

## *Missing Inflection in L2 Acquisition: Defective Syntax or L1-Constrained Prosodic Representations?*

HEATHER GOAD

*McGill University*

LYDIA WHITE

*McGill University*

JEFFREY STEELE

*University of Toronto*

---

### 1. INTRODUCTION

It is well known that second language (L2) learners show variability in the suppli-  
ance of inflectional morphology associated with functional categories (see Zobl  
and Liceras 1994 for an overview of relevant research). While it is uncontroversial  
that affixes, such as tense and agreement, and associated lexical items, including  
auxiliaries, are sometimes omitted in spontaneous production, there is consid-  
erable disagreement as to the implications of such omission. On the one hand,  
there are researchers who argue that the failure to consistently produce inflectional  
morphology in the L2 is the result of defective morphosyntactic representations;  
in particular, it is claimed that adult L2 learners cannot acquire functional fea-  
tures not instantiated in the first language (L1) grammar (Tsimplici and Roussou  
1991; Hawkins and Chan 1997; Hawkins 2000, 2001; Hawkins and Liszka 2003;  
Tsimplici 2003; Hawkins and Franceschina in press). Hence, post-puberty learners  
whose L1 grammars lack features such as tense or agreement are claimed to be  
unable to represent these features in the interlanguage (IL) grammar; in conse-  
quence, they fail to supply the relevant overt morphology consistently. On the

---

Thanks are due to our Mandarin informants, Derong Chen and Helen Xiaoyan Wu, to  
Jonathan Bobaljik, Yvan Rose, and two anonymous reviewers for helpful comments, and  
to the following research assistants: Meaghen Buckley, Simone Conradie, Sadie Fowler,  
Theres Grüter, Sarah Manolson, and Corrine McCarthy. This research was supported with  
grants from FQRSC and SSHRCC.

other hand, there are researchers who maintain that there is no deficit in syntactic representation as such. Features not found in the L1 can be represented in the IL grammar. Problems with overt morphology are instead attributed to difficulties in mapping between the syntactic and morphological components of the grammar, or in accessing certain forms from the lexicon (e.g., Haznadar and Schwartz 1997; Lardiere and Schwartz 1997; Lardiere 1998a, 1998b, 2000; Prévost and White 2000; Herschensohn 2001; Ionin and Wexler 2002; White 2003; White, Valenzuela, Kozłowska-Macgregor, and Leung in press).

In this article, we propose another possibility, which (following Goad and White 2003) we call the Prosodic Transfer Hypothesis. We argue that failure to supply overt morphology is related, at least in part, to properties of the L1 prosodic phonology which are transferred into the IL grammar. In consequence, there is a discrepancy between learners' underlying knowledge of the L2 morphosyntax and their realization of overt morphology which must be mediated through non-target-like (L1-based) prosodic representations. In particular, we will show that tense and agreement morphology in English is represented in terms of adjunction to the Prosodic Word, and that this structure is absent in Mandarin. As a result, Mandarin-speaking learners of English are unable to represent English inflection in target-like fashion in outputs, even though the morphosyntactic representation of English tense and agreement is appropriate.

## **2. PREVIOUS RESEARCH ON INFLECTION IN L2 ENGLISH: POTENTIAL EFFECTS OF L1 PHONOLOGY**

In research on L1 acquisition, there have been a number of phonological proposals to account for missing inflection or missing grammatical morphemes more generally (e.g., Gerken, Landau, and Remez 1990; Demuth 2001; Lleó 2001). By and large, this has not been the case for L2 acquisition (but see Wolfram and Hatfield 1986, and Bayley 1994). This is somewhat surprising, especially given the general agreement that L2 phonology robustly shows transfer effects. Indeed, L1 constraints on prosodic structure have been shown to play an important role in shaping IL outputs in monomorphemic contexts (e.g., Broselow 1983; Broselow, Chen, and Wang 1998; Steele 2002).

A recent exception to the absence of phonological accounts of IL inflection is Lardiere's (2003; see also 1998a) analysis of morphological variability in the production data of Patty, an L2 English speaker whose L1s are Mandarin and Hokkien. Lardiere (1998a, 1998b) conducted a longitudinal study of Patty, comparing her production at different time intervals, the first when Patty had lived in the USA for ten years and the second, more than eight years later. Patty was a fluent user of English; her production nonetheless revealed a number of non-native characteristics. In particular, suppliance of tense and agreement morphology in obligatory contexts was low: 34.5% for tense and 4.5% for 3rd person singular agreement, proportions which did not change between the recording sessions.

Examples of variable or missing tense inflection and agreement in Patty's outputs are given in (1a, b) and (2a, b), respectively.

- (1) a. *went* to school and *learn* English (Lardiere 2003:178)  
 b. yeah, Saul *gain* his sight (Lardiere 2003:178)
- (2) a. he *have* the uh, inspiration to say what he want to say (Lardiere 1998a:19)  
 b. everyone who *believe* it can get it (Lardiere 1998a:19)

In earlier work, Lardiere (1998a, 1998b, 2000) explains data like those in (1)–(2) in terms of problems in mapping between the morphological and syntactic components of the grammar. This approach accounts for the fact that there is a divergence between Patty's lack of overt morphology, which might suggest the absence of the functional category Infl, or of tense and agreement features, and other properties which are indicative of Infl. Concerning the latter, Patty shows 100% correct incidence of nominative case, as well as appropriate accusative pronouns in non-nominative contexts, suggesting that she has the relevant mechanisms in place for nominative case assignment (i.e., via Spec-head agreement within IP) (Lardiere 1998a). In addition, while marking for tense and agreement is low on lexical verbs, production is accurate and high (93%) in the case of material typically found in Infl, namely auxiliaries (*be*, *have*, and *do*) and copular *be* (Lardiere 1999). Given that a major function of auxiliaries and the copula is to carry tense and agreement features, this high level of suppliance of overt forms suggests that Infl, together with its associated features, is indeed present in Patty's grammar. Furthermore, when other sources of production data are considered, suppliance of morphology increases dramatically. Lardiere (2003) shows that in Patty's e-mail correspondence, past tense morphology is included in 78% of obligatory contexts, in contrast to oral production data.

Lardiere (2003) offers a phonological analysis of Patty's performance, suggesting that the failure to mark tense consistently can, at least in part, be attributed to properties of her L1 prosodic phonology, in particular, to a constraint against final consonant clusters in both Mandarin and Hokkien. In support of this, Lardiere shows that Patty has across-the-board problems with final clusters, which she consistently fails to produce both in monomorphemic words and in inflected verbs. In addition, her suppliance of past tense forms is much higher in the case of irregular verbs (46%) than regular (6%), as many irregulars in English do not end in clusters.

Hawkins and Liszka (2003) challenge the viability of Lardiere's phonological account. In their own data from two Chinese speakers (from Liszka 2002), subjects are more likely to omit *t/d* in past tense contexts (37% omission) than in monomorphemic words ending in clusters (18% omission). They point out that data from Bayley (1996) from 20 Chinese-speaking learners of English show a similar discrepancy: Bayley reports 62% *t/d* omission in regular past tense contexts versus 35% omission in the case of monomorphemic words. According to

Hawkins and Liszka, if omission of tense morphology is attributable to a prohibition on clusters in Chinese, then suppliance of *t/d* in past tense contexts should be in the same proportion as suppliance in monomorphemic words, contrary to their own data and those of Bayley. Since past tense contexts are more problematic, this supports the position that [ $\pm$ past] is absent from the IL grammar, on their view.<sup>1</sup>

The discrepancy between the results of Lardiere and those of Bayley and of Hawkins and Liszka clearly requires explanation. In Patty's spontaneous production, final clusters are generally problematic (past tense as well as monomorphemic words), whereas in Bayley and in Hawkins and Liszka, suppliance of *t/d* is significantly less accurate in past tense contexts, suggesting that there is something special about tense. We will show that, for many Mandarin speakers, there is indeed something special about tense, something not related to failed tense features but, rather, to the manner in which tense and other inflectional affixes are prosodified in the IL grammar.

### 3. HYPOTHESES

As mentioned earlier, in this article, we propose the Prosodic Transfer Hypothesis, whereby transferred L1 prosodic structure constrains interlanguage production. We hypothesize that different constraints are responsible for the patterns reported above. On the one hand, as proposed by Lardiere (2003), at the level of syllable structure, the prohibition against final clusters in Chinese languages may prevail in certain cases, notably so with Patty. On the other hand, for L2 speakers who have overcome this constraint and who are thus able to produce clusters in monomorphemic words with relative accuracy, there may still be problems with the organization of inflection into higher prosodic structure. We will argue, in particular, that Mandarin does not permit adjunction to the Prosodic Word, the structure necessary to represent tense and agreement in English. In other words, while tense and agreement features are underlyingly present in the IL grammar, learners are unable to reliably produce the corresponding forms because they cannot represent them prosodically in target-like fashion in outputs.

### 4. THE PROSODIC REPRESENTATION OF INFLECTION

In this section, we detail our assumptions about the prosodic structure underlying inflection in Mandarin and English. In section 4.1, we begin by reviewing our general assumptions concerning prosodic structure. In sections 4.2 and 4.3, we

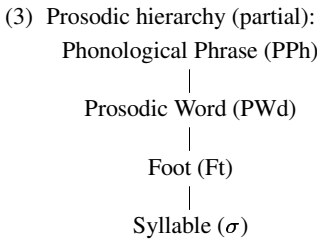
---

<sup>1</sup>One might question why any past tense morphology is produced at all if learners have no [ $\pm$ past] feature. As Hawkins (2001:348) acknowledges, optional suppliance of overt morphology is problematic for theories that claim absence of corresponding functional structure. An additional problem for his view is that the morphology, when supplied, is accurate; past is not supplied in present contexts, for example.

discuss the organization of inflection in English and Mandarin respectively. As will be evident, our approach to phonology is decidedly structural. Indeed, we will demonstrate that the L2 data from Mandarin-speaking learners of English support the position that inflectional morphology is organized differently in the two languages, and that, in English, inflected forms are prosodified differently from monomorphemic forms of the same segmental shape.

#### 4.1. Prosodic structure

We adopt the position that prosodic constituents are organized into the hierarchy in (3) (e.g., Nespor and Vogel 1986; Selkirk 1986).



In early works, it was commonly held that prosodic structure must respect the Strict Layer Hypothesis (SLH), such that constituents are strictly dominated by the immediately higher category, as in (3). More recently, researchers have recognized that the SLH is untenable as an inviolable whole. Selkirk (1997), for example, has proposed that the SLH be decomposed into four constraints, two of which concern us here:

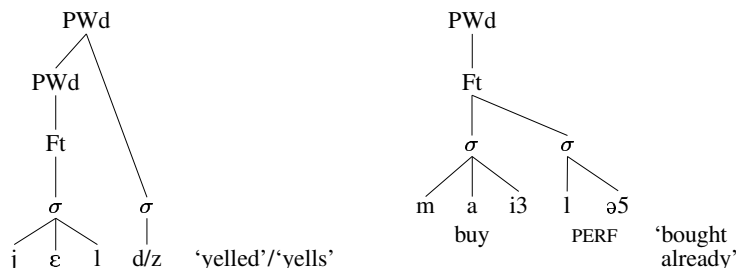
- (4) a. EXHAUSTIVITY (EXHAUST): No  $C^i$  immediately dominates a constituent  $C^j$ ,  $j < i-1$  (e.g., no PWd immediately dominates a  $\sigma$ );  
 b. NONRECURSIVITY (NONREC): No  $C^i$  dominates  $C^j$ ,  $j = i$  (e.g., no PWd dominates a PWd).

The constraint family EXHAUST ensures that domination relations between constituents do not skip one or more levels of the prosodic hierarchy. Across languages, it is perhaps most commonly violated in three-syllable constructions, where the PWd immediately dominates a syllable in order not to run afoul of foot binarity:  $[[\sigma\sigma]_{Ft}]\sigma]_{PWd}$ . To express this type of EXHAUST violation (i.e., syllable linking directly to PWd), we will henceforth label this member of the constraint family EXHAUST(PWd/ $\sigma$ ). Violations of NONREC occur when a constituent dominates a constituent of the same type. It is most commonly violated with PWd constituents in compounding:  $[[\dots]_{PWd} [\dots]_{PWd}]_{PWd}$ .

In English, both EXHAUST(PWd/ $\sigma$ ) and NONREC are simultaneously violated in inflected forms. This can be seen in (5a) where tense and agreement adjoin to the PWd as “affixal clitics” (in the terminology of Selkirk 1997), motivation for which will be provided in section 4.2. Although both constraints can be independently violated in Mandarin (in three-syllable constructions and compounding

respectively), they cannot be simultaneously violated. Consistent with this, inflectional morphology, of which aspect alone is overtly realized, incorporates into the PWd as an “internal clitic” (5b), as will be seen in section 4.3.<sup>2</sup>

- (5) a. English tense and agreement:                      b. Mandarin aspect:



After motivating the structures in (5) for the two languages, we argue, in sections 5 and 6.4, that this difference in the organization of inflection—in particular, the lack of adjunction in Mandarin—is responsible for the patterns observed in the productions of English inflected targets by Mandarin speakers.

## 4.2. English tense and agreement

In this section, we argue in favour of the structure in (5a) for English, and against the alternatives where inflection is: (i) internal to the lower PWd, or (ii) linked directly to the PPh. The arguments rely in part on the constraint in (6).

- (6) CONSTITUENTBINARITY (BINARITY) (cf. Hayes 1981; Kaye, Lowenstamm, and Vergnaud 1990):

Prosodic constituents are maximally binary.

With limited exceptions (see further note 15), PWd-internal rhymes in English are consistent with (6): two-position rhymes as in *fran.tic* and *fric.tion* are well formed whereas words with ternary rhymes like \**frank.tion* and \**freak.tion* are not. Sequences of this shape are nevertheless licit PWd-finally (e.g., *frank.freak*). If, in the latter case, the underscored strings were truly syllabified as rhymes, there would be nothing to prevent rhymes of this shape from occurring word-internally. To account for this pattern, it has been proposed that the final consonant in words of the latter shape is syllabified as the onset of an empty-headed syllable (OEHS):  $\dots VCC]_{PWd} \rightarrow [fræŋ.k\emptyset]$ ,  $\dots VVC]_{PWd} \rightarrow [friŋ.k\emptyset]$  (e.g., Kaye, Lowenstamm, and Vergnaud 1990).

Rhyme shortening reveals that class 1 suffixed forms, like monomorphemic forms, respect (6) when the OEHS syllabification of final consonants is taken into

<sup>2</sup>The numbers in (5b) indicate tone: 1 to 4 mark toned syllables, while 5 marks neutral-toned (toneless) syllables; the distinction between these will become important in section 4.3.

account: [waj.d $\emptyset$ ] ‘wide’ — [wit. $\theta\emptyset$ ], \*[wajt. $\theta\emptyset$ ] ‘width’. This indicates that class I morphemes attach to roots; that is, like Mandarin aspect, they are PWd-internal: [wit- $\theta$ ]<sub>PWd</sub>. Inflectional suffixes, by contrast, do not trigger shortening of the bases to which they attach, for example, [ərajv-d] ‘arrive-PAST’. This indicates that these morphemes attach to stems, that a PWd edge interrupts the word-final string: [[ərajv]<sub>PWd</sub>d]. Had tense and agreement been incorporated into the lower PWd, shortening of the base would have had to apply, yielding the unattested \*[əriv-d]<sub>PWd</sub>.

Before accepting this analysis, one additional PWd-internal structure for inflection must be eliminated, one where shortening does not take place and (6) is not violated, that is, the form where a syllable-boundary interrupts [aj] and [v]: [ə.raj.v-d]<sub>PWd</sub>. Inspection of fully syllabified [ə.raj.v $\emptyset$ .d $\emptyset$ ]<sub>PWd</sub> reveals that it contains adjacent empty nuclei. Such a representation is universally illicit, as informally stated in (7).<sup>3</sup>

(7) Adjacent empty nuclei are prohibited within the lower PWd/stem

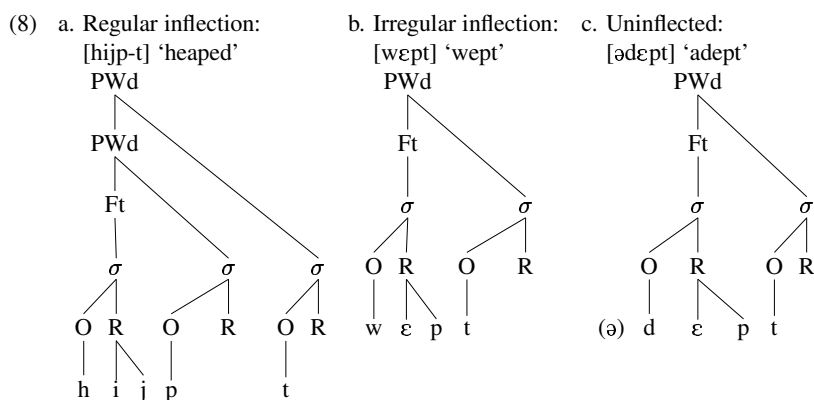
In the correct form, [[ə.raj.v $\emptyset$ ]<sub>PWd</sub>d $\emptyset$ ], the empty nuclei are not both contained within the lower PWd.

We have seen that since English inflection does not trigger shortening, it must lie outside the PWd in order to avoid violating the well-formedness constraints in (6) and (7). While the representation in (5a), [[ərajv]<sub>PWd</sub>d/z]<sub>PWd</sub>, is consistent with this, a second structure, where tense and agreement link directly to the PPh as “free clitics” (in Selkirk’s 1997 terminology) must be ruled out: \*[[ərajv]<sub>PWd</sub>d/z]<sub>PPh</sub>. Hayes (1989:207) has argued that tense is not organized in the same way as are free clitics such as *it*. In comparing *visit-ed* and *visit it*, he points out that stem-final [t] can be “lightly aspirated” in the former but not in the latter. This difference could not be captured if the two strings were to have the same prosodic representation. In short, tense — and by extension agreement — must be outside the lower PWd but cannot link as high up as the PPh. The remaining option is adjunction to the PWd.

In sum, we have seen that inflection in English involves adjunction. While this comes at a cost as concerns the SLH — both markedness constraints EXHAUST(PWd/ $\sigma$ ) and NONREC are violated — the advantage is that prosodic structure mirrors syntactic structure: functional and lexical material are represented differently from each other in both components of the grammar. As a result, learners of English can use their knowledge of syntax to bootstrap into the phonology (i.e., functional material lies outside the lower PWd) or they can use their knowledge of prosodic structure to bootstrap into the syntax (i.e., material outside the

<sup>3</sup>We are not concerned with the exact formulation of (7), but see Government Phonology where adjacent empty nuclei are formally ruled out by the Empty Category Principle. To support the universality of (7), see, e.g., Charette (1991) on French.

lower PWd is functional<sup>4</sup>). There is, however, a mismatch between prosody and syntax in the case of irregular inflection: regulars and irregulars are represented identically in the syntax but not in the phonology. While regular inflection is added outside of existing prosodic structure, irregulars instead respect the same rhyme constraints as uninflected PWds, in the case of ablaut (e.g., *ride-rod*; cf. monomorphemic *road*) and in pseudo-inflected forms where shortening of the rhyme is observed (e.g., *weep-weep*; cf. monomorphemic *adept*). Accordingly, irregular past is not prosodified in the same fashion as is regular inflection in (8a); rather, it is internal to the stem/PWd (8b), parallel to monomorphemic forms, as in (8c).



### 4.3. Mandarin aspect

Recall from (5b) that, in contrast to English, aspect in Mandarin is incorporated into the PWd of the base to which it attaches. Consequently, prosodic structure does not reflect syntactic organization: functional and lexical material are prosodically formally equivalent. In this section, we provide evidence that (5b) is indeed the correct structure. We begin with some observations about word structure in Mandarin, as several properties of the learners' L1 phonology are relevant to the proposed analysis of their treatment of inflection in English.

First, with limited exceptions, Mandarin morphemes are monosyllabic (e.g., Yip 1994; Shih 1997; Xu 2001), and consonant clusters are prohibited across the board. Indeed, most morphemes are CV(X) in shape (X = C or V). Second, as concerns foot structure, the language builds left-headed feet. Foot-initial syllables are bimoraic, stressed and tone-bearing (e.g., Yip 1995; Duanmu 2000). Following syllables which are internal to the same PWd are monomoraic, unstressed and neutral-toned (tone 5). Importantly, the latter observation holds of inflected forms (9a), as well as derived forms (9b) and phonologically-restructured compounds

<sup>4</sup>This is somewhat of a simplification, as some lexical material, namely class 2 derivation, is prosodically organized in the same fashion as inflection in English.



(9c) (Duanmu 2000). This suggests that both inflected and uninflected forms are prosodically represented in the same fashion and that inflection incorporates into the PWd as shown in (9a), in contrast to English.

(9) a. Inflection:

[mai3-lə5]<sub>PWd</sub>  
buy-PERF  
'bought already'

b. Derivation:

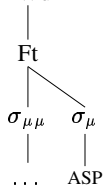
[muu4-t<sup>h</sup>o5]<sub>PWd</sub>  
wood-NOMINAL  
'wood'

c. Phonologically-restructured compounds:

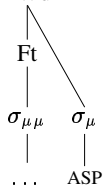
[[t<sub>ɕ</sub><sup>hw</sup>ən1]<sub>PWd</sub> [t<sup>h</sup>jan1]<sub>PWd</sub>]<sub>PWd</sub> → [t<sub>ɕ</sub><sup>hw</sup>ən1-t<sup>h</sup>jə5]<sub>PWd</sub>  
spring - day  
'spring'

Returning to (5b), we have prosodified aspect not only internal to the PWd but also internal to the foot. Given that foot-initial syllables in Mandarin are always heavy, the result is a Heavy-Light trochee; see (10a). However, HL trochees are cross-linguistically marked (e.g., Hayes 1995).<sup>5</sup> This may suggest that aspect is instead linked outside the foot, directly to the PWd as in (10b), a structure which violates EXHAUST(PWd/σ). If this could be combined with a NONREC violation, a constraint which is violable in Mandarin compounding (10c), the result would be the adjunction structure in (5a) used to phonologically represent inflection in English.<sup>6</sup>

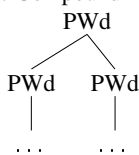
(10) a. PWd



b. PWd



c. Compounding:



Although EXHAUST(PWd/σ) and NONREC are both violable in Mandarin, the two constraints cannot be violated simultaneously. Nevertheless, in combination

<sup>5</sup>While LL trochees are preferred over HL across languages, HL will be selected as optimal in Mandarin if HEADPROMINENCE, which requires the head of a foot to be more prominent than its dependent (Piggott 1998; Mellander 2002), is undominated (see Steele 2002 for discussion).

<sup>6</sup>The structure for compounds in (10c) holds for nominal compounds, which do not inflect in Mandarin. Resultative verbal compounds are arguably phrasal, as will be discussed briefly below.

with the NONREC violation in (10c), (10b) is one step closer to the structure required for English inflection than is (10a). This could cast doubt on our analysis, that Mandarin speakers delete inflection in English because they do not permit adjunction. It is thus in our interest to demonstrate that (10b) is not the correct structure for Mandarin aspect.

In the following lines, our essential point will be to show that violations of EXHAUST(PWd/ $\sigma$ ), as in the structure in (10b), are permitted only under very limited conditions in Mandarin and, as a result, that aspect must be internal to the foot, as in (10a). First, Mandarin words which contain one tone-bearing syllable are maximally three syllables long; that is, they cannot include more than two consecutive neutral-toned syllables. If the foot is maximally bisyllabic (cf. Yip 1980, 1995), this follows straightforwardly: if the first toneless syllable is internal to foot, the result is a single violation of EXHAUST(PWd/ $\sigma$ ),  $[[\sigma_{\mu\mu}\sigma_{\mu}]_{\text{Ft}}\sigma_{\mu}]_{\text{PWd}}$ . This representation is consistent with the cross-linguistic observation that two or more adjacent unfooted syllables internal to the PWd is marked:  $*[[\sigma_{\mu\mu}]_{\text{Ft}}\sigma_{\mu}\sigma_{\mu}]_{\text{PWd}}$  (e.g., McCarthy and Prince 1994). Second, three-syllable PWds of this shape (i.e., with tone on the first syllable only) are limited to two constructions in Mandarin: (i) pronouns (e.g., *wo3-men5-de5* 1SG-PL-GEN ‘our’), and (ii) reduplicated forms in dialects where the copied half is always neutral-toned (e.g., *man4-man5-de5* slow-slow-ADV ‘slowly’).<sup>7</sup>

If the second syllable in inflected forms is internal to the foot (10a), rather than being linked directly to the PWd (10b), this would be consistent with the view that EXHAUST(PWd/ $\sigma$ ) is not freely violable in Mandarin. Most importantly, however, the foot-internal analysis of inflection is supported by the observation that the only two-syllable forms of the shape  $[\sigma_{\mu\mu} + \sigma_{\mu}]$  that inflectional morphemes can attach to are resultative constructions which have convincingly been argued to be phrasal. So, while the first two syllables in forms such as *hui2-lai5 le5* return-come PERF ‘(has) returned’ may appear to form a foot with perfective aspect linking directly to the PWd,  $[[\text{hui2-lai5}]_{\text{Ft}}\text{le5}]_{\text{PWd}}$ , the fact that the “potential modality items” *de* and *bu* can interrupt the two constituents of the putative foot instead supports the view that such constructions are phrasal (see Wu 2002 and references cited therein), that is, that they form independent PWds.<sup>8</sup>

<sup>7</sup>There are two apparent exceptions to the claim that PWds of the shape  $[\sigma_{\mu\mu} + \sigma_{\mu} + \sigma_{\mu}]$  are limited to two constructions. First, strings of this shape are commonly found when the final syllable is a question particle, e.g., *shu1-ben5 ne5* book-copy-QUESTION.PARTICLE ‘Where is the book?’. However, we do not consider such forms to be problematic, as on syntactic and semantic grounds, the question particle must attach directly to the PPh,  $[[\text{shu1-ben5}]_{\text{PWd}}\text{ne5}]_{\text{PPh}}$ , thereby incurring a violation of EXHAUST(PPh/ $\sigma$ ), in contrast to (10b). Second, strings of the shape  $[\sigma_{\mu\mu} + \sigma_{\mu} + \sigma_{\mu}]$  arise in resultative constructions. These constructions are discussed below in the text.

<sup>8</sup>Note that resultative constructions where each lexical constituent is toned also exist, e.g., *Ta1 chi1-bao3 le5* 3SG eat-full PERF ‘S/he ate so much s/he became full’. If these forms were inflected compounds,  $[[\text{chi1}]_{\text{PWd}}[\text{bao3}]_{\text{PWd}}[\text{le5}]_{\text{PWd}}]$ , Mandarin would

We thus conclude aspect in Mandarin incorporates into the foot of the base to which it attaches as in (10a). This is in contrast to English, where inflection adjoins to the PwD. It is this difference which we believe is responsible for Mandarin speakers' treatment of inflection in English.

## 5. REANALYSIS OF RESULTS FROM EARLIER STUDIES

Before turning to our own study, we provide a reanalysis of some of the previous findings from the literature discussed in section 2. Recall that we propose that high deletion rates in production are due to the unavailability of the adjunction structure (5a) required to phonologically represent English inflection in outputs. First, in Patty's productions, performance on irregulars is much better than on regularly inflected forms. Because irregulars do not involve adjunction (see (8b)), the absence of structures like (8a) from the grammars of Mandarin learners of English has no negative impact on the production of such forms.<sup>9</sup>

Second, the results of Lardiere (2003) compared with those of Bayley (1996) and Hawkins and Liszka (2003) differ for clusters in monomorphemic words. Like Lardiere, we consider Patty's behaviour to be due, in part, to a constraint against clusters. However, we do not attribute her behaviour to a *general* prohibition on strings of consonants. In keeping with the structural approach that we adopt, we propose that any syntagmatic constraint, such as that against clusters (which we label \*CC for convenience), must be confined to consonants that are adjacent within the lower PwD/stem. Satisfaction of \*CC will thus lead to reduction of clusters in monomorphemic forms (and in pseudo-inflected forms), but it will have no effect on clusters that arise from the addition of inflection. The subjects in Bayley and in Hawkins and Liszka appear to have overcome \*CC. However, their grammars still do not permit the adjunction structure required for English regular inflection. Patty's grammar, on the other hand, permits neither PwD-internal clusters nor adjunction.

In short, if the clusters that arise from adjunction violate constraints other than \*CC, then all of the previously discussed findings can be accounted for. There is, however, a condition under which the adjunction structure required for English inflection in (5a) can be circumvented, leading to another pattern of behaviour: we might expect some learners to use their L1 stem-internal structure in (5b) to represent English inflection in stimuli of certain shapes (see section 6.4). For learners who have overcome \*CC, the result would be that monomorphemic forms such as *weld* and inflected forms such as *yelled* are represented in the same

---

have the adjunction structure necessary for English inflection. If we accept that these constructions are phrasal, this structure will not be possible in the L1.

<sup>9</sup>As Patty reduces clusters in monomorphemic forms, we predict that she should perform well on irregulars involving ablaut (*ride-rod*) but not on pseudo-inflected irregulars (*weep-wept*) because the latter end in clusters. There is insufficient detail in Lardiere (1998a, 2003) to test this prediction.

fashion, [wɛld]<sub>PWd</sub> and [jɛl-d]<sub>PWd</sub>, and target-like outputs could then be produced for stimuli of the latter shape. Some of Bayley's or Hawkins and Liszka's subjects may follow this pattern. As no information on stem shape is provided by the authors, we cannot be certain. This question, however, is investigated in our study, as described below.

## 6. CURRENT STUDY

In the present study, we examine production data from Mandarin-speaking learners of English, concentrating on: (i) morphosyntactic evidence for the functional category Infl and its associated features; and (ii) potential effects of Mandarin prosodic structure on interlanguage outputs.

### 6.1. Predictions

If Mandarin prosodic structure constrains IL production of functional material, two patterns of behaviour are predicted on our account:<sup>10</sup>

1. Across-the-board (ATB) deletion of inflection: Learners have come to realize that English does not permit a stem-internal analysis of inflectional morphology (on the basis of the evidence in section 4.2) and are sensitive to the need for a unified analysis of this morphology. However, their grammars do not permit adjunction in outputs. The result is ATB deletion of inflection.<sup>11</sup>
2. Variable deletion of inflection: Inflectional morphology surfaces for stimuli where it can be incorporated into the PWd (like Mandarin aspect), without violating BINARITY (6) or the universally-undominated constraint against PWd-internal adjacent empty nuclei (7). The result is variable deletion of inflection but the variability is predictable, as we shall show in section 6.4.

### 6.2. Subjects and methodology

Twelve Mandarin-speaking adult learners of English participated in this study.<sup>12</sup> Their length of residence in Canada ranged from 6 months to 5 years. English

---

<sup>10</sup>We do not discuss the pattern of behaviour displayed by Patty (except briefly in section 6.4), as none of the subjects in our experiment showed extensive cluster reduction in monomorphemic words.

<sup>11</sup>If L2 speakers have knowledge of adjunction but cannot produce it, this requires either that comprehension and production are represented by different phonological grammars or that there is a single phonology where inputs are prosodified and constraint ranking is responsible for the loss of adjunction in outputs. We adopt the latter option, following Goad and Rose (in press).

<sup>12</sup>Subjects were tested as part of a larger project on functional categories in L2 acquisition; the data were not originally gathered to test the phonological hypotheses investigated here.

proficiency was tested by means of the grammar and vocabulary sections of the English Language Institute placement test. Subjects scored in the high intermediate/low advanced range.

Oral production data were elicited by having subjects describe two sets of pictures which illustrated sequences of events. One sequence showed a typical day in a woman's life; this targeted 3rd singular agreement. The other showed an incident which happened to the cartoon character Calvin (of Calvin and Hobbes); this targeted past tense. (Most subjects provided longer descriptions of the first set of pictures; hence, we have more instances of agreement than of tense (see below).) The data were recorded onto DAT tapes and subsequently transcribed, coded and double-checked, by native speakers of English.

### 6.3. Overall results

Tense and agreement morphology on lexical verbs was omitted to a considerable extent, as can be seen in Table 1.

**Table 1:** Suppliance of tense and agreement morphology for lexical verbs

	3rd singular	Regular past	Irregular past
Mandarin speakers (n = 12)	57/201 (28%)	16/28 (57%)	55/71 (78%)
Patty	4%	6%	46%

Suppliance is higher for regular past tense than for agreement (see section 7 for discussion); and irregular past forms are the most likely to be supplied, as expected (section 5). Note that the patterns of production from our subjects do not look like those of Patty; Patty fails to supply 3rd singular agreement and regular past to a similar extent, and her rate of suppliance is overall much lower.

Representative examples from the subjects in our experiment are given below. The examples in (11a, b) show suppliance of irregular past and omission of regular past, while those in (12a, b) show omission of agreement.

- (11) a. I never *saw* them before; they *open* my brain.  
 b. The people from other planet *change* his brain.
- (12) a. She *start* to clean herself.  
 b. Then she *cook* for the breakfast.

Before considering the incidence of tense and agreement inflection in more detail, we provide evidence that these Mandarin speakers do in fact represent tense and agreement features in their IL grammars. First, they performed at ceiling on a grammaticality judgment task which tested knowledge of overt tense and agreement morphology, not differing from a native speaker control group on this task. At least at a metalinguistic level, then, subjects were aware that tense and agreement are overtly marked in English. In addition, their production data

reveal a number of properties which are standardly assumed to implicate tense and agreement. These include nominative case assignment (nominative case is assigned by Infl which is [+tense]), incidence of copula and auxiliaries (these carry tense and agreement features), and accuracy of tense and agreement (implicating checking of the appropriate features). These results are presented in Table 2 where it can be seen that accurate suppliance is very high, much higher than the suppliance of inflectional morphology, and consistent with other results in the literature (e.g., Haznedar and Schwartz 1997; Lardiere 1999; Ionin and Wexler 2002; White 2003). Furthermore, there was only one case of faulty agreement in the entire data set: 3SG agreement used with a 3PL subject.

**Table 2:** Suppliance of Infl-related properties

Nominative case	Copular <i>be</i>	Auxiliary ( <i>be, have, do</i> )
424/424 (100%)	99/102 (97%)	76/87 (87%)

With respect to the properties reported in Table 2, there is little variation across subjects. However, as we shall see below, there are considerable differences in terms of phonological representations, with subjects falling into two distinct groups. As our data include many more contexts for 3rd person singular agreement than for past tense (see Table 1), we now focus on agreement.

#### 6.4. Focus on agreement

In section 6.1, we predicted that Mandarin speakers whose IL grammars are constrained by their L1 stem-internal analysis of inflection would show two patterns of production of L2 functional material. This proved to be the case: subjects fell into two distinct groups, as shown in Table 3. One group deleted agreement across the board, consistent with Prediction 1. The other supplied the morphology approximately half of the time, consistent with Prediction 2.

**Table 3:** Suppliance of agreement morphology for two groups of subjects

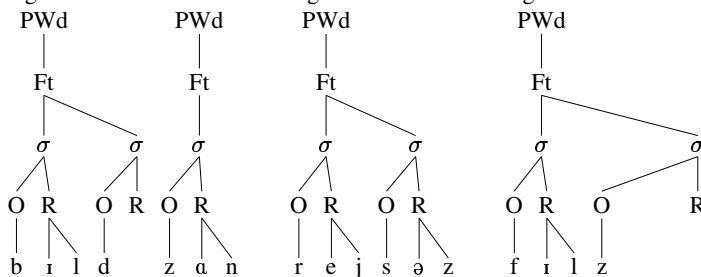
ATB deletion group (n = 6)	Variable deletion group (n = 6)
10%	49%

Here, we elaborate on Prediction 2, that inflectional morphology can only be realized by the variable deletion group in the case of stimuli where it can be incorporated into the PWD. There are three conditions under which a PWD-internal analysis of inflection is possible: (i) agreement is followed by a vowel-initial word to which it can be syllabified as an onset, for example, [bildʒan] ‘builds on’, [sowʒap] ‘sews up’ (see (13a));<sup>13</sup> (ii) agreement is attached to a sibilant-final

<sup>13</sup>In all of the structures in (13), we have syllabified the first two syllables internal to the foot, in keeping with the HL trochee preferred by native Mandarin.

base triggering schwa epenthesis which enables it to be syllabified as a coda, for example, [rejsəz] ‘races’, [wɔʃəz] ‘washes’ (see (13b));<sup>14</sup> (iii) agreement is attached to a base which is ...VX] in shape, enabling it to be incorporated into the foot as an OEHS, leading to a structure parallel to that attested for Mandarin aspect in (5b), for example, [filz] ‘fills’, [sowz] ‘sews’ (see (13c)).

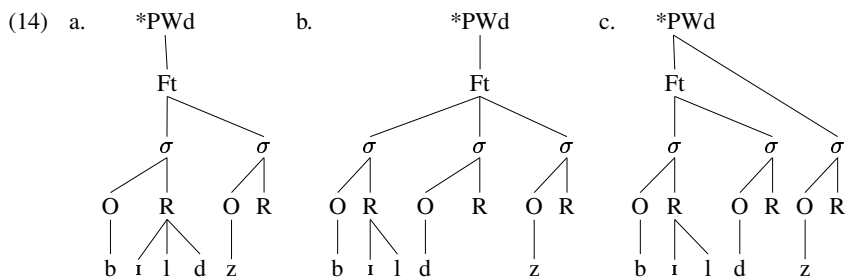
- (13) a. Agr as onset:                      b. Agr as coda:                      c. Agr as foot-internal OEHS:



In contrast to these cases, a stem-internal analysis of inflection is not possible with bases which are ...VXC] in shape as in, for example, [bildz] ‘builds’, [kijps] ‘keeps’ (before a consonant-initial word or pause). There is no room for agreement inside the PWD, without violating BINARITY in (6) (rhyme (14a) or foot (14b)) and/or the universally-undominated constraint against PWD-internal adjacent empty nuclei (7), as in (14b–c).<sup>15</sup>

<sup>14</sup>Note that while the rhyme in the second syllable in (13b) is branching, this syllable is not heavy as schwa is weightless; hence, the foot is a well-formed HL trochee.

<sup>15</sup>As mentioned in section 4.2, violations of BINARITY at the level of the rhyme are rare in English but they do occur in some dialects (e.g., [tʃaɪl.dθ] ‘child’). If the speakers in our study can provide an appropriate analysis for such forms, we must rule out the possibility that they could extend this analysis to forms like *builds*, thereby providing a PWD-internal parse for inflection, [bɪld]<sub>Rh</sub>.zθ]<sub>PWD</sub> (cf. (14a)). However, forms which violate rhyme binarity in English are restricted in shape: [VVC]<sub>Rh</sub> is possible, but \*[VCC]<sub>Rh</sub> is not; the coda and following onset must both be coronal; and the following onset must be [–cont] (see esp. Harris 1994; also Goldsmith 1990). If the Mandarin speakers were attentive to these facts, the PWD-internal analysis for inflected ...VXC] forms would only obtain in the case of past tense stimuli for stems of the shape VVC<sub>cor</sub> (e.g., *leased*, *peeled*; cf. monomorphemic *feast*, *field*). Few, if any, forms in the Mandarin speakers’ productions fit these criteria. We thus do not address this issue further and consider all PWD-internal parses for ...VXC + AGR to be ungrammatical, as in (14).



When the stimuli are divided into categories by stem shape (see Table 4), the pattern of suppliance by the variable deletion group is not consistent across categories. In accordance with our predictions, it is higher in those cases where agreement can be incorporated into the PWd/stem as in (13); see (a)–(c) in Table 4. Suppliance is low when there is no option for agreement to be inside the PWd as in (14); see (d) in Table 4. In contrast, the ATB group deletes inflection regardless of stem shape.

**Table 4:** Agreement in production by stem shape (% target-like)

	Example		ATB deletion group	Variable deletion group	
a.	Agreement as onset	[bildzən]	‘builds on’	7%	75%
b.	Agreement as coda	[rejsəz]	‘races’	0%	27%
c.	Agreement as foot-internal OEHS	[fɪlz]	‘fills’	7%	68%
d.	No option for agreement inside PWd	[bildz]	‘builds’	0%	9%

One may question why, for the variable deletion group, agreement surfaces only 27% of the time for sibilant-final stems where it is syllabified as a coda ((b) in Table 4). While Mandarin tolerates (sonorant) codas, it does not permit codas in unstressed syllables (Duanmu 2000:88), which is required for target-like production of forms like [rejsəz]. It appears, then, that the markedness constraints which prevent (obstruent) codas from appearing in unstressed syllables are still highly ranked in the IL grammar.

Finally, we must ensure that the difference between the ATB and variable deletion groups cannot be attributed to differences in performance on right-edge clusters more generally (as was the case for Patty). Specifically, the ATB deletion group should only show deletion of inflection, without widespread deletion of clusters in monomorphemic forms as well. Table 5 reports on the production of clusters in monomorphemic words. The ATB and variable deletion groups perform similarly in this case, in contrast to their performance on inflection. A comparison of the ATB group’s 57% target-like performance for clusters in monomorphemic forms like [bɪld] ‘build’ (see Table 5) with their 7% suppliance



of agreement in forms like [filz] ‘fills’ (Table 4) reveals that their behaviour cannot be attributed to more general deletion of clusters. Furthermore, performance by the variable deletion group on clusters in monomorphemic forms and in inflected forms of the same shape ((c) in Table 4), at 68% for each, is consistent with our approach: this group of subjects is incorporating agreement into the PWd/stem where possible, such that clusters in inflected forms formally resemble clusters in monomorphemic forms.

**Table 5:** Word-final clusters in monomorphemic forms (% target-like)

ATB deletion group	Variable deletion group
57%	68%

## 7. DISCUSSION

To summarize, we have argued that deletion of inflection in the L2 English production of Mandarin speakers is due to the unavailability of adjunction. We have identified two different patterns of behaviour resulting from the absence of adjunction: (i) a group of learners that deletes inflection across the board; and (ii) a group that, wherever possible, accommodates English inflection by means of a stem-internal analysis. All of the subjects in our experiment treat inflection in English in ways that can be attributed to L1 prosodic representation rather than to the absence of tense or agreement features in the interlanguage grammar. It must be acknowledged, however, that the number of tokens of overt inflection in our study is quite small; clearly, further data are required in order to see whether the patterns we have found are robust.

The Prosodic Transfer Hypothesis makes a number of predictions which will be the focus of future research. For example, different inflections which are prosodified in the same way in the L2 should be equally problematic for learners whose L1 grammar does not permit the necessary prosodic structure. Plural inflection on English nouns, for instance, should be disrupted to the same extent as 3rd person singular agreement on verbs. Similarly, regular past participles should pose the same difficulty in production as regular past tense. Contrary to the latter prediction, Hawkins and Liszka (2003) point out that in their data, as well as in those of Bayley (1996), omission of */d* in past participles does not pattern with past tense; instead, it patterns with cluster-final monomorphemic words, where accuracy is higher. However, there are very few past participle contexts in either Hawkins and Liszka’s or Bayley’s data. This preliminary finding must therefore be interpreted with caution; more systematic investigation is clearly required.

It is important to point out that we are not claiming that all cases of missing inflection in L2 can be explained solely in terms of prosodic transfer. Indeed, there are aspects of our own data that do not seem to be open to a phonological account. For example, given that tense and agreement morphology are prosodified in the

same fashion in English, we do not expect suppliance for these two morphemes to differ. While this is true for Patty, our data show a discrepancy between the two, with tense supplied more than agreement (see Table 1). Given more data, if we were to find that this difference between tense and agreement is indeed significant, we speculate that this may be due to performance considerations: for agreement, only 3rd person singular is overtly marked in English, in contrast to tense. Thus, the likelihood of deletion errors in agreement contexts is enhanced through pressure toward paradigm uniformity.

In conclusion, if variability in suppliance of L2 morphology can be accounted for in terms of L1 prosodic structure, as we have argued, this explains a number of puzzles associated with the missing inflection phenomenon. Firstly, as discussed by Lardiere (2000), it is not immediately obvious why L2 speakers should be so much more accurate in the case of free function morphemes (tense and agreement on auxiliaries, nominative case on pronouns) than with bound morphology. Our general impression is that the Mandarin speakers in this study stress function words, although we have yet to look at this systematically. In consequence, function words would form their own PWds, so there should be no problem representing them in outputs. Secondly, the fact that difficulties with inflection are not an across-the-board phenomenon but are manifested principally in oral production is exactly what is expected under a prosodic account. Finally, it is noteworthy that, for some subjects discussed in the literature, the proportion of suppliance of functional morphology does not vary over time, suggesting fossilization (Lardiere 1998a, 1998b; White 2003). On accounts that attribute morphological variability to mapping or access problems, there is no particular reason to expect the same degree of difficulty from one occasion to another in accessing forms which are assumed to be represented in the IL lexicon. In contrast, if failure to supply inflection is an effect of phonological representation, and that representation has fossilized, then lack of change over time is not surprising.

#### REFERENCES

- Bayley, Robert. 1994. Interlanguage variation and the quantitative paradigm: Past tense marking in Chinese-English. In *Research methodology in second-language acquisition*, ed. Elaine E. Tarone, Susan M. Gass, and Andrew D. Cohen, 157–181. Hillsdale: Lawrence Erlbaum.
- Bayley, Robert. 1996. Competing constraints on variation in the speech of adult Chinese learners of English. In *Second language acquisition and linguistic variation*, ed. Robert Bayley and Dennis R. Preston, 97–120. Amsterdam: John Benjamins.
- Broselow, Ellen. 1983. Non-obvious transfer: On predicting epenthesis errors. In *Language transfer in language learning*, ed. Susan Gass and Larry Selinker, 269–280. Rowley: Newbury House.
- Broselow, Ellen, Su-I Chen, and Chilin Wang. 1998. The emergence of the unmarked in second language phonology. *Studies in Second Language Acquisition* 20:261–280.
- Charette, Monik. 1991. *Conditions on phonological government*. Cambridge: Cambridge University Press.

- Demuth, Katherine. 2001. Prosodic constraints on morphological development. In *Approaches to bootstrapping: Phonological, lexical, syntactic and neuro-physiological aspects of early language acquisition*, Vol. 2, ed. Jurgen Weissenborn and Barbara Höhle, 3–21. Amsterdam: John Benjamins.
- Duanmu, San. 2000. *The phonology of Standard Chinese*. Oxford: Oxford University Press.
- Gavruseva, Lena, and Donna Lardiere. 1996. The emergence of extended phrase structure in child L1 acquisition. In *Proceedings of the 20th Annual Boston University Conference on Language Development*, ed. Andrew Stringfellow, Dalia Cahana-Amitay, Elizabeth Hughes, and Andrea Zukowski, 225–236. Somerville: Cascadilla Press.
- Gerken, LouAnn, Barbara Landau, and Robert Remez. 1990. Function morphemes in young children's speech perception and production. *Developmental Psychology* 26:204–216.
- Goad, Heather, and Yvan Rose. In press. Input elaboration, head faithfulness and evidence for representation in the acquisition of left-edge clusters in West Germanic. In *Constraints in phonological acquisition*, ed. René Kager, Joseph Pater, and Wim Zonneveld. Cambridge: Cambridge University Press.
- Goad, Heather, and Lydia White. 2003. Ultimate attainment of L2 inflection: Effects of L1 prosodic structure. Paper read at the European Second Language Association Conference, Edinburgh.
- Goldsmith, John. 1990. *Autosegmental and metrical phonology*. Oxford: Blackwell.
- Grimshaw, Jane. 1994. Minimal projection and clause structure. In *Syntactic theory and first language acquisition: cross-linguistic perspectives*, Vol. 1: *Heads, projections and learnability*, ed. Barbara Lust, Margarita Suárez, and John Whitman, 75–83. Hillsdale: Lawrence Erlbaum.
- Harris, John. 1994. *English sound structure*. Oxford: Blackwell.
- Hawkins, Roger. 2000. Persistent selective fossilisation in second language acquisition and the optimal design of the language faculty. *Essex Research Reports in Linguistics* 34:75–90.
- Hawkins, Roger. 2001. *Second language syntax: A generative introduction*. Oxford: Blackwell.
- Hawkins, Roger, and Cecilia Y.-h. Chan. 1997. The partial availability of Universal Grammar in second language acquisition: The 'failed functional features hypothesis'. *Second Language Research* 13:187–226.
- Hawkins, Roger, and Florencia Franceschina. In press. Explaining the acquisition and non-acquisition of determiner-noun gender concord in French and Spanish. In *The acquisition of French in different contexts*, ed. Johanne Paradis and Philippe Prévost. Amsterdam: John Benjamins.
- Hawkins, Roger, and Sarah Liszka. 2003. Locating the source of defective past tense marking in advanced L2 English speakers. In *The interface between syntax and lexicon in second language acquisition*, ed. Roeland van Hout, Aafke Hulk, Folkert Kuiken, and Richard Towell, 21–44. Amsterdam: John Benjamins.
- Hayes, Bruce. 1981. *A metrical theory of stress rules*. Doctoral dissertation, Massachusetts Institute of Technology.
- Hayes, Bruce. 1989. The prosodic hierarchy in meter. In *Phonetics and Phonology 1: Rhythm and meter*, ed. Paul Kiparsky and Gilbert Youmans, 201–260. San Diego: Academic Press.

- Hayes, Bruce. 1995. *Metrical stress theory: Principles and case studies*. Chicago: University of Chicago Press.
- Haznedar, Belma, and Bonnie D. Schwartz. 1997. Are there optional infinitives in child L2 acquisition? In *Proceedings of the 21st Annual Boston University Conference on Language Development*, ed. Elizabeth Hughes, Mary Hughes, and Annabel Greenhill, 257–268. Somerville: Cascadilla Press.
- Herschensohn, Julia. 2001. Missing inflection in L2 French: Accidental infinitives and other verbal deficits. *Second Language Research* 17:273–305.
- Ionin, Tanya, and Ken Wexler. 2002. Why is ‘is’ easier than ‘-s’?: Acquisition of tense/agreement morphology by child second language learners of English. *Second Language Research* 18:95–136.
- Kaye, Jonathan, Jean Lowenstamm, and Jean-Roger Vergnaud. 1990. Constituent structure and government in phonology. *Phonology* 7:193–231.
- Lardiere, Donna. 1998a. Case and tense in the ‘fossilized’ steady state. *Second Language Research* 14:1–26.
- Lardiere, Donna. 1998b. Dissociating syntax from morphology in a divergent end-state grammar. *Second Language Research* 14:359–375.
- Lardiere, Donna. 1999. Suppletive agreement in second language acquisition. In *Proceedings of the 23rd Annual Boston University Conference on Language Development*, ed. Annabel Greenhill, Heather Littlefield, and Cheryl Tano, 386–396. Somerville: Cascadilla Press.
- Lardiere, Donna. 2000. Mapping features to forms in second language acquisition. In *Second language acquisition and linguistic theory*, ed. John Archibald, 102–129. Oxford: Blackwell.
- Lardiere, Donna. 2003. Second language knowledge of [ $\pm$ past] vs. [ $\pm$ finite]. In *Proceedings of the 6th Generative Approaches to Second Language Acquisition Conference (GASLA 2002)*, ed. Juana Liceras, Helmut Zobl, and Helen Goodluck, 176–189. Somerville: Cascadilla Press.
- Lardiere, Donna, and Bonnie D. Schwartz. 1997. Feature-marking in the L2 development of deverbal compounds. *Journal of Linguistics* 33:327–353.
- Liszka, Sarah A. 2002. *The development of tense and aspect in second language English*. Doctoral dissertation, University of Essex.
- Lleó, Conxita. 2001. The interface of phonology and syntax: The emergence of the article in the early acquisition of Spanish and German. In *Approaches to bootstrapping: Phonological, lexical, syntactic and neuro-physiological aspects of early language acquisition*, Vol. 2, ed. Jürgen Weissenborn and Barbara Höhle, 23–44. Amsterdam: John Benjamins.
- McCarthy, John, and Alan Prince. 1994. Generalized alignment. In *Yearbook of Morphology 1993*, ed. Geert Booij and Jaap van Marle, 79–153. Dordrecht: Kluwer.
- Mellander, Evan. 2002. A prosodic theory of rhythm and prominence. Doctoral dissertation, McGill University.
- Nespor, Marina, and Irene Vogel. 1986. *Prosodic phonology*. Dordrecht: Foris.
- Piggott, Glyne L. 1998. Foot form and the parsing of weightless syllables. In *Proceedings from the Main Session of the Chicago Linguistic Society’s 34th Meeting*, ed. M. Catherine Gruber, Derrick Higgins, Kenneth S. Olson, and Tamra Wysocki, 315–332. Chicago: Chicago Linguistic Society.

- Prévost, Philippe, and Lydia White. 2000. Missing surface inflection or impairment in second language acquisition? Evidence from tense and agreement. *Second Language Research* 16:103–133.
- Prince, Alan, and Paul Smolensky. 1993. *Optimality Theory: Constraint interaction in generative grammar*. Ms., Rutgers University and University of Colorado, Boulder.
- Selkirk, Elisabeth O. 1986. On derived domains in sentence phonology. *Phonology* 3:371–405.
- Selkirk, Elisabeth O. 1997. The prosodic structure of function words. In *Signal to syntax: Bootstrapping from speech to grammar in early acquisition*, ed. James Morgan and Katherine Demuth, 187–213. Mahwah: Lawrence Erlbaum.
- Shih, Chilin. 1997. Mandarin third tone sandhi and prosodic structure. In *Studies in Chinese phonology*, ed. Wang Jialing and Norval Smith, 81–123. Berlin: Mouton de Gruyter.
- Steele, Jeffrey. 2002. Representation and phonological licensing in the L2 acquisition of prosodic structure. Doctoral dissertation, McGill University.
- Tsimpli, Ianthi-Maria. 2003. Clitics and determiners in L2 Greek. In *Proceedings of the 6th Generative Approaches to Second Language Acquisition Conference (GASLA 2002)*, ed. Juana Liceras, Helmut Zobl, and Helen Goodluck, 331–339. Somerville: Cascadilla Press.
- Tsimpli, Ianthi-Maria, and Anne Roussou. 1991. Parameter resetting in L2? *UCL Working Papers in Linguistics* 3, ed. Hans van de Koot, 149–169. University College London.
- White, Lydia. 2003. Fossilization in steady state L2 grammars: Implications of persistent problems with inflectional morphology. *Bilingualism: Language and Cognition* 6:129–141.
- White, Lydia, Elena Valenzuela, Martyna Kozłowska-Macgregor, and Yan-kit Ingrid Leung. In press. Gender agreement in nonnative Spanish: Evidence against failed features. *Applied Psycholinguistics*.
- Wolfram, Walt, and Deborah Hatfield. 1986. Interlanguage fads and linguistic reality: The case of tense unmarking. In *Languages and linguistics: The interdependence of theory, data and application*, ed. Deborah Tannen and James E. Alatis, 17–34. Washington: Georgetown University Press.
- Wu, Ching-Huei Teresa. 2002. On *de/bu* and the syntactic nature of resultative verbal compounding. Ms., McGill University.
- Xu, De Bao. 2001. Lexical third tone sandhi and the lexical organization of Mandarin. In *Chinese phonology in generative grammar*, ed. De Bao Xu, 45–94. San Diego: Academic Press.
- Yip, Moira. 1980. *The tonal phonology of Chinese*. Doctoral dissertation, Massachusetts Institute of Technology.
- Yip, Moira. 1994. Isolated uses of prosodic categories. In *Perspectives in phonology*, ed. Jennifer Cole and Charles Kisseberth, 293–311. Stanford: Center for the Study of Language and Information.
- Yip, Moira. 1995. Tone in East Asian languages. In *The handbook of phonological theory*, ed. John Goldsmith, 476–494. Oxford: Blackwell.
- Zobl, Helmut, and Juana Liceras. 1994. Functional categories and acquisition orders. *Language Learning* 44:159–180.