SSLA, **23**, 145–151. Printed in the United States of America.

INTRODUCTION

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Due to the recognition of the centrality of the lexicon for SLA theory (see the 1987 thematic issue of *SSLA*, edited by Susan Gass), the last few years have witnessed an increased interest in understanding lexical knowledge. As Gass (1999) reminded us, learning vocabulary in a second language is a complex task that involves much more than learning sound-meaning pairings; it also involves learning how lexical information is morphologically expressed and syntactically constrained. The present issue provides a natural sequel to the 1999 *SSLA* thematic issue, "Incidental L2 Vocabulary Acquisition," by addressing some of the questions raised in that volume, in particular the questions related to the intimate relationship between syntax and semantics at the lexical interface. This issue is devoted to the L2 acquisition of verb meaning and argument structure crosslinguistically, and it explores in detail the nature of linguistic systems that L2 learners acquire in this particular domain. The six central articles offer a coherent approach to the topic, using linguistic theory to help us understand the characteristics of learner grammars. Until recently, linguistic approaches to SLA have placed a strong emphasis on understanding the acquisition of functional categories, for example, and the acquisition of the lexicon has received less attention. Understanding how the lexico-syntactic interface is mentally represented, and how it evolves during the second language acquisition process, is crucial for developing an adequate theory of L2 knowledge in general, as well as for informing theories of the lexicon.

Argument structure is a complex level of representation of a predicate. It mediates between two other types of representations: the semantic or conceptual information of the lexical entries on the one hand, and the syntactic projection of arguments, or participants in the event described by the predicate, on the other. A classic assumption within generative grammar has been that

I would like to thank Lydia White, Patsy Lightbown, Bill VanPatten, Adele Goldberg, and Bonnie Schwartz for advice and support throughout the conception of this thematic issue. I also want to thank all the authors, the *SSLA* reviewers, and the editorial assistants of *SSLA*—Kim Swanson, Rachel Anderson, and Bruce Anderson—for their terrific work throughout the process. All remaining errors are my own.

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© 2001 Cambridge University Press 0272-2631/01 $9.50

https://doi.org/10.1017/S0272263101002017 Published online by Cambridge University Press

the lexicon is highly structured and that the syntactic behavior of verbs is strictly determined by their meaning (Levin, 1993; Levin & Rappaport Hovav, 1995; Pinker, 1989; Rappaport Hovav & Levin, 1998). The projection of arguments to syntactic positions is achieved by linking rules. These rules are sensitive to semantic notions like *change of state*, *direct causation*, *affectedness*, and the like. To take an example from Levin and Rappaport Hovav (1995), in English the argument of a verb that denotes the "immediate cause" of the eventuality described by the verb is its external argument and it maps to the subject position (e.g., *Mary smiled*); the argument that denotes a "directed change" is an internal argument and maps to object position (e.g., *The door opened*). However, most recent research has cast doubt on the assumption that all aspects of verb meaning and syntactic behavior are determined by the lexical entry (Goldberg, 1995; Jackendoff, 1996). The emerging picture is that event structure and syntax are also involved in argument projection. Ritter and Rosen (1998) have proposed that the variable behavior of verbs is determined by syntactic constructions (e.g., prepositional phrases, particles) that fulfill aspectual functions and as such are relevant for the linking of arguments. For example, in delimited events, affected arguments are objects and initiators are subjects. Consequently, verb meaning and syntactic behavior result from the interaction of lexical, aspectual, and syntactic information.

Although it is possible that the projection of arguments follows from universal linking rules (Levin & Rappaport Hovav, 1995; Pinker, 1989), there is considerable crosslinguistic variation in the particular aspects of meaning that are relevant for verb classification, as well as in the specific constructions in which verbs of a class participate. In the locative alternation *John loaded hay onto the wagon* and *John loaded the wagon with hay*, *the wagon* in the latter sentence is interpreted as completely affected in English, whereas affectedness might not be relevant for the locative alternation in Korean (Bley-Vroman & Joo, this issue). Furthermore, languages vary with respect to which aspects of verb meaning can be expressed in the verbal root and which others need to be realized as independent words or morphemes (Juffs, 1996; Talmy, 1985). Motion verbs with directional or locational PPs in English conflate motion and manner in the verb (*John walked to school*), whereas Japanese conflates motion and path (the equivalent of *John went to school walking*) (Inagaki, 1999).

Another source of variation in how languages classify verb meanings is exemplified by the notion of split intransitivity (the idea that intransitive verbs come in two varieties—unaccusatives and unergatives), which can have different morphological and syntactic expressions in different languages. Whether a given verb will be classified as unergative or unaccusative in a particular language depends on how the given language carves semantic space. For example, some verbs are always intransitive (such as *laugh*, a prototypical unergative verb, or *arrive*, a prototypical unaccusative verb). However, other unergative verbs show variable syntactic behavior when a prepositional phrase is added in the sentence (*Sue danced* vs. *Bill danced Sue across the*

https://doi.org/10.1017/S0272263101002017 Published online by Cambridge University Press

room), and so do other unaccusatives (*The ice melted* vs. *The heat melted the ice*). Thus, although some verbs are sensitive to the thematic and aspectual contributions of other elements in the sentences in which they appear, others are not sensitive to extrasyntactic elements. Ongoing research in lexical semantics is working toward a characterization of the interplay between semantic and syntactic aspects of verb meaning (Levin & Rappaport Hovav, in press; Sorace, 2000).

In sum, acquiring verbs entails learning the idiosyncratic meaning of the lexical entry (sound-meaning connection), the basic structural aspects of meaning that define verb classes (argument structure, event structure), how lexical information is projected onto syntax, and how syntax contributes to verb meaning. Moreover, learners need to acquire how lexico-syntactic operations are manifested morphologically in different languages. The picture that emerges attests to the complexity of the acquisition of the lexico-syntactic interface and the question that arises is how this interface is acquired in SLA.

Juffs (1996) has suggested that a logical problem exists with the acquisition of the lexico-syntactic interface because L2 learners have to discover which aspects of meaning (whether encoded lexically or derived syntactically) are relevant to acquire argument structure alternations in the target language through exposure to input (positive evidence). That is, learners do not usually encounter all verbs in their possible syntactic frames in the input, having to arrive at the correct lexico-syntactic representation from a few representative exemplars. Within this context, at issue is how lexical knowledge is represented initially and at different levels of interlanguage development, and how L2 learners eventually discover the right classification of verbs in the target language. Do they rely heavily on their L1 knowledge or do they resort to other default linguistic strategies? When the L1 and the L2 differ in substantial ways, are learners still sensitive to specific aspects of meaning that are syntactically relevant for the grouping of verbs into classes or is this capacity completely blocked after a critical period (Bley-Vroman, 1997)? If positive evidence is not sufficient for learners to converge on the analysis of the L2, does this suggest that explicit negative evidence (perhaps in the form of explicit instruction or error correction) is needed? These are all important questions in the field of SLA at large. Earlier studies on the acquisition of argument structure within the generative framework have focused mostly on the acquisition of English. A major strength of this collection is that it addresses these leading questions in English and other languages, such as in Spanish (Montrul), Japanese (Inagaki, Hirakawa, Sorace & Shomura) and Chinese (Oshita's reanalysis of Yuan's [1999] data).

The articles by Inagaki, Montrul, and Bley-Vroman and Joo deal with the question of transfer—the role of the L1 in the acquisition of an L2 at early stages of interlanguage development, in conjunction with other particular acquisition issues. In essence, these contributions support some version of the Full Transfer/Full Access hypothesis of Schwartz and Sprouse (1996). Previous research in the L2 acquisition of argument structure has shown that very of-

https://doi.org/10.1017/S0272263101002017 Published online by Cambridge University Press

ten overgeneralization errors occur: L2 learners extend argument structure alternations to verbs that do not alternate, or overextend other constructions to the wrong class of verbs. In many cases the source of these errors can be traced to the L1, in other cases L1 influence is not usually obvious, and errors appear to be developmental, possibly linked to default linguistic operations (Montrul, 2000). The opposite type of error has also been attested by White (1991): namely, that L1 influence can lead learners to take a conservative approach by which learners undergeneralize argument structure alternations in the L2 when such alternation is not part of their L1.

The articles by Inagaki and Montrul are independently concerned with how learners might eventually recover from L1-induced overgeneralization and undergeneralization errors. Both articles focus on how prepositional phrases (PPs) contribute lexical information in different languages. Inagaki investigates the acquisition of manner of motion verbs with goal PPs (*walk to school*, *run into the house*) bidirectionally (in Japanese by English speakers and in English by Japanese speakers). Japanese and English vary with respect to which of two meanings (MANNER or PATH) conflate with motion in the root verb. As a consequence of the different conflation patterns, Japanese does not allow manner of motion verbs with goal PPs (the equivalent of *John walked to school*), instead, MANNER has to be encoded syntactically (*John went to school walking*). Montrul also offers a bidirectional study of the acquisition of agentive verbs of directed motion (*march*, *walk*, *run*) in L2 English and L2 Spanish. These verbs are unergatives but become unaccusatives with the addition of a goal PP (*The soldiers marched to the tents*). In English, unlike in Spanish, these verbs participate in the causative alternation (*The captain marched the soldiers to the tents*). The two studies show that L2 learners distinguish among different verb classes and that L1 influence constrains the acquisition of argument structure early on. Whereas Inagaki speculates that explicit negative evidence in the classroom setting (in the form of error correction or focus on form) might be necessary to help learners overcome these errors, Montrul's results suggest that in some cases indirect negative evidence (noticing the absence of something in the input) may lead learners to converge on the right representation of the L2.

Bley-Vroman and Joo focus on those aspects of verb meaning that appear to be unlearnable if they are not part of the L1. In contrast to most of the studies in this issue, these authors contest the possibility that learners are sensitive to verb classes. They report on an experimental study on the acquisition of the English locative alternation (*John loaded hay onto the wagon* and *John loaded the wagon with hay*) by advanced Korean learners. Bley-Vroman and Joo claim that although learners can successfully acquire the broad aspects of meaning of this construction (the holism effect, or that *the wagon* in *John loaded the wagon with hay* is interpreted as completely affected in English), they cannot discriminate which verbs do not undergo the alternation (the narrow conflation aspects) to the same extent that native speakers can. Bley-Vroman and Joo's conclusion is that L2 learners can acquire aspects of meaning that show up crosslinguistically through positive evidence, whereas

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the narrow-class constraints that differ in the L1 and L2 seem not to be learned. In short, these narrow rules are candidates for fossilization (but see Juffs's commentary on this issue).

The next three articles deal specifically with unaccusativity, and focus on the extent to which interlanguage grammars are constrained by Universal Grammar and on the effects of lexical constraints in acquiring the L2 lexicon. Unaccusativity is a universal linguistic hypothesis establishing that there are two classes of intransitive verbs: verbs with nonagentive subjects (unaccusatives) and verbs with agentive subjects (unergatives). The nature of unaccusativity as a purely semantic (Van Valin, 1990) or purely syntactic phenomenon (Borer, 1994; Rosen, 1984) is still debatable. However, all authors in this issue adopt Levin and Rappaport Hovav's (1995) position, according to which unaccusativity is semantically determined but syntactically represented and languages manifest different syntactic reflexes for these two classes of verbs. Hirakawa investigates semantic and syntactic knowledge of the unaccusative-unergative distinction in L2 Japanese by using two syntactic constructions that have different semantic properties. By assuming that L2 learners are constrained by Universal Grammar, she shows that English learners at the intermediate level are able to discriminate semantically and syntactically between the two classes of verbs in Japanese, although advanced learners are less accurate on their performance with unaccusatives. Sorace and Shomura also investigate the unaccusative-unergative distinction in Japanese but focus instead on how the inherent meaning of unaccusative and unergative verbs plays a role in their rate of acquisition. By showing that unergative verbs are learned in a gradient fashion, they document how lexical constraints shape the development of grammatical knowledge, and suggest that lexical-semantic hierarchies are a potential universal characteristic of unaccusativity. However, Sorace and Shomura's unpredicted findings with unaccusative verbs are explained by the optional status of the syntactic reflexes of unaccusativity in the Japanese input. In common with previous investigations of unaccusativity in English and other languages, both Hirakawa and Sorace and Shomura have found that errors are more frequent or persistent with unaccusative than with unergative verbs.

Oshita offers an elegant developmental account for the above-mentioned widely observed difficulty with unaccusative verbs in L2 grammars crosslinguistically. He hypothesizes that L2 learners initially adopt a nontarget, yet linguistically licit, representation of unaccusative verbs, treating all intransitive verbs syntactically as unergatives. The subsequent restructuring of this initial representation at an advanced level accounts for why learners accept and produce unaccusative verbs in passive and postverbal subject constructions in English and have a tendency to reject preverbal subjects with unaccusative verbs in many other languages. Based on this hypothesis, Oshita reinterprets the results of existing research in L2 Japanese and offers a reanalysis of Yuan's (1999) results on the L2 acquisition of postverbal subject constructions with unaccusatives in L2 Chinese. In essence, Oshita's developmental account of unaccusativity represents a challenge for the Full Transfer/

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Full Access hypothesis of Schwartz and Sprouse (1996) because learners start with a nontarget rule for unaccusative verbs, despite the fact that the unaccusative-unergative distinction is present in their native grammars.

In closing this thematic issue, Juffs discusses theoretical and empirical considerations that emerge from the collective results of the six studies. A major concern is that most of these studies assume some version of the lexical determinism approach to the lexico-semantic interface. In light of the fact that linguistic theory is moving away from this particular position and toward a theoretical model that takes into account how other syntactic and aspectual elements determine verb meaning, perhaps the interpretation of the results of some of the studies presented here, such as Bley-Vroman and Joo's study, would benefit from consideration of the different aspects that play a role in verb meaning. At the methodological level, and in spite of the fact that most of the studies in this collection involved some sort of judgment data, Juffs raises the issue of validity and comparability of results. Major concerns are the use of scales of varying length across the different studies, and the importance of using some sort of visual data when testing aspectual notions. Despite these contested issues, Juffs finds that, thanks to the valuable experimental work of SLA researchers interested in linguistic theory, progress has been made both in validating and in casting doubt on linguistic claims through the use of control groups of native speakers, and in advancing our current state of knowledge on how the lexico-semantic interface is acquired in an L2.

In sum, the collective findings of the six articles point to the complexity of lexical knowledge and the contribution of Universal Grammar. In addition to the potential relevance of these findings to the field of linguistics at large, all of the articles address leading questions in SLA such as the role of the L1, the role of input (positive evidence, indirect negative evidence), and possible candidates for fossilization. Although no particular article deals with the role of instruction directly, some of them suggest that negative evidence might be necessary to help learners overcome errors induced by L1 influence and to avoid fossilization. Therefore, the findings of these studies have the potential to contribute to instructional practices, by suggesting which aspects of the acquisition of the lexicon, not usually represented in teaching materials or teaching interventions, might need to be stressed and which others should be ignored (Juffs, 1998; Toth, 2000). Hopefully, this thematic issue will inspire researchers to investigate the acquisition of the lexical-semantics interface using other sources of data and different methodologies, as well as to explore the role of instruction, communicative tasks, and the beneficial role of interaction in the acquisition of this particular type of lexical knowledge.

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