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Existential quantifiers in second language acquisition: a feature reassembly account*

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Lardiere's (2005, 2008, 2009) Feature Reassembly Hypothesis proposes that L2 acquisition involves reconfiguring the sets of lexical features that occur in the native language into feature bundles appropriate to the L2. This paper applies the Feature Reassembly Hypothesis to findings from recent research into the L2 acquisition of existential quantifiers. It firstly provides a feature-based, crosslinguistic account of polarity item *any* in English, and its equivalents—*wh*-existentials—in Chinese, Korean and Japanese. We then test predictions built on the Feature Reassembly Hypothesis, about how learners map target existential quantifiers in the L2 input onto feature sets from their L1, and how they then reassemble these feature sets to better match the target. The findings, which are largely compatible with the predictions, show that research that focuses on the specific processes of first mapping and then feature reassembly promises to lead to a more explanatory account of development in L2 acquisition.

* Earlier versions of this paper have been presented at GALA 2011 in Thessaloniki, and at research seminars at the University of Iowa, University of Cambridge and University of York. We are indebted to the audiences, especially Dora Alexopoulou, Harald Clahsen, Laura Dominguez, and Boping Yuan for their questions and comments, which helped to shape the paper. We also thank George Tsoulas for his extensive discussion, and Roumyana Slabakova for her insightful comments and her encouragement. We are grateful to the editors and reviewers for their detailed, helpful comments. This research is partially supported by the Learned Societies Fund and Research Strategy Committee Fund (School of English) at the University of Sheffield and the Research Priming Fund at the University of York. All errors are our own.

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1. Introduction

Acquisition of existential quantifiers in a second language (L2) presents a variety of learnability problems, due to the considerable cross-linguistic variation in this domain. The problem is made more interesting by the fact that in many languages, the basic existential meaning (\exists) is wrapped inside a set of licensing requirements that restrict in various ways the occurrence of the resulting lexical item. English *any*, Chinese *renhe* ‘any’, and the existential use of Chinese *wh*-words are all polarity sensitive, meaning that their distribution is restricted—although each in slightly different ways (Cheng, 1994; Giannakidou, 1997, 2006; Klima, 1964; Wang & Hsieh, 1996; Zwarts, 1995; among others). Korean and Japanese, like Chinese, can form existential quantifiers from *wh*-words, but in these languages, their distribution is not restricted (Gill, 2004; Nishigauchi, 1990; among others). The range of properties of the existential quantifiers in the above-mentioned languages offers an ideal paradigm within which to characterise the specific acquisition tasks that Lardiere’s recent Feature Reassembly proposal about L2 development (Lardiere, 2005, 2008, 2009) calls for: namely, a mapping task and a feature reassembly task (outlined below). The goal of this paper is to bring together existing data on the L2 acquisition of existential quantifiers, in order to investigate how the Feature Reassembly proposal can be applied. As a key step in achieving this goal, we provide a unified, feature-based representation of existential quantifiers in these languages.

In the Feature Reassembly Hypothesis (which builds on Full Transfer/Full Access (Schwartz & Sprouse, 1996)), L2 acquisition proceeds by means of the learner perceiving correspondences between lexical items in the L2 input and items in their

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own L1. This results in the L2 form being mapped to the L1 feature set for the item that is perceived to be equivalent. Once this initial mapping is established, ‘feature reassembly’ can occur, if required: features can be added or deleted from the L1-based feature set, as motivated by evidence in the input. However, reassembly may be slow to occur or may not occur at all if the relevant evidence is rare in the input, or if it is obscured by the L1 grammar. Lardiere (2008, 2009) thus proposes that a significant learning problem in L2 acquisition involves differences between the L1 and the L2 with regard to how features are assembled at the lexical level.

The Feature Reassembly approach to L2 development is rooted in minimalist syntactic theory (Chomsky, 1995), in which cross-linguistic variation boils down to variation in the way that syntactic features are assembled on lexical items. However, the cross-linguistic variation in existential quantifiers is one of many phenomena for which syntactic theory does not yet have a feature-based account. Rather than conclude that application of the Feature Reassembly approach must therefore be restricted to those phenomena that have been thoroughly explored in minimalist syntax research, we act on the observation by Zwarts (1998, p.177) that ‘the phenomenon of polarity [...] is essentially of a purely lexical nature’, and propose our own working model of a feature-based account for the behaviour of the existential quantifiers that form the foci of the L2 studies we discuss.

We focus here on the existential use of *any* in different environments. We exclude from this work instances in which *any* can be classed as a pure Negative Polarity Item (NPI) or as a Free Choice Item (FCI). These elements are accounted for by the same principles but their inclusion would unnecessarily complicate the picture as the other languages we consider have separate lexical items corresponding to the

FCI or the NPI interpretations of *any*. As a result, they have no direct incidence on the issues investigated here regarding existentials.

The paper is structured as follows. In section 2, we propose a feature-based account of the cross-linguistic variation in the expression of relevant existential quantifiers. Section 3 then uses the resulting proposal about feature configurations for existential quantifiers as the basis for predictions about L2 development in terms of two distinct tasks within the Feature Reassembly approach: mapping, and the feature reassembly task itself. We propose a hierarchy of difficulty for each task depending on L1–L2 combination. Section 4 then considers the predictions in light of existing research findings on the L2 acquisition of existential quantifiers in Korean, Chinese, and English. We argue on the basis of this exploration that the precise research framework required by the Feature Reassembly Hypothesis, together with the cross-linguistically complex domain of existential quantifiers, presents opportunities to further understand the relatively unknown process of L2 development.

2. ‘Any’ in English, Korean, Japanese and Chinese

2.1. Polarity sensitive existential quantifiers

2.1.1. English *any*

The determiner *any* and its compounds (*anyone*, *anything*, etc.) are ‘polarity items’, which is the term used since Klima (1964) to classify expressions whose distribution is restricted to certain environments:

1. a. If anyone crosses the finish line, raise the flag.
- b. Did you eat any strawberries yesterday?

- c. *Anyone is eating ice cream.
- d. *Ben ate any strawberries yesterday.

Much research has been devoted to trying to explain the precise restrictions on the distribution of *any* and other polarity items (e.g., Ladusaw, 1979; Linebarger, 1980, 1987; Zwarts, 1995, and others). We follow Giannakidou (1997, 2006), who argues (following Zwarts, 1995) that *any* is sanctioned in nonveridical contexts—that is, contexts that do not correspond to an actual event.¹ Thus, *any* is grammatical in contexts such as conditionals and interrogatives as in (1-a) and (1-b), but it is incompatible with progressives and episodics as in (1-c) and (1-d).

In all of the examples in (1), the (un)grammaticality of *any* could be accounted for in terms of licensing under the scope of a nonveridical propositional operator. Suppose that *any* bears an uninterpretable nonveridical feature [*u*NV], this feature could be checked and deleted by a nonveridical operator in CP.² However, if the propositional operator is veridical (as in episodics and progressives), then the [*u*NV]

¹ Giannakidou (2001, p.670) defines (non)veridicality as ‘a property of propositional operators in terms of truth entailment. A propositional operator is veridical iff the truth of *Op p* in *c* requires that *p* be true in some individual *x*’s epistemic model $M_E(x)$ in *c*. If the truth of *Op p* in *c* does not require that *p* be true in some such model in *c*, *Op* is nonveridical.’

² Both Giannakidou (2006) and Zwarts (1998) appeal to lexical-semantic properties as the source polarity sensitivity, although neither has proposed a specific feature. Szabolcsi (2004) proposes a feature-based account of *any* in negative polarity contexts, but this does not extend to all nonveridical contexts. Note that implementing semantic operators as features in syntactic derivation is not a new idea. In accounting for the *some-any* alternation in elliptical contexts in English, for instance, Tanaka and Tsoulas (2006) employ a feature [*u*Pol] for NPI *any* licensed in negation.

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feature would fail to be checked, and the derivation would crash: hence, (1-c) and (1-d) are ungrammatical.

However, there are two exceptions to the above generalisation. First, there are some veridical contexts where *any* is allowed, as shown in (2). If *any* bears a [*u*NV] feature, these sentences should be ungrammatical due to the absence of a nonveridical operator to check [*u*NV]; yet *any* is grammatical.

2. a. Only Izzy knew anything.
- b. Sam regretted that his boss had told anyone the news.

For exceptions such as these, Giannakidou (2006) argues that in certain veridical environments *any* can be ‘rescued’ by negative (i.e., nonveridical) inference in the context. Due to the lexical semantics of *only* and negative factive verbs such as *regret*, both (2-a) and (2-b) give rise to negative inferences, along the lines of (3-a) and (3-b).

3. a. Only Izzy knew anything. → No-one but Izzy knew anything.
- b. Sam regretted that his boss had told anyone. → Sam wished that his boss had not told anyone.

The second exception is that there are some nonveridical environments in which *any* is ungrammatical. As illustrated in (4-a)–(4-b), *any* is ungrammatical after adverbs of uncertainty (e.g., *probably*) and in the complement of non-factive verbs (e.g., *assume*), even though these sentences are nonveridical.

4. a. *She has probably eaten anything.
- b. *Sam assumed that his boss had told anyone the news.

Giannakidou (2006) points out that these combined properties of *any* place it (and certain similar items) in a distinct class of polarity items that contrasts with the class of polarity items that require strict syntactic licensing by a nonveridical operator. We will refine our proposal of a [*uNV*] feature by contrasting *any* with its Chinese counterparts, among which strict licensing by nonveridicality can be observed.

2.1.2. ‘Any’ in Chinese

As mentioned in Section 1, Chinese makes use of *wh*-expressions as existential quantifiers, in addition to their function as *wh*-interrogatives.³ These items are polarity sensitive in their existential sense. The interrogative and existential quantifier functions of Chinese *wh*-expressions are illustrated in (5)–(9), where the morpheme *shenme* is interpreted variously as ‘what’, or ‘anything’ (example (5) from Cheng, 1994, p.617; examples (6)–(9) from Li, 1992, pp.127–132).⁴

5. Hufei chi-le shenme (ne)?

³ Chinese *wh*-expressions also function as universal quantifiers. This function arises when the *wh*-word is licensed by the quantificational adverb *dou* ‘all’, in the same way that the *wh*-interrogative sense arises through licensing by an interrogative particle, as described below. See e.g., Cheng (1994); Li (1992) for details.

⁴ Throughout this paper, we use small caps to gloss *wh*-words in Chinese, Korean and Japanese, to indicate that their interpretation is not fixed. The intended interpretation (*wh*-interrogative or existential) is evident in the translation.

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Hufei eat-ASP what WH-Q

‘What did Hufei eat?’

6. Ta bu xihuan shenme.

he not like WHAT

‘He doesn’t like anything’

7. Ta xihuan shenme ma?

he like WHAT YES-NO-Q

‘Does he like something/anything?’

8. Yaoshi/Ruguo shenme ren xihuan ta, ...

If WHAT person like him

‘If anyone likes him...’

9. Ta zuo shenme.

he do WHAT

*‘He did something’ (‘What did he do?’)

The *wh*-interrogative interpretation of *shenme* (5) occurs when the *wh*-question marker *ne* is present, or when *ne* is omitted but the utterance has *wh*-interrogative intonation. The existential reading ‘anything/something’ occurs in a number of environments, including negation (6), *yes-no*-questions (7), and conditionals (8). However, as example (9) shows, the existential reading cannot occur in an episodic

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sentence. Example (9) can only receive a *wh*-interrogative interpretation (dependent on interrogative intonation).

Cheng (1994) (following Nishigauchi, 1990) accounts for the interpretation of Chinese *wh*-expressions in terms of binding by a quantificational operator. She assumes that these items are variables with no inherent quantificational force. The *wh*-interrogative sense thus occurs when bound by a *wh*-operator associated with the *wh*-question marker *ne* or its covert counterpart. For existential interpretations, Cheng proposes that a ‘trigger’ must be present, such as negation, or the *yes-no*-marker *ma*. When such a trigger is present, Cheng argues that the existential reading arises through binding of the *wh*-expression by existential closure. When there is no trigger, then the existential quantifier reading cannot occur. Hence, a sentence like (9) is ungrammatical (with declarative intonation). Building on Cheng (1994) (and also Li, 1992), Lin (1998) proposes a ‘Non-Entailment-of-Existence Condition’ whereby Chinese *wh*-existentials ‘must fall within the scope of some kind of operator—the kind which makes the proposition containing the [*wh*-existential] a non-fact’ (Lin, 1998, p.244). In other words, they are licensed under the scope of a nonveridical operator. This condition is met in (6)–(8) as well as in other constructions such as in the alternative *yes-no*-question form ‘*A-not-A*’ (10), the complement clause of a nonfactive verb (11), under the scope of an adverb of uncertainty (12), and in clauses marked by the aspect particle *le*, which, according to Li (1992), indicates inference of an event (examples (10)– (13) from Li, 1992, pp.129–133).

10. Ta xi-bu-xihuan shenme?

he like-not-like WHAT

‘Does he like something/anything?’

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11. Wo yiwei/renwei/cai/xiwang ni xihuan shenme (dongxi).

I think/think/guess/hope you like WHAT thing

‘I think/guess/hope that you like something.’

12. Ta dagai/keneng xihuan shenme.

he probably like WHAT

‘He probably likes something.’

13. Ta kandao shenme le.

he see WHAT INFERENCE

‘(It seems that) he saw something.’

The examples above demonstrate that Chinese *wh*-existentials are licensed by all non-veridical environments. This contrasts with English *any*, which, as we saw above, is not grammatical in at least two nonveridical environments: with uncertainty adverbs ((4-a), cf. (12)), and in the complement clause of a non-factive verb ((4-b), cf. (11)). In fact, Chinese has another polarity item that behaves in the same way as *any* in this respect. The existential *renhe* in Chinese, while licensed within non-veridical environments, is not allowed in (11) or (12), just like *any* (examples from Wang & Hsieh, 1996, pp.45–46).

14. a. Wo yiwei/cai ni kandao shenme/*renhe dongxi

I think/guess you see WHAT/any thing

‘I think/guess that you saw something/*anything’

b. Ta dagai/keneng xihuan shenme/*renhe dongxi

he probably like WHAT/ any thing

‘He probably likes something/*anything’

In short, Chinese *wh*-existentials seem to be licensed by a ‘default’ superset of nonveridicality, while English *any* and Chinese *renhe* are licensed in a subset of nonveridical environments.

A final point to note about Chinese *wh*-existentials is that they do not deviate from strict licensing by nonveridicality. Specifically, they are not ‘rescued’ by negative inference, unlike *any* (Li, 1992, pp.129–133):

15. *Wo houhui zuo shenme (shiqing).

I regret do WHAT thing

‘I regret having done something/anything.’

We will assume that the mechanism that allows *any* to be licensed by negative inference is post-syntactic (along the lines of Giannakidou’s (2006) ‘rescue’ mechanism). This mechanism thus lies outside the lexical properties of *any*. Consequently, it is not represented as a part of the feature specification of *any*, which we propose, along with feature sets for Chinese existentials, in the following section.

2.1.3. A proposal for licensing of polarity-sensitive existential quantifiers in English and Chinese

Chinese *wh*-existentials appear to correspond to Giannakidou’s (2006) class of polarity items that are licensed strictly by nonveridicality. Let us suppose, then, that Chinese *wh*-expressions, when functioning as existential quantifiers, host the

proposed uninterpretable nonveridical feature [*uNV*]. This feature could be checked and deleted by a nonveridical operator that, we assume, corresponds to Lin’s (1998, p.244) ‘kind [of operator] which makes the proposition containing the [*wh*-existential] a non-fact’. Moreover, our assumption is that the nonveridical operator is hosted by the lexical items that Cheng (1995) refers to as ‘triggers’ for *wh*-existential licensing: the negators *meiyou* or *bu*, the *yes/no*-question particle *ma*, the conditional complementizer *ruguo* ‘if’, and so on.

This proposal thus calls for differentiation at the level of features between Chinese *wh*-existentials, and the *wh*-expressions that are licensed by a *wh*-interrogative operator. We propose that for each Chinese *wh*-expression, there are two phonologically identical lexical entries: one that bears a [*uNV*] feature, and one that does not. This is shown schematically using *shei* (‘who’) as follows:

16. a. *shei* as *wh*-existential: b. *shei* as *wh*-interrogative:

$$\left[\begin{array}{c} \dots \\ \varphi \\ uNV \end{array} \right] \qquad \left[\begin{array}{c} \dots \\ \varphi \end{array} \right]$$

Returning to English *any*, we observed that the set of nonveridical environments that permit *any* represents a subset of the nonveridical environments that permit Chinese existential quantifiers (since *any* is ungrammatical with adverbs of uncertainty and with non-factive verbs, unlike Chinese *wh*-existentials).⁵ Therefore, we will assume

⁵ A similar observation is made in Zwarts (1998), where three different types of NPI are identified according to their licensing environments: weak, strong and superstrong. The licensing environments

that *any* also hosts an uninterpretable nonveridical feature but that it is subject to some kind of stronger restriction that disallows *any* in environments with uncertainty adverbs and non-factive verbs. Though we cannot offer an account for the precise nature of what contributes to this stronger restriction on *any*, we will represent it as an additional feature, α , alongside the NV feature in the lexical entry of *any*.⁶ We will label this combination of features $[uNV+\alpha]$, the notation that differentiates *any* from that of Chinese *wh*-existentials. Chinese *renhe*, sharing the same distributional restrictions as *any*, will also be represented with $[uNV+\alpha]$ in its feature specification, as follows:

17. a. *any*:

b. *renhe*:

$$\begin{bmatrix} \dots \\ \varphi \\ uNV+\alpha \end{bmatrix}$$

$$\begin{bmatrix} \dots \\ \varphi \\ uNV+\alpha \end{bmatrix}$$

of superstrong NPIs are a subset of the licensing environments of strong NPIs, which are in turn a subset of the licensing environments of weak NPIs. Zwarts argues that relative strength of negative polarity is intrinsic to the expressions themselves and thus must be accounted for in the lexicon (Zwarts, 1998, p.189).

⁶ One possibility is that the feature set represented by $[uNV+\alpha]$ must be checked by a clause-level nonveridical operator, whereas $[uNV]$ alone can be checked by any lexical nonveridical operator. Thus, if the nonveridical operator occurs on an adverb of uncertainty or in the VP of a nonfactive verb, then it is ‘invisible’ to the $[uNV+\alpha]$ combination. A problem with such an analysis lies in the licensing of *any* by negation, as negation is not a clause-level licenser. We speculate that licensing by negation could fall under a distinct usage of *any* as an NPI, and that NPIs should be treated as a distinct class of nonveridical items. This proposal is the subject of a separate paper.

2.2. ‘Any’ in Korean and Japanese: No distributional restrictions

Korean and Japanese, like Chinese, use *wh*-words to form *wh*-existentials. However, unlike their Chinese counterparts, Korean and Japanese *wh*-existentials are not subject to any distributional restrictions: they can occur in both veridical and non-veridical contexts. Due to this similarity between Japanese and Korean *wh*-existentials, in this section, we will describe and discuss their properties using Korean examples, while pointing out differences between the two languages where necessary.

The following examples show the use of *wh*-expressions as existentials and their distribution in Korean.

18. a. Nwu-ka cha-lul masiko iss-nayo?
 WHO-NOM tea-ACC drink PROG-Q
 ‘Is anyone/someone drinking tea?’
 ‘Who is drinking tea?’
- b. Nwu-ka sen-ul nemu-myen, kispal-ul tul-era.
 WHO-NOM line-ACC cross-COND flag-ACC raise-IMPER
 ‘If anyone/someone crosses the line, raise the flag’
- c. Nwu-ka cha-lul masiko isseyo.
 WHO-NOM tea-ACC drink PROG
 ‘Someone (*anyone) is drinking tea’

Korean *nwukwu* ‘who/anyone/someone’ can occur in both nonveridical contexts like questions (18-a) and conditionals (18-b), and also in veridical contexts such as

progressive declaratives (18-c).⁷ The example in (18-a) has two possible readings depending on whether *nwukwu* is interpreted as an interrogative pronoun or an existential quantifier. The two interpretations are differentiated by intonation: falling intonation yields the *wh*-interrogative reading; rising intonation yields the *yes-no*-question reading (Jun & Oh, 1996; among others).

Korean *wh*-expressions are generally assumed to be variables, whose quantificational force is determined through binding by a quantificational operator (like Chinese *wh*-expressions) (Aoun & Li, 2003; Cole & Hermon, 1998; Gill, 2004, Gil & Tsoulas, to appear; Kim, 1989; Nishigauchi, 1990; among others). According to Choi (2009), the features on sentential particles that head C play a key role in determining quantificational force. In (18-a), a *wh*-operator occurs when the question particle *nayo* has both *wh*- and interrogative features [+wh, +Q], while an implicit existential operator occurs when *nayo* has [–wh, +Q] features. (Choi suggests that the phonological reflexes of these different feature sets are the falling intonation of *wh*-questions and the rising intonation of *wh*-questions.) In (18-b) and (18-c), neither the conditional particle *myen* nor the progressive declarative *isseyo* is associated with a [+wh] or [+Q] feature, therefore in these cases too, an implicit existential operator gives *nwukwu* its existential quantifier sense.⁸

⁷ Note that when *nwukwu* is followed by the nominative case marker *ka*, the form is reduced to *nwu*.

⁸ In addition to bare *wh*-expressions as existentials, Korean has another existential quantifier which is formed when a *wh*-word combines with the particle *inka* (a *yes-no*-question particle), e.g., *nwukwu-inka* '(specific) someone'. This complex *wh*-existential form follows the same distributional pattern as the bare *wh*-existentials; that is, it is not subject to any distributional restrictions. Since the two forms share the same distribution pattern, we consider only the bare *wh*-existential *nwukwu* from here onwards.

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The following summarises the use of *wh*-expressions in Korean so far.

19. *nwukwu* (who): ‘who’, ‘(existential) anyone’, or ‘(non-specific) someone’

Compare this with the use of *wh*-expressions in Japanese:

20. a. *dare* (who) ‘who’/*someone
b. *dare+ka* (who+disj) ‘(existential) anyone/someone’

In (20-b), Japanese *wh*-words can combine with a particle *ka* to form an existential quantifier. However, as shown in (20-a), bare *wh*-words cannot serve as *wh*-existentials in Japanese; they serve only as interrogative pronouns. It is in this respect that Japanese *wh*-existentials differ from Korean (and also from Chinese: recall that in Chinese, *shei* (‘who’) can have the sense of *who* or *anyone/someone*). However, Japanese *wh*-existentials are like Korean in that they can occur in both veridical and nonveridical contexts. Moreover, the properties of *wh*-words in Korean and Japanese have received a similar line of analysis: the root *wh*-words are variables with no inherent quantificational feature, bearing only phi-features. The quantificational force of the *wh*-expressions arises through binding by an appropriate operator. In complex *wh*-quantifiers, the particles that combine with the root *wh*-expression also contribute to the properties of the resulting form through their features. For instance, the existential sense of *dare-ka* (20-b) arises from the particle *ka* (along the lines of

Kuroda 1965; Nishigauchi 1990). In short, nonveridicality is irrelevant to *wh*-existentials in Korean and Japanese.⁹

2.3. Summary

In order to facilitate discussion of the L2 acquisition of existential quantifiers in the context of Lardiere’s Feature Reassembly hypothesis, this section has proposed feature sets for English *anyone* and for the lexical items that seem to be most closely equivalent in Chinese, Korean, and Japanese. We summarise these feature sets in (21), where we also include the *wh*-interrogative sense of Chinese *shei*, since this will be relevant to the L2 acquisition discussion.

21.

| English | Chinese | | | Korean | Japanese |
|-------------------------------|----------------------|------------------------------|-------------------------------|------------------------------------|---|
| <i>anyone</i> | <i>shei</i> ‘who’ | <i>shei</i> ‘any/someone’ | <i>renhe</i> ‘any’ | <i>nwukwu</i> ‘who/any/someone’ | <i>dare-ka</i> _{DISJ} ‘any/someone’ |
| \varnothing <i>uNV+α</i> | \varnothing | \varnothing <i>uNV</i> | \varnothing <i>uNV+α</i> | \varnothing | \varnothing -V |

Based on these feature sets, the following section will set out the feature reassembly tasks facing learners acquiring existential quantifiers.

⁹ There are other *wh*-quantifiers such as *nwukwu-na* (who+DISJ = free-choice *any*) and *nwukwu-to* (who+CONJ = no-one) in Korean, and *dare-mo* (who+CONJ = no-one; also *everyone* when followed by a case-marker) in Japanese. In all cases, the quantificational and distributional forces are argued to come from the particles that *wh*-words combine with. See Gill, Harlow and Tsoulas (2007), Gil and Tsoulas (to appear), and Tanaka and Tsoulas (2006) for details.

3. The L2 learnability problems

Under the Feature Reassembly proposal, L2 acquisition proceeds by means of learners initially associating lexical items they encounter in the input with the feature sets of the closest morpholexical equivalents in their L1, on the basis of meaning or grammatical function (Lardiere, 2009). Once such an initial mapping from the target input to an L1 lexical entry is made, then feature reassembly can take place, and the L1-based feature set modified, if evidence in the input motivates this. The present section considers mapping and feature reassembly separately, and makes predictions about how each step will be achieved (if at all), with respect to the L2 acquisition of existential quantifiers. We focus on L2 Korean by English speakers, L2 Chinese by English or Japanese speakers, and L2 English by Chinese or Korean speakers, since these are the L1–L2 combinations that are investigated in the experimental studies described in Section 4.

3.1. Step 1: Mapping

Meaning and grammatical function are taken to be the cues that learners use to map items they perceive in the target language input to feature assemblies that exist in their L1. With this in mind, the existence of homophony in Chinese and Korean between the forms that express the *meaning* of existentials and those that serve the *function* of *wh*-interrogatives may complicate the mapping process for learners whose L1 is English. This is because learners usually encounter the interrogative use of *wh*-expressions much earlier in their exposure to target input and practise it much more than the existential use (at least in a classroom context: most if not all of the participants in the relevant studies in Section 4 had experienced classroom

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instruction).¹⁰ Consequently, English speakers acquiring Korean or Chinese are likely to map the forms *nwukwu* (Korean)/*shei* (Chinese) to their L1 feature set for *who* at an early stage of acquisition. Since *who* and *anyone* are morpho-phonologically distinct, the L1 does not provide any clue that another meaning for *shei* should be anticipated. When learners encounter *nwukwu/shei* in a context where the intended interpretation is existential, the prior association of these forms with *who*, along with potentially ambiguous context, may mean that learners do not readily realise that it should not be interpreted as a *wh*-interrogative (Choi 2009, p.52 also makes this point.). As a result, the existential quantifier use of *wh*-words may be easy to overlook for English-speaking learners, once the corresponding form is established as a *wh*-interrogative.

Japanese-speakers acquiring Chinese are in a similar situation, since Japanese has distinct forms, *dare* ‘who’ and *dareka* ‘anyone/someone’, corresponding to the single form *shei* in Chinese. Thus, for similar reasons as for the English-speaking learners, Japanese speakers may easily establish a mapping from the *wh*-interrogative *shei* to the L1 *wh*-interrogative *dare* ‘who’ but then have difficulty identifying the existential quantifier sense of *shei*. However, in this L1–L2 combination, the morphological similarity between the two languages, whereby both have variable *wh*-

¹⁰ For example, in online Chinese lessons, *wh*-interrogatives are introduced within the first few lessons (BBC Languages 2012; Learn Chinese 2012 Lesson 4), and frequently form part of the practice exercises, whereas *wh*-existentials occur later and are not presented as a focus for practice (e.g., Learn Chinese 2012 Lesson 14). Information about *wh*-existentials is also sparse in Chinese grammar references. Norman (1988) and Yip and Rimmington (1997) do not mention existential use of Chinese *wh*-expressions at all. Cheung, Liu and Shi (1994) and Li and Thompson (1981) briefly describe the use of Chinese *wh*-words as indefinite pronouns, but there is no mention of restrictions on this usage. For Korean, personal discussion with L2 Korean learners who had completed beginner level courses in the UK confirms that these learners had not covered the existential use of bare *wh*-expressions.

of English (22-c), because the target form *anyone* is distinct from English *wh*-words, and learners will be able to use meaning as a cue to map *anyone* to their L1 equivalents, without any interference from homophonous forms. The order of L1–L2 combinations in (22) represents the predicted degree of difficulty in terms of mapping from more difficult to less difficult.

3.2. Step 2: Feature Reassembly

Assuming that L1–L2 correspondences are drawn as in (22), then the initial-state (i.e., L1-based) and target feature sets are as shown in (23). To achieve these targets, distinct feature reassembly processes are required for each L1–L2 combination.

| 23. | L1 | TARGET |
|------------------------|---|------------------------------|
| L1 Japanese–L2 Chinese | φ, \mathbf{v} | φ, uNV |
| L1 Korean–L2 English | φ | $\varphi, \text{uNV}+\alpha$ |
| L1 English–L2 Chinese | $\varphi, \text{uNV}+\alpha$ | φ, uNV |
| L1 Chinese–L2 English | $[\varphi, \text{uNV}]$, or $[\varphi, \text{uNV}+\alpha]$ | $\varphi, \text{uNV}+\alpha$ |
| L1 English–L2 Korean | $\varphi, \text{uNV}+\alpha$ | φ |

The feature reassembly tasks in (23-a) and (23-b) share a similar process. Both sets of learners must add a feature or features ($[\text{uNV}]$ in Chinese, $[\text{uNV}+\alpha]$ in English) to their L1-based feature set, while the Japanese speakers (23-a) must also delete the disjunction feature \mathbf{v} contributed by the *-ka* particle of *dareka*. A prerequisite for the addition of the $[\text{uNV}]$ feature in (23-a) is that the learner

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establishes that the existential use of *shei* is restricted to nonveridical environments. For addition of the [$uNV+\alpha$] feature combination in (23-b), the learner must establish that *any* is restricted to a subset of nonveridical environments (see section 2.1.3). In both cases, it seems that the learners are faced with a poverty-of-the-stimulus problem, since the input will not provide evidence about where *shei/anyone* is ungrammatical. Given the less restrictive feature set from the L1, it is not clear what could motivate addition of the appropriate nonveridical feature(s). Consequently, both sets of learners may allow non-target-like unrestricted use of existential quantifiers, even at advanced levels of proficiency.

On the other hand, for L1 English–L2 Chinese in (23-c), the feature reassembly task involves deleting the α feature so that just the nonveridical feature [uNV] remains. In this case, evidence in the input should motivate this change. Specifically, examples of the existential use of Chinese *wh*-words with adverbs of uncertainty (e.g., (12) above) should demonstrate that the English [$uNV+\alpha$] feature combination is too restrictive for Chinese (provided that the learner does not misinterpret such uses as interrogatives).

For Chinese-speaking learners of English (23-d), there are two possible feature reassembly processes depending on whether mapping is made to Chinese *wh*-existentials or *renhe*. If the former, then addition of the α feature to the less restrictive [uNV] feature represents another poverty-of-the-stimulus problem, since the input will not provide evidence that *any* is ungrammatical in certain nonveridical environments such as with adverbs of uncertainty. Classroom instruction is unlikely to help: consultation with teachers of English along with examination of textbooks (e.g., Artusi, Manin & McCallum, 2008; Hughes & Jones, 2011; Riley & Hughes, 2010) confirms that English instruction does not usually include such fine-grained

details about the restrictions on *any*. Thus, in this scenario, the feature reassembly task may be difficult or unachievable, and learners even at more advanced levels may demonstrate over-permissive use of *any*. However, if Chinese learners map *any* to *renhe*, no feature assembly is needed since the L1 and the L2 share the same feature sets. In this case, learners should restrict *any* correctly as soon as the mapping is made.¹¹

Finally, in (23-e), if English-speaking learners of Korean establish an association between existential *nwukwu* in the input and their L1 feature set for *anyone*, then their feature reassembly task consists of deleting the $[uNV+\alpha]$ features. This should be motivated by evidence in the input that includes *wh*-existentials in veridical contexts such as progressives.

3.3. Predictions

Thus far, we have detailed how the two tasks of mapping and feature reassembly could take place for the L1–L2 combinations to be investigated. In particular, we have proposed predictions about the relative ease with which each task might be accomplished, based on considerations specific to each L1–L2 combination regarding the potential confounding effects of homophony and morphological dissimilarity (on the mapping task), and poverty of the stimulus (on the feature reassembly task). The hierarchy of difficulty can be schematized as follows:

¹¹ Chinese- and Korean-speaking learners of English face the additional task of acquiring the extra-syntactic property of *any* that allows licensing by negative inference in certain veridical environments, such as after [*Only DP ...*]. Since this is assumed to be a post-syntactic mechanism, we do not include it as part of our feature reassembly predictions, although we will return to the issue in section 4.3.

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24.

| | Mapping | Feature Reassembly |
|----------------|----------------|-----------------------------------|
| More difficult | EC=EK | JC=KE |
| ↑ | JC | CE (if CE maps to wh-existential) |
| ↓ | | EC=EK |
| Less difficult | KE=CE | CE (if CE maps to <i>renhe</i>) |

‘EC’ = L1 English L2 Chinese; ‘EK’ = L1 English L2 Korean;

‘JC’ = L1 Japanese L2 Chinese; ‘KE’ = L1 Korean L2 English;

‘CE’ = L1 Chinese L2 English

As (24) illustrates, predicted difficulty in one task does not correlate with difficulty in the other. For instance, the English learners of Korean (EK) are predicted to have the most difficult mapping task, but a less difficult feature reassembly task. In the following section, we investigate this predicted hierarchy of difficulty using data from recent L2 studies on the acquisition of existential quantifiers in the above L1–L2 combinations: Choi (2009) (L1-English–L2-Korean), Yuan (2010) (L1-Japanese/English–L2 Chinese), Gil and Marsden (2010) (L1-Korean–L2-English), and Gil, Marsden and Whong (2011, to appear) (L1-Chinese–L2-English). Since the mapping task must occur prior to the feature reassembly task, we will focus on examination of lower proficiency learners’ data to identify mapping effects, and on higher proficiency learners’ data to identify feature reassembly effects. Taking into account the fact that not all of the studies at our disposal include both lower and higher proficiency learners, we set out specific hypotheses as follows:

25. L1 English, L2 Korean (EK)

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- a. MAPPING: Lower proficiency learners will have difficulty identifying *wh*-existentials.
 - b. FEATURE REASSEMBLY: Higher proficiency learners will show accurate performance despite the initial mapping difficulty.
26. L1 English/L1 Japanese, L2 Chinese (EC, JC)
- a. MAPPING: Lower proficiency learners of both L1s will have difficulty identifying *wh*-existentials, but JC learners may identify them earlier than EC learners.
 - b. FEATURE REASSEMBLY: At higher proficiency levels, EC learners will outperform JC learners on the distribution of *wh*-existentials, despite initial mapping difficulty.
27. L1 Chinese/L1 Korean, L2 English (CE, KE) and comparisons with EK and EC
- FEATURE REASSEMBLY:
- a. Higher proficiency EK learners will be more accurate on *wh*-existentials than comparable proficiency KE learners on *any*.
 - b. (i) If CE learners map *any* to Chinese *wh*-existentials, higher proficiency EC learners will be more accurate on *wh*-existentials than comparable proficiency CE learners on *any*; Or,
(ii) If CE learners map *any* to Chinese *renhe*, higher proficiency CE learners will be more accurate on *any* than comparable proficiency EC learners on *wh*-existentials.

- c. At higher proficiency levels, CE learners will outperform KE learners on the distribution of *any*.

4. L2 Studies of ‘any’

The predictions stated in the previous section are investigated through examination of the findings of existing research into the L2 acquisition of existentials. The body of research we present in this section (Choi, 2009; Gil & Marsden, 2010; Gil et al., 2011, to appear; Yuan, 2010) includes almost all existing generative L2 acquisition research into existential quantifiers.¹²

4.1. L2 Korean

Choi (2009) investigates L2 acquisition of *wh*-existentials in Korean by L1-English speakers. Here we present just enough detail to enable consideration of the predictions in (25) that the mapping task will be difficult for English-learners of Korean but feature reassembly task relatively easy. Choi’s (2009) study was designed specifically to investigate the Feature Reassembly hypothesis (unlike any of the other studies reported in this section). The focus was on the different use of $[\pm Q]$ features in English compared with Korean, and whether learners could reconfigure these features in their L2 Korean, to arrive at target-like interpretation of Korean *wh*-words. Choi’s

¹² We omit a study by Philip (2002) on knowledge of *any* in Dutch-English interlanguage because its focus on *any* in modal contexts goes beyond our present aims. We also exclude Song (2003), because the focus is on the strict negative polarity usage Korean *wh*-existentials and English *any*, which is not the topic of the present paper. The work of Song and Schwartz (2009) is mentioned in Section 4.1.

investigation focused on the *wh*-interrogative and existential quantifier interpretations of *wh*-expressions in questions (28) and embedded clauses (29-a)–(29-b):¹³

28. John-i mwues-ul mek-ess-ni?

John-NOM what-ACC eat-PAST-Q

(with falling intonation:) ‘What did John eat?’

(with rising intonation:) ‘Did John eat anything/something?’

29. a. John-un [Mary-ka nwukwu-lul cohahay-ss-nunci] kiekhan-ta.

John-TOP Mary-NOM who-ACC like-PAST-Q remember-DECL

‘John remembers who Mary liked.’

b. John-un [Mary-ka nwukwu-lul cohahay-ss-ta-ko] kiekhan-ta.

John-TOP Mary-NOM who-ACC like-PAST-DECL-SUB remember-DECL

‘John remembers that Mary liked someone.’

As described in Section 2, the *wh*-interrogative interpretation of a Korean question like (28) is argued to occur when the *wh*-word is bound by a *wh*-operator that arises when the question marker particle bears the features [+*wh*, +Q]. The existential quantifier reading occurs via binding by an existential operator when the question marker particle bears the features [–*wh*, +Q]. Turning to the embedded clauses, Choi argues that the embedded question particle *-nunci* in (29-a) also has [+*wh*, +Q] features. Consequently *nwukwu* in (29-a) receives the interpretation ‘who’,

¹³ The labels in the glosses in (29-a)–(29-b) follow Choi (2009). Choi treats *-nunci* as an embedded question particle, which she glosses ‘Q’, *-ko* as a subordinating particle (‘SUB’), and *-ta* as a declarative particle (‘DECL’).

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However, in (29-b), the relevant clause-typing particle is the declarative *-ta*, which has [–wh, –Q] features. This results in binding by a default existential operator and the interpretation ‘someone’.

Choi (2009) investigated L2 knowledge of the interpretation of sentences like (28)–(29-b) in 24 upper-intermediate- and 23 advanced-level English-speaking learners. Translation of aurally-presented questions was used to test whether learners were sensitive to the effect of intonation in the interpretation of *wh*-words in questions. To test *wh*-words in embedded clauses, there were two tasks: a typical translation task (with the test sentences presented in written format) and a truth value judgement task, in which sentences like (29-a)–(29-b) were presented following a context that, in six out of 18 items, facilitated only an existential reading of the *wh*-word.

Choi found that across all three tasks, the learners in both groups were at least 84% accurate in providing/accepting *wh*-interrogative interpretations of *wh*-words in appropriate contexts. However, when it came to existential interpretations, the upper-intermediate learners’ accuracy ranged from just 6.94% on the listening-and-translation task involving questions like (28) to 14.24% on the reading-and-translation task that investigated *wh*-word interpretation in embedded clauses. The advanced learners, by contrast, demonstrated 60–68% accuracy with existential interpretations in the translation tasks and 82.61% accuracy in the judgement task. This suggests that at upper-intermediate level, the learners appear to have very little knowledge of the existential interpretation of Korean *wh*-expressions, but by advanced level, the relevant knowledge is emerging. This is clearly in accordance with both the mapping and feature reassembly predictions (25) for this L1–L2 combination.

A similar result was found in a study by Song and Schwartz (2009), which investigated knowledge of how the existential interpretation of Korean *wh*-

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expressions is affected by scrambling and by the scope-taking possibilities of a co-clausal NPI. The additional variables in this study mean that it falls outside the scope of the present paper. However, its findings include evidence that is consistent with the prediction that identification of the existential interpretation of *wh*-expressions will be difficult in lower proficiency English-Korean interlanguage, while target-like knowledge will be attainable via feature reassembly at higher proficiency levels.

4.2. L2 Chinese

Yuan (2010) investigated knowledge of the existential use of Chinese *wh*-expressions in English- and Japanese-speaking learners. Learners of five proficiency levels (beginner–advanced) took part in the study, with 14–29 learners per level, and a control group of 20 native Chinese speakers. The data collection instrument was a pen-and-paper acceptability judgement task, which included four tokens each of the grammatical and ungrammatical types listed in Table 1 (and previously illustrated in section 2.1.2). Participants rated each sentences on a scale of –3 (‘completely unacceptable’) to +3 (‘completely acceptable’).

Table 1: Test types in Yuan (2010)

| Category | Grammatical | Ungrammatical |
|---------------------|---------------------------------------|------------------------------------|
| 1. Negation | Negation+obj <i>wh</i> | *Subj <i>wh</i> + Neg |
| 2. Nonfactive V | Nonfactive V + [CP ... <i>wh</i> ...] | *Factive V+ [CP ... <i>wh</i> ...] |
| 3. Uncertainty Adv | Uncertainty adverb + <i>wh</i> | *Other adverb + <i>wh</i> |
| 4. Conditional | Ruguo ‘if’ + <i>wh</i> | *Other complementizer + <i>wh</i> |
| 5. A-not-A question | A-not-A + Obj <i>wh</i> | *Subj <i>wh</i> + A-not-A |

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| | | |
|-------------------------|--------------------------------------|-----------------------------------|
| 6. Inference (I) | Subj <i>wh</i> + inference <i>le</i> | *Subj <i>wh</i> without <i>le</i> |
| 7. Inference (II) | Obj <i>wh</i> + inference <i>le</i> | *Obj <i>wh</i> without <i>le</i> |
| 8. Yes/no question (I) | Subj <i>wh</i> + YES/NO Q <i>ma</i> | none |
| 9. Yes/no question (II) | Obj <i>wh</i> + YES/NO Q <i>ma</i> | none |

The results showed that, while the native control group behaved as expected, with statistically significantly higher mean ratings on the grammatical types compared with ungrammatical types, among the L2 groups, only the more advanced learners of each L1 demonstrated at least some target-like significant differentiation between the grammatical and ungrammatical test types. Among the learners classed as beginners and post-beginners, mean acceptability ratings for all test types ranged from –1.00 to +1.00 and the ratings for grammatical sentences were not significantly different from the ratings for ungrammatical sentences. These indeterminate mean ratings by the lower proficiency learners suggest that, at this level, the learners are not aware that *wh*-words can function as *wh*-existentials. The mapping prediction in (26) is thus supported, at least in terms of both L1 groups initially being unable to identify Chinese *wh*-words as existentials. However, the results do not show any clear advantage for the L1 Japanese group in the mapping task. This prediction was made on the grounds that Japanese (unlike English) also makes use of *wh*-words in existentials, therefore the L1 morphology may facilitate identification of the existential function of Chinese *wh*-words in the L1-Japanese group. The data from Yuan (2010) suggest that there was no such morphology-based facilitation.

Turning to the feature reassembly task, it was predicted in (26) that the advanced L1-English learners may demonstrate more target-like knowledge of the distribution of *wh*-existentials than the advanced L1-Japanese group. This prediction

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was made on the grounds that the Chinese input is likely to contain positive evidence to motivate deletion of the [+ α] element of the [$uNV+\alpha$] feature combination from L1 English, enabling the target (less restrictive) feature sets of Chinese *wh*-existentials to be attained. However, for Japanese learners of Chinese, the feature reassembly task involves adding an [uNV] feature to accommodate the restricted distribution of Chinese *wh*-existentials. Since the L2 input does not directly motivate this (lacking evidence about what is ungrammatical), it is a poverty-of-the-stimulus problem, and consequently the feature reassembly process may be difficult or even impossible. To test this prediction, we must focus on the advanced learners' results.

As already mentioned, the advanced learners of both L1 groups demonstrated at least some evidence of target-like knowledge of grammaticality and ungrammaticality with respect *wh*-existentials. Table 2 summarises the mean group ratings for these learners.

Table 2: Summary of mean group ratings for advanced learners (both L1 groups collapsed together, except where indicated)

| Category | Grammatical | Ungrammatical |
|-----------------------------------|----------------------|----------------------|
| Negation | | |
| Nonfactive V | >1.5 | <-1.0* |
| Uncertainty adv | | |
| Conditional | | |
| A-not-A | <-0.4 | <-2.0* |
| <i>le</i> (inference, Subj & Obj) | -1.0-0.61 | <-0.5 |
| <i>ma</i> (y/n, Subj & Obj) | E: < - 0.6; J: >0.46 | n/a |

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* = within-group significant difference compared with rating on grammatical equivalent ($p < .05$); 'E' = L1-English group; 'J' = L1-Japanese group.

From Table 2 we can see that in four categories—negation, uncertainty adverbs, nonfactive verbs and conditionals—the advanced learners demonstrated target-like behaviour with significantly higher mean ratings on the grammatical types than ungrammatical types. The same pattern is found in the *A-not-A* category, but, in this case, the ratings for the grammatical items are below 0 for both groups. (By contrast, the native control mean rating for the grammatical *A-not-A* items was 1.2.) With the inference marker *le*, the advanced learners' judgements are indeterminate, with mean group ratings for the grammatical items falling between -1 and $+0.66$. Finally, on the *yes/no* questions with the question marker *ma* there is a difference between the two L1 groups (although ratings are close to 0 in some cases): the English speakers tend to reject *yes/no* questions containing *wh*-existentials, while the Japanese speakers tend to accept them. These results thus clearly do not support the prediction (in (26-b)) that the L1 English group would have an advantage. Nonetheless, the fact the Japanese group appears to have overcome poverty of the stimulus and developed a grammar that (at least on some of the categories) correctly restricts the distribution of Chinese *wh*-existentials is not at odds with the Feature Reassembly Hypothesis, since (as in Full Transfer/Full Access), Feature Reassembly allows for any property of language to be acquirable in L2 acquisition in principle. The results for questions and for the inference marker *le*, in which the advanced learners do not show target-like judgements, raise some further interesting issues in relation to the Feature Reassembly Hypothesis, which we address below.

The advanced learners' native-like judgement on four of the sentence categories suggests that they have a feature set for Chinese *wh*-existentials that includes the target [*u*NV] feature. This raises the question of why they do not robustly accept the grammatical sentences containing *wh*-existentials under the scope of the *A-not-A* form, the *yes/no*-question particle *-ma* and the inference particle *-le*. Considering the two question forms first, it is interesting to recall that Choi (2009) found a similar pattern: English-speaking learners of Korean were less successful at identifying the existential quantifier sense of Korean *wh*-words in questions than in declaratives. She suggests that L1 transfer may play a role in this distinction, observing that 'in English, which lacks (matrix) question markers, the presence of *wh*-lexical items becomes the primary means of determining what type [i.e., *wh* or *yes/no*] an interrogative is' (Choi 2009, p.195. Bracketed text added by present authors.). It is likely that in Japanese, too, the presence of a bare *wh*-expression plays a greater role in determining the type of interrogative than it does in Korean or Chinese, because the main use of the bare forms of *wh*-expressions in Japanese is as *wh*-interrogatives. Moreover, while Japanese has question-marking particles (unlike English), the same forms are used for both *wh*- and *yes/no* questions. Therefore the question marker in Japanese does not provide a clue as to interrogative type. Thus, for both L1 groups, the combination of an interrogative environment with a Chinese *wh*-word may be immediately associated with the *wh*-interrogative interpretation of the *wh*-word. Consequently, these items may be judged ungrammatical or of indeterminate grammaticality due to the incompatibility between the *wh*-interrogative interpretation and *yes/no* questions.

Turning to the inference particle *-le*, the advanced learners' lack of success on this category can receive a precise account in terms of feature reassembly. Briefly, we claim that *-le* does not generate a nonveridical operator in the learners' grammar

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(unlike in the native Chinese grammar). This is because, although the semantic contribution of sentence-final *-le* can include inference, it does not always do so. According to the detailed exploration of the syntax and semantics of this particle by Soh (2009), *-le* is an aspect marker indicating a change of state, and also imparting a sense of ‘contrary to expectations’ in certain cases. Given this range of functions, many of which result in a veridical proposition, it does not seem surprising that, even at advanced level, learners may fail to treat *-le* as a nonveridical operator in contexts where a nonveridical interpretation is possible. Therefore, although we assume that the advanced learners have a target-like [μ NV] feature in their representation of Chinese *wh*-existentials, if *-le* does not actually generate a nonveridical operator in their grammar, the *wh*-existentials will fail to be licensed under the scope of this particle. In this way, a Feature Reassembly approach that appeals to the features proposed in Section 2 can account for the otherwise puzzling failure of the advanced learners to differentiate between the grammatical and ungrammatical sentences in this category.

4.3. L2 English

Data on the L2 acquisition of *any* come from two sources. The data on Korean-speaking learners of English come from Gil and Marsden (2010). For discussion of Chinese-speaking learners we draw together and expand upon findings from Gil et al. (2011, to appear). We briefly outline the relevant details first, and then consider the predictions (27) for these groups.

For Korean-speaking learners of English (Gil & Marsden, 2010), data were collected by means of a picture-based acceptability judgement task, which included

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grammatical instances of *anyone* in conditionals (30) and ungrammatical instances in progressive declaratives (31).

30. If anyone is touching their nose, blow the whistle.

31. *Anyone is reading.

The task included four tokens with the structure of (30) and five with the structure of (31) interspersed with 17 other test items. Each sentence was projected onto a screen underneath a corresponding picture—four people reading books and magazines in the case of (31)—and participants were asked to judge whether or not the sentence was good in the context of the picture. Twenty-two upper-intermediate level Korean-speaking learners of English took part in the study, as well as 20 native English speakers.

The key finding was that the learners had high group rates of acceptance on both the grammatical conditional items (87.12%) and the ungrammatical progressives (82.7%).¹⁴ The learners' rate of acceptance of the progressives contrasted strikingly with the control group's 27% acceptance of progressives. In short, it appears that upper-intermediate-level Korean learners of English do not restrict the distribution of *anyone* (at least as far as conditionals and progressive declaratives are concerned). However, analysis of the individual results showed that there were two out of the 22 learners who consistently rejected all five of the ungrammatical progressive tokens,

¹⁴ A slightly higher acceptance rate for conditionals was reported in Gil and Marsden (2010), because, for purposes specific to that paper, it was calculated on the basis of only two of the four conditional items. The rate reported here is based on all four.

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thus providing evidence that target-like behaviour is attainable, despite poverty of the stimulus.

The data on Chinese-speaking learners of English were collected by means of a paced grammaticality judgement task (Gil et al., 2011). Details of the test types are presented in Table 3.

Table 3: Test types

| Type | Example | No. tokens |
|-----------------|--|------------|
| 1. Negative V | Ned regretted that he'd phoned anyone. | 6 |
| 2. <i>Only</i> | Only Larry and I knew anything. | 3 |
| 3. Progressive | *Pete was buying any sunglasses. | 6 |
| 4. Episodics | *She wrote any emails. | 6 |
| 5. Factive V | *Byron knew that anyone had stolen his girlfriend. | 3 |
| 6. Nonfactive V | *Adam thought that he'd tasted any apple. | 3 |
| 7. <i>Even</i> | *Even my boss knew anything. | 3 |

The test also included grammatical and ungrammatical distractors. The sentences were presented one-by-one on a screen, and participants made judgements on an answer sheet. The L2 participants included 20 Chinese-speaking learners of upper intermediate or advanced proficiency (the 'CE comparison group' in Gil et al., to appear). Fifty-five native English speakers also completed the task. Table 4 shows the rates of acceptance and rejection of the two grammatical and five ungrammatical test types by the Chinese-speaking learners and the native speakers. (In some cases, the

sum of acceptance+rejection does not add up to 100 due instances of selection of ‘Can’t decide’.)

Table 4: Rates (%) of acceptance (rejection)

| Type | Chinese learners of English | Native speakers of English |
|------------------|--------------------------------|-------------------------------|
| 1. Negative V | 39.17 (58.33) | 83.03 (15.45) |
| 2. <i>Only</i> | 30.00 (68.33) | 87.88 (11.52) |
| 3. *Progressive | 14.17 (83.33) | 7.88 (90.61) |
| 4. *Episodics | 16.67 (80.83) | 8.79 (90.30) |
| 5. *Factive V | 15.00 (78.33) | 6.06 (93.33) |
| 6. *Nonfactive V | 20.00 (73.33) | 16.97 (83.03) |
| 7. *Even | 25.00 (73.33) | 18.79 (80.61) |

The overwhelming trend in the learner group is to reject all types, although the rates of rejection on the grammatical types are slightly lower than the rates of rejection of the ungrammatical types. A repeated measures ANOVA reveals a significant interaction of Type with Group ($F_{5,2,376,9}=36.8, p<.001$).¹⁵ This is clearly mainly due to the native English group having considerably higher rates of acceptance on the two grammatical types (>83%) than on the ungrammatical types (<19%). Post hoc paired samples *t*-tests were conducted to find out whether the learners differentiated between the grammatical types (Type 1, Negative V, and Type 2, *Only*)

¹⁵ A Huynh-Feldt correction is used because Mauchly’s test of sphericity was significant. The details of the statistical tests in this section are previously unreported.

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and their closest ungrammatical equivalents (Type 6, *Nonfactive V, and Type 7, *Even). The difference was significant for Negative V v. *Nonfactive V ($t(19)=3.29$, $p<.005$), but not for *Only* v. *Even ($t(19)=.65$, $p=.527$). (Unsurprisingly, both contrasts were statistically significant in the native English group.) In short, it seems as if the learners' grammar correctly disallows *any* in veridical contexts, but also disallows it in environments where it can be rescued by negative inference. The Chinese-speaking learners' behaviour is compatible with an account in which they have mapped *any* to *renhe*, rather than to *wh*-existentials. This is because, if the initial mapping were to the L1 feature set for *wh*-existentials, the learners might have been expected to accept *any* in the complement clause of a nonfactive V (Type 6), due to the absence of the [+ α] feature required by the target form, along with the predicted learnability problem in acquiring this feature. However, there is no evidence of behaviour on this test type differing greatly from behaviour on *any* of the other ungrammatical test types. This finding is thus more compatible with an account in which the required [+ α] feature is in the feature set from the outset, via mapping to the feature set of *renhe*. However, it appears that the learners have not acquired the post-syntactic mechanism for licensing *any* by negative inference, even though positive evidence of the grammaticality of *any* in such instances could be expected to be present in the input. As argued in Gil et al. (2011) (on the basis of a smaller set of data) the absence of acquisition here could be a reflex of the different form of licensing. However, for space reasons we set this question aside here.

The feature reassembly predictions relevant to L2 English in (27) are re-stated below:

32. L1 Chinese/L1 Korean, L2 English (CE, KE) and comparisons with EK and EC
- a. Higher proficiency EK learners will be more accurate on *wh*-existentials than comparable proficiency KE learners on *any*.
 - b. (i) If CE learners map *any* to Chinese *wh*-existentials, higher proficiency EC learners will be more accurate on *wh*-existentials than comparable proficiency CE learners on *any*; Or,
(ii) If CE learners map *any* to Chinese *renhe*, higher proficiency CE learners will be more accurate on *any* than comparable proficiency EC learners on *wh*-existentials.
 - c. At higher proficiency levels, CE learners will outperform KE learners on the distribution of *any*.

A caveat about our exploration of all of the predictions in (32), is that we do not have a means of accurately assessing whether reported levels of L2 proficiency are really comparable between two different studies with different target L2s. This is a more intractable problem for the predictions in (32-b) as we will see below. We will consider the more straightforward cases of (32-a) and (32-c) first, where the predictions appear to be confirmed. With reference to (32-a), the higher proficiency English-speaking learners of Korean in Choi (2009) were clearly more target-like than the Korean learners of English in Gil and Marsden (2010), since the former achieved >82% target-like judgements on the acceptability judgement task, whereas the latter demonstrated 82% non-target-like acceptance of ungrammatical instances of *any* in progressives. Prediction (32-c) also refers to Korean-speaking learners of English, comparing them with Chinese-speaking learners of English, and again, the Korean-

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speaking learners' behaviour is considerably less target-like than the Chinese-speaking learners' behaviour reported above. The Chinese-speaking learners demonstrated 83% target-like rejection of *any* in progressives, contrasting with the high rate of non-target-like judgments by the Korean-speaking learners. Both of these contrasts are as predicted, based on the specific feature reassembly task faced by each group.

Regarding the comparison of Chinese-speaking learners of English with English-speaking learners of Chinese, if we compare Yuan's (2010) advanced group with the learners from Gil et al. (to appear) (who, by their IELTS scores, are 'competent' or 'good' users of English), then there appears to be little difference between the two groups: both have largely target-like behaviour but with some non-target-like behaviour on certain test types. Thus, neither prediction in (32-b) is supported. However, if the learners in Gil et al. (to appear) are in fact closer in level to Yuan's post intermediate learners, then the results are compatible with prediction (ii) in (32-b) whereby Chinese-speaking learners of English should acquire target-like proficiency earlier than English-speaking learners of Chinese, due to the different feature reassembly tasks. Yuan's post intermediate learners did not differentiate between grammatical and ungrammatical uses of Chinese *wh*-existentials in any but the sentence type containing negation, thus their behaviour is relatively less target-like than that of the Chinese-speaking learners of English in Gil et al. (to appear).

Whichever of these two comparisons is correct, there is no evidence to support prediction (i) in (32-b), whereby English-speaking learners of Chinese should be relatively more target-like than Chinese-speaking learners of English. Prediction (i) depends on Chinese-speaking learners of English initially mapping *any* in the input to *wh*-existentials in their L1 lexicon. The lack of support for this prediction further

corroborates the analysis proposed above that Chinese-speaking learners of English map *any* in the L2 input to *renhe* in the L1 and not to their L1 feature sets for *wh*-existentials.

4.4. Discussion

Thus far, this section has outlined the main body of existing research into the L2 acquisition of existential quantifiers, and offered an evaluation of the findings in terms of our predictions about the relative difficulty of the mapping and feature reassembly processes for each L1–L2 combination. We acknowledge that a limitation of the endeavour is that, since the studies at our disposal were not designed to test the specific predictions we have proposed, their approaches, their range of coverage of existential quantifier uses, and their designs (for example, whether or not both lower and higher proficiency participants were included) all differ. Clearly, this means that conclusions drawn at this stage must be cautious. Thus, proceeding with caution, this section brings together the separate findings, and considers their implications.

Two common findings emerge across the L2 data presented. First, it is clear from those studies that included lower and higher proficiency learners, that it is by no means easy for L2 learners to acquire the full set of properties of existential quantifiers in any given L2: it is only by higher proficiency levels that target-like knowledge begins to emerge, if it emerges at all. Second, despite this difficulty, it is evident that the properties of existential quantifiers can be acquired, even when their acquisition represents a poverty-of-the-stimulus problem.

The predictions about mapping—the first step of the Feature Reassembly process—were largely confirmed. We predicted that mapping of L2 English *any* to the features sets of existentials in L1 Korean or Chinese would be relatively

straightforward, whereas mapping of L2 Chinese or Korean *wh*-existentials to the feature sets of L1 English and Japanese existential quantifiers would be difficult due to the difficulty in identifying the *wh*-existential use of bare *wh*-expressions. With respect to L2 Korean and L2 Chinese, both of the relevant studies (Choi, 2009; Yuan, 2010) had lower and higher proficiency learners, and in both cases only the more advanced learners demonstrated behaviour that clearly testified to knowledge of the *wh*-existential function of *wh*-words. While mapping predictions could not be investigated directly for L2 English, since the relevant studies included only higher proficiency learners, the results of the Korean-speaking learners of English (Gil and Marsden, 2010) also suggest that the predicted mapping from *any* to the L1 feature set for bare *wh*-existentials took place. This is because the distribution of *wh*-existentials is unrestricted in Korean, and the learners in Gil and Marsden (2010) appeared to allow unrestricted distribution of *any*. In other words, the findings for the Korean learners of English provide evidence of L1 transfer in accordance with the *any-wh* mapping that we proposed. We return to the issue of L1 transfer shortly.

One element of the mapping predictions that was not confirmed, was the prediction that the mapping task of Japanese-speaking learners of Chinese may be easier than that of English-speaking learners of Chinese, due to the fact that Japanese, like Chinese but unlike English, makes use of *wh*-words in the formation of existential quantifiers. In other words, it was predicted that the mapping task may be facilitated by morphological similarity. However, the findings of Yuan (2010) provided no evidence that Japanese learners of Chinese identify Chinese *wh*-existentials at an earlier stage than English-speaking learners do, so similar morphology did not appear to play a facilitative role. A similar finding is reported by Umeda (2008) in her investigation of the L2 acquisition of interrogative and

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universal—but not existential—interpretations of Japanese *wh*-expressions by L1-English and L1-Chinese learners. Umeda did not find evidence of similar *wh*-word morphology giving the Chinese-speaking learners an advantage over the English-speaking learners. Taken together, these findings support Lardiere's (2009, p.191) assumption that meaning and grammatical function are the key cues in the mapping process.

The mapping step of the Feature Reassembly Hypothesis makes a strong prediction that we have not explicitly investigated in this paper, namely that L1 transfer effects should occur. In fact, as mentioned above, we have seen evidence of L1 transfer in the Korean-speaking learners of English, who accepted *any* in progressives, precisely as expected if their interlanguage feature set for *any* is the same as the feature set of *wh*-existentials in their L1. However, not all of the studies show the L1 transfer effects that might be predicted. In particular, in the findings for L2 Chinese by Yuan (2010), an L1-transfer based difference might have been expected between the Japanese-speaking and English-speaking learners at the point at which they establish a mapping from *wh*-existentials in the L2 to their respective L1 feature sets for existentials. Specifically, considering acquisition of the existential sense of the Chinese *wh*-word *shei* ('who'), since the feature set for Japanese *dareka* 'anyone/someone' has no restrictive feature, then Japanese-speaking learners of Chinese would be predicted to pass through a stage in which they allow existential *shei* to occur in any environment. By contrast, English-speaking learners of Chinese would be predicted to over-restrict *shei*, disallowing it even with uncertainty adverbs and in the complement clause of nonfactive verbs, due to the [*u*NV+ α] feature combination from L1 English. Neither of these patterns are attested in Yuan's data. Instead, learners of both L1s appear to go instantaneously from failure to identify *wh*-

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words as existentials to restricting them in a manner that is compatible with having the target [μ NV] feature.

Although unexpected, this pattern is not necessarily at odds with the Feature Reassembly proposal. It is not impossible that the feature reassembly step of the process could take place immediately on identification and mapping of *wh*-existentials. Where the feature reassembly tasks in Section 3 involved overcoming poverty-of-the-stimulus, our prediction that achievement of this task may be delayed or even permanently inhibited was based on evidence from other L2 poverty-of-the-stimulus studies showing that acquisition under such circumstances is often delayed (e.g., Dekydtspotter, Sprouse & Swanson, 2001; Marsden, 2009). However, whether or not the prediction of delay holds will actually depend on what, in the target language input, will lead to overcoming the specific poverty-of-the-stimulus problem in question. In the case of acquisition of the restrictions on polarity items, it is not clear what the relevant evidence is—either in L1 or L2 acquisition. However, since the Japanese learners of Chinese in Yuan (2010) were able to acquire the restrictions on Chinese *wh*-existentials, the relevant evidence was clearly perceivable. It could be the case that the relevant evidence had already been processed and internalised as part of the interlanguage grammar even before the existential use of Chinese *wh*-words was identified. Thus, as soon as this use was identified, the correct feature reassembly could take place immediately. Such a process would account for the absence of measurable L1 transfer effects in this case.

Turning to the feature reassembly task in other L1–L2 combinations, for Chinese learners of L2 English it was predicted that no feature reassembly should be required if English *any* is mapped to Chinese *renhe*, and this was supported by evidence of target-like behaviour. There was also support for the prediction of earlier

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acquisition of target-like features for English learners of L2 Korean contrasting with delayed feature reassembly due to poverty of the stimulus for Korean learners of L2 English. In this latter case, although the group results for the Korean learners of English did not show target-like knowledge, there were two individuals within the group who were target-like and hence provide evidence of overcoming poverty of the stimulus. As with the Japanese learners of Chinese, it is not clear what evidence in the input would have motivated the relevant feature reassembly.

A crucial question that the existing data did not allow us to investigate is whether learners of English map *any* in the input to an existential feature set, thus contrasting with the lower proficiency learners of Korean and Chinese, who appeared unable to identify existential uses of *wh*-words. Not surprisingly, a clear outcome of this paper is that there is a need for further research into how acquisition of existential quantifiers proceeds. The Feature Reassembly Hypothesis provides a structured framework for such research, and future studies that are specifically designed to test the two key tasks, mapping and feature reassembly, should be able to shed light on some of the questions that have arisen here. For the mapping task, it is crucial to be able to observe (i) when mapping occurs (if it occurs at all), and (ii) how learners deal with more than one mapping possibility. For (i), an ideal study would investigate learners of both lower and higher L2 proficiency, so as to better ascertain whether a particular mapping is made early or late. For (ii), translation tasks (as Choi 2009 used) may enable more accurate assessment of how learners interpret particular forms when there are several candidate lexical items in the L1 for a given L2 item.

As for the feature reassembly task, investigation of carefully selected additional L1–L2 combinations would also be informative. A useful addition to the data presented in this paper, would be L2 Chinese by Korean-speakers, and vice versa. In

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either of these cases, the L1 and L2 are morpho-lexically the same in terms of both languages using bare *wh*-expressions as existentials. However, Chinese existentials are restricted in terms of distribution whereas Korean are not. Thus, in this L1–L2 combination, the L1 and L2 differ with regard to just one variable, which may make the initial mapping and subsequent feature reassembly easier to track.

Finally, the question of how poverty of the stimulus is overcome in the acquisition of the restrictions of existential quantifiers takes us beyond a feature-set-by-feature-set investigation, since the trigger for feature reassembly in these cases must necessarily be something external to the features of a particular lexical item. However, results from studies that employ the precise level of investigation called for by the Feature Reassembly Hypothesis should reveal details of when and how mapping and feature reassembly occur. This will help to answer broader questions about what leads to the acquisition of specific properties in the absence evidence. Since poverty of the stimulus is a fundamental concept motivating generative linguistic research, many sub-areas of linguistics, including L2 acquisition research, could benefit from understanding of how specific cases of poverty of the stimulus are overcome. We believe that the exploration in this paper has demonstrated that existential quantifiers would provide an ideal topic for such research, and the Feature Reassembly Hypothesis an ideal tool.

5. Conclusion

This paper has brought together the findings from current research into the L2 acquisition of existential quantifiers and used them to examine the Feature Reassembly Hypothesis. We have teased apart the mapping and feature reassembly

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processes that this hypothesis entails, and articulated each process in the form of concrete predictions about the L2 acquisition of existential quantifiers, with English, Chinese, Japanese and Korean as the L1 or L2. Our predictions take into consideration L1–L2 differences in the morphological paradigm for the mapping process, and potential poverty-of-stimulus problems for the feature reassembly process. The result is a predicted hierarchy of difficulty in the accomplishment of each process, among the different L1–L2 combinations. As a key step in the formulation of our predictions on mapping and feature reassembly, we have proposed a feature-based account of the variation in the realisation of existential quantifiers in the four languages.

Our findings are largely compatible with the Feature Reassembly Hypothesis, although certain L1 transfer effects were not always attested. Discussion of this issue raised questions about the precise nature of the interface between the mapping and feature reassembly processes, and about how the restricted distribution of polarity items is ever acquired, given poverty of the stimulus. We have shown that the complexity of the cross-linguistic variation in existential quantifiers offers a potentially rich domain for further research that could shed light on this issue. In addition, we have drawn attention to the need for feature-based cross-linguistic analysis of any given phenomenon, as a prerequisite to applying the Feature Reassembly Hypothesis to L2 acquisition of that phenomenon.

We conclude that the Feature Reassembly Hypothesis offers an acquisition model that can potentially explain how the development of interlanguage proceeds, beyond the initial state. Given the finite nature of the mapping possibilities, feature reassembly is also predicted to proceed in equally finite and restricted ways which can be precisely and explicitly formulated. As a result, the predictions are fully testable. It

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is this that makes the Feature Reassembly Hypothesis a superior model. If the predictions are borne out (as they have been, to a large degree, in the present investigation of existing data), the Feature Reassembly Hypothesis will prove a stronger and more predictive model for L2 development, than any model based merely on surface forms and function.

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