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*Review Article*

Beyond paradigm: The 'what' and the 'how' of classroom research

**Abstract**

This paper reviews studies in second language classroom research from a cross-theoretic perspective, arguing that the classroom holds the potential for bringing together researchers from opposing theoretical orientations. It shows how generative and general cognitive approaches share a view of language which implicates both implicit and explicit knowledge, and which holds a bias towards implicit knowledge. Arguing that it is implicit knowledge which should be the object of research, it proposes that classroom research would benefit from incorporating insights from a generative understanding of language. Specifically, there is a need for a more nuanced view of the complexity of language in terms of linguistic domain, and the interaction between those domains. Research in generative second language acquisition research showing developmental differences in terms of both linguistic domain and interface is reviewed. The core argument is a call for more attention to the 'what' of language development in classroom research and, by implication, teaching practice. As such, the language classroom is seen to offer potential for research that goes beyond paradigm to address both the 'what' and the 'how' of language development.

### **Keywords**

second language acquisition, generative, cognitive, classroom research, knowledge, explicit, implicit, acquisition, learning, language domain

### **Introduction**

Broadly speaking, contemporary mainstream research on language and language acquisition from a mentalist point of view can be divided into two approaches: that of generative orientation and that of general cognitive orientation. Within second language acquisition (SLA) these paradigms do not readily interact or intersect, with much scholarly work written or presented within paradigm for a within-paradigm audience. The broad aim of this paper is to show that (i) there is in fact more agreement than the current polarisation of paradigm suggests and (ii) the needs of the classroom can provide a unifying *raison d'etre* for a collaborative approach to SLA capable of overcoming paradigm differences. The suggestion of cross-paradigm research does not mean that fundamental differences between schools of thought are denied. In fundamental ways, generative and general cognitive theories stand in direct opposition. After all, it is a contradiction in terms to say that language is a distinct or

unique type of knowledge (the generative claim) while also being indistinct from other types of knowledge (the cognitive stance). Similarly, it would be difficult to posit grammatical principles to be both innately specified (generative) and deduced from the input (cognitive) at the same time. Despite these real differences, we look to (adult) second language development in the classroom as an area which holds potential for cross-paradigm research, with a more theory-neutral aim of informing classroom practice.

Before exploring this, however, we need to be more explicit about the areas of SLA research we will be addressing. While there is much research investigating questions of relevance to second language development and the language classroom, the concern in this paper is limited to research from a mentalist perspective. Thus, we are not engaging with research exploring questions of social context (e.g. Lantolf and Thorne 2006), identity (e.g. Block 2007) or motivation (e.g. Dörnyei 2001), for example. Instead we will be considering work that explores psycholinguistic development, with particular focus on those working within a generative framework and those assuming a cognitive or connectionist mental architecture. The thrust of the discussion is to argue that generative SLA (GenSLA) research has a contribution to make to classroom research, despite the fact that this approach has not been seen to be of much relevance to the classroom to date.

Indeed, while there is sometimes reference to or acknowledgment of the generative agenda in non-generative research,<sup>1</sup> there tends to be very little acknowledgement of non-generative concerns in GenSLA research. The reality is that the basis of GenSLA has been the very clear, if narrow, aim of exploring questions of unconscious 'acquisition' (as opposed to metalinguistic 'learning'), with a concomitant focus on linguistic phenomena that are considered to be included within core competence, as defined by Chomsky (1965).<sup>2</sup> Moreover, one consistent aim of this research has been to validate the generative paradigm itself, showing evidence for innate language universals. By contrast, there is a wider range of researchers interested in language development in the classroom who tend to assume a cognitivist paradigm, though, unlike GenSLA, the primary aim of this research has not usually been to validate that paradigm necessarily, but instead to explore questions of classroom instruction. Some of the core strands in this tradition include research on different types of explicit and/or implicit instruction (e.g. Benati 2005; Ellis et al. 2006; Izumi and Lakshmanan 1998), corrective feedback (e.g., Carroll and Swain 1993; Mackey 2006; Philp 2003) and interaction (e.g. Ellis et al. 1995; Long 1996; Pica et al. 1987).

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<sup>1</sup> See, for example, contributions to the 2005 *Studies in Second Language Acquisition* Special Issue.

<sup>2</sup> The notions of 'acquisition' and 'learning' are explained more fully in Section 2.

Considering the differing aims of these sets of research, it is perhaps not surprising that most have chosen to engage within paradigm. Even research methodology tends to vary by paradigm, making cross-paradigm debate more difficult. Yet, it is also not surprising, given that second language development is the shared object of study, that there are also areas where parallels can be drawn. One such area is to do with differing types of knowledge. In the next section we argue that there is a degree of agreement across frameworks about assumptions to do with explicit and implicit knowledge, bringing us to the conclusion that SLA research should measure implicit knowledge. We then explore the property-theoretic nature of GenSLA more fully and summarise the findings of research that shows differences in development by type of linguistic property, as well as effects of interaction between different domains of language. This is followed by consideration of two studies in terms of the desiderata for classroom research identified in this paper. Our conclusion is that classroom research on *how* language develops should also incorporate insights from the generative focus on *what* develops.

### **Types of second language knowledge**

Whether overtly or not, all second language researchers assume a distinction between a deliberate, consciously controlled type of linguistic knowledge (termed 'learned' or 'explicit' knowledge) and an intuitive, automatic type of linguistic knowledge ('acquired' or 'implicit' knowledge), a point noted elsewhere (e.g. R. Ellis 2005). Agreeing with Ellis that there is no broad consensus in any paradigm on what the relationship is between these two types of knowledge, this section explores the concepts of acquired/implicit and learned/explicit knowledge, arguing that this is where the two paradigms might fruitfully engage with each other.

Focus on acquired knowledge is fundamental to the generative approach because of its concern with UG-constrained development of linguistic competence. One constant methodological challenge has been to minimise the effects of performance, and to avoid researching learned knowledge. The qualitative difference between acquired and learned knowledge, as articulated by Schwartz (1993), sees learned linguistic knowledge and acquired knowledge ('competence') as forever distinct, positing what has become known as the 'no interface' position between the two types of knowledge. Since first proposed, this position has not been refuted within the generative framework; and the issue no longer receives much discussion. Within cognitive research, there is also a distinction between implicit and explicit knowledge, with *both* types usually seen as a product of learning, and thus with no meaningful role

for a process known as 'acquisition' that is distinct from 'learning', as understood by generativists.

Yet it is far from clear that these two approaches are as opposed as the use of different terminology might suggest. Consider the following quotes, the first from a leading proponent of the cognitive perspective, and the second from the original generative argument for the 'no interface' position:

1. Explicit and implicit knowledge are distinct and dissociated; they involve different types of representation and are substantiated in separate parts of the brain. ... explicit knowledge does not *become* implicit knowledge nor can it be *converted* to it. (N. Ellis 2005: 307)
2. ...explicit data and ND [negative data] help to create another type of knowledge, one that should be seen as distinct from competence; whereas explicit data and negative data effect LLK [learned linguistic knowledge], they do not effect competence. (Schwartz 1993: 160)

Notably, the cognitive quote (1) is even more explicit in its distinction between two types of knowledge than the no interface generative quote (2). The difference, of

course, is that for N. Ellis, the distinction between implicit and explicit systems applies to all types of knowledge, while Schwartz is speaking exclusively about language knowledge. Notably, however, it is not the case that within each paradigm a no interface position is held uniformly. While Ellis's position is clear in (1), other cognitivists hold the view that explicit knowledge can become implicit over time and with practice (e.g. DeKeyser 2007). Equally, although a strict generative no interface position assumes no interaction between types of knowledge there is a growing interest among GenSLA researchers in investigating learning in addition to acquisition (Whong et al. 2013a). While there has been no stated change in the generative position with regard to this epistemological interface, research exploring the effects of language teaching on acquisition begs the question of the relationship between learned and acquired knowledge.

Whether there is interaction between types of knowledge or not, we echo the observation of R. Ellis (2005) that both paradigms posit a qualitative difference between implicit or acquired knowledge on the one hand, and explicit or learned knowledge on the other. Descriptions of the two types of knowledge are strikingly similar. In describing implicit knowledge N. Ellis writes 'In fluency, both language processing and language tallying are typically unconscious; our implicit systems automatically process the input, allowing our conscious selves to concentrate on the

meaning rather than the form' (2005:308). Even more striking, he goes on to say 'Implicit learning occurs largely within modality and involves the priming or chunking of representations or routines within a module' (2005: 312). Though Ellis's appeal to a module presumably does not refer to the Fodorian modular view of language (Fodor 1983) which has been the mainstay of the generative approach, both paradigms assume function-specific modality which operates outside of conscious introspection as something separate from more deliberate, consciously controlled functionality. Interestingly, the passage in (2) from Schwartz (1993), continues in a way that resonates with our interest in both learned and acquired knowledge. She writes, '[the two types of knowledge] may, nevertheless, affect linguistic behavior, and sometimes that may be all we are seeking.'

Our emphasis on the existence of two types of knowledge within the two opposing mentalist paradigms should not be mistaken, however, for an argument that implicit and acquired knowledge are the same thing. Acquired knowledge is understood to be knowledge that is specific to the domain of language, while implicit knowledge includes a wide range of knowledge beyond the purely linguistic. Thus acquired knowledge can be seen as a subset of implicit knowledge, with the difference depending on one's view of mental architecture. That generativists posit acquired knowledge to be a delineated subset of implicit knowledge is irrelevant to non-

generativists because of the domain general nature of the connectionist premise.

Despite these fundamental differences, there is another shared point which, curiously, does not tend to be stated overtly: that implicit knowledge is in fact 'better' than explicit knowledge (Whong et al. 2013b). This assumption is inherent to theory-laden poverty-of-the-stimulus research which is only interested in evidence of acquisition. But in more cross-theoretic terms, the biasing of implicit knowledge is reasonable as well. After all, implicit knowledge is automatic and fast – the most basic components of fluency however defined. Additionally, implicit knowledge is assumed to be more lasting. Within a cognitive orientation, this is a result of deeper entrenchment that comes from repeated activation; while from a generative approach, such knowledge has a privileged status as UG-constrained modular knowledge. Moreover, as explained by N. Ellis above (1), the more that any speech act draws from implicit knowledge, the less the mechanics of language need to rely on explicit knowledge. This allows for a freeing up of deliberate processes for other things, such as consideration of meaning and context. In short, the more that knowledge of language is implicit, the more a speaker can exploit explicit mental resources for optimal delivery of thoughts and intentions.

The starting point of this discussion, then, is agreement on two points, between the two mentalist approaches to SLA: i) that there is a meaningful distinction between

the two types of knowledge implicated in L2 development and ii) that implicit knowledge is valued over explicit knowledge. We keep these points about epistemology in mind as we turn to classroom research.

### **Research on instruction: What to measure, and when**

There is a large body of research which frames the question of learning in terms of the effectiveness of implicit versus explicit instruction since the locus of interest is on what teachers can do in order to better facilitate language development among their learners, or in other words, the 'how' of language development. The overall finding of the seminal meta-analysis by Norris and Ortega (2000, 2001), as well as subsequent meta-analyses (e.g. Mackey and Goo 2007, Spada and Tomita 2010), is clear support for the effectiveness of instruction, with indication that explicit instruction leads to larger effect sizes in aggregate than implicit.<sup>3</sup> It is well known, however, that the nature of classroom research entails numerous methodological challenges (Doughty 2003). In terms of the explicit/implicit distinction, there is a challenge which we will refer to as the Instructed SLA bind: the only way to show effectiveness of input is to test learner knowledge (Hulstijn 2005). This bind can lead to a conflation of claims

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<sup>3</sup> This generally accepted claim is not uncontroversial, however. See, for example, Sanz and Leow (2011) and the papers within.

about input with claims about mental states because the effectiveness of different types of instruction can only be shown based on data that reflects changes in learner knowledge. If carefully made, claims about differences of instruction can be valid. But crucially, research on type of instruction does not, in itself, allow for claims about the type of knowledge that develops as a result. In other words, explicit instruction does not necessarily lead to explicit knowledge. This might be unproblematic if there were no differences between types of knowledge. But as has been established, SLA researchers of all persuasions accept a qualitative difference between implicit/acquired and explicit/learned knowledge.

The Instructed SLA bind is obvious from a perspective which prioritises questions of epistemology and not instruction. Thus one advantage that could come from a generative contribution to classroom research is in controlling for this problematic bind. Moreover, we would argue that the best way to demonstrate the effectiveness of instruction is if learners can be shown to have implicit knowledge of the linguistic phenomena under study, and not just explicit knowledge. This is because of the cross-paradigm acceptance of the superiority of implicit knowledge. Of course, we would not advocate attempts to ignore explicit knowledge altogether. However, the distinction needs to be made clear and researchers should do what they can to

control for the type of knowledge underlying their data through careful manipulation of research methods.

R. Ellis (2002, 2005) and Housen et al. (2005) also note that studies often do not make sufficient allowance for the potential effects of explicit knowledge on measures assumed to tap implicit knowledge. Ellis (2005) sets out to validate measures of implicit and explicit knowledge through triangulation using five different tests, two identified as measuring explicit knowledge and three—two production tasks and a timed grammaticality judgement task—identified as measuring implicit knowledge. However, while any usage-based perspective would naturally place high value on production data, spontaneous production data is not a sufficient method for showing implicit knowledge, since learners can potentially draw from all sources of knowledge concurrently. Moreover, production data is, by nature, limited; regardless of the amount of the output, any set of production data, even if captured by very large corpora, will only ever be a subset of what learners, whether individually or in aggregate, can produce. In addition, production data cannot show the limits of knowledge as it can never show what is ruled out by the learner's underlying L2 knowledge, whether in terms of grammaticality or interpretation.

Yet there seems to be a growing assumption within classroom research that production is the most valid way to study language development. 33 of the 49 studies

included in the original Norris and Ortega (2000, 2001) meta-analysis relied on methods which cannot show the limits of the learner's knowledge, whether because they relied exclusively on production data or production data combined with being asked to choose the correct response from a set of options. In a more recent analysis Spada and Tomita (2010) comment that the reliance on production data seems to be growing, and they cite Mackey and Goo (2007) who report that 52% of the measures used in their meta-analysis were 'open-ended production measures (e.g., oral production tasks and writing tests).' Our concern is that Spada and Tomita go on to conclude, '[t]hus, it would appear that SLA researchers are responding to the call for more measures of spontaneous, unanalyzed (i.e., implicit) knowledge and use' (Spada and Tomita 2010, p. 288). Given the limits of production data, we question this practice. It cannot be assumed that production necessarily captures implicit knowledge. While spontaneous production data may draw from implicit knowledge, equally, it may be scaffolded by, or be fully derived from, explicit knowledge.<sup>4</sup>

One existing way to increase the validity of claims about the effectiveness of instruction is the inclusion of a delayed post-test. After all, durability of knowledge,

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<sup>4</sup> As noted above, R. Ellis (2005) also identified the timed GJT as a measure of implicit knowledge. This has led to considerable follow-up research on GJTs (e.g., Ellis and Loewen 2007; Gutierrez 2013; Isemonger 2007), the outcome of which further highlights the difficulty of isolating implicit L2 knowledge, as well as allowing for the claim to be maintained that timed GJTs measure implicit knowledge at least to some extent.

say, a year after instruction, indicates stable knowledge. Yet any researcher knows how difficult this is in practical terms. Another option is the use of on-line psychometric measures such as reaction time or eye-tracking methods (see Roberts 2012 for an overview), or new techniques in neurolinguistics such as fMRI, though access to this technology is a challenge. In sum, while classroom research shows that explicit instruction is effective, as measured by immediate post-tests, whether instruction results in increased levels of implicit (and hence, durable, ingrained, automatic) knowledge is not as clear. In sum, we argue that the distinction between implicit and explicit knowledge needs to be more robustly recognised in research design, and suggest that implicit knowledge should be the target of research, regardless of theoretical premise.

### **Linguistics and Classroom Research**

In considering the distinction between explicit and implicit knowledge, Hulstijn notes that 'definitions of learning—whether implicit or explicit—as a process (how) can easily become contaminated with the object of learning (what)' (2005: 133). In addition to differences between implicit and explicit knowledge, there is the need for considerations of 'what' develops in terms of linguistic phenomenon.

The question of 'what' was the intuition underlying the meta-analysis of Spada and Tomita (2010), which asks whether the effectiveness of type of instruction depends on type of language feature, making a distinction between 'complex' and 'simple' linguistic phenomena. Re-analysing data from 41 studies, they are careful to distinguish between implicit and explicit knowledge, and to not conflate type of input with resulting knowledge; and they consider durability by factoring in short versus long term findings. They are also laudably upfront about the degree to which the notions of 'complex' and 'simple' are problematic. They note three different ways to define these concepts, citing psycholinguistic, linguistic and pedagogic definitions; and they point out problems with each of these definitions (2010: 268). In the end, they follow Hulstijn and de Graaff (1994) and Celce-Murcia and Larsen-Freeman (1999), opting for a linguistic definition. For them, this means defining complexity in terms of number of derivations or transformations involved in arriving at the form in question. However, this notion of 'complexity' is problematic. By this definition, articles are categorised as 'simple', for example, in contrast with the dative alternation, which is considered 'complex' (Spada and Tomita 2010: 273, Table 3). It is well accepted in linguistic analyses that articles are far from simple. Knowledge of articles in English requires knowledge of definiteness, specificity and genericity (Ionin et al. 2004; Ionin et al. 2011; Snape and Yusa 2013), and how those properties interface with both the

discourse and with other properties of grammar, such as the mass/count distinction within noun phrases. From a linguistic point of view, articles are certainly not simple.

This problem of the definition may be one reason why Spada and Tomita do not find any connection between type of linguistic phenomenon and effectiveness of teaching. Instead, their overall conclusion is to support the already known finding that there are larger effect sizes for explicit instruction over implicit. The complexity factor reveals the largest effect sizes for explicit instruction of complex language features, with complex forms enjoying larger effect sizes than simple forms – but within both the categories of explicit and implicit instruction (Spada and Tomita 2010: 281). In other words, they are not able to show an interaction between type of instruction and type of linguistic feature, based on their definition. They suggest that their definition of complexity might have undermined their research. We concur. Though expressed in different terms, questions about *type* of linguistic property have driven GenSLA in the last couple of decades, in attempt to determine which aspects of language are readily acquired, and which are not. Crucially, this research has led to an understanding of second language development in terms of the properties of language itself. In the remainder of this section we explore how the property-theoretic nature of the generative paradigm can provide the basis for exploring what should be taught.

### *Domains of language*

Though debate remains about points of detail, generative researchers assume a privileged status for language-specific knowledge. Specifically, there are processes that are unique to syntax, phonology, semantics and the lexicon, respectively. Of much interest to GenSLA since the 1990s, has been the difference between the domains of functional morphology and syntax. As is well known by every teacher of language, L2 learners seem to have great difficulty with production of functional morphology, whether that is inflection or free morphemes such as articles and other particles. Nonetheless, GenSLA findings have shown that, although target-like morphology may not be consistently produced, the syntax that the particular morphology is associated with, is, in many cases, intact (Lardiere 1998a, 1998b; White 2003). For example, syntactic theory argues that an abstract syntactic category of Tense plays a role in a range of linguistic properties, including subject-verb agreement, tense marking, nominative case on subject pronouns (e.g., *She smiled* vs. *\*Her smiled*), whether or not null subjects are permitted, whether or not a copula is required, and the position of main verbs (which can be seen by whether or not they 'raise' in front of negation: *He did not smile* vs. *\*He smiled not*).

If an L2 learner's grammar contained no Tense category, or if the syntactic mechanisms associated with Tense were impaired in L2 acquisition, then we would

expect to see random, non-target-like use in all of these areas. In fact, it has been found that for learners of different L2s, and with a variety of L1s, errors are not random, and, moreover, different patterns emerge according to the domain. Within morphology, for example, learners tend to exhibit high rates of omission (but not misuse) of inflectional morphemes that indicate subject–verb agreement or tense. At the same time, however, they are accurate on syntactic properties such as subjects, case-marking of pronouns and verb position (e.g., L2 English: Haznedar 2001; Ionin and Wexler 2002; and Lardiere 1998a, b; 2008; L2 French and German: Prévost and White 2000). Similar results are found in the nominal domain: experimental data show that English-speaking learners of L2 Spanish are able to make use of the syntactic gender features in comprehension tasks, yet they make errors in the oral production of gender agreement morphology on determiners and adjectives (Alarcón 2011; among others). Such findings suggest a disconnect between production of morphology and tacit knowledge of the underlying syntax, the source of which researchers have attributed to a problem with the process of mapping from the syntactic representation to the appropriate morphological form (e.g., Prévost and White 2000a, 2000b; Lardiere 2007).<sup>5</sup>

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<sup>5</sup> Such proposals assume that the underlying syntax is target-like, or that the development of target-like syntax is possible. An alternative view, which we will not explore here, holds that the

Work by Slabakova (2008) asks whether there is also a disconnect between morphology and meaning in L2 acquisition. Slabakova surveys a wide range of GenSLA research, and concludes that there is consistent evidence that functional morphology acts as a 'bottleneck' in the domain of semantics, in the sense that it inhibits, but does not ultimately block, development. One example of this comes from work by Montrul and Slabakova (2002) (among others) on L2 knowledge of aspect in Spanish, by English-speaking learners. English uses the simple past both for one-time past events (3a) and for habitual actions in the past (3b). Spanish, on the other hand, uses the perfective form for the former (4a) and the imperfective for the latter (4b) (examples from Slabakova 2008: 170).

3. a. Felix robbed a person in the street. (*one-time event*)  
b. Felix robbed (people) in the street. (*habitual*)
  
4. a. Guillermo rob-ó en la calle. (*one-time event*)  
Guillermo rob-PERF in the street  
'Guillermo robbed (someone) in the street.'  
b. Guillermo rob-aba en la calle. (*habitual*)

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underlying syntactic structure itself is the source of problems in the production of morphology, a position dubbed the Failed Functional Features Hypothesis (Hawkins 2005; Hawkins and Chan 1997).

Guillermo rob-IMPERF in the street

‘Guillermo habitually robbed (people) in the street.’

The participants in Montrul and Slabakova’s study completed two tasks: an inflection task that involved selecting between the imperfective and perfective forms of Spanish verbs in a set of sentences; and a judgement task, which tested knowledge of the semantic implications of the two different verb forms. In this second task, participants had to rate the acceptability of coordinated clauses, in which the first clause contained a verb in either the imperfective (5a) or perfective (5b), and the second clause was either a logical (i.e., acceptable) or contradictory (i.e., unacceptable) continuation, depending on the boundedness of the event (i.e., whether or not the event has an endpoint) in the first clause. The imperfective form yields an unbounded interpretation and the perfective a bounded interpretation, in native Spanish (Montrul and Slabakova 2002: 131).

5. a. La clase era a las 10 pero empezó a las 10:30. (*logical*)  
The class was.IMPERF at 10 but started at 10.30
- b. \*La clase fue a las 10 pero empezó a las 10:30. (*contradictory*)  
The class was.PERF at 10 but started at 10.30

The key finding was that among those learners who were at least 80% accurate on the inflection task and could therefore be considered to have acquired the perfective/imperfective morphology, around half were also accurate on the judgement task and so had also acquired the semantics. However, among those who scored lower than 80% on the inflection task, almost none were accurate on the judgement task. Findings such as this support Slabakova's (2008) conclusion that when there is a mismatch between the L1 and the L2 with regard to how meaning maps onto form, acquisition of meaning will be delayed until learners have acquired comprehension (but not necessarily production) of the form.

From this, Slabakova suggests that functional morphology is a key area in which language learners could benefit from time spent in contextualised practice. Particularly when there is a form-meaning mismatch between the L1 and the L2, the location of particular meanings in the L2 (such as the relationship between boundedness and perfective/imperfective verbal morphology exemplified for Spanish, above) may not be salient for acquisition. Practising these forms in relevant contexts may facilitate their acquisition. This suggestion brings Slabakova's position close to non-generative voices. Slabakova, herself, notes (2008: 281) that DeKeyser (1997, 2001, 2007) has consistently argued for the role of practice in language development. Additionally, this

research resonates with the impetus for Spada and Tomita's meta-analysis, that the effectiveness of a particular type of instruction may vary with the type of linguistic property. If the Bottleneck Hypothesis is correct, we might expect that it is difficult to develop implicit knowledge of functional morphology. However, more reassuringly, explicit instruction could facilitate both explicit and implicit knowledge of syntactic and semantic properties of language. In sum, a more robust view of 'what' develops, with a more principled delineation into the domains of syntax, morphology, or semantics (leaving other domains aside for the moment), may reveal differences supporting Spada and Tomita's original intuition that different types of instruction may have variable effects, depending on different properties. But even this more nuanced view of language does not tell the whole story.

#### *Interfaces between domains*

In addition to questions about the domains of language, such as functional morphology and syntax, are questions of interaction between domains. For example, phonology may interact with semantics, such that a sentence like *You want this* becomes a question if uttered with question intonation. Or, discourse may interact with syntax, rendering the non-canonical word order in *Coffee, I like* grammatical, if *coffee* is a discourse topic. An influential body of GenSLA research suggests that the

syntax-discourse interface may be harder to acquire than other interfaces in L2 acquisition (Belletti et al. 2007; Sorace, 2005, 2006, Sorace and Filiaci, 2006; Argyri and Sorace 2007; Sorace and Serratrice 2009). This is interesting in the context of the L2 classroom, because discourse notions such as topic and focus do not commonly feature in classroom instruction. Yet if the syntax-discourse interface is problematic in L2 acquisition, this could be precisely where increased classroom attention could be beneficial.

Recent work by Valenzuela and McCormack (2013) aims to investigate the effect of classroom instruction on the acquisition of a complex set of interface properties found in Spanish topic-comment constructions such as (8a–b) (Valenzuela and McCormack 2013: 103–104):

6. a. [Context: I have a group of friends that I have known for many years.]

A Juan<sub>i</sub>, lo<sub>i</sub> conocí en París cuando era estudiante

To Juan, CL I-met in Paris when was student

'Juan, I met in Paris when I was a student.'

- b. [Context: I eat fruit and vegetables in order to stay healthy.]

Manzanas, como todos los días.

Apples, I-eat all the days

'Apples, I eat every day.'

In both examples the leftmost NP is a 'topic', and the subsequent clause a comment on the topic. In terms of syntax, the leftmost NPs (*Juan* and *Manzanas*) are assumed to have moved out of their canonical position in the subsequent clause (i.e., the object position of 'meet' in (8a) and 'eat' in (8b)). This movement is motivated by the context, whereby the moved NPs serve as a reintroduced topic that links to entities already introduced in the previous discourse, that is, 'a group of friends' in (8a) and 'fruit and vegetables' in (8b). Thus, topic-comment constructions involve the interface between syntax and discourse. In addition, (8a) includes a clitic pronoun *lo* that refers back to *Juan*, while such a clitic is absent in (8b). The clitic pronoun is required when the topic NP is specific. Thus, *Juan* in (8a) is specific (i.e., the speaker has a specific friend named Juan in mind) while *manzanas* in (8b) is non-specific (i.e., no specific set of apples is intended). This means that topic-comment constructions in Spanish involve the interface of syntax (movement), semantics (specificity of topic) and discourse (reintroducing given topics). For English learners of L2 Spanish, the topic-comment syntax could be transferred from their L1, but acquisition of when to use a clitic pronoun, which requires integration of the semantic and discourse properties that govern whether the given topic is specific or non-specific, represents a challenge.

Valenzuela and McCormack investigated what is taught in L2 Spanish classrooms with regard to topic-comment constructions and clitics, and then they examined some data from English-speaking learners of Spanish (from Valenzuela 2005) in order to find out whether reflexes of the instruction could be identified in the learners' performance. They found that topic-comment constructions are rarely taught, whereas instruction is commonly provided about clitic pronouns and their placement. However, the instruction about clitics does not include their interpretation in terms of the link between the topic and the wider context. The results of an oral sentence selection task (for comprehension) and a sentence completion task (for written production) showed that learners displayed grammatical accuracy by accepting and producing both topic-comment structures represented in (8a) and (8b). However, they tended to over-use the structure with clitic pronouns (8a) for non-specific topics and to over-accept the specific topic interpretation when the non-specific structure without clitic pronouns (8b) would have been target-like.

The results indicate that learners are aware that the structures in (8) are grammatical, but they are less successful in interpreting the structures appropriately in given contexts. In other words, classroom exposure, including explicit instruction, seems to have facilitated L2 acquisition of the structure of topic-comment constructions with and without clitics; but interpretation, which the learners have not

been taught about, remains unacquired. This result resonates with other findings, mentioned above, that show persistent problems with linguistic properties in which syntax interfaces with discourse. Valenzuela and McCormack propose that classroom instruction could usefully include more focus on syntax-discourse phenomena. Specifically, they suggest that examples be provided of target constructions within a wider context, with explicit explanation of why one given construction (e.g., (8a)) is chosen over another (8b). Such instruction could facilitate understanding of required discourse notions such as topic and focus, which could lead to mastery of target properties that interface with discourse.

To summarise this section, we agree with Spada and Tomita (2010) that consideration of the type of linguistic property is important when evaluating or designing classroom L2 research. However, we suggest that insights from recent generative SLA research provide a more useful means of defining linguistic properties. With this in mind, we have explored GenSLA research findings showing that ease of acquisition of a given property appears to depend on the particular domain of language, or interface between domains. We have also showcased studies that aim to consider how such findings might be exploited in the language classroom.

### **Putting it all together: meeting the desiderata for classroom research**

Earlier we argued that the key common ground between generative and non-generative approaches to SLA is the importance of acquired/implicit L2 knowledge as the target for research. We then argued that classroom research should (i) use methods that measure acquired/implicit knowledge rather than metalinguistic knowledge; and (ii) pay more attention to the specific properties of language being taught and measured, with considerations of differences by linguistic domains and the interfaces between domains. A recent study by Toth and Guijarro-Fuentes (2013) shows attention to linguistic properties and recognises the importance of measuring implicit knowledge. They ask whether L2 Spanish learners can develop implicit knowledge of the Spanish particle *se* if explicit instruction is given. Some transitive verbs in Spanish (9a) also allow a spontaneous, inchoative interpretation with no agent, if the particle *se* is included (9b). This contrasts with the passive or impersonal reading which comes when *se* is used with accusative verbs (9c) (examples from Toth and Guijarro-Fuentes 2013: 1168).

9.     a.     Pedro secó los platos.  
                  Pedro dried the dishes

b. Los platos se secaron.

The plates PRT dried.

c. Se lavaron los platos.

PRT washed the dishes

'The dishes were washed.' or 'One washed the dishes.'

L2 Spanish speakers who were explicitly taught the impersonal, passive (9c) and spontaneous (9b) uses of *se* were compared with a control group who were not exposed to any focus on the form. To measure implicit knowledge they use a timed judgement task. Improvement by the instructed group in correctly accepting sentences like (9b,c) at both post and delayed post-tests lead them to conclude that explicit instruction can result in the development of implicit knowledge, a result which they take as evidence against a 'no interface' position between learned and acquired knowledge.

In presenting their study, Toth and Guijarro-Fuentes are critical of generative researchers who have a blind commitment to a no interface position saying this 'has led generative L2 theorists to circular, unfalsifiable interpretations of learner data that disregard alternative explanations' (2013: 1165). While we agree that the

unchallenged assumption within much GenSLA research needs discussion, we question whether Toth and Guijarro-Fuentes are really able to show evidence that explicit knowledge can become implicit. After all, the explicit focus on *se*, which came with much exemplification and practice, would also qualify as positive input and thus could be argued to be the source of the subsequent development of acquired knowledge. We would not insist that this alternative interpretation is the correct analysis for their results. However, we note that even a study carried out as carefully as that of Toth and Guijarro-Fuentes faces the difficult challenge of finding unequivocal evidence for the question of the relationship between implicit and explicit knowledge.

Another study asking about the effect of instruction on implicit knowledge explored the issue using neuroimaging technology. Yusa et al. (2011) investigate L1-Japanese learners of L2 English, focusing on *never* inversion, whereby subject-auxiliary inversion is required when the negative adverb *never* is fronted for stylistic purposes, as shown in (10a). (10b) shows the unmarked, non-inverted form of the sentence. (10c) shows that, if *never* is fronted without subject-auxiliary inversion, the result is ungrammatical. Finally, (10d) shows that with non-negative adverbs such as *today*, there is no subject-auxiliary inversion.

10. a. Never will I eat sushi.

- b. I will never eat sushi.
- c. \*Never I will eat sushi.
- d. Today I will eat sushi./\*Today will I eat sushi.

While Yusa et al. explicitly taught the monoclausal structures in (10), they tested learners on biclausal *never*-inversion sentences, such as (11b), which is the stylistically inverted version of (11a).

- 11. a. [Those students who will fail a test] are never hardworking in class.
- b. Never are [those students who will fail a test] \_\_\_ hardworking in class.
- c. \*Never will [those students \_\_\_ fail a test] are hardworking in class.

*Never* inversion was chosen because it is rare in the input and not usually taught. Thus, Yusa et al. could be reasonably sure that their participants had had very little, if any, exposure to this structure prior to the study. The participants were divided into two proficiency-matched groups, one of which received explicit instruction about *never* inversion, the other which did not. Two test measures were used: responses to an on-screen paced grammaticality judgement task, and fMRI data that were

measured while the participants completed the judgement task. Both measures were administered both before and after instruction.

The key finding in both the judgement task results and the neurolinguistic data was a significant change from pre-test to post-test in the instructed group, but not in the control group. In the judgement task, the instructed group became significantly more accurate in accepting grammatical *never* inversion (e.g., 10a and 11b) and rejecting ungrammatical tokens (e.g., 10c and 11c), even though no instruction about the biclausal structures had been provided. In the neurolinguistic data, Yusa et al report significant changes in activation within Broca's area (specifically, within the left inferior frontal gyrus), which is associated with the acquisition of syntax.

Both of these studies are exemplary in many respects. The explicit challenge to the question of the relationship between explicit and implicit knowledge is welcome. And both studies show gains in implicit knowledge that come after learners are given explicit instruction. However, the fact that explicit instruction is always going to include positive input means that it is difficult to demonstrate that explicit knowledge *becomes* implicit. There is nothing to rule out the parallel development of two types of knowledge. Rather than conclude that this means such research is not useful, we argue that this methodological conundrum is all the more reason why researchers interested in second language development should abstract away from their theory-dependent

biases. After all, it is possible to make useful claims about the effectiveness of instruction on the development of both explicit and implicit knowledge which does not depend on questions of mental architecture. Arguably, this is the kind of research that is more likely to be useful to teachers. Thus, we agree with Toth and Guijarro-Fuentes that it is time to let go of blind commitments to paradigm; and we argue that we should, instead, focus on which aspects of language seem to benefit from instruction, in conjunction with how differing types of instruction compare.

Before concluding, we note the test design of Yusa et al. which intentionally tested a construction that was not taught. While the rationale is to do with confirming the generative adherence to UG-constrained development, we wonder whether one way forward in the difficult question of researching implicit knowledge might be to test constructions that are not taught, but that implicate the same linguistic principles of a cognate structure that is taught, as was done by Yusa et al. Admittedly, this kind of approach assumes a theory-dependent view of language, but it may still provide a useful way to investigate the effectiveness of instruction.

## **Conclusion**

The motivation behind this paper was to discuss SLA research from two different paradigms that are rarely represented in a single article, and to consider the current state of classroom research in order to explore what might be achieved if researchers from a generative orientation engaged with the language classroom. Accepting the conclusion that the most successful language teaching is likely to include focussed explicit instruction, we have argued that beyond this very general claim, SLA researchers would do well to recognise what GenSLA research has shown about development by different linguistic domain, as well as development which requires interaction between language domains. In other words, more careful attention to the nature of the linguistic property under investigation is needed. In short, it is the nature of GenSLA as a property theory (Gregg 2001) which may provide the most useful contribution to the existing agenda of classroom research. Moreover, there are implications for pedagogy. Knowing that some aspects of language – like functional morphology – seem impervious to mastery, while others – like core word order properties – seem to be acquirable, could help a teacher decide how to approach different aspects of grammar, and what to expect from instruction.

We have also argued that it is important for SLA researchers to avoid the instructed SLA bind so that type of instruction is not erroneously conflated with type of resulting knowledge. Moreover, we prioritise the testing of implicit knowledge rather

than explicit knowledge as the former is understood across frameworks to be 'better'. It is acknowledged, however, that isolating implicit knowledge is very difficult in terms of research methodology, especially for the vast majority of researchers who do not have access to brain scanning equipment.<sup>6</sup> We have also noted the difficulty of controlling for positive evidence when giving explicit instruction. However, given that neither theoretical stance has yet to determine the relationship between implicit and explicit knowledge, we find this question an area which warrants a collaborative approach to classroom research that goes beyond paradigm. In sum, we argue for an approach to classroom research in which 'what' is added to the question of 'how' language develops. The hope is that by placing the needs of the classroom first, we may find a shared focus that allows researchers to set aside paradigm differences and pursue a research agenda with the potential of providing some useful guidance for teachers facing the onerous task of teaching language.

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<sup>6</sup> Indeed, even access to neuroimaging data does not offer an easy answer to the question of whether implicit or explicit knowledge is accessed in a given task (Morgan-Short et al. 2012).

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