

Selective optionality in language development

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1.. Introduction

Experimental research on native speakers points to a distinction between violations of ‘soft’ constraints, which trigger gradient linguistic judgments, and violations of ‘hard’ constraint, which lead to categorical linguistic judgments (Sorace, forthcoming; Sorace & Keller, 2004). Hard constraints are purely structural in nature, while soft constraints tend to be associated with the mapping between syntax and lexical semantics, pragmatics, and information structure. It is argued in this paper that this distinction allows a more fine-grained analysis of syntactic variation in individual speakers than would it possible within current syntactic theories.

The particular perspective adopted here is developmental, and the focus is on adult second language (L2) acquisition and native language (L1) attrition. Variation in the unstable competence is widespread, but systematic and constrained. Drawing on data from near-native L2 speakers, it is shown that purely syntactic features are unproblematic at this stage but features at the interface of syntax and discourse (which have clear interpretive effects) present residual optionality. Data from speakers who have been exposed to a second language for many years display ‘emerging’ optionality in the native grammar with respect to precisely the same interpretive interface features, whereas structural constraints do not change as a result of attrition.

These data point to a remarkable convergence among data from different domains. In all these cases, it is the same features that present instability and variation: constructions that belong to the syntax proper are fully acquired in L2 acquisition and are retained in L1 attrition. In contrast, constructions that require the integration of syntactic knowledge with knowledge from other domains present residual optionality in L2 and exhibit emergent optionality in L1 attrition. While no comprehensive

explanation of these facts is currently available, the paper discusses the differences between ‘representational’ accounts, which put interfaces within the syntactic competence, and ‘computational’ accounts, which place optionality at the level of processing abilities.

The structure of this paper is as follows. First, the main findings of research on L2 endstate grammars are reviewed. It is then shown that the characteristics of residual L2 optionality are also found in L1 attrition: in both cases, optionality occurs at the interface between the syntax and other cognitive systems.

It is argued that narrowing down the domain of residual optionality to interface domains is a step forward, but raises the problem of what exactly an ‘interface’ is: specifically, the question is whether crosslinguistic effects leading to optionality occur at the level of L2 knowledge representations, or at the level of L2 computational/processing abilities. Both types of explanations have been proposed, and are reviewed here in turn. The final section explores the relevance of recent experimental research in psycholinguistics and cognitive neuroscience, and suggests that the issue of ‘reduced input’ in bilingual development may also play an important role.

2. Adult bilingualism: ultimate attainment and effects on the native language

Recent research on post-pubertal adult second language (L2) acquisition has led to two important generalizations. First, the developmental paths and outcomes of L2 acquisition present similarities with those characterizing other types of language

development. Second, the final outcome of L2 acquisition may be divergent from the outcome of first language (L1) development, but divergence is selective (i.e. is not found across the board) and appears to be constrained by universal principles.¹ These two generalizations are related; in fact, they are two sides of the same coin.

There has been a growing awareness among L2 acquisition researchers that a better understanding of the mechanisms and processes involved in L2 acquisition is more likely to be obtained if L2 acquisition is put in the wider context of research on language development. As Meisel (2001) puts it,

There can be no doubt that there exist important commonalities shared in part or totally by the various types of language development. Consequently, the division of labor among research disciplines may represent an obstacle to achieving an adequate understanding of the driving forces and the mechanisms determining linguistic development.” (Meisel 2001: 1).

This paper presents evidence that there are indeed commonalities between L2 acquisition and other types of language development, such as non-pathological attrition in the L1 of speakers who have had prolonged contact with a second language . Perhaps paradoxically, these commonalities are most evident if one considers the patterns of differences between the most advanced endstate grammar attained by L2 learners and the corresponding monolingual L1 grammar. Hawkins (2001) has recently stressed the importance of understanding and explaining L1-L2 differences in terms of “...changes in the way UG interacts with other components of the mind, or in terms of changes that occur in components of UG.” (2001: 364).² He suggests that “poverty of the stimulus”

studies, which focus on the similarities between L1 and L2 acquisition, have played a crucial role in establishing that UG constraints are available in L2 acquisition, and in countering claims that L2 acquisition is ‘fundamentally different’ from L1 acquisition: these studies have obtained plenty of evidence that L2 grammars are shaped by the same kind of constraints as all natural grammars (see White 2003 for a review).³

However, only a focus on L1-L2 difference can help us understand how age impacts on acquisition processes and outcomes, in short, how the language faculty changes over the lifespan.

The differences examined in detail here are those found in the endstate grammar of very advanced or ‘near-native’ L2 speakers of Italian whose L1 is English. These features are compared with the L1 of native Italian speakers under attrition from long-term exposure to English. The comparison reveals that it is the same areas of grammar that appear to be *unstable* in language development and change, regardless of the circumstances in which development takes place. With respect to many of the phenomena described here, it is the same domains of grammar that show permeability to crosslinguistic influence. It is perhaps unsurprising that these same domains have independently been identified as more likely to exhibit gradience and variation in fully developed languages (Sorace, forthcoming; Sorace and Keller 2004). If confirmed by further research, the discovery of converging findings from different areas of inquiry may be an important step towards a unified theory of language development.

Meanwhile, there are several unresolved questions that have arisen from the study of patterns of differences in endstate grammars: evidence from psycholinguistics and the cognitive neuroscience of bilingualism (Felser et al 2003; Friederici and Hahne 2001, among others) provides some indications of how these questions may be addressed.

2.1 *Endstate grammars*

It is a fact that learning a language in adulthood normally leads to different outcomes from learning a language in early childhood. While the steady state of L1 acquisition is known in advance and is deterministically attained, the steady state of L2 acquisition seems to be extremely variable. However, there are people who start acquiring a second language in late adolescence and adulthood and become virtually indistinguishable from native speakers, at least in some respects (see discussion below). Do these very able learners attain the same type of mental representations of grammatical knowledge that monolingual speakers attain? Do they use the same cognitive resources? And do they apply the same processing strategies in using their knowledge? Addressing these questions requires studying learners who have stabilized at the highest competence levels.

Research specifically focused on ultimate attainment can tell us what kind of 'steady state' can be reached in non-primary language acquisition, whether such a state is quantitatively/qualitatively different from the monolingual steady state, and whether it obeys universal constraints. The characteristics of the best attainable final state – that is, the competence of near-native speakers - are, in a sense, more revealing of Universal Grammar (UG) constraints on L2 acquisition than those of other stages (Borer 1996; Sorace 2000a, 2000b, 2003). If it is found, for example, that intermediate grammars appear to violate UG, the argument can always be made that, given more input, or more time, or a better learning environment, the non-native grammar may in due course converge on the target. However, adult learners who have reached the near-native level, and continue to benefit from full exposure to the L2, can be assumed to have

progressed to the furthest attainable competence level: if there are differences between their grammar and the target grammar, these differences may therefore be considered as permanent. Investigating these differences is tantamount to testing the limits of L2 acquisition.⁴

Of the three possible ultimate attainment scenarios – convergence, constrained divergence, and unconstrained divergence (Sorace 1993; Sorace 2003; White 2003) – the focus here is a particular instantiation of constrained divergence: the scenario in which the endstate grammar exhibits *residual optionality* due to subtle and persistent L1 influence. This phenomenon will be illustrated with data from on-going research on pronominal forms (Filiaci 2003; Sorace 2000a, 2000b, 2003; Belletti and Sorace, forthcoming) in null subject languages. Let us first examine how L2 speakers of Italian acquire the main feature of the ‘null subject parameter’ (Rizzi 1982), that is, the option of using both overt and null subjects.

As extensively argued in the theoretical syntax literature (Rizzi 1982; Belletti 2003), Italian is a ‘null subject’ language because it allows the omission of subjects in main clauses. The identification of null subjects is made possible by the presence of rich verbal morphology, which specifies person and number features. The distribution of null and overt subjects is regulated by discourse-pragmatic factors: subjects may be null when they refer to a topic, that is, an entity already introduced in the linguistic or situational context; overt subjects are used instead to introduce a new referent, or to contrast a referent with others. Thus, the learner of L2 Italian has to acquire both the syntactic parameter that licenses null subjects and the discourse-pragmatic conditions on subject realization. Both aspects may be presumed to be acquired at the near-native

- (3) a. Maria ha detto che andava da Paolo?
 Maria has said that was going to Paolo's?
- b. *No, Ø (= Paolo) ha detto che andava da lei
 No, Ø has said that (he) was going to her.
- (4) a. Why didn't Mary talk to anyone?
- b. *Ø was sick.

A similar pattern is found with respect to another aspect of the null subject parameter: the relative position of the subject and the verb (see also Leonini & Belletti 2004). In response to an all-focus question, such as 'what happened', L1 English near-native speakers of Italian optionally place the subject in preverbal position regardless of the unaccusative or unergative status of the verb⁷, as in (5b)-(6b); native Italians, in contrast, would naturally place it after the verb, as in (5c)-(6c). This also happens in a contrastive context, such as (6), in which Italian requires the topic to be in postverbal position.

- (5) a. Che cosa è successo? *'What happened?'*
- b. Gianni è arrivato.
 Gianni is arrived
Gianni arrived
- c. E' arrivato Gianni
 is arrived Gianni
Gianni arrived
- (6) a. Chi ha tossito? *"Who coughed?"*

- b. Gianni ha tossito
Gianni has coughed
- c. (Ha tossito) Gianni
(has coughed) Gianni

Furthermore, these speakers are more likely to produce sentences like (7a) regardless of whether the subject is definite or indefinite, whereas monolingual speakers would prefer a postverbal subject, as in (7b), particularly when the subject is indefinite (Belletti 1988).

- (7) a. Hai sentito che un palazzo/il palazzo dell'ONU è crollato?
have you heard that a building/thebuilding of the UN collapsed?
- b. Hai sentito che è crollato un palazzo/il palazzo dell'ONU?
have you heard that is collapsed a building/the UN building?

There are parallel effects in comprehension. For example, in the forward anaphora sentences in (8b), L2 near-native speakers of Italian are significantly more likely than monolingual Italians to judge the overt pronoun as coreferential with the matrix subject 'Maria', rather than with the complement 'la sua amica' or with a third extralinguistic referent; however, the null pronoun in (8a) is correctly interpreted as referring to the matrix subject.

- (8) a. Mentre attraversa la strada, Maria saluta la sua amica
while Ø is crossing the street, Maria greets her friend

- b. Mentre **lei** attraversa la strada, Maria saluta la sua amica
while she is-crossing the street, Maria greets her friend.

A further distinction between preverbal and postverbal subjects is that preverbal indefinite subjects are interpreted as ‘old’ information (topic) whereas postverbal subjects are ambiguous between the two readings (Pinto 1997). This distinction is observed in the intuitions of native speakers of Italian, but near-native speakers have indeterminate intuitions and may therefore interpret the preverbal indefinite subject ‘un bambino’ in (9a) both as referring to one of the twins and as a new referent. In contrast, native and near-native speakers do not differ in their interpretation of (9b): both readings are allowed.

(9) Il mio vicino del terzo piano ha due gemelli.

My neighbour on the third floor has twins

a. La notte scorsa un bambino piangeva.

the night last a baby was-crying

b. La scorsa notte piangeva un bambino.

the last night was-crying a baby

A striking feature of these patterns is their asymmetry: near-native speakers of Italian overgeneralize overt subject pronouns and preverbal subjects to contexts which would require null subjects and postverbal subjects in native Italian, but they do not do the reverse, namely they do not extend null and postverbal subjects to inappropriate contexts. In fact, when they use null pronouns and postverbal subjects, they use them

correctly. So these speakers do not lack *syntactic* knowledge: they have acquired a null subject grammar.⁸ What seems to be at stake is knowledge of the appropriate felicity conditions for the use of overt subjects and preverbal subjects. The optionality in their grammar is at the level of the *discourse conditions* on the distribution of pronominals and on the placement of subjects. Thus, residual optionality primarily affects morpho syntactic features that are interpretable at the interface with conceptual systems (LF). The affected features may remain unspecified, giving rise to optionality. Thus, residual optionality affects the use of overt subjects and preverbal subjects in L2 Italian, which is regulated by the interpretable [topic-shift] and [focus] features. If these features remain unspecified, overt subjects in near-native Italian are not necessarily being interpreted as shifted topics or foci.

3. Revisiting previous studies of near-nativeness

3.1 Interface divergences

A brief re-examination of the results previously obtained by studies on near-nativeness indicates a similar split between syntactic constraints and other types of interpretive conditions on the syntax.⁹ Coppieters's (1986) classic study was the first investigation of competence differences between native and near-native speakers. He compared the judgments of native and near-native speakers of French on a variety of constructions, some of which he assumed exemplified 'formal UG properties' and others represented 'semantic' properties outside the domain of UG. While the overall profile of near

native speakers was one of divergence from native speakers and lack of uniformity, it is intriguing that most differences were found with respect to the ‘semantic’ properties. For example, near-native speakers of French have significantly different intuitions from native speakers about certain interpretive contrasts between the imperfect and the present perfect. In (10), the present perfect imposes the meaning “Did you manage to drive in the snow?” whereas the imperfect in (11) means “Did you know how to drive in the snow?”.

(10) Est-que tu **as su** conduire dans la neige?
 is-that you have known-PERF drive in the snow

(11) Est-que tu **savais** conduire dans la neige?
 is-that you knew-IMP drive in the snow

Native French speakers are consistently able to recognize this type of distinction, but near-native speakers have indeterminate intuitions, or actually attribute to one tense the meaning of the other. In contrast, the differences between the two groups with respect to purely syntactic properties (as for example what used to be called then the “A-over-A constraint, in (12)-(13)) are much smaller.

(12) Cet homme, dont j’admire le tableau, est venu hier
 this man of whom I admire the painting is come yesterday

(13) *Cet homme, dont je joue avec les enfants, est venu hier.
 this man of whom I play with the children is come yesterday

Coppieters' study was criticized on methodological grounds (and was replicated in part by Birdsong (1992), who employed a more stringent methodology and did not obtain the same results).¹⁰ However, it was probably right in pointing to a split between purely syntactic properties, for which L2 learners construct target-like representations, and properties responsible for interpretive differences, for which L2 learners construct divergent or indeterminate representations.

A more recent example of near-native divergence in the same domain is Montrul and Slabakova's (2003) study of tense / aspect interpretive distinctions in L1 English-L2 Spanish. Unlike Coppieters, Montrul and Slabakova consider that aspect falls within the domain of Universal Grammar, in line with recent theoretical research: specifically, it is determined by a functional aspectual category which is activated in Romance languages but not in English (Giorgi and Pianesi 1998). In Spanish, the preterit is used to mark perfective aspect, while the imperfect is used to indicate the unboundedness of the event. In English, on the other hand, past tense events are inherently perfective and unboundedness is expressed via the progressive. So the task faced by the English learner of Spanish is to acquire the [+/- perfective] distinction carried by the two tenses. In addition, they have to acquire the fact that the two tenses carry different, context-bound interpretations. The tense in Spanish impersonal constructions determines whether the null subject receives a specific or a generic interpretation. With the imperfect, both interpretations are available; with the preterit, only the specific interpretation is possible, as shown by the contrast in (14).

- (14) a. Se comía bien en ese restaurante
CL eat-IMP well in that restaurant

“One/we ate well in that restaurant”

b. Se comió bien en ese restaurante

CL eat-PRET well in that restaurant

“We/*one ate well in that restaurant”

This distinction is not taught, and tends to be acquired late. More importantly, the results of Montrul & Slabakova’s study show that even though the majority of near-native speakers of Spanish recognize it, and thus perform similarly to natives, a substantial minority (5 out of 12) do not. Hence, a minority of speakers at this advanced level exhibit a split between native-like syntactic representations of tense-aspect distinctions, and a divergent representation of interpretive properties related to these distinctions.

A pattern of residual optionality emerged from a study by Robertson & Sorace (1999) on V2 constructions in very advanced L1 German-L2 English. The overall outcome of this study shows that these learners, as a group, have acquired the fact that Standard English is a categorically non-V2 language, having divested itself of all but residual V2 effects since the Middle English period (Lightfoot 1999).¹¹ However, some of them occasionally produce sentences such as the following:

- (15) First of all one has to realize that in the past new developments always affected society. Whether it was the radio or the car it doesn't make any difference. **Always have been conservative warnings** that the harms would outweigh the positive consequences.

- (16) Although in a highly developed country, like Germany, the majority of the people are well off, **for many kids is living with their parents a nightmare.**

The explanation offered by Robertson & Sorace was in terms of a strong C feature (which is part of the interlanguage lexicon) wrongly entering the numeration for an English sentence: so, in a sense, the locus of optionality was assumed to be the interface between the syntax and the lexicon. But a different range of considerations may be made. German has generalized verb-second, in the sense that the verb always occupies the second position irrespective of the nature of the elements placed in clause-initial position. English, in contrast, exhibits residual verb-second, occurring only when certain types of constituents (usually negative adverbials and delimiting PPs) are fronted. This type of fronting is stylistically marked and relatively infrequent in the input. V2 phenomena are related to the specification of the illocutionary force of the utterance, and ultimately to the speaker's pragmatically motivated choice, for example, the decision to put a constituent in focus, or to topicalize it. However, it is only in English that these choices are lexically conditioned, producing a marked word order in a minority of cases. Full control of these conditions, and of their syntactic effects, is still problematic for a minority of German learners of English: optionality here involves the effects of the more consistent, generalised V2 system of German onto the less consistent, residual V2 constructions of English. Once again, we note a split between the native-like acquisition of syntactic properties (i.e. a non-V2 grammar) and the residual optionality in an area that involves the complex interplay of syntactic and discourse conditions.

Hopp's (2004) study of Japanese and English near-native speakers of L2 German points to a discrepancy between knowledge of syntactic options and universal constraints on scrambling (a process that changes the order of constituents in a clause), which are completely acquired, and knowledge of the discourse-pragmatic conditions on the acceptability of scrambled orders, which remain indeterminate or divergent. For example, advanced Japanese speakers of L2 German acquire the strong uninterpretable syntactic feature that makes scrambling possible in the L2 (Oka 1996, among others), but their judgments diverge from those of native German speakers with respect to certain types of scrambling that are governed by extrasyntactic features. Thus, their acceptance of intact scrambling of indefinite DP over a definite DP, shown in (17), is much higher than for native German speakers, who assign a marginal acceptability status to this construction.

(17) Ich denke, dass einen Film über Frankreich Martin gestern gesehen
hat.

I think that a film about France Martin yesterday seen
has

According to Hopp, the source of the problem is a lower sensitivity to a contrastive focus constraint on this type of scrambling.

3.2 *Interface convergences*

In contrast with the research we have reviewed so far, there are some studies of near-native speakers that show no optionality or, in other words, complete convergence of near-native and native performance. One such study is Sorace's (1993) investigation of clitic-climbing and auxiliary change in L1 French-L2 Italian. In a verb complex consisting of a modal verb and an embedded infinitive, a clitic pronoun can be attached to the embedded verb, as in (18a), or it can 'climb' to a position preceding the main verb, as in (18b): if the embedded verb normally requires the perfective auxiliary *essere* 'be', there is an apparent optional 'transmission' of the auxiliary 'be' to the main verb (which normally selects *avere* 'have') when the clitic remains attached to the main verb: so both auxiliaries are possible, as in (18a). If there is clitic climbing, however, the auxiliary of the main verb obligatorily changes to 'be', as shown in (18b,c).

- (18) a. Maria ha dovuto / è dovuta andarci
Maria has had / is had go-there-Cl
Maria had to go there
- b. Maria ci è dovuta andare
Maria there-Cl is had go
Maria had to go there
- c. *Maria ci ha dovuto andare
Maria there-Cl has had go

These phenomena, known in the literature under the name of ‘restructuring’ (Rizzi 1982; Burzio 1986), are not related to any interpretive differences or discourse conditions. The auxiliaries in (18a) often vary within individual idiolects; when there is a preference, this is not related to particular contexts.¹² Sorace (1993) found that French near-native speakers of Italian have a native-like representation of clitic climbing (even though modern French does not allow this option) and acquire the obligatory auxiliary change triggered by this construction. The only difference between their intuitions and those of native Italians is that they have a strong preference for *avere* in (18a): in other words, they tend to eliminate the optionality of auxiliary choice.

Another study that found no differences between natives and near-natives (and no optionality) is White and Genesee (1996) on subjacency in L2 English. These authors investigated the competence of near-native speakers of English (selected via a complex screening procedure) with respect to different types of wh-extractions. The aim was to ascertain whether these speakers had acquired the subjacency constraints on wh-movement. Subjects performed in an acceptability judgment test that included stimuli like these:

- (19) *What did you hear the announcement that Ann had received?
- (20) *Who does Tom love the woman who married?
- (21) Which car did the police claim Ann had stolen?
- (22) Who did Jane announce would be the new teacher?

The constraints at work here are purely syntactic and do not interface with any lexical or pragmatic conditions. The results show that near-native speakers of English do not

differ from native speakers in their judgments of complex extractions, and thus the constraints had been completely acquired.

4. Parallels between L2 acquisition and L1 attrition

There has been relatively little research on the effects of second language on the native language. The implicit assumption underlying much L2 acquisition research is that the native grammar usually does not change in response to L2 input. Much early research on attrition was concerned with migrant communities, which are usually characterised by diminished use of the L1, separation from the L1 speaking community, low degree of acculturation, and a low-level of L2 attainment at least in the first generation (see Weltens et al. 1986). The few studies on individual speakers (usually case studies), which have led to two important descriptive generalisations:

- (a) Attrition is a selective process: some aspects of the L1 grammars are more vulnerable than others. For example, Altenberg (1991) shows that case and number features in German are affected by English, but negative placement is not.
- (b) Attrition generally leads to the loss of restrictions on the application of rules. This generalisation was described in early attrition research. Seliger (1989) states that attrition involves the replacement of formally more complex and more narrowly distributed rules by formally less complex rules with wider distribution. In his 1991 study, Seliger found that the dative alternation rule in English L1, which is lexically governed, is affected by the more general and primarily syntactic L2 Hebrew rule.

Recent research within a generative grammar framework (Sorace 2000b; Tsimpli et al, 2003; Tsimpli, Sorace, Heycock and Filiaci, 2004) has explored attrition phenomena in more depth, focusing on the changes that occur in the pronominal system of native Italian speakers after prolonged exposure to English. The results of these studies indicate that native Italians who are near-native speakers of English exhibit an identical pattern of optionality as the English near-native speakers of Italian: these speakers may overgeneralize overt subjects and preverbal subjects to contexts which require a null subject or a postverbal subject, both in production and in comprehension. The reverse pattern is not found.

Thus, there is a parallelism between the end-state knowledge of English near-native speakers of Italian and the native knowledge of Italian near-native speakers of English under attrition with respect to null/overt subjects and pre/postverbal subjects. In both cases, the speakers' grammar is/remains a null-subject language. The computational features of syntax responsible for the licensing of null subjects are acquired completely: only the syntax-discourse interface conditions on pronominal subjects are affected by attrition.¹³

A similar discrepancy between syntactic properties and interface conditions is reported by Montrul (in press), who investigates the knowledge of pronominal forms (subjects, objects and clitics) in Spanish heritage speakers (i.e. second-generation Spanish-speaking immigrants to the United States). Her results indicate that purely syntactic properties are spared by attrition, whereas properties interfacing with discourse pragmatics and lexical-semantic factors are affected by it. For example, heritage speakers' knowledge of dative clitics in (21b) is identical to that of monolingual Spanish speakers, but their knowledge of the preposition *a* with direct

objects in (22a, b) and clitic-doubling in (23), which are subject to factors such as animacy, lexical aspect, agentivity, and affectedness, is significantly more indeterminate.

- (23) a. Patricia mandó una carta a mis amigos
Patricia sent a card to my friends
- b. Patricia les mandó una carta
Patricia to them-DAT CL sent a card

- (24) a. Inés conoce a varios aficionados
Inés knows several fans
- b. La opera conoce varios aficionados
The opera knows several fans

- (25) Cecilia le lavó las manos a Victoria
Cecilia to her-DAT CL washed the hands to Victoria

Heritage speakers also exhibit optionality with respect to pronominal subjects and subject-verb inversion, although not to the same extent as the Italian speakers in Tsimpli et al (2003); (see also Gurel 2002 for attrition in Turkish subject pronouns and Polinsky 1995, in press, for attrition in Russian pronominal forms). In a different study of attrition in Spanish heritage speakers, Montrul (2002) reports attrition effects on the same tense-aspect distinctions illustrated in (14a,b) above, which create residual problems for individual L2 learners.

5. A generalization on optionality in bilinguals

At this point a generalization is needed that accounts for these results. As a first approximation, the following generalization may be proposed:

(26) “Narrow” vs. “Interface” syntax.

- Features that are internal to the computational system of syntax proper are acquired successfully by adult L2 learners and are retained in the L1 under attrition; endstate (near-native) grammars converge with native grammars, and grammars under attrition do not diverge from monolingual grammars.
- Features that belong to the interface between syntax and other domains, such as the lexicon, discourse, or pragmatics, may never be completely acquired by L2 learners and may be vulnerable to the effects of attrition. It is among these features that one finds ‘residual’ L2 optionality due to the influence of the native language and ‘emerging’ optionality due to the influence of the second language.

A closer look at the notion of ‘interface’ is in order. At first sight, it may appear as if the generalization in (26) contradicts decades of L2 acquisition research. Much early descriptive research on L2 acquisition, in fact, concluded that semantically more transparent properties are easier to learn than more abstract syntactic properties, which do not correspond in any clear way to semantic notions (see e.g. Kellerman 1987). Research on the ‘basic variety’ shows that early interlanguage grammars favor

semantic and pragmatic principles of utterance organization (Klein & Perdue 1997). However, the generalization in (24) does NOT claim that syntactic aspects are easier than semantic aspects; rather, it suggests that aspects of grammar that require not only syntactic knowledge, but the ability to coordinate syntactic knowledge with knowledge from other domains is late acquired – in fact, possibly *never* completely acquired by L2 learners. The differentiation between syntactic computational properties and interface properties has been made by other researchers. For example, Jakubowicz (2000) argues for the relevance of the notion of *syntactic complexity*, namely that (a) constructions requiring the integration of syntactic knowledge and knowledge from other domains are more complex than constructions requiring syntactic knowledge only, and (b) a syntactic operation is less complex if it is obligatorily required in every sentence; it is more complex if it is present only in some sentences because of semantic or pragmatic choices. Investigating the interface between syntax and discourse necessarily requires going beyond “narrow syntax”. Avrutin (1999, 2002) goes a step further and regards “discourse” as “a *computational system* (my emphasis) that operates on non-syntactic symbols and is responsible for establishing referential dependencies, encoding concepts such as ‘old’ and ‘new’ information, determining topics, introducing discourse presuppositions, etc...” (Avrutin 2002: 1).

The situation of the English speakers of L2 Italian is clear: referential pronouns in Italian qualify as complex, since they demand the simultaneous mastery of both morphosyntactic properties and discourse conditions; in contrast, referential subject pronouns in English are less complex because they are not conditioned by discourse factors. It follows that residual L1 influence leading to optionality in L2 grammars is NOT expected to apply in all cases, but only when the L1 instantiates the most

‘economical’ option. So English affects Italian in this respect, but in the reverse case of Italian near-native speakers of English one would NOT expect L1 Italian to exert residual influence on L2 English. It is therefore more accurate to say that crosslinguistic influence may take place unidirectionally, from less complex to more complex grammars, whenever two coexisting grammars are in conflict with respect to syntactic complexity. The results from the study on L1 syntactic attrition indeed show that it can be the L2 to affect the L1, if the L2 instantiates the less complex option.

6. Interpreting optionality: representational vs. processing accounts

The argument so far has been that residual optionality in the production and comprehension of L2 near-native speakers and L1 speakers under attrition from a second language may be caused by one of the bilingual speaker’s syntactic systems – the most economical - affecting the knowledge representations in the other system. In L2 acquisition, this residual influence prevents the complete acquisition of constraints at the syntax-discourse interface. In L1 attrition, this influence causes a change in these constraints. In neither case is ‘narrow syntax’ directly affected. This account may be termed ‘representational’ because it assumes effects internal to the speaker’s grammatical competence.

It is possible, however, to interpret these patterns in a different way. The question to be addressed is this: are interface problems internal to the learner’s representation of syntactic knowledge, or are they external to these representations and created by computational difficulties in integrating knowledge from different domains?

Notice that the notion of ‘interface’ is ambiguous: regardless of the theoretical standpoint one takes, interface conditions seem to involve extra-syntactic factors and the speaker’s ability to coordinate different types of knowledge. Thus, the L2 data illustrated above are compatible with the representational account, but are also compatible with a different assumption: namely, that interface problems may not be due to the persisting effects of the L1 on knowledge representations, but rather to some specific difficulty posed by interfaces. Such difficulty may be due to inadequate processing abilities in coordinating and integrating different types of knowledge. Thus the problems with overt subject pronouns described above may stem from the L2 speakers’ not consistently having the computational resources necessary to coordinate the use of an overt pronoun with the introduction of a new or contrastive topic. This alternative, which may be termed the ‘processing account’, is thus independent of the issue of crosslinguistic influence.

The idea that at least some phenomena in L2 end-states may be attributable to inadequate coordination of different types of knowledge has been gaining ground in L2 research. L2 studies on other potentially problematic interfaces (e.g. the syntax-morphology interface (Lardiere 1998; Prévost and White 2000) suggest that persistent (or even potentially permanent) morphological problems in the endstate grammar may be ‘surface’ problems related to the mapping of abstract syntactic knowledge onto the correct morphological exponents. The fact that learners’ problems tend to be with missing inflection, as opposed to wrong inflection, suggests the existence of computation problems with the integration between syntactic and morphological knowledge, leading to the optional use of ‘default’ underspecified forms.

Furthermore, there is independent evidence from psycholinguistic and neurolinguistic research that processing abilities in L2 speakers are different from those of monolingual speakers. An example is provided by Kilborn (1992), who investigated German near-native speakers of English. His experiments focused on the on-line integration of different types of grammatical information in comprehension. Word-monitoring tasks were used in normal and noise conditions.¹⁴ Kilborn's results show that the performance of near-natives in normal listening conditions is similar to that of natives in noise conditions, indicating a failure to integrate syntactic and semantic information as rapidly as monolingual L1 speakers. Once again, this study points to an interface domain as a prime locus of differences between native and near-native knowledge. More recently, Felser et al. (2003) suggested that adult L2 learners employ qualitatively different parsing strategies from native speakers (both young and mature). In particular, they tend not to use universal, least-effort strategies based on phrase structure; instead, they attempt a more direct mapping of surface form to interpretation. Faced with ambiguous relative clauses with complex antecedents, such as (25a,b), advanced L2 speakers use different disambiguation strategies from native speakers.

- (27) a. Someone shot the servant of the actress who was on the balcony.
 b. Everyone liked the actress with the servant who was always smiling.

Felser et al argue that L2 learners do not rely on phrase-structure information to the same extent as both young and mature native speakers. Instead, they attempt more direct form-function mappings, indicating a failure to integrate phrase-structure and

lexical-semantic information and, crucially, a lack of automaticity of syntactic processing.

Another window into L2 speakers' processing abilities has been opened by recent cognitive neuroscience research making use of brain-imaging techniques, such as functional magnetic resonance imaging (fMRI) and electrophysiological measurements, such as event-related potentials (ERPs). While this type of research is still very new and should be interpreted cautiously, it has nevertheless revealed potentially important new lines of research. The evidence provided by these studies is completely independent of speaker's voluntary performance, and can be therefore regarded as complementary to behavioural evidence resulting from linguistic and psycholinguistic research.¹⁵

Summarizing a complex picture (see Hahne and Friederici 2001 for an overview), ERP studies point to:

- (a) A reduced automaticity of the phrase structure component: this is signaled by the absence of early left anterior negativity (LAN) in non-native speakers, compared to native speakers.¹⁶
- (b) Quantitative differences between native and non-native speakers with respect to semantic processing: the telling piece of evidence in this case is a delayed or more pronounced N400 component.
- (c) Qualitative differences between native and non-native speakers with respect to syntactic integration, evidenced by the absence of a P600 component in low-proficiency learners.

Studies employing fMRI suggest that, overall, different brain regions subserve language processing in L1 and L2.¹⁷ While this by itself is not necessarily an indication of different processing strategies, some studies also indicate that proficiency level and age of first exposure significantly affect activation patterns only for *grammatical* (i.e. syntactic) processing; the effects of these variables are reduced or absent for lexical or semantic processing. L2 processing elicits more inter-subject variability, as indicated by more diffuse activation patterns in L2 speakers. Finally, L2 grammatical (but not semantic) processing involves stronger and more extensive brain activation compared to L1 processing, even when there are no behavioral differences (Wartenburger et al. 2003; Meyer et al. 2003). This pattern may be taken as an indication of ‘greater effort’ involved in L2 processing, even in highly proficient L2 speakers.

Taken together, these results are consistent with the behavioural studies which point to a reduced automaticity of grammatical, as opposed to lexical or semantic, processing. Future neuroimaging studies will need to analyse the syntactic component further, separating purely computational aspects from interface aspects. Further research will also need to look at different kinds of integration processes, separating lexical from discourse/pragmatic information. However, it is already possible to extract a message from these studies: there are differences between native and non-native speakers in terms of processing abilities, and these differences selectively concern the access to and the integration of the syntactic component and the coordination of multiple sources of knowledge.

To return to the question of whether optionality in L2 near-native grammars is due to representational or processing problems, one can formulate the following working hypothesis. If the efficiency of L2 syntactic processing is sub-optimal, L2

speakers' ability to integrate syntactic knowledge with information from different domains is likely to be sub-optimal too and may fail with significantly more frequency than in L1 speakers. When integration fails, speakers may resort to default strategies, such as the use of overt subject pronouns and the positioning of subjects in preverbal position.¹⁸ Crosslinguistic influence from the L1 may be a reinforcing factor, but it loses its privileged status as the only cause of these phenomena.¹⁹

7. Usage and exposure as critical variables

Does the processing account hold for L1 attrition? The assumption in this case would be that syntactic processing in the native language becomes less than optimal as a result of prolonged exposure to a second language. One factor that tends to be systematically underestimated, but needs to be considered in this respect is the role of 'practice', i.e. continuous exposure to input beyond a certain threshold, and continuous active use. What L2 near-native speakers and L1 speakers under attrition have in common is the fact that their total exposure to the language is reduced compared to that of monolingual speakers: in the case of L2 speakers, because they started the process of L2 acquisition in adulthood; in the case of L1 speakers under attrition, because they stopped being exposed to the L1 continuously. The same argument could apply to L1 bilingual acquirers, because they are exposed to two languages simultaneously and therefore the quantity of input received in each language is – even in the ideal case of perfectly balanced input – half the input to which monolingual children are exposed.

It is possible that quantitatively reduced input may determine a drastic decrease in the number of opportunities for coordinating different information types in communication, and may therefore result in an efficiency loss for these processing abilities. Besides quantitative differences, the input these bilinguals receive may also be qualitatively different from the input in a typical monolingual environment. L2 speakers, especially if they live in country where their own language is spoken, may use the L2 in interactions with other L2 speakers (colleagues, spouses, children) or with L1 speakers under attrition who produce the same non-native forms. Similarly, L1 speakers may hear their native language spoken by other L1 speakers under attrition and by L2 speakers. These speakers' optionality is therefore reinforced by optionality in the input.²⁰

To recapitulate, lack of automaticity in syntactic processing may, at least partly, be due to insufficient practice in, and exposure to, a language. If the syntactic component is less automatic in bilingual processing, the integration of different types of knowledge may be computationally more costly. Thus, the parallels among these groups of bilingual speakers suggest that sustained exposure to input may be necessary both for *acquiring and maintaining* an efficient syntactic system.

8. Conclusions

This paper has presented evidence of residual optionality and persistent L1 influence in near-native L2 grammars whose locus seems to be the interface between syntactic and discourse/pragmatic knowledge. Similar patterns of optionality and (asymmetric)

crosslinguistic influence are also found in the domain of non-pathological individual L1 attrition. There are two possible explanations for these patterns: one involves underspecification at the level of knowledge representations, with ‘soft’ interface constraints being the target of indeterminacy; the other involves processing difficulties related to the integration of different types of knowledge. Behavioral and neuropsychological evidence suggest that syntactic processes are less automatic in L2 speakers than in L1 speakers, which in turn may increase integration difficulties. Future research will tell whether only one of these accounts is the correct one, or whether perhaps both are necessary to explain these complex patterns of linguistic behavior in bilingual speakers.

Notes

¹ Here and throughout the paper the focus is on adult L2 acquisition. Child L2 acquisition (i.e. the acquisition of a second language between the ages of 2 and, roughly, puberty) is not considered, although there is evidence that grammatical attainment at this age is generally higher than in adult learners (see Lakshmanan 1995).

² There is still considerable controversy around the question of whether a language-specific cognitive faculty (“Universal Grammar”) constrains adult second language acquisition. On the one hand, research has shown that adult learners can attain complex knowledge of the L2 that goes beyond the input received (White 2003): in this respect, there is a ‘poverty of the stimulus’ argument for both first language acquisition (see Pinker 1989, among others) and second language acquisition. On the other hand, there are undeniable differences in the outcome of first and second language acquisition, which would seem hard to reconcile with the idea that the same constraints are at work in both cases. It is important to consider the possibility that these differences may be due to other (perhaps domain-general) cognitive faculties and not to Universal Grammar *per se*.

³ Pidgins and creoles also exemplify how natural language grammars are governed by the same constraints that shape language development in other domains (see DeGraff 1999 and the articles therein).

⁴ I leave aside here the difference between near-native grammars and the vastly more common *non-native* ‘fossilized’ endstates, which is important (Long 2003; White 2003) but not relevant to the discussion in this paper.

⁵ Experimental data in Italian were collected by Filiaci 2003, Tsimpli et al. 2004, and Belletti, Sorace and Bennati (forthcoming). The reader is referred to these works for detailed statistical results. Different types of controlled production and comprehension tasks were used to elicit subject pronouns in a range of contexts. Acceptability judgment tasks are not suitable for testing these constructions, since sentences would have to be presented in context. Participants were screened for near-nativeness using a modified version of the test developed by White & Genesee (1996).

⁶ The fact that both options – null and overt pronouns – are possible in different contexts means that errors in this domain do not give rise to strong ungrammaticality, and native speakers' intuitions are best treated as preferences, rather than categorical behaviors. In fact, the lack of categoricalness in this domain is predicted by the hypothesis pursued in this paper, namely that pronominal choice in Italian is at the interface between syntax and discourse.

⁷ It is often assumed that unaccusative verbs freely allow postverbal subjects in an 'unmarked' (i.e. unfocused) context as a result of their single argument being generated in the direct object position (see Belletti 1988, 2002). However, Pinto (1997) argues that what determines the possibility of subject-verb 'inversion' in Italian is the presence of a [+Locative] feature either in the argument structure of the verb, or in the predicate in which the verb appears. For this reason, some unergative verbs allow postverbal subjects with a locative expression in an all-focus context (*In questa stanza ha dormito il re di Spagna* 'In this room slept the king of Spain'); on the other hand, some unaccusative verbs that do not denote a telic change are unnatural with a postverbal subject (?**Dopo la notizia è impallidita mia madre* 'After the news got pale my mother').

⁸ This is also evidenced from the fact that near-native speakers of Italian have knowledge of some of the syntactic correlates of the [+Null Subject] setting, such as the lack of subject-object asymmetries in complex extractions from Wh-islands (see Filiaci 2003; Tsimpli et al, 2004 for details).

⁹ It remains to be determined whether different types of interface (i.e. the syntax-lexicon interface, the syntax-semantics interface, the syntax-phonology interface) pose different challenges to learners from those of the syntax-discourse interface.

¹⁰ It is interesting that sometimes group results may obscure patterns of divergence in individual subjects. Birdsong's replication of Coppieters' study is a case in point: there was great variation in terms of individual performance, with some of the subjects performing in a convergent way and others (most, in fact) performing in a divergent way compared to native speakers. These findings are not uncommon in sociolinguistics either. A classic discussion of individual variability can be found in Macaulay (1978) and Dorian (1994).

¹¹ It is worth noting that variation with respect to residual V2 is found among less educated native English speakers.

¹² Clitic climbing is subject to dialectal variation: in general, it is not common in northern Italian varieties and is more widespread in southern varieties, although one finds considerable idiolectal variation within these two main areas.

¹³ The syntax-discourse interface has also been identified as a domain particularly vulnerable to instability and crosslinguistic influence in bilingual L1 acquisition (i.e. the simultaneous acquisition of two languages from birth). Müller and Hulk (2001) maintain that there are two constraints on crosslinguistic influence in bilingual language development: first, there must be structural correspondence between the

bilingual child's two languages with respect to a particular area of grammar; second, the area(s) in question must require the interfacing between syntax and pragmatics. For further theoretical and empirical refinements of this hypothesis, see Serratrice, Sorace & Paoli (2004).

¹⁴ A word monitoring task requires participants to press a button whenever they hear a particular target word in a recorded text. Reaction times are measured, enabling the researcher to assess, for example, whether word recognition is affected by the semantic or syntactic ambiguity of the text.

¹⁵ It should be noted, however, that to date there are no studies specifically focused on near-native speakers (with the exception of Meyer et al. 2003), and that some studies do not control adequately for L2 proficiency.

¹⁶ Event-related potentials are small voltage changes in the electroencephalogram, which reflect the activity of a large number of neurons in response to given stimuli. An ERP consists of positive and negative voltage peaks, called "components", which vary in polarity, latency and distribution on the scalp. ERP effects refer to changes in the amplitude and latency of components as a function of the factors manipulated in the experiment. The main advantage of this method is its excellent temporal resolution, which allows the study of language processing on the temporal scale on which it takes place.

¹⁷ fMRI is a hemodynamic method that detects increases in the oxygenated blood flow to particular regions of the brain when they become activated in response to given stimuli. It has very good spatial resolution but is not best suited to the study of real-time processing, since the metabolic responses it measures occur at some temporal distance from the presentation of the relevant stimuli.

¹⁸ Indeed, it appears that these difficulties are resolved in ways that betray the influence of universal factors. In the cases presented here, optionality has asymmetric effects and favors the retention and occasional surfacing of unmarked options, which are subject to fewer constraints; this is consistent with typological trends (see e.g. Bresnan 2000 on pidgin formation).

¹⁹ There is in fact suggestive evidence from studies of pronominal usage in speakers who do not know English. Serratrice (2004) presents data from older monolingual Italian children who substitute overt subjects for null subjects significantly more often than adult native speakers. Bini (1993) shows that the same phenomenon is found in the spontaneous production of Spanish learners of Italian. In both these cases, crosslinguistic influence from a more economical grammar cannot be an explanation. Rather, the relevant factor seems to be a specific difficulty with the syntax-pragmatics conditions on the distribution of subject pronouns, which causes developmental delays and triggers the use of overt subjects as a default form.

²⁰ The effects of optionality in the input may be compounded for speakers exposed to both standard and non-standard dialects simultaneously.

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