and creolization of languages. Cambridge: Cambridge University Press. 349–370.

Escure G (1981). 'Decreolization in a creole continuum: Belize.' In Highfield A & Valdman A (eds.) *Historicity and variation in creole studies.* Ann Arbor: Karoma Press. 27–49.

Escure G (1990). Corpus of Belizean varieties. (Unpublished).

Escure G (2004). 'Belize and other Central American varieties: morphology and syntax.' In Schneider E (ed.) *A handbook of varieties of English: The Americas and the Caribbean.* The Hague: Mouton. 315–342.

Herzfeld A (1978). 'Tense and aspect in Limón Creole: a sociolinguistic view towards a creole continuum.' Ph.D. Diss. Department of Linguistics, University of Kansas.

Huber M (1999). *Ghanaian Pidgin English in its West African context.* Amsterdam & Philadelphia: John Benjamins.

Lefebvre C (1998). *Creole genesis and the acquisition of grammar: the case of Haitian Creole.* Cambridge: Cambridge University Press.

Ludwig R (ed.) (1989). *Les créoles français entre l'oral et l'écrit.* Tübingen: Gunther Narr Verlag.

Parépou A (1885). *Atipa.* (Ré-édité 1980). Paris: Editions Caribéennes, Collection UNESCO d'oeuvres représentatives. (Série créole.)

Patrick P (1992). *Urban Jamaican Creole.* Amsterdam & Philadelphia: John Benjamins.

Rickford J (1987). *Dimensions of a creole continuum.* Stanford: Stanford University Press.

Schuchardt H (1883). *Kreolische studien v. Über das Malaiospanische der Philippinen.* Vienna: Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften zu Wien.

Singler J (1984). 'Variation in tense-aspect-modality in Liberian English.' Ph.D. Diss. Los Angeles: University of California.

Smith G (2002). *Growing up with Tok Pisin: contact, creolisation and change in Papua New Guinea.* London: Battlebridge.

Washabaugh W (1975). 'Variability in decreolization on Providence Island, Colombia.' Ph.D. Diss. Chicago: Wayne State University.

(1994). 'Help our troubled & lost generation.' *Alkebulan.* (Belize), January 21, 2.

(1994) 'The observer.' *The People's Pulse.* (Belize), April 17, 14.

Variation in Second Language Acquisition

I Tsimpli, Aristotle University of Thessaloniki, Thessaloniki, Greece

The linguistic behavior of the L2 speaker is commonly believed to differ from that of the native speaker. The differences involve several aspects of language: grammar, pronunciation, and social and pragmatic features of language use. Moreover, these differences are both qualitative and quantitative, especially in early stages of L2 development. Grammatical, phonetic, and pragmatic deviations from the target L2 are obvious in learners with relatively little exposure to the second language. On the other hand, in advanced stages of second language development, the L2 learner may even attain native-like performance at least in the domain of grammar use (Birdsong, 1992; Epstein *et al.,* 1998; Sorace, 1993, 2000).

Throughout L2 development – perhaps with the exception of beginning stages – the learner's behavior generally includes target-like uses, whose frequency increases with time. In advanced stages, the comparison between the native speaker and the L2 speaker of that language becomes considerably more difficult. Empirical research on L2 grammatical development has shown that even advanced L2 speakers may differ from native speakers of a language in the degree of (in)consistent use of target forms, or in the (in)consistent application of grammatical constraints on the use of L2 grammar (cf. Coppieters, 1987; Hawkins *et al.,* 1993; Sorace, 1993, 2000; White and Genesee, 1996). This variation is also termed 'optionality' or 'variability' and refers to the performance data of the individual L2 speaker.

This notion of variability seems to be distinct from the notion of individual variation or individual differences. These terms aim to describe variation among L2 learners who have been grouped under the same level of L2 performance, on some independent measure of evaluation (e.g., a placement test). The degree of individual variation among L2 learners has also been used as a criterion for distinguishing first from second language development. Child L1 learners follow a relatively uniform developmental pattern and attain a mature level of competence in their native language. In the generative linguistics tradition, this uniform, fast, and effortless process of L1 development, together with the uniformity of the outcome referred to as native speaker's competence, are viewed from the same theoretical perspective: the innateness hypothesis for language acquisition. The lack of uniformity in the outcome of L2 acquisition, on the other hand, gives rise to alternative hypotheses regarding the nature of the cause. Several possibilities have been offered, which are addressed below. In

general, the difference between first and second language learners is considered to be either a difference in the learning mechanisms employed in the developmental process, or an (in)ability of the learner's system to successfully analyze L2 input, resulting in a non-target mental representation of the L2 grammar (Hawkins, 2001; White, 2003). The majority of research on L2 variation attempts to account for the L2 data on these grounds.

Recent studies in L2 acquisition have raised alternative or additional possibilities to account for variation in the performance of the L2 speaker. These are based on two fundamental hypotheses of modern linguistic theory. The first concerns the competence/performance distinction in language. Although this distinction has been an essential part of Chomskyan linguistics throughout, it is only recently that psycholinguistics and L2 research combined their efforts to investigate the possibility of L2 variation being relevant to constraints on L2 processing (production or perception) rather than on L2 knowledge (Juffs, 1998; Juffs and Harrington, 1995; Felser *et al.*, 2003) thus investigating L2 performance as a possible cause of part or all of variation in advanced stages of L2 development. The second hypothesis draws on the new 'minimalist' direction which generative linguistic research has adopted with Chomsky's (1995) minimalist program. Minimalism offers a promising view on the architecture of the language system in relation to other domains of human cognition. From this perspective, variation in the L2 learner potentially involves problems at the interface between syntax and discourse, or syntax and morpho-phonological realization (Sorace, forthcoming; Prévost and White, 2000; Goad and White, 2004). Furthermore, the combination of these two hypotheses leads to the possibility of investigating variation in the L2 speaker's grammar as a result of interface problems (morphological or syntactic) in execution, i.e., in production or comprehension, but not in the underlying linguistic knowledge.

Whatever the analysis, it is noteworthy that the two notions of variation, i.e., variation in an individual L2 speaker's grammar or variation among L2 speakers' performance, could amount to the same psycholinguistic property of the non-native language. In other words, a feasible analysis of variability in the use of a syntactic phenomenon by a non-native speaker should be extendable to account for variation found among L2 learners. As we shall see below, to approach the question of variability one needs to have an elaborate theory of language use that makes underlying grammatical representations only one of the many possible loci of variation in language performance.

In the following sections, some of the recent theoretical trends of L2 speaker variation in the use of grammar will be presented. They belong to the different but complementary research hypotheses outlined above, namely the grammar, the interface, and the processing approach.

The L2 Grammar

Earlier work in second language acquisition has revolved around the question of whether the developing L2 grammar and its endstate are constrained by natural language principles, as is the case with the native language grammar. This question refers to the nature of the learning mechanisms involved in L2 acquisition which guide the analysis of the input but also the construction of the L2 grammar. To this aim, different types of developmental L2 data primarily from adults but also from children and adolescents were examined with two points of reference; the target language on one hand, and Universal Grammar – i.e., natural language principles – on the other. There are three logical possibilities in this respect, namely that second language development is (i) similar, (ii) different, (iii) partly similar to native language acquisition, insofar as accessibility of principles and constraints of Universal Grammar is concerned. Unsurprisingly, all three possibilities have been advocated under the names of *Full Access*, *No Access,* and *Partial Access* theory, respectively (White, 2003). Within each of these theories, a number of alternative analyses have been proposed, which, however, share the basic assumptions regarding the nature and the locus of the L2 representation. Thus, *Full Access* theories propose that L2 grammars are represented in the same cognitive faculty as L1 grammars, i.e., the Language Faculty. All learning mechanisms and constraints on developing and on endstate native grammars are similarly operative in the L2 case. These theories have an important epistemological advantage over No Access and Partial Access theories, in that they assume the 'null hypothesis' for second language acquisition, Specifically, by arguing that the cognitive domain of linguistic knowledge is the same for native and non-native languages, they propose a more economical approach to knowledge acquisition and storage. Moreover, they have an empirical advantage in explaining the fact that all L2 learners, exposed to sufficient input, will attain good knowledge of the second language, which can be used spontaneously and without conscious feedback from explicit meta-linguistic information. On the other hand, Full Access theories need to account for variation in the use of the L2 grammar by even advanced learners. To this

end, they propose that variation can be (a) due to the insufficient or degenerate nature of the input presented to the L2 learner, (b) to the 'marked' status of the L2 phenomenon in relation to universal constraints (c) to L1 interference at interface levels of representation. The third choice belongs to the interface approach to L2 variation and will be discussed below. The nature of the input and the extent to which the L2 learner's developing grammar can analyze it adequately is an empirical question and requires experimental testing. The idea is that even if the quantity and quality of the input are similar in native and non-native learners of the same language, the fact that the non-native learner already has an endstate representation of the native language may render the L2 input underdetermined for the L2 developing grammar (Schwartz and Gubala-Ryzak, 1992). Finally, the second possible cause of variation in the L2 speaker refers to the characterization of the L2 grammar as the marked option with respect to a particular phenomenon. For example, it has been argued that null subject languages, such as Spanish, instantiate the unmarked option of the relevant parameter whereas the English non-null subject option is 'marked.' Thus, L2 acquisition of the 'marked' option should be slower or even incomplete for native speakers of null subject languages, whereas the opposite case, e.g., English learners of Spanish, would be more successful.

No Access theories maintain that the language faculty is only indirectly involved in L2 grammar construction, i.e., only through positive transfer of grammatical features or parametric values that are similar in the native and the second language. The crucial difference between No Access and Full Access theories is the assumption that general learning mechanisms may be implemented in the analysis of the L2 input and the construction of the L2 grammar (Clahsen and Muysken, 1986). This approach implies that the L2 grammar may be represented in a cognitive domain distinct from the L1 grammar, in adult L2 learners. As a result, variation in the performance of the L2 speaker is expected: a linguistic generalization drawn from general cognitive strategies, distinct from the language faculty, will give rise to wrong performance, even if the rule is consistently observed. This is due to the notions of domain-specificity and modularity of the language faculty. Grammar-construction located outside the language faculty is bound to show defects compared with the usual development of the native language, in the same way that compensatory strategies implemented by cognition in domains affected by some pathological cause can give rise to incomplete output representations (Paradis and Gopnik, 1997).

Partial Access theories share the assumption of Full Access theories regarding the role of UG constraints in L2 grammar construction. Thus, L2 development is regulated by the same language-specific mechanisms operative in L1 acquisition. Second language grammars are, then, 'natural languages,' represented within the domain of the language faculty. On the other hand, Partial Access theories suggest that syntactic differences between the grammar of the native and the second language are problematic even for advanced learners. The reasons are various. For example, some Partial Access theories assume that the Critical Period Hypothesis is valid and, as a result, constructing the target L2 grammar even on the basis of sufficient input is impossible for adult L2 learners. The underlying assumption is that certain aspects of the language faculty are subject to critical period constraints. These aspects become inaccessible after the end of the critical period, and the system maintains the syntactic choices of the native language for the L2 grammar, too. In advanced stages of L2 development, the L2 grammar attempts to compensate for the misfit between the L1 grammar and the L2 input, adopting other UG-constrained options or using metalinguistic strategies to accommodate the L2 input (Smith and Tsimpli, 1995; Hawkins and Chan, 1997). It is important to note that variation in the performance of the L2 speaker is predictable by Partial Access theories. The locus of variation is the syntactic domain where L1 syntax differs from the second language. As L2 development proceeds, the learner's attempts to integrate UG-based or other options to approximate L2 input leads to improvement in L2 performance, which, however, cannot, by assumption, be identical to native-like output.

Explicitly adopting the Critical Period Hypothesis is not necessary in the Partial Access framework. It is possible to attribute the incomplete nature of L2 grammars to the mature representation of the native language which characterizes the language faculty of an adult L2 learner. Thus, it has been suggested that L2 learners are predicted to show optional and variable behavior in the use of L2 grammar due to the underlying optional grammatical representations. This optionality is due to unfixed (or 'inert' in Eubank's 1993/94 terms) values that functional categories such as inflection may have, in second language grammars. Given that the cause of optionality is the lack of fixed values of grammatical features in the L2 syntactic representations, this version of the Partial Access approach is perhaps the only one in this framework that invokes a derivational and representational difference between native and non-native grammars: the former cannot tolerate valueless features whereas the latter can. Although this theory has

been presented as a theory of developing second language grammars, a version of it has been extended to describe endstate or very advanced L2 grammars which are characterized as 'impaired' with respect to their inability to identify the value of specific grammatical features (Beck, 1998). Partial Access theories share the empirical problem of reducing variation to a minimum – albeit in a small minority of L2 speakers – and attaining an endstate grammar that is indistinguishable from that of a native speaker.

Having outlined the main assumptions of the 'grammar approach,' it becomes clear that this approach builds primarily on syntactic theory. It ignores performance factors or other non-linguistic constraints on L2 performance, on the grounds that second language grammars are analyzable like native language grammars, within the generative paradigm. If the point of reference is indeed the native language, then L2 grammars, particularly given the variability observed even in advanced stages of L2 development, should differ in both qualitative and quantitative terms. As mentioned at the beginning of this essay, however, it is possible to analyze variation in the L2 speaker as the result of an interaction between parts of the language faculty and other aspects of cognitive or motor systems, affecting language performance. We can then turn to the interface approach to L2 variation.

The Role of the Interfaces

In the recent minimalist framework of Chomsky (1995), language is viewed as a cognitive system that comprises a computational component, i.e., the syntax proper, and two interface levels: the LF (Logical Form), which includes all and only semantic information of syntactic representations, and the PF (Phonetic Form) which includes all and only phonetic output. LF is the interface between language and the conceptual-intentional systems of higher cognition, in particular, inferencing, whereas PF is the interface between language and the sensorimotor systems. Given that generative research has been based on the modularity view of the language faculty (Chomsky, 1972), the minimalist picture of language allows only the computational component, i.e., the domain where syntactic derivations take place, to remain strictly modular in the Fodorian sense. Interface levels are by definition penetrable by the systems which form the interface itself. Therefore, semantic features that 'reside' in language but also in the mental lexicon are actively involved in the LF interface. Similarly, phonetic features, which are produced by the motor system interfacing with language, have a representation in the PF interface.

An important property of interface representations is the necessary exclusion of some features which, nevertheless, participate in the syntactic computation. In particular, there are syntactic features that are *interpretable* at LF, due to their semantic content, and other syntactic features that are *uninterpretable* at LF and have to be deleted before the derivation reaches the semantic LF interface. Features such as Case or subject-verb Agreement, are responsible for crucial aspects of the syntactic derivation, but are not 'legible' by the LF interface, due to their lack of semantic content (Chomsky, 1995). Thus, in a sentence such as *This boy runs fast,* the agreement feature [3rd person singular] appears on the subject and the verb's feature specification. At LF, however, the feature is interpretable only on the subject, which is a nominal category, and not on the verb. Given that LF and PF interfaces are regulated by semantic and phonetic constraints, respectively, the elements or grammatical features that participate in the interface representations need to have semantic and phonetic content. It should be pointed out that features that are *uninterpretable* at LF are those features that drive syntactic computations and, as a result, are responsible for crosslinguistic variation in the syntax. Thus, syntactic differences between languages, referred to as 'parameters,' are regulated by the properties that semantically uninterpretable features have in each natural language. The process of native language acquisition comprises acquisition of lexical, interpretable, and uninterpretable features, which will determine the parametric properties of the language acquired. This picture of the language system, together with the distinct role of a grammatical feature inside the syntactic computation and at either interface level, has proved fruitful in the description and analysis of variation in the non-native speaker of a language, as we see in the theoretical accounts framed within the interface approach.

Within the minimalist spirit, there have been some recent attempts to account for variation in the use of L2 grammar by advanced learners. There are two alternative views. One assumes that second language grammars can develop through the operation of the same UG-based principles and constraints as native language grammars. Therefore, L2 development can reach an endstate that is identical to that associated with L1 development as far as the modular representation of the grammar is concerned. This theory does not adopt critical period assumptions regarding differences in the 'ultimate attainment' of native and non-native developmental processes. It is assumed, however, that interface properties are vulnerable in cases of language contact in the individual's linguistic system. Thus, it is possible to find interference of L1 discourse-related

features on an otherwise native-like L2 representation at the LF interface (Sorace, forthcoming).

To exemplify this theoretical approach, Sorace discusses the use of subject pronouns by English near-native speakers of Italian. It appears that differences from the monolingual Italian speaker's use of pronouns are restricted to the syntax-discourse interface. Specifically, although these L2 speakers use null subject pronouns, they will occasionally use an overt subject pronoun as a response to a question such as *Perchè Maria è uscita?* ('Why has Maria gone out?'), producing utterances with an overt pronoun, e.g., 'Perchè *lei...*' ('Because she . . .'), which are deviant, from the monolingual speaker's view, in discourse terms. This type of evidence suggests that near-native L2 speakers can be native-like with respect to the syntactic properties of the L2 grammar, but still show interference effects from the native language at the interface between syntax and discourse.

The interface level of syntax and morphology/ phonology has been invoked in attempts to analyze optional use of correct morphological forms by advanced or near-native L2 speakers (Lardiere, 2000; Prévost and White, 2000). The argument, in this case, is that the constraints that necessitate use of, for example, the third person singular '–s' in English present tense forms of regular verbs (*walk-s, laugh-s*) are distinct from the syntactic representation that includes *abstract* specification of the corresponding inflectional feature. Thus, the phonological form [la:fs] is the realization of the abstract syntactic representation including the verb 'laugh' with its inflectional features (V, (3rd Person, Singular, Present Tense)). For a speaker to produce the correct form, both the abstract specification and its mapping constraints on overt morphology have to be satisfied. The interface approach to L2 speaker variation suggests that the underlying representation can be target-like, especially in the case of near-native L2 speakers, whereas the operation of the interface conditions on PF realization are affected by the surface properties of the native language. Thus, optionality in the correct use of overt morphophonology is predicted even in near-native L2 speakers.

The two versions of the interface approach presented above share a fundamental assumption, namely that the grammar of the L2 learner can be identical to that of a native speaker of the language in question. Thus, the crucial difference between the interface approach to variation and the grammar approach presented in the previous section concerns the vulnerability of the grammar proper in non-native language acquisition. One could, however, entertain an alternative account for L2 speaker variation, which is sensitive to the minimalist architecture of the language faculty, and combines some of the possibilities offered by the grammar and the interface approach. It could be referred to as the *Interpretability* approach, and it capitalizes on the minimalist assumption that grammatical features can be distinguished in terms of their role in the derivation, i.e., the syntax module, and the LF or the PF interfaces (Tsimpli, 1997, 2001). This is a more general learnability approach to grammatical features and the pattern of their acquisition in native child language learners, in non-native adults, and in pathological cases of language development.

The interpretability theory suggests that the semantically *uninterpretable* grammatical features are subject to maturational constraints in first language development. Assuming that the Critical Period Hypothesis is valid, the implication is that these uninterpretable features become inaccessible after the critical period is over. For example, the agreement feature found on verbal inflection has been associated with the value of the Null Subject parameter, mentioned above. Assuming that it is an uninterpretable feature, the implication is that it will not be accessible for parameter-resetting after the end of the critical period (Tsimpli, 1997). On these assumptions, adult L2 learners fail to construct an L2 grammar using the same resources as the child native language learner. Specifically, syntactic aspects that depend on purely grammatical features with no semantic content lead to incomplete and deviant derivations of L2 syntactic structures, even in advanced stages of L2 development. This results in the attested variation in L2 performance. On the other hand, semantically interpretable features are not subject to maturation; therefore, they are accessible to learners in any course of language acquisition. Recall also that the LF interface is not a modular system, and as such it is penetrable by higher levels of cognition, including conceptual and pragmatic information. It is therefore possible to access semantic features not only through the language system, i.e., 'bottom-up,' but through the conceptual-intentional systems, too, i.e., 'top-down.'

There are two main questions for this theory: (a) How can the theory account for near-nativeness in the use of L2 grammar; and (b) why do features of the syntax/discourse interface show variation and optional use by L2 speakers, as suggested by Sorace (forthcoming). With respect to the first question, near-native grammars are claimed to 'simulate' L2 output via linguistic or extra-linguistic routes (Smith and Tsimpli, 1995). The process of approximating near-nativeness is itself gradual. Thus, implementing alternative resources may, in the early stages of development, involve a process which is conscious or accessible to consciousness. With time and practice, the successful output becomes implicit knowledge in the

form of an over-learned routine (Anderson, 1992). For this account to be psychologically feasible, it is important to maintain that it is an empirical question which can be tested neurolinguistically and psycholinguistically, so as to access sub-conscious workings of language and systems parasitic on it, such as memory and processing constraints. Furthermore, we expect some variation to persist in the use of these grammatical features, precisely because attainment of the 'near-native' level is mediated by cognitive routes not followed in the case of the native speaker, in the form of compensatory strategies.

As far as the second question is concerned, namely the variation observed in the use of discourse-related features, there are different possibilities. The first is that these features are not part of the LF interface exclusively. Logical Form is the level of syntactic representation that includes all and only semantic features, but not discourse-related features which contribute to pragmatic interpretation. It is possible then that a higher level of representation where discourse and information-structure of the sentence are relevant, is involved. This level 'enriches' the output representation of syntax *and* LF. For example, according to theories such as Relevance Theory (Sperber and Wilson, 1995; Carston, 2002), reference-assignment to pronouns, and generally, interpretation of pronouns, is largely underdetermined by the LF interface. When this representation enters pragmatics, early stages of discourse processing will allow context to determine the referential index that the pronoun has.

Another possibility is to distinguish between the activation of an interpretable feature such as [aspect] or [referentiality] in L2 grammar construction, and the PF output of the grammaticalized options this feature has in a specific language. Consider, for example, the difference between a language that morphologically marks the distinction [+/−progressive] but not [+/−perfective], such as English, and a language that marks [+/−perfective] but not [+/−progressive], such as Russian or Greek. Both features belong to the category of *viewpoint aspect* in Smith's (1991) terms, i.e., the category of morphologically realized aspectual distinctions, which may differ from language to language. According to Smith (1991), the [progressive] feature is a subcategory of the general [-perfective] feature, in that the contexts in which the progressive interpretation is the target are also imperfective, whereas the reverse does not hold. It is relatively common for Russian or Greek near-native speakers of English to show some variation in the use of the progressive form, usually overextending it to habitual or stative cases. Sentences such as '*I am thinking that you are a fool*' are therefore possible in the advanced L2 of these speakers.

The question then is whether the problem is localized in the PF interface, the LF interface, or both. If it is a PF-interface problem, then the near-native grammar of these learners of English shows variation due to the possible mapping of the –*ing* form onto the [progressive] *and* the [−perfective]. The latter is a feature active in the native language, and the former is the feature active in the second language. Given the interpretability of these features at the LF interface, the interpretability theory predicts that the [progressive] should be accessible to the L2 grammar. Given the native language, however, the [imperfective] will also remain available. The reason why acquisition of the [progressive] does not override the L1 [imperfective] feature is primarily the subordinate/superordinate relation of these two features at the semantic level. As a result, the learner will show a certain degree of optionality even at advanced stages of development, in the morphological realization of the [−perfective, −progressive] as in the example presented above. In all contexts where the [−perfective] is active, the [progressive] may but does not need to be active too. Although the learner has acquired the [+/−progressive] distinction in the second language and can use it to contrast ongoing and habitual readings of an event, optional uses of -*ing* for non-progressive forms are also expected because of the [−perfective] feature.

In this analysis, variation in the use of aspectual forms in L2 speakers stems from the semantic interaction – at the LF interface – of [+/−progressive] and [+/−perfective] interpretable features in the second language and from the PF implications this has for the mapping options of these features onto L2 forms. If this approach is correct, variation in the use of interpretable features does not indicate problems in the *acquisition* of the relevant L2 feature. Instead, variation can be found in cases where different features of the same category are grammaticalized in L1 and L2, respectively. The co-existence and LF interaction of the native and non-native features gives rise to the variation attested.

Syntactic Processing in the Second Language

Language processing has usually held a peripheral place in generative linguistics research due to the assumption that the 'parser' is a performance system whose operations draw from grammatical knowledge but also from memory and processing constraints specific to the parser and independent from grammar proper. In native language processing, it seems that the integration of semantic and pragmatic information follows the initial step of syntactic processing; this involves generating a syntactic structure constrained

by universal and language-specific constraints on syntactic parsing, largely independent from semantic or pragmatic considerations (Frazier and Clifton, 1996; Phillips, 1996; cf. Altmann *et al.*, 1998; MacDonald, 1994). Second language research has recently begun investigating variation in the use of the second language, as a result of parsing differences between the native and the non-native language. It is then possible that 'parsing' a syntactic structure in the second language is different from 'knowing' that same structure. Consequently, L2 performance may exhibit variation which need not involve incomplete or divergent L2 grammars (Sorace, forthcoming).

Transitivity and argument structure alternations constitute a common research area in language processing. Notice that this area of grammar involves the mapping from lexicon to syntax, and, as such, it requires knowledge of lexical semantics and corresponding syntactic structures. Juffs (1998) found differences in the parsing ability of causative-inchoative alternations in advanced L2 learners of English, who appear to share the same level of grammatical knowledge of these structures in the second language but vary in their ability to parse them. It is argued that the variation attested may be due to the different native languages of the learners (Japanese, Korean, Romance, Chinese) but also to the different rate and pattern of development of the L2 parser compared with the L2 grammar. The discrepancy between L2 competence and L2 parsing has also been found in processing studies concentrating on purely syntactic phenomena, such as wh-interrogatives (Juffs and Harrington, 1995). The claim is that although knowledge of wh-extraction and chain-formation are part of L2 knowledge, L2 learners are sensitive to semantic or pragmatic properties of wh-structures, on-line. Differences between native and non-native language processing have also been identified in relation to 'universal' principles of parsing. The structures involve modification and create local ambiguities of the type *I met the secretary$_i$ of the director$_j$ who$_{i/j}$ was standing on the balcony* (Papadopoulou and Clahsen, 2003; Felser *et al.*, 2003). The prediction for this type of structures is that parsing strategies force the interpretation according to which the person standing on the balcony is the secretary rather than the director. This prediction is not borne out for both native and non-native speakers of English. It is therefore concluded that language-specific parsing preferences together with parsing strategies adopted for non-native language processing need to be taken into account.

Generally, research on language processing focuses on the ability of native and non-native speakers of a language to assign an interpretation to a sentence using lexical or structural knowledge on-line. In a recent study, Papadopoulou and Tsimpli (2004) investigated native and non-native language processing in Greek, focusing on the use of subject-verb agreement morphology to resolve local ambiguities created by optionally transitive verbs. The group of L2 speakers of Greek included participants from different language backgrounds with advanced or near-native knowledge of the language. The results show that whereas native speakers show no significant difference in reading times for the subject and object interpretation, non-native speakers show a significant preference for the object reading, indicating that thematic information, such as transitivity, overrides morphological cues for parsing locally ambiguous structures. Thus, native parsing prioritizes morphology over thematic structure, while the reverse holds for non-native parsing.

Conclusion

Variation in the L2 speaker's linguistic performance is frequently attested. The questions for linguistic theory are whether the attested variation is (a) the result of an underdetermined or incomplete L2 grammar, (b) the result of the 'contact' between the native and the non-native language at the grammar or the interface level, (c) the result of a mismatch between language knowledge and language use, or (d) a combination of these. Research continues to address all of these options as open questions, and fruitful outcome is expected when more is known about mental interaction between the language system, the parser, and higher levels of cognition.

See also: Bilingualism and Second Language Learning; Interlanguage; Language as an Object of Study; Linguistic Universals, Chomskyan; Modularity; Second Language Acquisition: Phonology, Morphology, Syntax; Second Language Attrition.

Bibliography

Altmann G, van Nice K Y, Garnham A & Henestra J A (1998). 'Late closure in context.' *Journal of Memory and Language 38,* 459–484.

Anderson M (1992). *Intelligence and development: A cognitive theory.* Oxford: Blackwell.

Beck M L (1998). 'L2 acquisition and obligatory head movement: English-speaking learners of German and the local impairment hypothesis.' *Studies in Second Language Acquisition 20,* 311–348.

Birdsong D (1992). 'Ultimate attainment in second language acquisition.' *Language 68,* 706–755.

Carston R (2002). *Thoughts and utterances: the pragmatics of explicit communication.* Oxford: Blackwell.

Chomsky N (1972). *Language and mind.* New York: Harcourt Brace Jovanovich.

Chomsky N (1995). *The minimalist program.* Cambridge, MA: MIT Press.

Clahsen H & Muysken P (1986). 'The availability of Universal Grammar to adult and child learners: a study of the acquisition of German word order.' *Second Language Research 2,* 93–119.

Coppieters R (1987). 'Competence differences between native and near-native speakers.' *Language 63,* 544–573.

Epstein S, Flynn S & Martohardjono G (1998). 'Second language acquisition: theoretical and experimental issues in contemporary research.' *Brain and Behavioural Sciences 19,* 677–714.

Eubank L (1993/94). 'On the transfer of parametric values in L2 development.' *Language Acquisition 3,* 182–208.

Eubank L (1996). 'Negation in early German-English interlanguage: more 'valueless features' in the L2 initial state.' *Second Language Research 12,* 73–106.

Felser C, Roberts L, Gross R & Marinis T (2003). 'The processing of ambiguous sentences by first and second language learners of English.' *Applied Psycholinguistics 24,* 453–489.

Frazier L & Clifton C Jr (1996). *Construal.* Cambridge, MA: MIT Press.

Goad H & White L (2004). 'Ultimate attainment of L2 inflection: effects of L1 prosodic structure.' In Foster-Cohen S, Sharwood-Smith M, Sorace A & Ota M (eds.) *EUROSLA Yearbook.* 119–145.

Hawkins R (2001). *Second language syntax: a generative introduction.* Oxford: Blackwell.

Hawkins R & Chan C (1997). 'The partial availability of Universal Grammar in second language acquisition: the 'failed functional features hypothesis.' *Second Language Research 13,* 187–226.

Hawkins R, Towell R & Bazergui N (1993). 'Universal Grammar and the acquisition of French verb movement by native speakers of English.' *Second Language Research 9,* 189–233.

Juffs A (1998). 'Some effects of first language argument structure and morphosyntax on second language sentence processing.' *Second Language Research 14,* 406–424.

Juffs A & Harrington M (1995). 'Parsing effects in L2 sentence processing: subject and object asymmetries in wh-extraction.' *Studies in Second Language Acquisition 17,* 483–512.

Lardiere D (2000). 'Mapping features to forms in second language acquisition.' In Archibald J (ed.) *Second Language Acquisition and Linguistic Theory.* Oxford: Blackwell. 102–129.

MacDonald M C (1994). 'Probabilistic constraints and syntactic ambiguity resolution.' *Language and Cognitive Processes 9,* 157–201.

Papadopoulou D & Clahsen H (2003). 'Parsing strategies in L1 and L2 sentence processing: a study of relative clause attachment in Greek.' *Studies in Second Language Acquisition 25,* 501–528.

Papadopoulou D & Tsimpli I M (2004). 'Native and non-native parsing strategies of subject-object ambiguities in Greek.' Aristotle University of Thessaloniki.

Paradis M & Gopnik M (1997). 'Compensatory strategies in genetic dysphasia: declarative memory.' *Journal of Neurolinguistics 10,* 173–185.

Phillips C (1996). *Order and structure.* Ph.D. thesis, MIT.

Prévost P & White L (2000). 'Missing surface inflection or impairment in second language acquisition? Evidence from tense and agreement.' *Second Language Research 16,* 103–133.

Schwartz B & Gubala-Ryzak M (1992). 'Learnability and grammar reorganization in L2A: against negative evidence causing the unlearning of verb movement.' *Second Language Research 8,* 1–38.

Smith C (1991). *The parameter of aspect.* Dordrecht: Kluwer Academic Publishers.

Smith N V & Tsimpli I M (1995). *The mind of a savant: language learning and modularity.* Oxford: Blackwell.

Sorace A (1993). 'Incomplete vs divergent representations of unaccusativity in near-native grammars of Italian.' *Second Language Research 9,* 22–47.

Sorace A (2000). 'Syntactic optionality in L2 acquisition.' *Second Language Research 16,* 93–102.

Sorace A (forthcoming). 'Selective optionality in language development.' In Cornips L & Corrigan K (eds.) *Biolinguistic and sociolinguistic accounts of syntactic variation.* Amsterdam: Benjamins.

Sperber D & Wilson D (1995). *Relevance: communication and cognition.* (2nd edn.). Oxford: Blackwell.

Tsimpli I M (1997). 'Resumptive features and minimalism: evidence from second language acquisition.' *Proceedings of the 21st Annual Boston University Conference on Language Development 21,* 639–655. Somerville, MA: Cascadilla Press.

Tsimpli I M (2001). 'LF-interpretability and language development: a study of verbal and nominal features in Greek normally developing and SLI children.' *Brain and Language 77,* 432–448.

White L (2003). *Second language acquisition and Universal Grammar.* Cambridge: Cambridge University Press.

White L & Genesee F (1996). 'How native is near-native? The issue of ultimate attainment in adult second language acquisition.' *Second Language Research 12,* 233–265.