Variability in second language article production: beyond the representational deficit vs. processing constraints debate

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This article addresses the debate on the causes of variability in production of second language functional morphology. It reports a study on article production by first language (L1) Serbian / second language (L2) English learners and compares their behaviour to that of a Turkish learner of English, reported in Goad and White (2004). In particular, it focuses on the tendency of these learners to omit articles more in adjectivally pre-modified (Art + Adj + N) than in non-modified contexts (Art + N). The asymmetry is found in both spoken and written production. The article argues that the pattern of results is not consistent with models assuming target-like syntax: the Missing Surface Inflection Hypothesis cannot predict the asymmetry at all, and the Prosodic Transfer Hypothesis cannot extend its explanatory power to spoken production of L1 Serbian/L2 English learners, or to written production in general. An alternative account, with broader empirical coverage, is proposed, on which L2 learners whose L1s do not grammaticalize definiteness misanalyse English articles as nominal modifiers, and treat them in production as such. The model goes beyond the representational deficit vs. processing constraints debate, in that it suggests that variability is caused by processing limitations, but precisely because the production of misanalysed elements cannot be (directly) syntactically motivated, and has to rely on general cognition instead.

Keywords: second language acquisition, English article use, variability in L2 grammars, prosodic transfer, syntactic misanalysis in L2

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I Introduction

Second language learners (L2ers) typically show a degree of variability in their production of both bound and free functional morphology: they use requisite forms on some occasions, fail to do so on others and sometimes supply them in inappropriate contexts. Examples (1) and (2) illustrate the production of past tense forms by Chinese learners in Hawkins and Liszka's (2003) study; examples (3) and (4) from White (2003) show some article errors by a participant who produces articles correctly on many other occasions (italics and Ø in 3 and 4 added):

> 1) When I *saw* the film 'Lonely and Hungry' and it *reminded* me of the old time when life *was* very hard. Some people they *were* very hungry and they *have* no work to do. They really *don't* want to steal . . .
> 2) The girl *ranned* not far away.
> 3) But, if you're Ø doctor, if you're Ø lawyer, you cannot come!
> 4) Is it a furniture?

Opinions differ as to what exactly causes such variability, or why it might persist, despite plenty of positive evidence, even in highly advanced and end-state L2 speakers. An issue that has been extensively debated is whether or not some form of grammatical (representational) impairment is involved. This question is closely linked to the issues of the extent to which the first language (L1) influences and shapes second language (L2) development, and whether Universal Grammar (UG) is available (and, if so, to what an extent) in second language acquisition (SLA).

At one end are proposals that assume that what the variability reflects are indeed non-targetlike syntactic representations. Some of these proposals argue for a fundamental difference between the nature of L2 and L1 grammars, assuming the availability of UG in first language acquisition but not SLA (e.g. Clahsen, 1989). Others advocate a less radical difference between the L1 and L2 development, assuming a partial UG-access through the L1; this means that only features (and categories) instantiated in the L1 are available to the L2 learner. Syntactic features absent from the L1 will not be acquirable, and in that respect L2ers' syntactic representations must remain non-target-like (Tsimpli and Roussou, 1991; Smith and Tsimpli, 1995; Hawkins and Chan, 1997; Franceschina, 2001; Hawkins, 2001). This position is sometimes collectively referred to as the Representational Deficit Hypothesis (Hawkins,

2003).[1] It captures well the observation that learners from different L1 backgrounds often show different rates of success in mastering certain grammatical forms of a particular L2.

At the opposite end is a view that argues against any syntactic deficit in L2 grammars, assuming full UG access in SLA, not restricted by the L1. It is suggested that variable production can be attributed to difficulties learners experience in mapping fully specified abstract syntax to surface morphological forms (e.g. Haznedar and Schwartz, 1997; Lardiere, 1998, 2000; 2003; Prévost and White, 2000; White, 2003). This position is known as the Missing Surface Inflection Hypothesis (MSIH; Prévost and White, 2000) or Processing Deficit Approach (Jiang, 2004). The strongest argument in favour of appropriate and intact syntax comes from an apparent contrast between variable production of morphology, on the one hand, and accurate production on related syntactic properties, on the other. For example, learners may show variability in production of past tense morphology, while at the same time being highly accurate on nominative case assignment, taken to implicate the feature tense (e.g. Lardiere, 1998; 2000). MSIH also captures the insight that while morphological production in the L2 is variable, it is also largely principled (i.e. not random). For example, while the past tense suffix *-ed* might not be reliably produced to mark the past tense, it is much less likely to appear on verbs in contexts indicating future. However, the weakness of this approach is that it is inherently *post hoc* (cf. White, 2003). The Missing Surface Inflection Hypothesis does not predict that surface inflections will be missing; it only accounts for omissions if they happen to be found in production.

To address this problem, MSIH has recently been supplemented by a proposal that allows for representational problems to play a part, but restricting them to the phonological level. The Prosodic Transfer Hypothesis (henceforth the PTH; cf. Goad, White and Steele, 2003; Goad and White, 2004) suggests that a transfer of L1 phonological representations might interfere with the production of L2 morphology. Like MSIH, it also assumes that L2 syntax must be fully

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[1] Other terms that can be found in the literature include Impaired Representation Hypothesis (Duffield *et al.*, 2002), Competence Deficit Approach (Jiang, 2004) and Failed Functional Features Hypothesis (Hawkins and Chan, 1997).

specified, and not impaired nor L1-restricted. However, if requisite prosodic structures for representing some L2 functional material are not available, then such material may be deleted in production. If non-targetlike L1 structures are transferred and used to accommodate L2 functional material, patterns of asymmetry conditioned by phonological contexts are predicted. This predictive power is a clear advantage this proposal has over the Missing Surface Inflection Hypothesis, as it allows testing. What is unclear, however, is why there should be a lasting effect of L1 transfer (implicating the unavailability of the full UG repertoire) in one domain of grammar (i.e. phonology), but not another (i.e. syntax).[2]

In sum, the proposals differ as to whether they assume any representational deficits, and if so of what kind. The question has been generating a lively debate and research, and is as yet unresolved. What is becoming increasingly obvious, though, is that traditional methods of looking at overall levels of accuracy rates – in production or on grammaticality judgement tasks – is unlikely to provide definitive answers. As Jiang (2004) observes, once a learner's accuracy hits the 80% mark, both accounts assuming fully specified syntax and those assuming non-targetlike representations could offer a principled explanation of a sort.

One way of moving the debate forward is to look more closely at well-defined patterns of asymmetries. We know that L2ers do not produce functional forms equally poorly or equally well in all contexts. Investigating contexts that systematically influence production may give us some insights into the underlying causes of the problem. For example, depending on the learners' L1 phonological structures, PTH predicts clearly defined phonologically-determined asymmetries. Different accounts would predict different asymmetries, although one needs to bear in mind that certain asymmetries might be compatible with several explanations. When this is the case, looking into the production of L2ers from different L1 backgrounds may be profitable.

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[2] Goad and White (2004) wish to reserve judgement as to whether full or partial access to UG in the domain of phonology is possible. However, the case study they discuss involves an end-state learner, whose production, they argue, shows a persisting effect of L1 phonological transfer and the unavailability of the required L2 structures. It is not clear why this should continue to be the case at this advanced stage, if the participant had full UG access in the domain of phonology.

If only one of two groups exhibit a certain asymmetry in production, an explanation that relies on the dimension of language along which the L1s differ receives indirect support. Similarly, if two groups show the same asymmetry, when their L1s pattern along one dimension but differ along another, the account that correctly predicts the behaviour of *both* groups of learners is to be preferred.

The aim of this article is to contribute to the debate by focusing on one aspect of L2 article production, namely the tendency of L2 learners from certain L1 backgrounds to omit articles more with nouns modified by adjectives (Art + Adj + N) than in non-modified sequences (Art + N). The article reports the behaviour of L1 Serbian/L2 English learners at four different proficiency levels, and compares it with the behaviour of an L1 Turkish / L2 English speaker reported in Goad and White (2004).

The material is organized as follows. Section II offers preliminary remarks on how definiteness is understood in this article. In Section III, the prosodic transfer account is introduced, with special reference to the asymmetry in article production in Art + N vs. Art + Adj + N contexts. Section IV introduces the present study, while Section V and VI discuss the results and compare them to those previously reported in the literature. Section VII summarizes the findings and considers their theoretical and methodological implications.

II Preliminary remarks on definiteness

Definiteness is a notion often discussed in the philosophical, semantic, pragmatic and syntactic literature (for representative reviews, see Chesterman, 1991; Lyons, 1999), though what different authors assume under the term may not always be freely interchangeable. I follow Lyons (1999) in emphasizing the need to distinguish between grammatical definiteness, on the one hand, and definiteness as a category of meaning, or semantic/pragmatic definiteness, on the other. The latter is universal and is often glossed as the 'identifiability of a referent'[3]: it is

[3] In fact, the 'identifiability of the referent' is a shorthand for 'a referent that is uniquely identifiable to speaker and hearer in the given context' or, more technically, following Hawkins (1991), 'a referent that exists and is unique (in the maximal set sense) in one of the pragmatically-delimited sets mutually manifest to speaker and hearer on-line'. For an extended discussion, see Trenkic, 2003.

an element of interpretation in all languages. It can be inferred through general principles of goal-oriented behaviour, and can be part of the lexicosemantic content of some expressions. For example, demonstratives in any language encode semantic definiteness as part of their meaning. However, this does not imply that every language grammaticalizes this category of meaning.

Grammatical definiteness – and it is the type that is of primary concern here – is in Lyons' terms 'a morpho-syntactic category, grammaticalizing a pragmatic category of identifiability' (1999: 282) (i.e. in a similar way that tense grammaticalizes the pragmatic category of time). It is realised as a specifier feature [Def], associated with the functional projection DP. Being a specifier feature, [Def] is semantically uninterpretable, and on the Principle of Full Interpretation (Chomsky, 1995) such features must be eliminated from the syntactic expression prior to LF. Through a matching of features in the syntactic expression with the features of corresponding morphological forms, spec DP position will be filled by a determiner representing the best fit, and the feature [Def] checked off. It is filling of this position (i.e. feature checking) that determines the definiteness status of a nominal phrase in languages that grammaticalize definiteness, rather than the lexicosemantic content of a determiner.[4] In fact, the definite article appears to have no lexicosemantic content at all, being an underspecified, pleonastic determiner, 'a meaningless filler, with the role of occupying . . . [spec DP] in the absence of any contentful item to fill that position' (Lyons, 1999: 290; for a proposal that the definite article in Greek lacks semantic content and has a purely grammatical function, see also Tsimpli, 2003). The definite article signals definiteness, but does not inherently encode it.[5]

Finally, the indefinite article is not linked to spec DP position at all, otherwise it would signal definiteness as well. Instead, on the assumption of multiple functional projections (compare Cinque, 1995) where

[4] For example, in some languages, demonstratives may appear in a position unrelated to spec DP (e.g. in postnominal adjectival position in Spanish). When this is the case, the nominal cannot receive its definite status from the meaning of the determiner alone, rather, a definite article has to appear to fill spec DP as well (e.g. Spanish *la casa esta* 'the house this' vs. *esta casa* 'this house').

[5] This is different from Ionin *et al.* (2004) who assume that articles encode either definiteness or specificity as part of their lexicosemantic content.

K[case]P is the highest functional projection of the nominal phrase (Lyons, 1999), the indefinite article is projected lower in the phrase and is linked to Cardinality. It thus signals indefiniteness only indirectly, by the fact that spec DP has not been filled.

The distinction between grammatical definiteness and definiteness as a category of meaning is worth bearing in mind when considering what is acquired/acquirable in second language acquisition, and I return to this in later sections.

III Previous research: L2 article production and the prosodic transfer account

In a recent study by Goad and White (2004), one of the reported results is a peculiar pattern of article production in L2 English by an end-state Turkish speaking learner, named SD[6] (see also White, 2003). SD was found to omit articles more in contexts where a noun was modified by an adjective (Art + Adj + N) than with non-modified nouns (Art + N). This asymmetry is accounted for in terms of the Prosodic Transfer Hypothesis. Within this section, subsection 1 introduces the central assumptions and prediction of the PTH, and subsection 2 summarizes Goad & White's discussion of the relevant prosodic structures in English, Turkish and the L2 English of a Turkish speaker.

1 Prosodic Transfer Hypothesis: central assumptions and predictions

The PTH is embedded in the framework of non-linear, prosodic phonology (e.g. Nespor and Vogel, 1986; Peperkamp, 1997). The framework postulates that phonology, similarly to syntax, imposes a hierarchical structure on language, and that it operates with a range of domain-specific units (e.g. syllable, foot, prosodic word, prosodic phrase) and constraints. In particular, the PTH rests on the idea that languages differ in the way they prosodify functional material. Following Selkirk (1996) – and as represented in (5) – functional material (fnc) can be prosodified in four different ways:

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[6] This is just one of the results from a broader study which investigated the spontaneous oral production of this participant, focusing on her production of tense, agreement and plural morphology, in addition to articles. For the purpose of this article, however, only her article production is reported.

- as an independent prosodic word (PWd);
- as an internal clitic (internal to the PWd);
- as an affixal clitic (involving adjunction to the PWd); or
- as a free clitic (when it links directly to the phonological phrase, PPh):
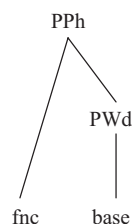
5) a. independent PWd   b. internal clitic   c. affixal clitic   d. free clitic

PWd	PWd	PWd	PPh
		PWd	PWd
fnc	fnc base	fnc base	fnc base

Not every language will allow all four combinations. The central prediction of the PTH is, thus, that:

> If the L1 does not permit certain kinds of prosodic representations as required by the L2, then second language speakers will have difficulties in representing such morphology in the outputs of the phonological component of the interlanguage grammar. (Goad and White, 2004: 122)

This view postulates L1–L2 phonological differences to be a significant cause of the variability in production of L2 morphosyntactic forms. This means that even two languages that may have functional material in the same linear position relative to lexical elements, and that might combine them in the same syntactic structures, could still prosodify the material differently (i.e. the functional element in question and the lexical word may build different prosodic 'trees'). When this is the case, problems in L2 spoken production of functional material are predicted.

## 2 Prosodic representations in the L2 English of a Turkish speaker: specific predictions

It is assumed that articles and unstressed determiners in English prosodify as free clitics (compare Selkirk, 1996: 198). They attach to (prosodic) phrases, not words (Goad and White, 2004: 133):

6) English articles: free clitics

```
            PPh
           /  \
          /   PWd
         /     |
        /      |
      a/the   man
```
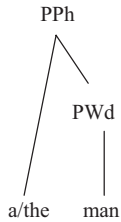
The PTH, as outlined above, predicts that if the L1 grammar does not allow this structure, a native-like prosodification of articles in L2 English will not be possible. Goad and White (2004) argue that this is the case with L1 Turkish. Determiner-like elements (e.g. demonstratives, numerals) in Turkish are said to be stressed, thus forming independent PWds:

7) Turkish stressed determiners: independent PWds

```
          PPh
         /   \
       PWd   PWd
        |     |
       bír   adam

       one    man
```
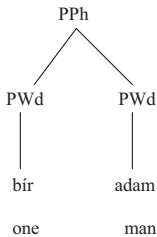
While Turkish does not have a definite article, the unstressed version of the numeral *bir* ('one') is sometimes assumed to be an indefinite article, or at least a quasi-indefinite article (compare Lyons, 1999). However, unlike English articles, this element is believed to prosodify as an affixal, not a free clitic (Goad and White, 2004: 131):

8) Turkish unstressed determiners (*bir*): affixal clitics

```
            PPh
             |
            PWd
           /  \
          /   PWd
         /     |
       bir    adám

        a      man
```
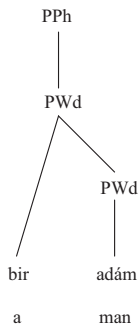
Evidence for this prosodic structure principally comes from the difference in position of the unstressed *bir* (quasi-article) and the stressed *bir* (numeral) in adjectivally modified nominal phrases. While stressed *bir* precedes the adjective (as in 9), the unstressed *bir* directly precedes the noun and cannot be separated from it by an adjective (as in 10):
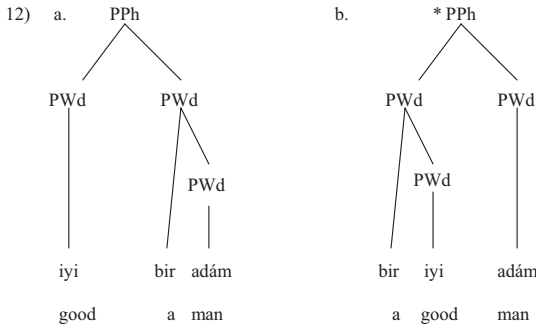
9)   bír   iyi   adam
             one   good   man

10)   a.   iyi   bir   adám
             good   a   man
      b. *   bir   iyi   adám
             a   good   man

Given the linear and syntactic equivalence of *bír iyi adám* (9) and **bir iyi adám* (10b), Goad and White (2004: 132) argue that the well-formedness of the former but the ill-formedness of the latter must be due to prosodic constraints. As a stressed element, the numeral *bir* forms an independent prosodic word, which allows it to be separated from the head noun by an adjective (see 11). The unstressed *bir*, on the other hand, is prosodically dependent. If it is assumed to be an affixal clitic – so that it must prefix directly onto the lexical word with which it forms a prosodic word – then the order in (10) is predicted[7] (and is prosodically represented in 12):

11)   PPh

          PWd PWd PWd

           bír   iyi   adam

          one   good man
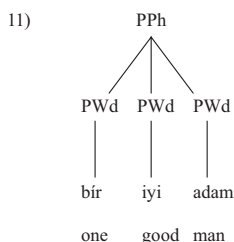
In short, the same syntax but a different prosodic representation results in well-formedness of (11) but ill-formedness of (12b). The same
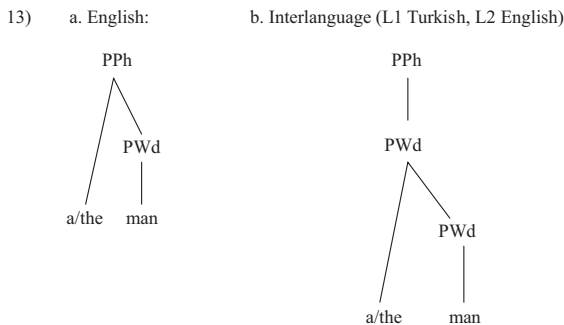
[7] Note that morphosyntactic considerations must come into play to account for why *bir* forms a prosodic word with the head noun rather than with the adjective. This alone, however, does not explain why *bír iyi adam* (9) is well-formed and **bir iyi adám* (10b) is not (see Goad and White, 2004: footnote 7).

12) a.   PPh   b.   * PPh

```
        PWd        PWd              PWd        PWd

                      PWd                PWd

        iyi      bir  adám           bir  iyi      adám

       good      a   man             a   good     man
```

prosodic representation but different morphosyntactic considerations (i.e. affixal clitic must appear adjacent to the syntactic head) account for the well-formedness of (12a) but ill-formedness of (12b).

Assuming that Turkish determiners are independent PWds, and the quasi-article is an affixal clitic, Goad and White (2004) suggest that Turkish provides no way to associate articles directly with the PPh. Such a lack of licensing options may lead, in general, to two outcomes: in extreme cases learners may delete functional material in all contexts; in other cases, they may use non-targetlike structures from the L1 to accommodate L2 functional material. In the latter case suppliance is predicted to be suppressed, variable and dependent on phonological contexts.

Goad and White's participant SD produces articles: definite articles in around 72% of obligatory contexts and indefinite articles in around 60%. This suggests that she must be using some L1 structures to prosodically represent them, and one representation that she could be applying is adjunction to PWd, used to represent the unstressed *bir* in Turkish (see 8). The target-like English construction and the assumed interlanguage construction are shown in (13):

13)   a. English: b. Interlanguage (L1 Turkish, L2 English)

```
              PPh                            PPh

                    PWd                      PWd

          a/the    man                           PWd

                                         a/the        man
```

This strategy should produce targetlike performance in simple Art + N sequences. However, this structure cannot accommodate Art + Adj + N sequences, and this is why a higher rate of omission in such contexts is predicted. The prediction, as we have seen, is supported by SD's production.

The account, however, has several internal problems. It is a mystery as to why, if SD uses the same structures and mechanisms to produce both definite and indefinite articles, the suppliance of the definite article should be markedly better (72% vs. 60%). Also, it is not clear why SD should produce articles in Art + Adj + N sequences at all, if a prosodic structure for article realization in this context is unavailable. Or, as a reviewer pointed out, why SD should not use some of the other matrices available to her to accommodate the non-targetlike prosodic structure (for example, to stress the article as in Turkish (9), *á good man*). Finally, if SD utilizes adjunction to PWd, it might also be predicted that she would sometimes produce the illicit Adj + Art + N sequence in English. Goad and White do not consider this prediction.

The most serious objection to the PTH as a valid account of the asymmetry comes externally, though. In Section IV, the same pattern is shown to occur not only in spoken but also in written production (which, by definition, lies outside the remit of a prosodic account). Furthermore, it is found in oral production of L2ers from an L1 background where the PTH would fail to predict this pattern. I argue that a more encompassing explanation – accounting for both modes of production and both learner populations – involves non-targetlike syntactic representations.

IV The study

The results reported here are part of a larger study on second language acquisition of English articles by Serbian speakers (Trenkic, 2000). The limited focus of this article is on the comparison of learners' article production in Art + Adj + N vs. Art + N contexts. The section starts with a summary of prosodic and morphosyntactic properties of the participants' L1. It is followed by a description of tasks, participants, data and results.

1 Serbian

a Prosodic structures: Serbian (also referred to here as Serbian/ Croatian/Bosnian, or S/C/B, to enable cross-referencing with the findings of other authors) is a language without a system of articles. However, there are determiner-like elements (on a par with English possessive or demonstrative determiners, for example) that can optionally precede a noun. When these are disyllabic, they have the status of an independent prosodic word (Zec, 2005: 83):

```
14)        PPh
          /    \
       PWd      PWd
        |        |
      jedna     žena

       one      woman
```
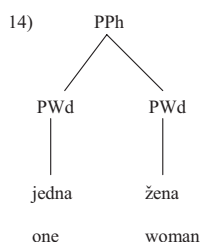
When monosyllabic, however, they are directly included in the phonological phrase (unless in focus; for details, see Zec, 2005):

```
15)        PPh
          /   \
              PWd
             /   |
           ta   žena

          that  woman
```
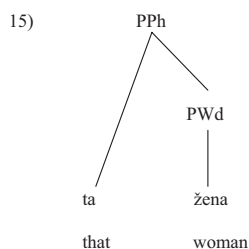
This means that a structure identical to the one needed for prosodifying English articles exists in Serbian. According to PTH, then, suppressed article suppliance in Art + Adj + N contexts should not be expected, as L1 Serbian speakers would not need to use adjunction to PWd to represent English articles.

b Morphosyntactic representations: In line with Lyons (1999), I assume here that in languages without a definite article (e.g. Serbian, Turkish, etc.), definiteness, as a universal category of meaning, is not grammaticalized. What this means is that marking and semantically interpreting nominals for definiteness is neither triggered nor restricted

by syntax (compare Chierchia, 1998). The morphosyntactic feature [Def] is not realised in the grammar of these languages, and there is no structural position associated with it (i.e. DP).

S/C/B do not have a definite (or an indefinite) article, and the functional head D does not appear motivated (Corver, 1992; Zlatić, 1997; Stjepanović, 1998; Willim, 2000; Bošković, 2005): there are neither elements that could project a DP (the semantic class of determiners in S/C/B corresponding to the syntactic category adjective), nor is there syntactic evidence of active head or specifier positions associated with this functional projection (Trenkic, 2004). The functional projection that closes off the phrase seems to be the K[case]Phrase (see Lyons, 1999; Willim, 2000: 325).

In terms of grammatical representations, then, neither L1 Serbian nor L1 Turkish could be said to equip their speakers with the morphosyntactic feature [Def], which they could transfer into the L2 English. Whether this feature, and the corresponding projection, could then be acquired in SLA is, of course, a matter of controversy: the Missing Surface Inflection Hypothesis and the Prosodic Transfer Hypothesis would predict the feature to be available through access to UG. The Representational Deficit Hypothesis, on the other hand, would predict that the feature would not be acquirable, and that learners from these L1 backgrounds should exhibit persistent variability in article production. I return to this in the analysis.

2 Tasks, participants and data

a The Map Task: The present study reports article production of a group of 12 learners on the Map task, a communicative task in which two participants, in order to complete it, exchange information which is only partially shared. All 12 participants were 17-year-old secondary school students in Serbia, with Serbian as the L1, who had studied English as part of the school curriculum for 7 years. Participation was voluntary, and the task was administered in a quiet room during school hours. Instructions were given by the researcher in the participants' L1. They were informed that they would play a board game in English. It was explained that each person would be given a map of a treasure island, but that only one map would be up-to-date and accurate, showing a safe

route to the treasure. The goal of the task was to help the person with the older version of the map update his copy accurately, in order to reach the treasure safely. The participants were seated at opposite ends of a table with a low screen in the middle, allowing them to see each other's face but not the other person's map. The task was designed to elicit spontaneous, meaning-focused production, while retaining a degree of control over what participants referred to (for more on the Map Task, see Brown, 1995). Dialogues were tape-recorded and transcribed. Article suppliance and omissions were noted for all mentions of objects drawn in the maps.

b Written translation task: Article performance on a written task is reported here to see whether higher omission rates in Art + Adj + N contexts are restricted to spoken production only, or extend to written production as well. Six short stories (between half a page and one page long) were composed for the purpose of the study, to be translated by participants from Serbian into English. The grammar and vocabulary were judged familiar to the participants by their English teachers. To try to discourage participants from unduly focusing on form and relying on their metalinguistic knowledge, they were instructed that the aim of the exercise was to translate as much material as they could. Data was collected during participants' regular classes of 45 minutes duration. Most participants completed between 2 and 3 stories within that time. Control native speaker (NS) results were obtained on a cloze test of the same texts.

For the purpose of the analysis of the results, the 6 stories were treated as a single set of data. The set contained a total of 239 full NPs, which were identified as target contexts. Each target context was classified according to a range of criteria (number, countability, concreteness, the degree to which the native speaker group provided consistent answers, etc.). To keep as many variables constant as possible, I discuss here the results from 67 concrete countable singular contexts, 45 of which were clearly definite, and 22 indefinite (i.e. the native speaker group was consistent (>90%) in supplying the same article). Out of 45 definite NPs, 35 were in Art + N contexts, and 10 in Art + Adj + N contexts. For indefinite NPs, 9 were non-modified, and 13 were adjectivally modified.

Table 1 Learner groups and the number of datasets

Group	Description	Number of years studying English	Number of datasets
A	Penultimate year of secondary school (age 17–18); preparing for university	7	20
B	Final year secondary school (age 18–19); preparing for university	8	8
C	University students training to be EFL teachers; penultimate year of study (age 21–22); scoring lower pass marks on their previous general English exam	11	10
D	University students training to be EFL teachers; final year of study (age 22–23); scoring higher pass marks on their previous general English exam	12	10

Four learner groups participated in the study. They were all adolescent/adult L1-Serbian learners of English, in state schools and universities in Serbia. Table 1 describes the groups and provides the number of datasets compiled by each one.[8] Only group performance is reported, due to certain restrictions on data collection imposed by the participating schools. Implications for interpreting the results are considered in the next section.

3 Results

a The Map Task: In the context of L1 Serbian learners' acquisition of L2 English, the Prosodic Transfer Hypothesis would fail to predict suppressed article production in adjectivally modified contexts. This is because a prosodic structure equivalent to the one needed for representing English article exists in their L1 and, unlike Turkish learners of English, they need not rely on adjunction. The null hypothesis here, therefore, was that there would be no difference between article omissions in Art + N and Art + Adj + N contexts. The independent variable was adjectival modification (Art + N vs. Art + Adj + N contexts), and its effect on article production was measured by the proportion of

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[8] No independent proficiency test in English was administered. Students were grouped according to the grade (the number of years they studied English) and the achieved mark on their regular English exams. The distinction between the lower pass students in Group C (scoring 6 and 7 on the scale 5–10, where 6 is the lowest pass mark) and higher pass students in Group D (scoring 8 and above) was made to facilitate a clearer detection of changes in very advanced learners.

Table 2 Proportions of omission errors in Art + N vs. Art + Adj + N contexts in spoken production of L1 Serbian learners of L2 English

Participants	'Art + N' contexts		'Art + Adj + N' contexts	
	Omission/total	Omission (%)	Omission/total	Omission (%)
P1	7/30	23.3	8/21	38.1
P2	7/19	36.8	9/13	69.2
P3	5/26	19.2	8/27	29.6
P4	10/22	45.5	6/9	66.7
P5	8/62	12.9	4/12	33.3
P6	1/24	4.2	4/16	25.0
P7	11/25	44.0	7/10	70.0
P8	13/35	37.1	10/16	62.5
P9	3/12	25.0	4/5	80.0
P10	10/21	47.6	4/7	57.1
P11	8/25	32.0	3/11	27.3
P12	3/24	12.5	2/5	40.0
Group total	86/325	26.5	69/152	45.4

omission errors in each sample (dependent variable). Omission rates for each individual participant and for the group as a whole are summarised in Table 2.

Given that the Map Task elicits semi-controlled spontaneous production, the overall number of nominal phrases produced by each participant differed, and adjectivally premodified phrases were produced less frequently than non-modified ones. However, a clear pattern of higher rates of omissions in Art + Adj + N sequences is detectable for all the participants bar one (P11's omission rates in the two contexts were roughly comparable). Using both the usual formula for calculating the significance of the difference between two proportions (e.g. Butler, 1985: 95) and Wood's formula, which incorporates a stabilizing correction (Woods *et al.*, 1986: 183), the difference between proportions of article omissions in Art + N vs. Art + Adj + N contexts for the group as a whole is highly statistically significant; $z = 4.44$ (usual formula), $z = 4.01$ (Wood's formula), in both cases $p < .001$, for either a directional or a non-directional test.

In sum, there is a difference in article omission rates which is attributable to adjectival modification, and it is therefore safe to reject the null hypothesis. We can also observe that the direction of the difference was the same as for the Turkish learner SD: the presence of an adjective affected article production negatively. Example (16) illustrates the

asymmetry. In this short dialogue, the speaker A (P9) correctly supplies an article in two Art + N conditions, and omits an article in two Art + Adj + N contexts (the relevant contexts are italicised):

16)   A: there are a lot of trees
      B: ok
      A: *dark forest* + and you go through *the forest* . . .
      B: yes
      A: and you go round it + and you come + to *wooden bridge*
      B: mhm
      A: and you go over *the bridge* . . .

b Written translation task: A written translation task was included to check whether higher omission rates in Art + Adj + N contexts could be attested in written production as well. The null hypothesis again was that there would be no difference in article production in adjectivally modified and in non-modified contexts. An alternative hypothesis was that the results would follow the pattern found in spoken production, i.e. that articles would be omitted more in Art + Adj + N contexts. The independent variable was the nominal premodification, and the dependent variable was the proportion of omission errors in production. Again, the *z*-test for calculating the significance of the difference between two proportions was used to assess the effect of the independent variable on production. Learners' overall performance is summarised in tables (3) and (4). The comparison of article omissions is shown in Figures 1 and 2.

   The results have two striking features. First, there is a huge difference between the production of the definite and the production of the indefinite article. Definite articles are supplied far more consistently in obligatory contexts (Table 3), but they also inappropriately substitute indefinite articles in a large number of contexts (Table 4). This finding

**Table 3**   Summary of definite article production

Context Group	Art + N					Art + Adj + N				
	A	B	C	D	NS	A	B	C	D	NS
Number of targets	700	280	350	350	700	200	80	100	100	200
Suppliance (%)	70.7	72.1	90.0	94.6	97.0	38.0	48.8	74.0	89.0	98.0
Omission (%)	23.0	14.3	0.9	0.3	0.4	54.5	42.5	15.0	6.0	0.5
Substitution (%)	3.0	10.4	4.6	1.1	2.6	7.5	7.6	9.0	4.0	1.5
Other (%)	3.3	3.3	3.7	4.0	–	0.0	1.3	2.0	1.0	–

Table 4 Summary of indefinite article production

Context Group	Art + N					Art + Adj + N				
	A	B	C	D	NS	A	B	C	D	NS
Number of targets	180	72	90	90	180	260	104	130	130	260
Suppliance (%)	26.1	50.0	70.0	79.9	96.3	20.4	32.7	80.0	86.9	96.2
Omission (%)	31.7	16.7	0.0	1.1	0.0	49.6	43.4	3.8	1.5	1.2
Substitution (%)	41.1	31.9	28.9	17.8	3.8	24.2	20.2	12.3	8.5	2.7
Other (%)	1.2	1.4	1.1	2.2	–	5.7	3.8	3.9	3.0	–

goes beyond the scope of this article, but will be briefly referred to in the discussion (a detailed discussion can be found in Trenkic 2000; 2002). Second, just as in the oral production, there is a stark asymmetry in article omissions in Art + Adj + N sequences, compared to Art + N contexts.

The levels of article omissions are relatively high in all contexts for the two lower proficiency groups (ranging from 14% to as much as 55%). In contrast, omission rates are markedly reduced in the production of the two higher proficiency groups, and in some contexts they almost disappear. For example, for the most advanced group, omission
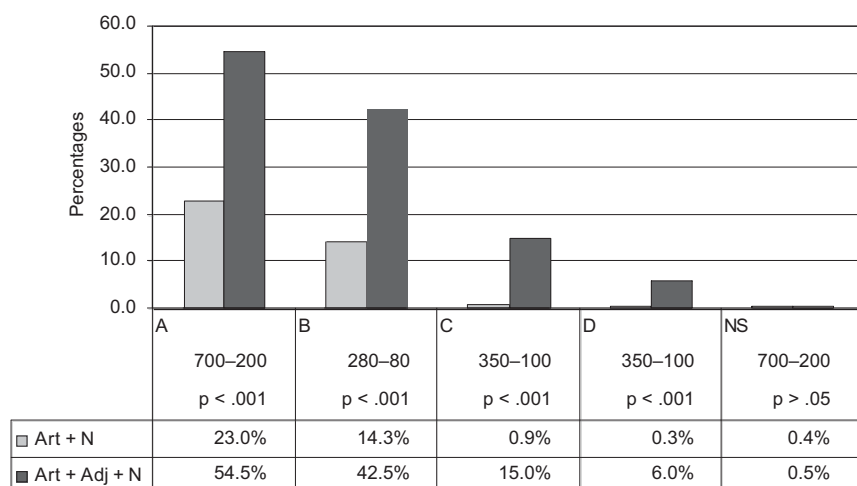
Figure 1 Omission of *the* in adjectivally modified and non-modified contexts, across groups
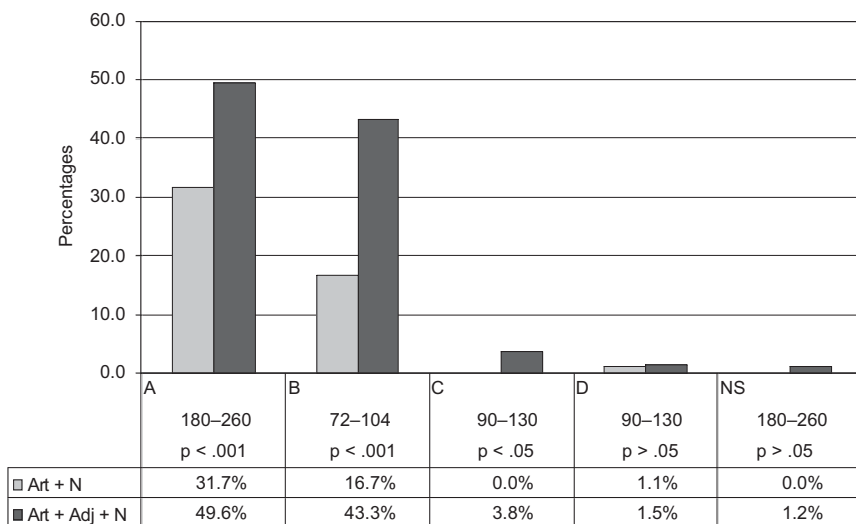
Figure 2 Omission of *a(n)* in adjectivally modified and non-modified contexts, across groups

errors are so few (well below 10% in all contexts) that superficially at least, their production appears native-like.

What is crucial, however, is that the presence of an adjective increased the likelihood of the article drop in all learner groups, irrespective of the overall accuracy rates or the rate of omissions. The asymmetry persisted through the developmental stages, despite the overall improvement in production. The definite article results (Figure 1) show that the difference between omission rates in Art + N and Art + Adj + N contexts is statistically significant in all learner groups (A: $z = 8.57$, $p < .001$; B: $z = 5.51$, $p < .001$; C: $z = 6.37$, $p < .001$; D: $z = 4.07$, $p < .001$, NS: $z = .13$, $p > .05$).[9] The results on the indefinite article (Figure 2) follow the same trend, reaching statistical significance in groups A, B and C, though not in D[10] (A: $z = 3.75$, $p < .001$;

[9] Only z-values calculated using the usual formula are reported, as both the values obtained in this way and using Wood's formula were equally significant.

[10] Perhaps identical patterns for the definite and the indefinite article should not be expected. Scholars have long observed 'that "definite" and "indefinite" are not merely polar opposites, but qualitatively different concepts' (Chesterman, 1991: 1; see also Hawkins, 1991), and that the definite and the indefinite article may be linked to different grammatical features (i.e. definiteness and cardinality, respectively; for more details, see Lyons, 1999). Thus when we talk about the absence of the feature definiteness in L2 grammars, it might be more appropriate to restrict predictions to the definite article production only.

B: $z = 3.71$, $p < .001$; C: $z = 1.88$, $p > .05$ for nondirectional two-tailed test, but $p < .05$ for the directional, one-tailed test; D: $z = .27$, $p > .05$; NS: $z = 1.45$, $p > .05$). Again, we are safe in rejecting the null hypothesis of no difference: the presence of an adjective affects article production negatively in written production as well. The pattern of higher article omission in adjectivally modified contexts was not observed in the native speaker group.

A caveat is in order. Only group performances are reported, and it must be that some learners in groups C and D behave in an even more native-like way than the group results would suggest. It should also be taken into account that these learners, however proficient, were not in fact end-state learners, and that further improvements in their production could not be ruled out. However, this may be beside the point: it is not the level of omission errors that is of most interest here but rather the non-native-like asymmetry in omissions, which persists even when the overall production appears close to nativelike in most other respects. Whatever was causing it in earlier stages of acquisition seems to have continued to have an effect in very advanced stages as well. With further reductions in omission errors, the asymmetry must disappear as well, but the question remains as to whether we are justified in assuming that seemingly native-like production is in fact underpinned by native-like representations and/or processes. I return to this question in the discussion.

V Discussion of the results

The asymmetry in article production in adjectivally modified and non-modified nominal contexts, reported here for L1 Serbian learners of L2 English, is similar to that found in Goad and White (2004) for the L1 Turkish learner of L2 English, SD. However, unlike SD's production, the L1 Serbian/L2 English learner data cannot be accounted for in terms of the Prosodic Transfer Hypothesis. First, the asymmetry is attested not only in spoken but in written production as well, and a prosodic account, understandably, makes predictions regarding spoken production only. Second, even in spoken production, the PTH would not predict the established pattern in Serbian speakers' L2 English, given that the requisite prosodic structure exists in their L1. In sum, while the

Prosodic Transfer Hypothesis could account for the pattern of article production by an L1 Turkish / L2 English learner, it fails to extend its explanatory power to the same pattern in L1 Serbian/L2 English learners' production.

Another possibility is that the behaviour of both learner populations is affected by non-targetlike syntactic representations, either because UG is unavailable in SLA (e.g. Clahsen, 1989), or else because only categories and features instantiated in the L1 are available, leading to a misanalysis of L2 material (Smith and Tsimpli, 1995). We know that neither Serbian nor Turkish have a definite article, and the argument is that definiteness as a category of meaning is not grammaticalized in these languages (Lyons, 1999), i.e. that the syntactic feature [Def] is lacking. Further, while such languages have a semantic class of determiners, and these elements occur in the same surface position as English determiners, they behave syntactically as prenominal modifiers (i.e. adjectives), and should therefore be categorically treated as such (compare Lyons, 1999; Bošković, 2005). In short, S/C/B and Turkish do not have a syntactic category Determiner (Trenkic, 2004; Oztürk, 2005). Assuming L1 transfer, it seems most plausible that Turkish and S/C/B learners of English misanalyse English determiners, including articles, as prenominal modifiers (for a similar proposal for L1 Japanese/L2 English, compare Kuribara, 1999). I argue that the results support this analysis.

A basic challenge to the position assuming syntactic misanalysis is to explain why articles are produced at all, sometimes very accurately, and then why there should be clearly defined patterns of asymmetry in production, such as the one between Art + N and Art + Adj + N contexts. A model detailing assumptions about language production will be helpful in answering these questions. The working model of native-speaker production I outline here is based, in broad terms, on Garrett's (1975) and Levelt's (1989) models, following more recent minimalist assumptions about the organization of the language faculty (for a general overview of models of language production, see Harley, 2001). Figure 3 summarizes the stages of production on a hypothetical example of a speaker who wishes to say *The girl picked the red flower (and the boy picked the yellow one)*. The first stage in production is assumed to be conceptualization. At this stage, we determine what it is that we
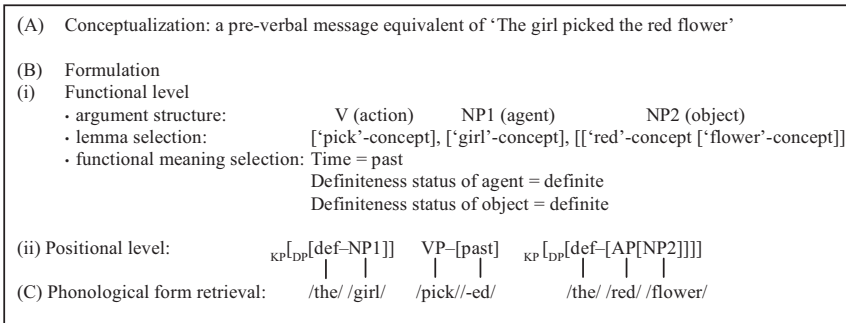
> (A) Conceptualization: a pre-verbal message equivalent of 'The girl picked the red flower'
>
> (B) Formulation
> (i) Functional level
>   · argument structure: V (action)   NP1 (agent)   NP2 (object)
>   · lemma selection: ['pick'-concept], ['girl'-concept], [['red'-concept ['flower'-concept]]
>   · functional meaning selection: Time = past
>   Definiteness status of agent = definite
>   Definiteness status of object = definite
>
> (ii) Positional level: $_{KP}[_{DP}$[def–NP1]]   VP–[past] $_{KP}[_{DP}$[def–[AP[NP2]]]]
> | | | | | | |
> (C) Phonological form retrieval: /the/ /girl/ /pick//-ed/   /the/ /red/ /flower/

Figure 3 Model of native speaker production of *The girl picked the red flower*

want to say in the given context, considering what we know and expect others to know or be aware of. This stage, thus, depends on general cognition, and the product of it is a pre-verbal message.

In the formulation stage that follows, the pre-verbal message gets transformed into its linguistic correlates. This stage has two sub-stages: the functional and positional levels. At the functional level, a functional argument structure is built, and the lexicon is consulted for the first time so that appropriate concepts can be selected: lemmas of lexical words with associated semantic and syntactic information, and language specific functional concepts (e.g. tense, number, definiteness, etc.). Once this is established, the syntax module takes over the information and generates expressions, which include strings of terminal nodes with associated features.

Finally, the lexicon is accessed again to retrieve phonological forms (probably content words first, followed by functional items, though the order is not of direct relevance here). This insertion happens automatically, through the matching of features on terminal nodes and vocabulary items. We have already said that [Def] is an uninterpretable feature that will be checked off by filling in spec DP position. The position will be filled by the pleonastic determiner *the*, unless some contentful determiner (e.g. demonstrative or possessive) have already filled the position, and so checked off the feature already.

According to the model, then, if the node DP and the feature [Def] were not generated at the positional level, the retrieval of the relevant forms would be impossible. Therefore, if these elements are absent from L2 grammars, there will be no syntactic motivation for articles to

appear in production at all. Indeed, if production were solely based on (appropriate) syntax, we would expect to see an across-the-board omission of articles. The fact that this is rarely the case, though, does not lend direct support to the view that syntactic representations must therefore be appropriate. Instead, one may want to argue that article forms appear in production because language production is not based solely on appropriate syntax. Syntactic processing is just one stage in production, and what happens before that level may well motivate the production of misanalysed elements.

Here is the proposal. If articles are misanalysed as adjectives, they will also be attributed some lexical meanings. Based on the contexts in which articles appear in the input and/or explicit instruction that learners may receive, these are likely to be related in some way to definiteness as a semantic category ('identifiability of a referent'). (Other meanings may come into play, too, and we come to that in the next section.) Figure 4 illustrates a possible learner representation of the definite article.

If articles, analysed as adjectives, are represented in a learner's lexicon, then they may be produced just as any other adjective would be, if the learner wishes to express the lexical meaning she attributes to them. Using again the example of the sentence *The girl picked the red flower*,
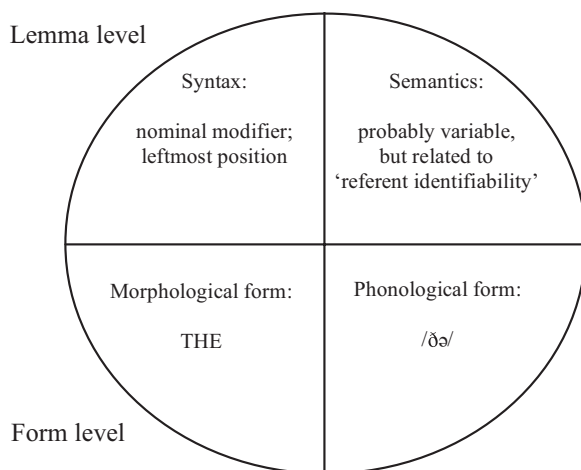

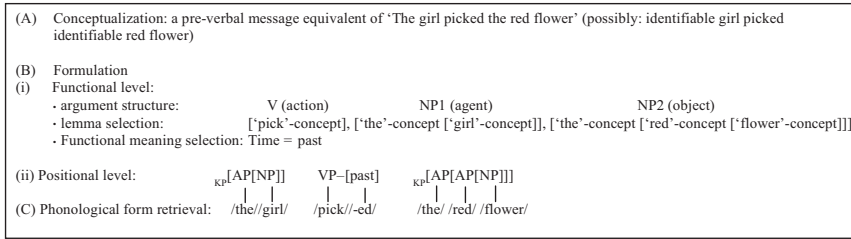**Figure 4**   A possible learner representation of the English definite article (based on Levelt's 1989 model)

(A) Conceptualization: a pre-verbal message equivalent of 'The girl picked the red flower' (possibly: identifiable girl picked identifiable red flower)

(B) Formulation
(i) Functional level:
    · argument structure: V (action)   NP1 (agent)   NP2 (object)
    · lemma selection: ['pick'-concept], ['the'-concept ['girl'-concept]], ['the'-concept ['red'-concept ['flower'-concept]]]
    · Functional meaning selection: Time = past

(ii) Positional level: $_{KP}$[AP[NP]]   VP–[past] $_{KP}$[AP[AP[NP]]]
                                   | | | | | | |
(C) Phonological form retrieval: /the//girl/   /pick//-ed/   /the/ /red/ /flower/

Figure 5 Model of L2 production of *The girl picked the red flower*

the mechanism is described in Figure 5. The figure shows that in order for an article to be produced, there would have to be a decision at the conceptual level that the identifiability of the referent will be monitored for and expressed. The resulting pre-verbal message would then trigger lemma access for the concept of identifiability (call it *the*-concept), and eventually a form will be retrieved, after syntax has generated an appropriate slot for an adjective.[11] The mechanism for producing *the* is thus exactly the same as the one for producing *red* in this example (but see below). Unlike in native-speaker production, where articles are semantically empty elements, and their insertion is purely syntactically motivated by the need to check off the uninterpretable feature [Def], in learner production articles are meaningful adjectives, accessed and produced as lexical words. Such production can be said to be pragmatically motivated, i.e. motivated by the perceived need to express the meaning that articles encode in the learner's representation. At this stage, one could reasonably ask why an L2er would ever want to express semantic definiteness, if, as in their L1, it could be efficiently calculated from the context of use? I presume that it is because articles are very frequent

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[11] Of course, the identifiability of the referent will be registered at the level of conceptualization in native speaker production as well (as will be the time of the event, or the number of participants), to trigger functional meanings selection and syntactic processing, as required by the grammar. But an L2er who has misanalysed articles as adjectives will have to go one step further: she will need to register not only the identifiability status of the referent but the need to lexically express it, as well. Think about it this way: at the level of conceptualization a native speaker of English will register other contextual detail, too, for example the size or the shape of the referent. However, as these are not grammaticalized in English (but may be in other languages), there will be no corresponding functional meanings to be retrieved. And neither will they automatically trigger lemma selections of the corresponding lexical words (e.g. *big/small*; *round/square*), otherwise we would never be able to suppress their expression. Instead, they will only be produced, if in addition to registering these properties, the speaker has also perceived the need to express them in the context.

in the input and, though misanalysed, they are represented in the learner's lexicon. Based on the input, the learner may hypothesize that unlike in her L1, the meanings encoded by article forms need to be expressed in the L2. She may, then, make a strategic decision to monitor the context at the what-I-want-to-say level, in order to produce articles and so conform to what she has noticed in the L2 input.

Obviously, strategic decisions need strategic control to be executed, and are therefore costly in terms of attentional resources. When attention is directed to, or exhausted by, other concurrent demands, article forms will fail to appear. In early stages of acquisition, when many aspects of production require conscious control, it is understandable that omission levels will be high. With increased general proficiency, though, some of the limited cognitive resources will be freed, making the monitoring of the context for semantic definiteness more feasible, and so the production of articles more consistent. Finally, what started as a strategic process may through practice come to be fairly automated. All this means that a steady progress in suppliance rate should be expected, and that it may, indeed, reach very high levels. However, production will remain unmotivated by the syntax and, as such, not categorically required. This means that whenever cognitive resources are exceeded (even though this may be on fewer and fewer occasions), the forms will fail to be produced.

This ultimately leads us to the explanation of the asymmetry concerning the higher omission rates in Art + Adj + N vs. Art + N sequences. Conceptualizing what one wants to say is normally fast and efficient, but it is not cost free: it requires and takes some of the person's limited attentional resources. The more elements of meaning we need to encode in a single phrase, the more complex and more costly the task. Clearly, then, as a sequence with one extra element of meaning, Art + Adj + N contexts will be more taxing than Art + N ones. All other things being equal, attentional resources will always be exceeded sooner in the former, leading to proportionally more article omissions.

Two of the reviewers and a number of other colleagues have suggested that this proposal should predict an equal omission of both articles and adjectives in Art + Adj + N contexts (as well as in Adj + Adj + N). This would only be true, however, if conceptualization, like syntax, was blind to meaning. But of course, it is not. In fact, at the level

of conceptualization we do not operate with grammatical categories, only with pre-verbal meanings (however one envisages them), so what the learner will deal with is neither Art + Adj + N nor Adj + Adj + N, but rather Meaning 1 + Meaning 2 + Meaning 3. And meanings are not all created equal. Some meanings will be more informative in the contexts, and so, all other things being equal, more relevant (compare Sperber and Wilson, 1995), and more likely to be attended to (if need be, at the expense of processing some other aspects of the utterance). For example, in the context where there are two mugs on the table, one red and one green, mentioning the colour would be more informative than mentioning the identifiability status: the ungrammatical *pass me red mug* will almost certainly lead to the desired outcome, whereas the grammatical *pass me the mug* would slash your chances by half. It is then reasonable that meanings encoded by real adjectives will be attended to first, and only if enough resources are left in the end, the meaning that articles encode will be entered into the computation (or, for that matter, meanings encoded by other (misanalysed) functional elements).[12] Of course, the lack of attention may lead to an adjective drop as well, in native just as well as in the non-native production: for example, if my attention is preoccupied with something else and I do not notice that there are two mugs on the table, I am likely not to mention the colour of the mug and say *Pass me (the) mug*.

Summing up the discussion so far, the proposal here is that L2ers whose L1s do not grammaticalize definiteness analyse English articles as nominal modifiers, and treat them in production as such. This means that their article production is lexically based (articles are treated as lexical words) and pragmatically motivated (i.e. motivated by the perceived need to express the meaning they encode for the learner). Whether they will appear in production critically depends on whether the need for expressing the identifiability of the referent has been registered

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[12] A reviewer points out that this account and PTH should make another different prediction, not addressed in this article: under PTH only omissions in prenominally modified contexts are expected (Art + Adj + N), while the current proposal should predict no difference in article omissions between prenominal (Art + Adj + N) and postnominal (Art + N + Adj) contexts. This may be so, although other factors such as adjacency to the noun and /or markedness of the structure (e.g. *the star invisible*) may introduce additional parameters.

at the conceptual level, the level that is open to general cognition and so dependent on working memory constraints. It will happen only if there are still some resources available after more relevant aspects of meaning have been attended to. If, however, attentional resources have been exhausted by other demands of production, articles will not be produced.

Finally, it is worth checking how other proposals would deal with the results. It was already shown that the Prosodic Transfer Hypothesis could not account for the full set of data. The Missing Surface Inflection Hypothesis, however, could claim, *post hoc*, that the mapping between fully specified syntactic representations at the positional level and phonological forms from the lexicon is more difficult in adjectivally modified than in non-modified contexts. There is, however, no principled reason why this should be so. In fact, a study by Granfeldt (2000) suggests that it is not. Participants in Granfeldt's study were Swedish learners of French. Both languages grammaticalize definiteness, and the L2 data of 4 adult learners (informal interviews and story-telling tasks) suggests that a full transfer of the nominal phrase structure occurs from the L1 to the L2, making the L2 syntax appropriate and fully specified. In terms of our model it means that appropriate terminal nodes and associated features are generated at the positional level. What is crucial here is that the presence of an adjective did not affect determiner production negatively in this population. These learners produced a total of 1075 nouns in non-modified contexts, omitting determiners 108 times (13.5%), and 145 in adjectivally premodified contexts, omitting determiners only 4 times (2.8%). The finding thus suggests that when syntax is appropriate and fully specified, the mapping between the feature [Def] at the positional level and the appropriate phonological forms from the lexicon, is not more difficult in Art + Adj + N than in Art + N sequences. The Missing Surface Inflection Hypothesis cannot therefore account for this asymmetry.

Interestingly enough, young bilinguals in Granfeldt's study went through a stage when [Def] was not yet established (2000: 273), and prenominal adjectives affected the production of determiner forms negatively, appearing with them in almost complementary distribution. A similar pattern has been reported for young L1 German monolinguals (Clahsen *et al.*, 1994). This suggests that there is a phase in the development of the

nominal phrase structure without functional categories, with functional forms being treated as prenominal modifiers. It does not last long, however, and at the age of around two and a half not only do omission rates drop significantly, but the asymmetry between article production in adjectivally modified and non-modified contexts disappears, suggesting that the functional category Determiner, and the related feature [Def], have been acquired, and that production now is motivated by syntax. When syntax is target-like, omissions are not only fewer but, crucially, their pattern is different.

I emphasize again that it is not omission errors *per se*, or even their magnitude, that are indicative of whether the production of functional forms is motivated by the syntactic module or general cognition, but rather the patterning of omissions.

VI General discussion

The model of production developed here resolves many other puzzling results. For example, both Goad and White's (2004) participant SD and L1 Serbian learners of English from our study were found to supply the definite article more consistently than the indefinite article. This should not be surprising if article production is determined at the level that is sensitive to the limitations of attentional resources: in order to produce a definite article in English,[13] these learners need to monitor for the identifiability status of the referent only. But to produce the indefinite article, additional considerations of countability and number are also required, making the monitoring more costly, and so the omissions more likely.

Another puzzle is why L2ers are sometimes worse in supplying articles in 'more obvious' contexts, omitting the definite article, for example, more with second than with first mention referents, and more in topic than in non-topic positions (compare Robertson, 2000; Trenkic 2002). Remember that the model assumes that article production is pragmatically motivated by the perceived need to express the meaning, and whether it will be perceived depends on whether enough resources are left after more relevant aspects of meaning have been attended to. Not every part of the intended message will receive equal attention,

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[13] The situation may well be different in other languages, where other features (e.g. case, gender, etc.) need to be checked as well.

though, and how attentional resources are distributed across an utterance will depend on pragmatic considerations of relevance (compare Sperber and Wilson, 1995). From the speaker's point of view, the most relevant part of the utterance, and so the one that will receive primary attention, will be the one carrying 'new' information; that includes first mention definite referents, e.g.:

> *A*: Did you talk to anyone?
> *B*: Yes, I talked to *the guy who designed Carrie's hat*.

In contrast, information that is 'given' or mutually manifest (e.g. already established in the discourse, or can be easily retrieved through the context) will be backgrounded. This is why we would expect second mention and topic referents to receive less attention, which means that, all other things being equal, their dedicated pool of resources will be exceeded sooner, leading to more frequent article omissions.

The argument is worth stressing. It is often taken that this gradual progress in L2 definiteness marking, from the 'least obvious' to the 'most obvious' contexts, is an indicator that the learners are moving from discourse-driven towards grammatically-driven production, and that it parallels the diachronic article development (Robertson, 2000). There are actually few grounds for such a claim, as the starting point and the direction of the change is very different in the two cases: in diachronic terms, the definite article starts from the 'most obvious' definite contexts, for example the area of overlap with demonstratives, or from topic position, and only gradually spreads to 'less obvious' contexts from there (Lyons, 1999: 334). In contrast, even the most advanced L2ers (from articleless L1 backgrounds) show residual optionality in article production in the 'most obvious' contexts. This difference seems to suggest, once again, that lexical/pragmatic, rather than syntactic considerations guide L2 learner article production and development.

What must not be overlooked, however, are the results taken to constitute independent evidence for the presence of the feature [Def] in the syntax of L2ers whose L1s do not grammaticalize definiteness. Specifically, Goad and White (2004: 125) suggest that SD's 'failure to consistently produce overt morphology cannot be attributed to failure to represent the relevant *morphosyntactic features*' (my emphasis). They

point out that despite frequent omissions, SD never substituted *a* for *the* and *the* for *a* in spontaneous production, and that she showed 'a robust definiteness effect'. These findings are argued to implicate a ± definite distinction, represented in SD's grammar 'presumably as a feature on D' (White, 2003: 138). If the argument stands, then it suggests that at least some L2ers from articleless L1 backgrounds can successfully acquire the morphosyntactic feature [Def]. A closer look at the results, however, shows that only claims about semantics, but not syntax, can be justifiably made.

SD is indeed very remarkable in that she does not make substitution errors, despite low suppliance rates of 72% for *the* and only 60% for *a(n)*. In that respect she differs from the majority of cases reported in the literature, where substitution is found to be a common problem in L2 English (Huebner, 1983; Tarone, 1985; Parrish, 1987; Tarone and Parrish, 1989; Thomas, 1989; Master, 1990; Trenkic 2002; Leung, 2001; Ionin and Wexler, 2003; Ionin *et al.*, 2004). However, this in itself does not constitute evidence that SD has an appropriate syntactic representation of definiteness. The lack of substitution errors is perfectly compatible with the model of lexically based article production. If a learner links article forms to the 'identifiability of the referent' (i.e. if she lexicalizes semantic (in)definiteness on article forms), and recognizes contexts as semantically definite or indefinite, articles will be produced in semantically appropriate contexts. But the 'appropriate' lexical meanings (remember that articles are semantically empty elements for native speakers) will only ensure that elements encoding semantic definiteness do not appear in contexts perceived as semantically indefinite, and vice versa. They will not stop omission errors, and their patterns, which will still be conditioned by the available attentional resources for monitoring semantic definiteness at the conceptual level. All the lack of substitution errors in SD's production can be said to suggest is that she has linked article forms to semantic (in)definiteness. It does not constitute evidence that the morphosyntactic feature [Def] has been acquired.

Learners, however, do not have to make exclusive links between article forms and semantic (in)definiteness; indeed, most do not seem to. The reasons why this may be so, or what meanings L2ers may attribute to articles, are issues that cannot be addressed here. However, we know

this to be the case as several studies report that when substitution errors occur, they are not random but appear to be determined by the lexical meanings L2ers attribute to article forms. For example, if learners associate *the* with the notion of specificity, instead of, or in addition to, semantic definiteness, they will use *the* in place of *a* in semantically [–definite; +specific] contexts (Ionin *et al.*, 2004; for similar findings, but involving different form–meaning associations, see Huebner, 1983; Thomas, 1989; Trenkic 2002). In terms of the model developed here, this means that at the conceptual level, the learner will monitor not (only) for the identifiability of the referent, but (also) for its specificity, or some other property with which she associates article forms. This scenario predicts both principled substitution errors, based on lexical meanings that learners attribute to the forms, and specific patterns of omission errors, when attentional resources are exceeded. And this seems to be consistent with what we generally find in the SLA literature.

Finally, one needs to look at what is termed SD's 'robust definiteness effect'. As rightly noted by an anonymous reviewer, the major argument here involves the observation that definite nominals were practically non-existent in existential *there* constructions, implying SD's sensitivity to the fact that only indefinite referents are appropriate. This seems correct, but I fail to see that this is in any way different from the lack of substitution errors in other contexts.[14] As discussed above, SD correctly perceives contexts as semantically definite or indefinite and only supplies those forms that are semantically compatible. Existential contexts simply do not appear to be an exception in that respect. What 'robust definiteness effect' then amounts to seems to be only that SD supplied the indefinite article considerably better in existential *there* contexts than in

[14] It is reported that SD never used *the* in place of *a* (White, 2003: 136), and only overused *the* in a limited number of bare NP contexts (38 times). Based on the data reported in White (2003), I calculate that it was 1.7% out of the total number of NPs in the corpus (2237), 2.33% of the total number of indefinite contexts (the total of singular, plural and mass, 1634), and 4.30% when only bare NP contexts (indefinite plural and mass, 884) were taken into account. This compares to the use of *the* in existential *there* constructions in the following way: SD supplied the definite article twice, out of the total of 146 contexts. It is 1.36% out of the total number of all DPs in this indefinite context (146), but 6.90% when only bare NP contexts are considered (29). The numbers are small for confident conclusions, but there does not appear to be much meaningful difference in the use of *the* in indefinite contexts, whether involving existential *there* construction or not (and, if anything, comparing like with like, the overuse of *the* in bare NP contexts seems higher in *there* constructions than in other contexts: 6.90% vs. 4.30%).

other indefinite contexts (93% vs. 60%). If this is all, this result remark-ably echoes findings from other studies (e.g. Thomas, 1989, Trenkic, 2000), where it has been suggested that the indefinite article is supplied more consistently because *there is a* has been learnt as a formulaic sequence or 'chunk' (Thomas, 1989: 351), either as a result of its stable form and high frequency, and/or because it has been taught as such.[15]

VII Conclusions and implications

The goal of this article is to contribute to the debate on the causes of variability in L2 production of functional elements. While it focuses just on one particular asymmetry in L2 article production, the model that has been developed bears implications, and testable predictions, for L2 production of functional morphology in general.

First, the model shows why production of L2 functional forms can be motivated, even when they have been syntactically misanalysed in SLA: such material will be treated in production as lexical, and its pro-duction will be pragmatically motivated by the perceived need to express the meaning they encode. Second, the model explains the occurrence and patterning of omission errors: given that production of misanalysed functional elements critically depends on the stage of production that is open to general cognition (conceptualization), it will be constrained by the available attentional resources. Thus whether the need for express-ing the meaning that a functional form encodes is perceived will depend on whether enough attentional resources are left after more relevant aspects of meaning have been attended to. When the resources are exceeded, the form will be omitted in production. The model, thus,

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[15] A reviewer comments that SD uses many different kinds of indefinite expressions in existential *there* constructions (i.e. plural/non-count bare NPs, and NPs with numerals and quantifiers), and that therefore the 'chunk explanation' is not compelling. In fact, this should not be a problem. The 'chunk explanation' only aims to explain why the suppliance of the indefinite article is better, so, by defini-tion, it only deals with [+sing] contexts. I presume that it is because in the absence of other concepts that need to be expressed (e.g. a numeral) in [+sing] *there* contexts, *there is a* is retrieved as a whole. This, however, does not imply that *there*, *is* and *a*, will not have individual representations in the lex-icon, or that they may not combine with other elements, only that the sequence of the elements will have a psychological reality of its own as well (compare Wray, 2002). This may be either because they are stored and retrieved as a whole (in addition to being stored as separate elements), or else because they are constructed preferentially. This has nothing to say about [−sing] contexts, where a different sequence (*there are* [+optional element]) will be applied.

takes us beyond the representational deficit vs. processing constraints debate: variability is caused by processing limitations, but precisely because the production cannot be syntactically motivated and has to rely on general cognition instead.

Finally, whether there will be substitution errors in production will depend on whether the learner has established 'appropriate-like' links between a form and its lexicosemantic content. One can assume that learners will be more successful with forms which grammaticalize semantically transparent concepts, such as the paste tense morpheme -*ed* (time), or the plural morpheme -*s* (number), but less so with articles, where the grammaticalized concept (definiteness) is more opaque.

It is interesting to note here that the claim that when functional material is supplied in L2 production, it is mainly supplied in appropriate contexts, has been one of the chief arguments for fully specified syntax (e.g. Lardiere, 1998; Prévost and White, 2000). What we have shown here is that:

- forms that grammaticalize opaque concepts (e.g. articles) may often appear in inappropriate contexts (the results in Table 3 and 4 from our study only adding to the wealth of earlier findings); and
- even when forms are supplied in appropriate contexts, the reasons for doing so may be non-nativelike (they may be supplied as lexical, rather than functional material).

Just as it is true that omission errors do not by necessity imply that underlying representations must be non-targetlike (e.g. Lardiere 1998), so it is the case that native-like production does not have to be a direct reflection of native-like representations or processes.

This raises an important methodological issue, and it is that we cannot base our judgements on the state of learner knowledge in SLA simply on the level of absolute success in behavioural performance. Focusing on asymmetries in production takes us one step further: it can reveal that despite seemingly targetlike levels, learners from some L1 backgrounds may still be non-targetlike in other respects, suggesting that representations and processes that underpin their production may in fact be different from that of native speakers'. Similar findings, flagging the

same warning, also come from other research paradigms such as self-paced reading (Jiang, 2004) or event-related potentials (Mueller *et al.*, 2005). Together, they all emphasize the need for finer grained experimental investigations in SLA.

Finally, having advocated a non-targetlike syntax position, it only seems fair to acknowledge that the pattern of results discussed in the article does not in fact provide direct evidence against the role of prosodic transfer in the production of L2 morphology, but merely that on its own, it is insufficient to account for the data. I can see no reason to suppose that L2ers may have difficulties with only one level of linguistic representation. It is thus perfectly feasible that SD's article production, in addition to being disadvantaged due to syntactic misanalysis, may be further aggravated by prosodic transfer. An empirical study which would compare Serbian and Turkish EFL learners, at comparable proficiency levels and with similar language learning histories, would be very useful in that regard.

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