didn't like it and did not eat meat.) In Chinese we can say 小的时候他___吃肉。
- (A: Why do I never see you wear green shirts? B: Because green always brings me back luck.) In Chinese we can say 他____ 穿绿色的衣服。
- (A: Will you fly to New York tomorrow? B: No, we will drive there.) In Chinese we can say 他们 坐飞机去纽约。
- (A: Do you think that the government effort to clean the trash and filth out of the streets made some difference in the past years? B: I don't think so. The city still looks like before.) In Chinese we can say 这个城市 干净。
- (A: Did you exercise today? B: No, I am too busy studying for tomorrow's exam.) In Chinese we can say 今天他___运动。
- (A: Lets go play basketball together. B: Forget it. I have a lot of homework due tomorrow.) In Chinese we can say 他____去打球。
- (A: What happened to her? She often cries. B: Her husband died from a car accident two years ago. Before that, she did not cry.) In Chinese we can say 以前她____哭。
- (A: Is his pronunciation of Chinese good? B: I don't think so. He always messes up all the tones in his sentences.) In Chinese we can say 他的发音___好。
- (A: How was your quiz? B: We did not have enough time left for the quiz. The teacher did not do it.) In Chinese we can say 他们___考试。

(A: How is the movie? B: My car broke on the way there. I didn't go to the movie.) In Chinese we can say 他___去看电影。

(A: I hope Chinese cabbage is not expensive in the United States. I like it so much. B: No, It is only 70 cents per pound.) In Chinese we can 白菜___贵。

Task 3: comprehension of RCs

我约的那个朋友来晚了。

养狗的那个人很喜欢打球。

他昨天看的那个电影很有意思。

谢服务员的那个人很高兴。

打电话的那个人是小李的哥哥。

那个人找的老师在上课。

我昨天买的那件衬衫是红的。

欢迎 Obama 的学生去了 soldiers & sailors.

Task 4: production of RCs

她唱那些中文歌 (ta chang na xie zhongwenge)。那些中文歌很好听 (na xie zhongwenge hen haoting)。Qestion: 哪些中文歌很好听?

那个人等我们 (nage ren deng women)。那个人在打电话 (nage ren zai da dianhua)。 Qestion: 哪个人在打电话?

小王读那篇课文 (xiao Wang du na pian kewen)。那篇课文很难 (na pian kewen hen nan)。 Qestion:哪篇课文很难?

那个老师帮助我 (nage laoshi bangzhu wo)。那个老师很喜欢喝茶(nage laoshi hen xihuan he cha)。Qestion: 哪个老师很喜欢喝茶?

那个人穿红衣服 (nage ren chuan hong yifu)。那个人是我妹妹 (nage ren shi wo meimei)。Qestion: 哪个人是我妹妹?

老师看见那个学生 (laoshi kanjian nage xuesheng)。那个学生没做功课 (nage xuesheng mei zuo gongke)。Qestion: 哪个学生没做功课?

那个学生去过中国 (nage xuesheng qu guo zhongguo)。那个学生很用功 (nage xuesheng hen yonggong)。Qestion: 哪个学生很用功?

老师接那个学生 (laoshi jie nage xuesheng)。那个学生渴了(nage xuesheng ke le)。 Qestion: 哪个学生渴了?

Training 2:

For bu/mei training

• Stative vs. Dynamic

1.

Implicit:

b. A little boy likes his T-shirt with the dinosaur a lot. He wore it ever day last summer. This summer, his mom found that it still fits him very well. So In Chinese we can say.....

这件衣服没小。(This shirt has not gotten smaller for the boy.)

Explicit:

Bu is used to negate static situations vs. mei (you) is used to negate dynamic (changing state) situations.

Static: 这件衣服不小。(This coat is not small for him.)

Changing state: 这件衣服没小。(This shirt has not gotten smaller for the boy.)

2.

Implicit:

a. She is 5'5" tall and 130lb, so she is not skinny at all. In Chinese we can say...

她不瘦。(She is not skinny.)

b. She was 150lb and she decided to go on a diet to lose some weight. After a month's effort, she is still 150lb. She has not become thinner. In Chinese we can say...

她没瘦。(She has not become thinner.)

Explicit:

Bu is used to negate static situations vs. mei (you) is used to negate dynamic (changing state) situations.

Static: 她不瘦。(She is not skinny.)

Changing state: 她没瘦。(She has not become thinner.)

3.

Implicit:

a. John only likes eating sweet apples. He went to a grocery store and tried some apple samples and found one of them tastes good and not sour. In Chinese we can say...

这个苹果不酸。(This apple is not sour.)

b. He is very busy with his project this weekend and worked from morning until the evening. At 6 o'clock, he felt very hungry and found some leftovers from yesterday. He smelled it and it is still good and has not gone sour. In Chinese we can say...

这个菜没酸。(This dish has not gone sour.)

Explicit:

Bu is used to negate static situations vs. mei (you) is used to negate dynamic (changing state) situations.

Static: 这个苹果不酸。(This apple is not sour.)

Changing state: 这个菜没酸。(This dish has not gone sour.)

4.

Implicit:

a. She seldom makes grammatical errors in her Chinese production and her handwriting of Chinese characters is beautiful. However, her pronunciation is not correct and her tones are mixed when she pronounces the sentence. So in Chinese we can say...

他的发音不好。(His pronunciation is not good.)

b. In order to improve his pronunciation, he joined a study abroad program and went to China. He had intensive Chinese classes 6 hours each day for six weeks. However, after the intensive training, his pronunciation has not become better. So in Chinese we can say

他的发音没好。(His pronunciation has not become better.)

Explicit:

Bu is used to negate static situations vs. mei (you) is used to negate dynamic (changing state) situations.

Static: 他的发音不好。(His pronunciation is not good.)

Changing state: 他的发音没好。(His pronunciation has not become better.)

5.

Implicit:

- a. You seldom can find Chinese cabbage in grocery stores in United States, however, you can definitely find them in Chinese grocery stores. Chinese cabbage is about \$0.90/lb in Chinese grocery stores of United States. So generally it is not expensive. In Chinese we can say 白菜不贵。(Chinese cabbage is not expensive.)
- b. Chinese cabbage is about \$1/lb last year. This year there was a heavy drought which affected the production of Chinese cabbage. However, the price of Chinese cabbage has not gotten more expensive. In Chinese we can say 白菜没贵。(Chinese cabbage has not gotten more expensive.)

Explicit:

Bu is used to negate static situations vs. mei (you) is used to negate dynamic (changing state) situations.

Static: 白菜不贵。(Chinese cabbage is not expensive.)

Changing state: 白菜没贵。(Chinese cabbage has not gotten more expensive.)

6.

Implicit:

- a. The city I live has too much pollution and trash nowadays. I seldom go downtown area for shopping. In Chinese we can say 这个城市不干净。(This city is not clean.)
- b. Over the past several years the government has tried to clean the trash and filth out of the streets. However, it does not seem like the policy changes have done anything. The city still looks like before. In Chinese we can say 这个城市没干净。(This city has not gotten cleaner.)

Explicit:

Bu is used to negate static situations vs. mei (you) is used to negate dynamic (changing state) situations.

Static: 这个城市不干净。(This city is not clean.)

Changing state: 这个城市没干净。(This city has not gotten cleaner)

7.

Implicit:

a. During a track and field event Jeremy was racing in the 400 meter. Out of the 30 competitors involved in the event Jeremy placed fifth. Jeremy's running is not slow. So in Chinese we can say... 他跑得不慢。(His running is not slow.)

b. Last year Paul could run five miles in 30 minutes. About 6 months ago he had knee surgery. After recovering from surgery Paul returned to his original pace, his running has not become slower. So in Chinese we can say 他跑得没慢。(His running has not become slower.)

Explicit:

Bu is used to negate static situations vs. mei (you) is used to negate dynamic (changing state) situations.

Static: 他跑得不慢。(His running is not slow.)

Changing state: 他跑得没慢。(His running has not become slower)

• Habitual vs. Episodic (The example of explicit training is only given in the first pair of sentences)

1.

Implicit:

a. He did not eat meat when he was a little boy since he had a bad digestive problem. However, his doctor solved his problem, now he can eat meat. So we can say that

小的时候他不吃肉。(When he was a little boy, he did not eat meat)

b. He likes eating meat and cannot live without meat for a single day. However, his stomach was painful so he didn't eat any meat yesterday. In Chinese we can say...

他昨天没吃肉。(He didn't eat meat yesterday)

Explicit:

Within dynamic situations, bu is used to negate habitual situations (habits) vs. mei (you) is used to negate episodic situations (single event).

Habit: 以前他不吃肉。(Before, he did not eat meat)

Single event: 他昨天没吃肉。(He didn't eat meat yesterday)

2.

a. She is allergic to alcohol, so she does not drink. In Chinese we can say...

她不喝酒。(She does not drink alcohol.)

b. Yesterday she and her two roommates went to a party. Since she was the driver and needed to drive back, she did not drink alcohol. In Chinese we can say...

她没喝酒。(She did not drink alcohol.)

a. Green clothes often bring him bad luck, so he does not wear green clothes. In Chinese we can say...

他不穿绿色的衣服。(He does not wear green clothes.)

b. Today is St. Patrick's Day. Many classmates wear green clothes, but he forgot and did not wear green clothes. In Chinese we can say...

他没穿绿色的衣服。(He did not wear green clothes.)

4.

a. She is a quiet and introverted person. She likes to stay at home and do a lot of reading. She did not like exercise before. However, when she had some health problems the doctor told her to exercise often, so she did. So we can say

以前她不运动。(Before she did not exercise.)

b. He has an important exam tomorrow, so he did not exercise today as usual. In Chinese we can say...

今天他没运动。(He did not exercise today.)

5.

- a. The books sold on-line are much cheaper than those sold in book stores, so she doesn't buy books in bookstores. In Chinese we can say 她不在书店买书。 (She does not buy books in bookstores.)
- b. She went to bookstore and looked around the books. Nothing interested her there. She went home without buying any books. In Chinese we can say 她没在书店买书。(She did not buy books in the bookstore.)

6.

- a. Little boys generally cry when they get shots. Michael is a brave boy and never cries when he has vaccine. In Chinese we can say 他不哭。(He does not cry.)
- b. Michael's mother brought him to his pediatrician for a routine check this morning. This time he was so brave that he didn't cry when he got vaccine. In Chinese we can say 他没哭。(He did not cry.)

- a. She used to work at very early time in the morning and did not have enough time for taking a shower, so she did not take a shower in the morning as now she does. In Chinese we can say 以前他早上不洗澡。(He did not take a shower in the morning before.)
- b. She needed to catch an early flight this morning. So she did not take a shower in the morning. 她早上没洗澡。(She did not take a shower this morning.)
- Realized vs. nonrealized (The example of explicit training is only given in the first pair of sentences)
- 1. Implicit

a. I had a lot of homework to do this afternoon, so I didn't play basketball this afternoon. In Chinese we can say...

下午我没去打球。(I didn't play basketball this afternoon)

b. I need to prepare for tomorrow's exam, so I won't play basketball this afternoon. In Chinese we can say...

下午我不去打球。(I won't play basketball this afternoon)

Explicit:

Within the episodic situations, bu is used to negate unrealized situations vs. mei (you) is used to negate realized situations.

Realized: 下午我没去打球。(I didn't play basketball this afternoon.)

Unrealized: 下午我不去打球。(I won't play basketball this afternoon.)

2.

a. We have not finished this lesson yet, so we won't have a quiz tomorrow. In Chinese we can say...

我们不考试。(We won't have a quiz tomorrow.)

b. We did not have enough time left for a quiz in the class, so we didn't have a quiz. In Chinese we can say...

我们没考试。(We didn't have a quiz.)

3.

a. He will drive to New York with his family this coming Sunday instead of flying. In Chinese we can say...

他们不坐飞机去纽约。(They won't go to New York by airplane.)

b. Due to the severe flight delay, they drove to New York and didn't fly yesterday. In Chinese we can say...

他们没坐飞机去纽约。(They didn't go to New York by airplane.)

4.

a. He is busy with his comprehensive exam these days, and he doesn't have time to go to a movie with his wife this weekend. In Chinese we can say...

他不去看电影。(He won't go to the movie.)

b. His car broke this morning. He had to have his car tow to a car shop and could not go to the movie that he planned to in the morning. In Chinese we can say...

他没去看电影。(He didn't go to the movie.)

For RC training³

• Reversible Subject RCs:

³ The example of RC explicit training is only given in the first RC sentence in the appendix.

1.

Implicit:

One of my teachers helped me with designing the experiments of my thesis. The teacher likes drinking tea a lot. In Chinese we can say...

帮助我的那个老师很喜欢喝茶。(The teacher who helped me likes drinking tea.)

Three choices in the implicit practice session for this RC sentence:

- a. 帮助我的那个老师很喜欢喝茶。
- b. 那个老师帮助我的很喜欢喝茶。
- c. 帮助那个老师的我很喜欢喝茶。

Explicit:

Explicit training:

Making relative clauses based on simple sentences:

- a. 那个老师帮助我。
- b. 那个老师很喜欢喝茶。

First, find the shared component of these two simple sentences: 那个老师

Second, delete the shared component form sentence (a), you get "帮助我"; add "的" after "帮助我", you get "帮助我的"

Third, use the part you get from the second step "帮助我的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get the relative clause "帮助我的那个老师很喜欢喝茶。(The teacher who helped me likes drinking tea)"

Practice session for this RC sentence:

- (a. 那个老师帮助我。b. 那个老师很喜欢喝茶。) The shared component of these two sentences is:
 - a. 茶
 - b. 那个老师
 - c. 我
- (a. 那个老师帮助我。b. 那个老师很喜欢喝茶。) Delete the shared component from sentence (a) and add "的", you get:
 - a. 帮助我的
 - b. 那个老师的
 - c. 喜欢喝茶的
- (a. 那个老师帮助我。b. 那个老师很喜欢喝茶。) Use the part you get from the second step "帮助我的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:
 - a. 帮助那个老师的我很喜欢喝茶。
 - b. 那个老师帮助我的很喜欢喝茶。

c. 帮助我的那个老师很喜欢喝茶。

2

The president Obama will give a speech at the Soldiers & Sailors Hall of Pitt. Many students go there to welcome him. In Chinese we can say...

欢迎 Obama 的学生去了 soldiers & sailors hall. (The students who welcome Obama go to the soldiers & sailors hall.)

Three choices in the implicit practice session for this RC sentence:

- a. 学生欢迎 Obama 的去了 soldiers & sailors hall.
- b. 欢迎学生的 Obama 去了 soldiers & sailors hall.
- c. 欢迎 Obama 的学生去了 soldiers & sailors hall.

3.

We signed up to join a tour group. When we got there, a person from the tour agency was making a call while he was waiting for us. In Chinese we can say...

等我们的那个人在打电话。(The person who was waiting for us was making a call.)

Three choices in the implicit practice session for this RC sentence:

- a. 等我们的那个人在打电话。
- b. 那个人等我们的在打电话。
- c. 我们等的那个人在打电话。

4.

A customer appreciated the waitress very much for her helping with his special needs. He looks very happy. In Chinese we can say

谢服务员的那个人很高兴 (The person who thank the waitress is very happy)。

Three choices in the implicit practice session for this RC sentence:

- a. 那个人谢服务员的很高兴。
- b. 谢服务员的那个人很高兴。
- c. 那个人谢的服务员很高兴。
- Irreversible Subject RCs:

5.

Many people are playing in the park. It is easy to find my younger sister, because she is wearing red clothes. So In Chinese we can say...

穿红衣服的那个人是我的妹妹。(The person who wears red clothes is my younger sister.)

- a. 那个人穿红衣服的是我的妹妹。
- b. 穿红衣服的那个人是我的妹妹。
- c. 那个人穿的红衣服是我的妹妹。

6.

In our class, only one student went to China before. He is very diligent. So in Chinese we can say...

去过中国的那个学生很用功。(The student who had been to China is very diligent.)

Three choices in the implicit practice session for this RC sentence:

- a. 那个学生去过中国的很用功。
- b. 去过中国的那个学生很用功。
- c. 那个学生去过的中国很用功。

7.

Little Li has several siblings. They all came back for Thanksgiving holiday. Her little brother is playing game; her older sister is helping her mom with cooking; her big brother is on the phone. So in Chinese we can say...

打电话的那个人是小李的哥哥。(The person who is on the phone is little Li's older brother.)

Three choices in the implicit practice session for this RC sentence:

- a. 那个人打电话的是小李的哥哥。
- b. 那个人打的电话是小李的哥哥。
- c. 打电话的那个人是小李的哥哥。

8.

That person likes playing basketball a lot. He raises two dogs and sometimes he plays ball with his dogs. In Chinese we can say

养狗的那个人很喜欢打球。 (The person who raises dogs likes playing ball).

Three choices in the implicit practice session for this RC sentence:

- a. 养狗的那个人很喜欢打球。
- b. 那个人养狗的很喜欢打球。
- c. 那个人养的狗很喜欢打球。
- Reversible Object RCs:

1.

I asked a friend to meet with me in a restaurant at 6pm. However, he came late due to the unexpected heavy snow. In Chinese we can say...

我约的朋友来晚了。(The friend whom I had an appointment with came late.)

- a. 我约的朋友来晚了。
- b. 朋友我约的来晚了。
- c. 约朋友的我来晚了。

2

A teacher saw one of his students in a movie theater yesterday night. Today the teacher found that the student did not do his homework. In Chinese we can say

老师看见的那个学生没做功课。(The student who the teacher saw did not do his homework.)

Three choices in the implicit practice session for this RC sentence:

- a. 老师看见的那个学生没做功课。
- b. 那个学生老师看见的没做功课。
- c. 那个学生看见的老师没做功课。

3.

A new term starts. Some teachers working in the international students' office are waiting at airport to pick up new international students. They have been there for two hours and feel thirsty. In Chinese we can say

接新学生的老师渴了。(The teachers who pick up new students are thirsty.)

Three choices in the implicit practice session for this RC sentence:

- a. 接新学生的老师渴了。
- b. 老师接新学生的渴了。
- c. 接老师的新学生渴了。

4.

A person is looking for a second-year Chinese teacher; however, that teacher is having a class at that time. In Chinese we can say

那个人找的老师在上课。(The teacher whom the person looks for is having a class.)

Three choices in the implicit practice session for this RC sentence:

- a. 老师那个人找的在上课。
- b. 那个人找的老师在上课。
- c. 找老师的那个人在上课。
- Irreversible Object RCs:

5.

He went to a movie yesterday. He likes it and the movie is very interesting. So in Chinese we can say...

他昨天看的那个电影很有意思。(The movie he watched yesterday is very interesting.)

Three choices in the implicit practice session for this RC sentence:

- a. 他昨天看的那个电影很有意思。
- b. 那个电影他昨天看的很有意思。
- c. 昨天看那个电影的他很有意思。

I bought a shirt yesterday, which is red. So in Chinese we can say... 我昨天买的那件衬衫是红的。(The shirt I bought yesterday is red.)

Three choices in the implicit practice session for this RC sentence:

- a. 那件衬衫我昨天买的是红的。
- b. 昨天买那件衬衫的我是红的。
- c. 我昨天买的那件衬衫是红的。

7.

She likes singing. She can sing Chinese songs very well; however, she is not good at English songs. So in Chinese we can say...

她唱的那些中文歌很好听。(The Chinese songs she sang are very pleasant to your ears.)

Three choices in the implicit practice session for this RC sentence:

- a. 她唱的那些中文歌很好听。
- b. 中文歌她唱的很好听。
- c. 唱中文歌的她很好听。

8.

When I enter the classroom, a student is reading a text. The text is very difficult. In Chinese we can say

那个学生念的那篇课文很难。(The text that the student read is difficult.)

Three choices in the implicit practice session for this RC sentence:

- a. 课文那个学生念的很难。
- b. 念课文的那个学生很难。
- c. 那个学生念的那篇课文很难。

Test 3 (posttest 2):

Task 1: comprehension of bu/mei

今天我们不开会。

她没买保险。

以前她不用信用卡。

今天我不去学校。

电影票不便宜。

今天我们没休息。

博物馆的人没多。

他不吃早饭。

今天他没去跑步。

他的房间不暖和。

她没漂亮。

以前他不预习功课。

Task 2: fill-in-the-blank questions of *bu/mei*

- (A: I saw some students sleeping on the floor in the library during finals week. B: Yeah. I don't like it and don't do that.) In Chinese we can say 他___在图书馆睡觉。
- (A: Your apartment is so cold. B: Yea, I know. The landlord came last week and renovated the heating system, but my room has not become warmer.) In Chinese we can say after the renovation, 他的房间 暖和。
- (A: Why are you getting up so early today? Today is Saturday. B: Yeah. We have a speech contest in the Chinese program today and everyone needs to be there.) In Chinese we can say 今天我们 休息。
- (A: Do you cook? B: Yes. I cook every day. But before I got married, I always ate out and did not cook.) In Chinese we can say 以前她 做饭。
- (A: Did you see that girl who just walked by? B: Yea, she wasn't pretty or attractive at all.) Based on the conversation, in Chinese we can say 她___漂亮。
- (A: Will you go running outside tomorrow? B: Tomorrow will have heavy rain for the whole day. I would like to stay at home.) In Chinese we can say 明天她___去跑步。
- (A: It looks like people are not interested in that museum. B: Yea, I know. There are only a few visitors in that museum every day.) So in Chinese we can say... 博物馆的人___多。
- (A: What should I do? I don't have money to buy insurance. B: Ten years ago, when I was as young and as healthy as you, I didn't buy insurance at all.) In Chinese we can say 以前她___买保险。
- (A: Did you have a meeting today? B: No. Due to the heavy snow, many people could not come.) In Chinese we can say 今天我们_____ 开会。
- (A: I went to the opening show of the Avengers last summer, the ticket was \$30. B: Really, I went to it this summer, and the ticket was \$30, too.) In Chinese we can say that one year later, 电影票___便宜。
- (A: Did you go school today? B: I didn't. I don't feel well today.) In Chinese we can say 今天他___去学校。

Task 3: comprehension of RCs 他花的那些钱是父母的钱。 问老师问题的那个学生很用功。 我弟弟看的那本书很有意思。 认识很多朋友的那个学生很可爱。 我们谢的那个人回去了。 买咖啡的那个人去了图书馆。 小王约的那个朋友生病了。 拿花的那个女孩很漂亮。

Task 4: production of RCs

我找那个人(wo zhao nage ren)。那个人很高 (nage ren hen gao)。Qestion: 哪个人很高?

那个朋友请她看电影 (nage pengyou qing ta chi fan)。那个朋友很喜欢她 (nage pengyou hen xihuan ta)。Qestion: 哪个朋友很喜欢她?

我妹妹吃那个苹果 (wo chi nage pingguo)。那个苹果很大 (nage pingguo hen da)。 Qestion: 哪个苹果很大?

那个教授介绍 Dr. DeKeyser(nage jiaoshou jieshao Dr. DeKeyser). 那个教授喜欢唱歌 (nage jiaoshou xihuan changge)。Qestion:哪个教授喜欢唱歌?

他穿那种鞋 (ta chuan na zhong xie)。那种鞋很舒服 (na zhong xie hen shufu)。 Qestion: 哪种鞋很舒服?

那个人说法文 (nage ren shuo fawen)。那个人是中国人(nage ren shi zhongguoren)。 Qestion: 哪个人是中国人?

Obama 欢迎那些朋友 (Obama huanying na xie pengyou)。那些朋友去了纽约 (na xie pengyou qu le niuyue)。Qestion:哪些朋友去了纽约?

那个人发短信 (nage ren fa duanxin)。那个人住在 Shady Avenue (nage ren zhu zai Shady). Qestion: 哪个人住在 Shady Avenue?

Training 3: For *bu/mei* training

• Stative vs. Dynamic (The example of explicit training is only given in the first pair of sentences in the appendix.)

1.

Implicit:

- a. Jack and Jill went to the movies for their date. Two tickets cost them 40 dollars, the movie tickets are not cheap. So in Chinese we can say... 电影票不便宜。(The movie ticket is not cheap)
- b. Laura wants to see the Avengers during the summer. The ticket on the opening night is \$10. She waited until the final showing. The ticket is still \$10. So in Chinese we can say... 电影票没便宜。(The move ticket has not become cheaper)

Explicit:

Bu is used to negate static state vs. mei (you) is used to negate dynamic state (i.e. changing state). Static: 电影票不便宜。(The movie ticket is not cheap)

Changing state: 电影票没便宜。(The move ticket has not become cheaper)

2.

a. Today is Labor Day and it is free to enter the museum. However there are not many people visiting the museum today. So in Chinese we can say... 博物馆的人不多。(There are not many people visiting the museum)

b. The museum has added new attractions in an attempt to increase the number of visitors it receives. However, the number of people visiting the museum has not increased. So in Chinese we can say...博物馆的人没多。(The number of people visiting the museum has not increased)

3.

a. Barry has been living in student housing. His room doesn't have good insulation, so in the winter it is not warm. In Chinese we can say... 他的房间不暖和。(His room is not warm) b. Jerry has been complaining to his landlord that his room doesn't have any heat all winter. His landlord decided to renovate the heating system to fix the problem. After the renovation, his room has not become warmer. So in Chinese we can say... 他的房间没暖和。(His room has not become warmer)

4.

- a. The girl who just walked by is not attractive at all. In Chinese we can say 她不漂亮。 (She is not pretty.)
- b. Tracey has already been very pretty. She wants to be prettier and got plastic surgery. However, the Plastic surgery didn't make her become prettier. In Chinese we can say 她没漂亮。 (She has not become prettier.)

5.

- a. My insurance meets the minimum requirement and is only \$20 a month. I think it is a great deal. In Chinese we can say 他的保险不贵。(His insurance is not expensive.)
- b. He had a car accident last year. However, his insurance has not increased this year since he had so many years of good records. In Chinese we can say 他的保险没贵。(His insurance has not increased.)

6.

- a. She does not have enough money to pay a one bedroom apartment, so she chose to rent a studio this year. In Chinese we can say 她的钱不多。(She does not have a lot of money)
- b. He inherited one million dollars from his father two year ago. He wanted to use this money to earn more and invested the money in different kinds of business. However, after two years' hard working, he still has one million dollars. In Chinese we can say 他的钱没多。(His money has not become more.)

- a. I like hot and sour soup because it is hot and sour together. However, I don't like this one because it is only hot but not sour. In Chinese we can say 这个汤 (soup) 不酸。(This soup is not sour.)
- b. It is a surprise. This soup has been on the table for three days, but it still smells good and has not gone sour. In Chinese we can say 这个汤 (soup) 没酸。(This soup has not gone sour.)
- Habitual vs. Episodic (The example of explicit training is only given in the first pair of sentences in the appendix.)

1.

Implicit:

- a. He is used to staying up very late at night and getting up very late in the morning. He needs to drive to work immediately after he gets up every day and does not have time for breakfast. In Chinese we can say 他不吃早饭。(He does not eat breakfast.)
- b. He did not feel well this morning and did not feel like eating anything. So he went to work without eating. In Chinese we can say 他没吃早饭。(He did not eat breakfast.)

Explicit:

Within dynamic situations, bu is used to negate habitual situations vs. mei (you) is used to negate episodic (single event) situations.

Habit: 他不吃早饭。(He does not eat breakfast.)

Single event: 他没吃早饭。(He did not eat breakfast.)

2.

- a.Ten years ago, she was young and healthy, so she thought it was wasting money to buy insurance and she did not buy any insurance for herself. In Chinese we can say 十年以前她不买保险。(She did not buy insurance ten years ago.)
- b. She lost her job this year, so she did not buy insurance for herself. In Chinese we can say 她没买保险。(She did not buy insurance.)

3.

- a. During the final time every semester, you can see some students lying on the floor to take a nap in the library. But he does not like that and never sleep in the library. So in Chinese we can say 他不在图书馆睡觉。(He does not sleep in the library.)
- b. Yesterday he worked overnight to write on a paper due today and only took a nap on the desk. In Chinese we can say 他没在床上睡觉。(He did not sleep in his bed.)

4.

- a. He didn't preview the vocabulary and text for the next day before the teacher talked to him. In Chinese we can say 以前他不预习功课。(He didn't preview lessons before.)
- b. She did not feel well yesterday and did not preview the lesson for today. In Chinese we can say 她没预习功课。(She did not preview the lesson.)

5.

- a. She need to go to work at 8am and does not have enough time to jog around the park in the morning. In Chinese we can say 她早上不跑步。 (She does not run in the morning.)
- b. She slept through the 7am alarm this morning, so she did not have time to go outside for jogging. In Chinese we can say 她早上没跑步。 (She did not run in the morning.)

- a. She did not want to be bothered by remembering to pay credit card each month, so she did not use credit card before. In Chinese we can say 以前她不用信用卡。 (She does not use credit card before.)
- b. Since the store does not accept credit card, she paid her clothes in cash. So in Chinese we can say 她没用信用卡。(She did not use credit card.)

7.

- a. He does not know how to cook, so he always eats outside and never cook by himself. In Chinese we can say 他不做饭。 (He does not cook.)
- (A: Do you cook? B: Yes. I cook every day. But before I got married, I always ate outside and did not cook by myself) In Chinese we can say 以前她____做饭。
- b. Yesterday he had a meeting with his students and came home very late. He ordered in instead of cooking by himself. In Chinese we can say 他没做饭。 (He did not cook.)
- Realized vs. Unrealized (The example of explicit training is only given in the first pair of sentences in the appendix.)
- 1. Implicit:
- a. The coordinator is out of town, so we won't have a meeting today. In Chinese we can say 今天 我们不开会。 (We don't have a meeting today.)
- b. Due to the heavy snow, yesterday's meeting was cancelled and we didn't have a meeting yesterday. In Chinese we can say 今天我们没开会。 (We didn't have a meeting today.)

Explicit:

Within the episodic situations, bu is used to negate unrealized situations vs. mei (you) is used to negate realized situations.

Realized: 今天我们没开会。(We didn't have a meeting today.)

Unrealized: 今天我们不开会。 (We don't have a meeting today.)

2.

- a. Today is Saturday; however, because Chinese program has the annual speech contest, everybody in the program needs to come. In Chinese we can say 今天我们不休息 (We don't have a day off today.)
- b. Today is Saturday; however, because we had a final paper due this afternoon, we didn't take the day off. In Chinese we can say 今天我们没休息 (We didn't have a day off today.)

3.

- a. you want to go jogging with your friend tomorrow. You called her and asked whether she will go jogging tomorrow. She said that it will rain tomorrow and she won't go running. In Chinese we can say 明天她不去跑步。(I won't go running tomorrow.)
- b. Yesterday had a heavy rain. The route in the park is muddy, so he did not run today. In Chinese we can say 今天他没去跑步。(I didn't go running today.)

a. I only have one class today. However, the class is cancelled because the teacher is sick. So I don't need to go to school today. In Chinese we can say 今天我不去学校。(I won't go to school today)

b. I don't feel very well the whole day, so I didn't go to school today. In Chinese we can say 今天我没去学校。(I didn't go school today)

For RC training:

• Reversible Subject RCs: (The example of RC explicit training on is only given to the first sentence in the appendix.)

1.

One of her friends invited her to a movie. That friend likes her very much. In Chinese we can say 请她看电影的那个朋友很喜欢她 (The friend who invited her to a movie likes her very much)。

Three choices in the implicit practice session for this RC sentence:

- a. 那个朋友请她看电影的很喜欢她。
- b. 请她看电影的那个朋友很喜欢她。
- c. 请那个朋友看电影的她很喜欢她。

Explicit training:

Making relative clauses based on simple sentences:

- a. 那个朋友请她看电影。
- b. 那个朋友很喜欢她。

First, find the shared component of these two simple sentences: 那个朋友

Second, delete the shared component form sentence (a), you get "请她看电影"; add "的"after"请她看电影", you get "请她看电影的"

Third, use the part you get from the second step "请她看电影的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get the relative clause "请她看电影的那个朋友很喜欢她 (The friend who invited her to a movie likes her very much.)"

Practice session for this RC sentence:

- (a. 那个朋友请她看电影。b. 那个朋友很喜欢她。) The shared component of these two sentences is:
 - a. 电影
 - b. 那个朋友
 - c. 她
- (a. 那个朋友请她看电影。b. 那个朋友很喜欢她。) Delete the shared component from sentence (a) and add "的", you get:
 - a. 请她看电影的

- b. 那个朋友的
- c. 她的

(a. 那个朋友请她看电影。b. 那个朋友很喜欢她。) Use the part you get from the second step "请她看电影的" to modify the shared component in sentence (b) by putting the modifier before the shared component, you get:

- a. 请那个朋友看电影的她很喜欢她。
- b. 那个朋友请她看电影的很喜欢她。
- c. 请她看电影的那个朋友很喜欢她。

2

A student often asks his teacher all kinds of interesting questions. He works hard on his study. In Chinese we can say

问老师问题的那个学生很用功。 (The student who often asks his teacher questions works hard.)

Three choices in the implicit practice session for this RC sentence:

- a. 问老师问题的那个学生很用功。
- b. 那个学生问老师问题的很用功。
- c. 问那个学生问题的老师很用功。

3.

That boy made a lot of friends. He is really lovely. In Chinese we can say 认识很多朋友的那个男孩很可爱。(The boy who made a lot of friends is really lovely.)

Three choices in the implicit practice session for this RC sentence:

- a. 那个男孩认识很多朋友的很可爱。
- b. 那个男孩认识的很多朋友很可爱。
- c. 认识很多朋友的那个男孩很可爱。

4.

Before Dr. DeKeyser gave a talk, a professor introduced him first. The professor likes singing a lot. In Chinese we can say...

介绍 Dr. DeKeyser 的教授喜欢唱歌。(The professor who introduced Dr. DeKeyser likes singing.)

Three choices in the implicit practice session for this RC sentence:

- a. 介绍 Dr. DeKeyser 的教授喜欢唱歌。
- b. 教授介绍 Dr. DeKeyser 的喜欢唱歌。
- c. 教授介绍的 Dr. DeKeyser 喜欢唱歌。
- Irreversible Subject RCs:

5.

A person is sending a message over there. He lives in Shady Avenue. In Chinese we can say 发短信的那个人住在 Shady Avenue (The person who is sending a message lives in Shday Avenue.).

Three choices in the implicit practice session for this RC sentence:

- a. 那个人发短信的住在 Shady Avenue.
- b. 那个人发的短信住在 Shady Avenue.
- c. 发短信的那个人住在 Shady Avenue

6.

A person bought a cup of coffee. He went to library after that. In Chinese we can say 买咖啡的那个人去了图书馆。 (The person who bought a cup of coffee went to library.)

Three choices in the implicit practice session for this RC sentence:

- a. 那个人买咖啡的去了图书馆。
- b. 买咖啡的那个人去了图书馆。
- c. 那个人买的咖啡去了图书馆。

7.

A person is speaking fluent French over there. He is a Chinese. In Chinese we can say 说法文的那个人是中国人。 (The person who is speaking French is a Chinese.)

Three choices in the implicit practice session for this RC sentence:

- a. 那个人说法文的是中国人。
- b. 说法文的那个人是中国人。
- c. 那个人说的法文是中国人。

8.

A girl is holding a bunch of flowers over there. She is pretty. In Chinese we can say 拿着花的那个女孩很漂亮。 (The girl who is holding a bunch of flowers is pretty.)

Three choices in the implicit practice session for this RC sentence:

- a. 拿着花的那个女孩很漂亮。
- b. 那个女孩拿着花的很漂亮。
- c. 那个女孩拿着的花很漂亮。
- Reversible Object RCs:

1.

Little Wang asked one of his friends out today. Unfortunately, his friend is sick and cannot go with him. In Chinese we can say

小王约的那个朋友生病了。(The friend whom little Wang asked out is sick.)

Three choices in the implicit practice session for this RC sentence:

- a. 那个朋友小王约的生病了。
- b. 那个朋友约的小王生病了。
- c. 小王约的那个朋友生病了。

2.

Obama welcomed several foreign friends in White House this morning. Afterwards, these friends went to New York. In Chinese we can say

Obama 欢迎的那些朋友去了纽约。 (The friends Obama welcomed went to New York.)

Three choices in the implicit practice session for this RC sentence:

- a. 那些朋友 Obama 欢迎的去了纽约。
- b. Obama 欢迎的那些朋友去了纽约。
- c. 那些朋友欢迎的 Obama 去了纽约。

3.

A clerk helped us a lot with our paperwork. We appreciate very much for her help. After we finished all the procedures, we found she already left. In Chinese we can say 我们谢的那个人已经走了。(The person we appreciate already left.)

Three choices in the implicit practice session for this RC sentence:

- a. 我们谢的那个人已经走了.
- b. 那个人我们谢的已经走了。
- c. 那个人谢的我们已经走了。

4.

I am looking for a friend in a big conference. Since my friend is very tall, I think it is not hard to find him. In Chinese we can say

我找的那个人很高。 (The person I am looking for is very tall.)

Three choices in the implicit practice session for this RC sentence:

- a. 那个人我找的很高。
- b. 那个人找的我很高。
- c. 我找的那个人很高。
- Irreversible Object RCs:

5

He is wearing a pair of special shoes. The shoes are very comfortable. In Chinese we can say 他穿的那种鞋很舒服。 (The shoes he is wearing is very comfortable.)

Three choices in the implicit practice session for this RC sentence:

- a. 那种鞋他穿的很舒服。
- b. 他穿的那种鞋很舒服。
- c. 穿那种鞋的他很舒服。

6.

My younger sister is eating an apple. The apple is very big. In Chinese we can say 我妹妹吃的那个苹果很大。 (The apple my sister is eating is very big.)

Three choices in the implicit practice session for this RC sentence:

- a. 我妹妹吃的那个苹果很大。
- b. 那个苹果我妹妹吃的很大。
- c. 吃那个苹果的我妹妹很大。

7.

My younger brother is reading a book. The book is very interesting. In Chinese we can say 我弟弟看的那本书很有意思。 (The book my brother is reading is very interesting.)

Three choices in the implicit practice session for this RC sentence:

- a. 那本书我弟弟看的很有意思。
- b. 我弟弟看的那本书很有意思。
- c. 看那本书的我弟弟很有意思。

8

He spent a lot of money each term. But most of the money is not earned by himself and is from his parents. In Chinese we can say

他花的很多钱是父母的钱。 (Most of the money he spent is from his parents.)

Three choices in the implicit practice session for this RC sentence:

- a. 很多钱他花的是父母的钱。
- b. 花很多钱的他是父母的钱。
- c. 他花的很多钱是父母的钱。

Test 4 (posttest 3):

Task 1: comprehension of bu/mei

以前她不在图书馆看书。

这个周末他没在家。

这儿的花没便宜。

图书馆不安静。

她没穿裙子。

他写字不快。

今天我不去老师办公室。

以前他不点辣的菜。

今天我没复习课文。

她不上网聊天。

这个城市的人没少。

今年寒假他不回家。

Task 2: fill-in-the-blank questions of *bu/mei*

- (A: Mark's writing speed is pretty fast, but he has been trying to increase it for two months. How is his writing now? B: I don't think it is improved.) In Chinese we can say 他写字快。
- (A: The librarians have tried several solutions to get people studying there to quite down. How is it now? B: I don't think the library has become quieter.) In Chinese we can say after several solutions, 图书馆___安静。
- (A: The Flower shop down the street is selling bouquets of flowers for \$90. B: What?! That is more than twice the price of a bouquet on the street corner.) In Chinese we can say 这个花店的花____便宜。
- (A: The city is very small and you can cross the town in less than half an hour of driving. B: Yeah. However, the number of people in this city is not a few) In Chinese we can say 这个城市的人 少。
- (A: If you like spicy food so much then why didn't you order spicy dishes at yesterday's dinner? B: Because several people there do not eat spicy food, and I wanted to share food with them.) In Chinese we can say 他___点辣的菜。
- (A: Why didn't I see you wear a skirt all the summer? B: I don't like wearing skirts because it shows out my fat ankle.) In Chinese we can say 她_____ 穿裙子。
- (A: I noticed that you drink at least five cups of coffee every day. B: Yes, I do. Can you imagine that I didn't drink coffee at all before.) In Chinese we can say 以前她____喝咖啡。
- (A: Cell phones really improves people's life and everybody is so convenient to be reached with cell phones. B: But also it brings you a lot of hassles. you lose a lot of freedom. That is why I refused to use cell phone for a long time before.) In Chinese we can say 以前 B_____ 用手机。
- (A: Did you go back home this winter break? B: No. I went to China to visit my friends.) In Chinese we can say 今年寒假他___回家。
- (A: Is it convenient for me to visit you this weekend? B: Sorry. I am going to a conference this weekend and won't be home.) In Chinese we can say 这个周末他___在家。
- (A: Did you go to the teacher's office? B: No. I had a long and busy day today, so I didn't get the chance to go to his office.) In Chinese we can say 今天他____去老师办公室。
- (A: Can we review the text together this afternoon? B: I need to pick up my friends at the airport this afternoon and I will review it tomorrow.) In Chinese we can say 今天我___复习课文。

Task 3: comprehension of RCs 我们欢迎的新朋友去了 WPU。 喜欢中文老师的那个学生很有意思。 约我们的那个人不能来了。 喝了很多酒的那个人回家了。 哭的那个学生考得不好。 小李请的那个人想学 Kung Fu。

那个人读的那本书很难。

那个人昨天发的短信很长。

Task 4: production of RCs

那个教授帮助小王 (nage jiaoshou bangzhu xiao Wang)。那个教授很酷 (nage jiaoshou hen ku)。Qestion: 哪个教授很酷?

那个人养那种狗 (nage ren yang na zhong gou)。那种狗很大 (na zhong gou hen da)。 Qestion: 哪种狗很大?

那个人找小明 (nage ren zhao xiao Ming)。那个人去过中国 (nage ren qu guo zhongguo)。Qestion: 哪个人去过中国?

她穿那件衣服 (ta chuan na jian yifu)。那件衣服很合适 (na jian yifu hen heshi)。 Qestion: 哪件衣服很合适?

那个学生花很多钱 (nage xuesheng hua henduo qian)。那个学生很懒 (nage xuesheng hen lan)。Qestion: 哪个学生很懒?

小王认识那个朋友 (xiao Wang renshi nage pengyou)。那个朋友会说中文(nage pengyou shuo zhongwen)。Qestion: 哪个朋友会说中文?

那个人读课文 (nage ren du kewen)。那个人是加拿大人 (nage ren shi jianada ren)。 Qestion: 哪个人是加拿大人?

我爸爸问那个学生 (wo baba wen nage xuesheng)。那个学生很聪明 (nage xuesheng hen congming)。 Qestion: 哪个学生很聪明?

Test 5 (delayed posttest):

Task 1: comprehension of bu/mei

以前在中国星期六不休息(a day off, rest)。

她的中文没好。

学校餐厅的饭不好吃。

以前我们的办公室不在 Cathedral of learning.

今天我没去图书馆。

今天他不开车去学校。

她不喝茶。

她没在学校餐厅吃饭。

她的办公室没大。

今年5月她不实习。

电脑不贵。

今天他没吃晚饭。

Task 2: fill-in-the-blank questions of bu/mei

(A: Do you want to order-in dinner today? B: I don't feel very well and would like to not eat dinner.) Based on the information above, in Chinese we can say that 今天她___吃晚饭。

- (A: Do you think the food at the campus cafeteria is better quality after the change? B: No, I don't think so. Although they made a lot of effort to improve the service and environment of the cafeteria, the food has not improved any.) Based on the information above, in Chinese we can say 学校餐厅的饭___好吃。
- (A: This computer was \$1,000 two months ago during the post-Christmas sale. B: Yesterday I saw this computer is still \$1,000 and has not gotten more expensive.) Based on the information above, in Chinese we can say 这台电脑____贵。
- (A: The weather last Saturday was really nice. Did you go outside and enjoy the sunshine? B: I needed to go to work last Saturday.) Based on the information above, in Chinese we can say 她星期六___休息 (take a day off, rest)。
- (A: Why didn't you take the bus to school before? Now, you know that it is more convenient than driving, and you don't need to take a long time to look for a parking space. B: I thought that the bus is much slower than driving.) Based on the information above, in Chinese we can say 以前他___坐公共汽车去学校。
- (A: Brenda is a second-year student in the Chinese program of Pitt. How is her Chinese? B: She isn't able to communicate with anyone in Chinese. I don't think she can speak it very well.) Based on the information above, in Chinese we can say 她的中文____好。
- (A: Hi, you live on campus. How are the meals at the campus cafeteria? B: I don't know. I don't eat at the campus cafeteria.) Based on the information above, in Chinese we can say that person B___在学校餐厅吃饭。
- (A: I am calling to borrow your lecture notes from yesterday's class? Can we meet at the library? B: Today, I cannot go to library. How about I give it to you tomorrow?) Based on the information above, in Chinese we can say that today person B ____去图书馆。
- (A: I noticed that you pay a lot of attention to your diet after you talked to your doctor. B: Yes I didn't eat fruits like apples, oranges, or watermelon before, now I have started to eat them.) Based on the information above, in Chinese we can say 以前他___吃苹果。
- (A: Why didn't you drive your car today? B: I got a flat tire yesterday on my way back. I had to take the bus here today.) Base on the information above, in Chinese we can say that today person B $_$ __ 开车。
- (A: Shannon's office is too small. It can only hold a desk and a chair. B: Yea. She complained several times to her boss about it.) Based on the information above, in Chinese we can say 她的办公室___大。
- (A: I heard that you went to a big company in New York for an internship in June. How was it? B: I didn't go there. I took 2 intensive courses in June and I was very busy with my coursework.) Based on the information above, in Chinese we can say that 今年 6 月她___去实习。

Task 3: comprehension of RCs 接新学生的老师渴了。 那个人买的咖啡很好喝。 谢我们的那个学生考得很好。 小王住的那个公寓很漂亮。 昨天看电影的那个男生很帅。 我们等的那个人在打电话。 打球的那个学生很聪明。 教授介绍的那个学生很可爱。

Task 4: production of RCs

那个人请我们 (nage ren qing women)。那个人喜欢打球 (nage ren xihuan daqiu)。 Question: 哪个人喜欢打球?

我爸爸喝那种酒 (wo baba he na zhong jiu)。那种酒很便宜 (na zhong jiu hen pianyi)。 Question: 哪种酒很便宜?

那些人欢迎新学生 (na xie ren huanying xin xuesheng)。那些人很忙 (na xie ren hen mang)。Question: 哪些人很忙?

她穿那双红鞋 (ta chuan na shuang hongxie)。那双红鞋很贵 (na shuang hongxie hen gui)。Question: 哪双鞋很贵?

那个人唱中文歌 (nage ren chang zhongwen ge)。 那个人去过中国 (nage ren qu guo zhongguo)。Question: 哪个人去过中国?

她喜欢那个男孩 (ta xihuan nage nanhai)。那个男孩很酷 (nage nanhai hen ku)。 Question: 哪个男孩儿很酷?

那个人喝咖啡 (nage ren he kafei)。那个人很酷 (nage ren hen ku)。Question: 哪个人很酷?

小李帮助那个教授 (xiao Li bangzhu nage jiaoshou)。那个教授去了中国(nage jiaoshou qu le zhongguo)。Question: 哪个教授去了中国?

APPENDIX B: FLIER FOR RECRUITING PARTICIPANTS

Learning, reviewing and earning

Dear first year students,

I am a sixth year PhD student and also a current instructor of second-year Chinese at Pitt. My specialty is Chinese Linguistics and the acquisition of Chinese as a second language. After several years of hard work, I finally reached the last and hardest step for my dissertation: collecting data. The whole process will take you around 3 hours and 40 minutes; you will be asked to come four times to Language Media Center (CL G17) at your convenient time. You will be paid \$100 for full completion of the study.

The research tests two complex Chinese language grammars which you have learned and which learners often make errors when using: the distinction of Λ /没 and Chinese relative clauses. The training and testing, for these two grammars, are conducted on a computer. The research is designed based on the first-year textbook and the Chinese characters found in the research come from the first-year textbook. To participate in the research, you need first choose any three consecutive days from March 25th to April 7^{th} , and then choose the fourth time two weeks later after the third day you come (the 1^{st} day: 80 min; 2^{nd} day: 60 min; 3^{rd} day: 60 min; and the 17^{th} day: 20 min).

I am able to reserve the Language Media Center every day from March 25th to April 7th from 2:00 to 5:00pm. These are the regular hours for coming. However, if these hours don't work or you prefer another time, I would be happy to accommodate you. Please email me (<u>jiw45@pitt.edu</u>) what times you would like to take the training and testing. Thank you all for your help.

Since I am interested in oral Chinese, and heritage learners generally have near native-like oral proficiency, heritage learners will not be included in this research.

Participation in this research is voluntary, and it will not affect your grades in any way.

Jing Wang (jiw45@pitt.edu)
PhD candidate

Linguistics department University of Pittsburgh

APPENDIX C: LANGUAGE BACKGROUND INFORMATION

All personal information you will provide is confidential. Feel free to use the back of the sheet if you need more room.

Name: Is English your native language?						
What language(s) does your mother speak? your father?						
How old were you when you started to learn Chinese?						
How many years have you studied Chinese?						
Do you study Chinese in your free time (not for school purposes)?						
If yes, how many hours per week do you practice Chinese?						
What do you do to study Chinese? read books watch movies or television listen to music other						
Do you speak Chinese outside of your language class?						
If yes, how many hours per week do you speak Chinese?						
Who do you speak Chinese with? ☐ friends who are native speakers of Chinese ☐ friends who are not native speakers of Chinese ☐ boss or other people at work ☐ other						

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Questions	ahout	the	training	and	tecte.
Questions	about	uic	uammg	ana	wous.

- 1. Do you think it is too easy or two hard for you? Which one do you think is harder to learn? Bu/mei or relative clauses?
- 2. Do you think you have learned from the three days training? Which do you think you learned more? Negative forms bu/mei or relative clauses?

Thanks for your cooperation!

Please take a moment now to make sure that you have filled in all the blanks.

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