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TRANSITIVITY ALTERNATIONS IN L2 ACQUISITION

Toward a Modular View of Transfer

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This experimental study on English, Spanish, and Turkish as second languages investigates the interaction of universal principles and L1 knowledge in interlanguage grammars by focusing on verbs that participate in the causative/inchoative alternation (such as *break* in English). These verbs have the same lexico-semantic composition, but differ crosslinguistically as to how they encode the alternation morphologically. Results of a picture judgment task show that, as in L1 acquisition, L2 learners of Turkish, Spanish, and English with different L1s rely on a universal mechanism when learning transitivity alternations. L1 influence plays a prominent role in the morphological realization of the alternation. These findings suggest that UG and L1 knowledge may not affect all linguistic domains in the same way at a given stage of development. It is proposed that transfer is subject to modularity in interlanguage grammars.

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Linguists and psycholinguists working within the generative framework assume that children acquire their native language aided by Universal Grammar (UG), an innate component of the mind. UG postulates principles and parameters that are not part of general cognition or learning in general but are instead specific to language. The principles of UG constitute a theory of the initial state of the mind of the language learner and help to define a possible (narrow) set of hypotheses that children may entertain about grammar when exposed to input from the ambient language. For some L2 researchers, UG is also involved in some way in SLA, but this is certainly not the only source of knowledge available to L2 learners. There seems to be an overall consensus that the L1 plays an important role as well. Yet, considerable debate still exists as to the extent of such knowledge at the earliest stages of the acquisition process and throughout development.[1]

Most recently the question of sources of knowledge in L2 acquisition has been addressed within the context of the initial state (i.e., the starting cognitive state of the L2 acquisition process) and subsequent stages of interlanguage development, and a variety of theories have been proposed. Among these theories, two contrasting positions have emerged: the Full Access Model (henceforth FAM; Epstein, Flynn, & Martohardjono, 1996), and the Full Transfer/Full Access Hypothesis (henceforth FT/FA; Schwartz & Sprouse, 1994, 1996). Simply put, for the FAM, only UG is involved in the initial state of interlanguage development, whereas for the FT/FA the initial state is the L1, although it accommodates a role for UG as well.

These SLA theories have been formulated primarily to account for the ontology of functional categories (i.e., morphosyntax) in L2 acquisition. However, such claims about the initial state and development should also hold for the acquisition of other aspects of the grammar. This article extends the predictions of these two theories to the L2 acquisition of lexical-semantic knowledge and derivational morphology. The aim is to arrive at a more precise characterization of how exactly UG and L1 knowledge might interact in this linguistic domain and in a given stage of interlanguage grammars.

The acquisition of the lexicon, with particular focus on argument-structure alternations, has received some attention within the generative tradition (notably Bley-Vroman & Yoshinaga, 1991; Chen, 1996; Inagaki, 1997; Juffs, 1996; Montrul, 1997, 1999a, and 1999b; White, 1991a; White et al., 1998, 1999). Some of the findings can inform the existing debate on whether the role of the L1 or of UG is more prominent at the earliest stages of development. Argument-structure alternations are clearly poverty-of-the-stimulus phenomena because L2 learners, like L1 learners, have to discover the specific semantic constraints of verb classes that are syntactically relevant and determine particular alternations. The evidence from the input is not sufficient because learners do not usually encounter verbs in all their possible syntactic frames in the input, and they have to arrive at the appropriate representation of verbs based on evidence from a few exemplars. Furthermore, argument-structure alternations are not usually given much emphasis in language classes and text-

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books (Juffs, 1998). Moreover, L2 learners have also been shown to generalize argument-structure alternations and, with increased proficiency, to eventually unlearn the generalizations and apply the rule only to the correct class of verbs (Juffs, 1996).

The focus of this type of research has been almost exclusively English (two exceptions are Hirakawa, 1998, and Sorace, 1995). For example, studies on the L2 acquisition of the dative alternation (Bley-Vroman & Yoshinaga, 1991; White, 1987, 1991a) and the locative alternation (Juffs, 1996) have shown important L1 effects at the earliest stages of development, as predicted by the FT/FA. However, studies of the causative alternation (Hirakawa, 1995; Juffs, 1996; Moore, 1993) seem to support a more prominent role for UG because L2 learners of different L1 backgrounds make errors that cannot be traced back to their respective L1s and are similar to the errors documented in the L1 acquisition literature (i.e., developmental errors that arise from grammar restructuring). Thus, the findings of these English-based studies have not yet offered a clear understanding of how UG and L1 knowledge operate with the acquisition of lexical representations.

In this article, I examine the acquisition of the causative/inchoative alternation in English, Spanish, and Turkish as second languages. This alternation involves verbs that denote a change of state and can optionally be transitive or intransitive, such as *break, open,* or *close* in English (*Peter broke the window, The window broke*). The particular interest of this verb class lies in the fact that, although the semantic composition is uniform cross-linguistically, the three languages vary with respect to how they encode the alternation morphologically on the verb, either with zero or overt morphemes. Because this particular alternation shows both similarities (at the lexico-semantic level) and differences (at the morphological level) cross-linguistically, it is an ideal testing ground to explore the interaction of UG and L1 knowledge in interlanguage grammars. Three related studies on English, Spanish, and Turkish as second languages are presented to show that there is an interesting interaction between L1 and UG knowledge at different levels of linguistic representation. Results suggest that default linguistic mechanisms (from UG) play a role at the argument-structure level but that the L1 has a strong influence at the morphological level, particularly with the morphology of alternating verbs. Although these findings are largely consistent with the predictions of the FT/FA, as opposed to the FAM, they also suggest that L1 influence does not affect all linguistic domains in the same way and that it is subject to modularity in interlanguage grammars.

The remainder of the article is organized as follows. The first section gives an overview of transfer within the generative perspective. The next section describes the facts of the causative/inchoative alternation in English, Spanish, and Turkish and is followed by an outline of the theoretical approach assumed throughout the course of the study. Next, I review the acquisition of transitivity alternations in L1 acquisition, which is crucial to arrive at a proper understanding of the L2 acquisition situation. I then provide a review of ear-

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lier studies related to the acquisition of the causative/inchoative alternation in English. The hypotheses, description of the design, and results of the three related studies are then reported. The next section discusses the overall trends found in the three studies in terms of the hypotheses tested. The article concludes by considering the implications of the results for the acquisition of the lexicon as well as a theory of L2 linguistic competence.

GENERATIVE APPROACHES TO TRANSFER

In earlier work within generative approaches to SLA, the role of the mother tongue in L2 acquisition had an ambiguous status (see White, 1992, and Gass, 1996, for overviews). Some researchers regarded L1 influence as evidence against access to UG (Bley-Vroman, 1989; Schachter, 1988). The reasoning was as follows: If L2 learners use their L1 to analyze the L2, then they are not using UG because the L1 is the only kind of linguistic knowledge that they have available. This claim that UG and L1 knowledge are competing notions figures to some degree in Epstein et al.'s (1996) FAM. These researchers contended that the starting point of L2 acquisition is UG, as it is in L1 acquisition, and that the role of the L1 is at best minimal throughout development. Evidence in support of this position comes from research showing that very early L2 learners can learn properties of the L2 that are not represented in their L1, and that L2 learners of different language backgrounds show similar developmental patterns as L1 learners. In essence, L2 learners do not simply transfer structures directly from their L1s. By contrast, empirical evidence showing that L2 learners are constrained by their L1 from the very beginning would constitute evidence against this theory.

The most accepted view today is that transfer is not necessarily incompatible with UG knowledge, given that L1 is, by definition, a particular instantiation of UG. Rather, the view is that UG and L1 are complementary sources of knowledge that guide interlanguage development. This position was originally defined by White (1989) and in her earlier work on parameter resetting, and is presently advocated by Schwartz and Sprouse's (1994, 1996) FT/FA. If the L1 is a subset of UG, the question that arises is how to distinguish between a UG or an L1 effect in interlanguage grammars. An L1 effect would be identified when learners impose a linguistic analysis or representation from their L1 onto the L2, and this representation can be appropriate (if L1 and L2 match in this respect) or not (if L1 and L2 do not match) for the target language. By contrast, when L2 learners resort to a linguistically licit operation that is not necessarily present in their particular L1s but is nonetheless attested in other natural languages or particular stages of natural language development (such as L1 acquisition or diachronic change), then it is possible to trace that particular operation to UG.

For the FT/FA, the starting points of L1 and L2 acquisition are clearly not the same: Whereas UG is the initial state in L1 acquisition, the L1 in its entirety is the initial state in L2 acquisition. Because the L1 as a cognitive state

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is the point of departure, full transfer manifests itself early on in the L2 acquisition process—that is, "all the properties of the computational system transfer as a block" (Schwartz & Sprouse, 1996, pp. 66–67). Development is failure driven. After the initial state, when input can no longer be analyzed through the L1, L2 learners show evidence of full access to the language faculty when they resort to other UG options or to applications of operations allowed by UG. As I understand this position, there is an initial stage of absolute L1 influence and subsequent stages in which UG and L1 may interact, albeit indirectly.[2]

Empirical evidence showing that L2 learners impose the analysis of their L1 as their first approach to the L2, as well as evidence tracing different developmental paths among learners of different languages, would constitute support for the initial transfer stage. In contrast, if in a given linguistic domain a comparison is made of the developmental paths of L2 learners with different language backgrounds (whose language also differs typologically from the target language) and it is found that the developmental paths are similar and cannot possibly be traced back to the L1, there might be support against transfer and for UG. Perhaps a more compelling type of evidence against transfer—and for UG—would be to find that L2 learners, whose respective L1s have the same properties as the target language in the domain under investigation, do not adopt the analysis of their L1 to analyze the target language, and make errors that cannot be traced back to their L1. That is, if these learners were to adopt the analysis of their L1, they could converge on the grammar of the L2 from the very beginning, but this does not happen all the time.

There is an important body of experimental work confirming the predictions of the FT/FA. After evaluating the competing predictions of the FAM and FT/FA with lexical-acquisition data, in this article I largely support the FT/FA. I also propose that transfer does not necessarily operate as a block in all linguistic domains, but that it is subject to modularity in interlanguage grammars. Levels of linguistic representation (phonology, syntax, conceptual structures) and the associated interfaces are usually conceived of as modules within grammatical theory (Jackendoff, 1997). Webelhuth (1995) suggested that linguistic competence is, at least theoretically, decomposed into separate components. Thus, if grammar is organized in a modular way, there is no particular reason why all modules should be acquired with the same ease or approached in the same way. Transfer can be more advanced or pervasive in some domains than in others; that is, it can restructure or reconfigure earlier in some modules (perhaps syntax) but take longer in others (morphophonology or phonology). Given that both linguistic universals and language-particular properties characterize individual languages, it is not surprising if different areas of grammar are susceptible to different kinds of errors, or influence, in second language acquisition.[3] Thus, if interlanguage grammars are natural language grammars, they should also exhibit the interaction of language-particular and universal properties of language in a modular organization.

This article presents empirical evidence from an intermediate point in in-

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terlanguage development showing that UG and L1 influence manifest themselves in different theory-defined levels of linguistic representation—namely, the lexico-semantic interface and morphology. There are two possible reasons for this particular interaction: (a) The initial state is not the same across different levels of linguistic representation and, hence, the developmental paths are different; or (b) the initial state is the same (probably L1), but different levels of linguistic representation reconfigure at different stages (some earlier than others). The discussion and conclusion will largely support the latter.

TRANSITIVITY ALTERNATIONS IN ENGLISH, SPANISH, AND TURKISH

In order to understand the learning task of the L2 learners in this study, the characteristics of transitive, intransitive, and alternating verb classes in the three languages under consideration must be examined. English, Spanish, and Turkish are the target languages in the three studies reported and the native languages of the learners in each individual study. Crosslinguistically, prototypical change-of-state verbs are lexical causatives and participate in the causative/inchoative alternation. Verbs of this class (e.g., *break* in English) are optionally transitive or intransitive. The transitive form has a causative meaning (1a), whereas the intransitive form in (1b) expresses a change of state and focuses on the result.

(1) a. The man broke the window.
b. The window broke.

Whereas in English there is no overt derivational process relating the transitive and intransitive forms, in many languages the derivational relationship between both forms is expressed by overt morphemes.[4] However, even in those languages that encode this alternation overtly on the verb, morphological derivation is not marked uniformly across (or even within) languages (Haspelmath, 1993). For example, in Spanish, the transitive form is morphologically simple (2a) but the intransitive form is complex, consisting of the reflexive clitic *se* and the verb root (2b).

(2) a. *El enemigo hundió el barco.*
"The enemy sank the ship."
b. *El barco se hundió.*
the ship REFL sank
"The ship sank."

The reflexive clitic *se,* shown in (2b), is obligatory with these verbs and, as in passives and middles, it has been traditionally analyzed as the morphological expression of the suppressed external argument (Burzio, 1986; Cinque, 1988).

Most change-of-state verbs in Turkish belong to the causative pattern, where the transitive member of the pair is marked with causative morphology

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(3a) and the intransitive form is morphologically simple (3b). The causative is a bound morpheme, subject to the vowel and consonant harmony rules of the language, and the form is either *-DIr* or *-t,* depending on what precedes.[5] The latter allomorph is used with polysyllabic stems ending in a vowel or liquid consonant (Lewis, 1967, p. 144). Verbs that belong to this pattern are ungrammatical without the causative morpheme in a transitive configuration (3c):

(3) a. *Düşman gemi-yi bat-ır-mış.*
enemy ship-ACC sink-CAUS-PAST
"The enemy sank the ship."
b. **Düşman gemi-yi bat-mış.*
enemy ship-ACC sink-PAST
"The enemy sank the ship."
c. *Gemi bat-mış.*
ship sink-PAST
"The ship sank."

Like Spanish, Turkish also exhibits the anticausative pattern with other change-of-state verbs, such as *aç-mak* "open," *kapa-mak* "close," and *kır-mak* "break." The transitive form is simple but the intransitive form is complex, consisting of the verbal root and the morpheme *-il*.[6]

(4) a. *Hırsız pencere-yi kır-dı.*
thief window-ACC break-PAST
"The thief broke the window."
b. *Pencere kır-ıl-dı.*
window break-PASS-PAST
"The window broke."
c. **Pencere kır-dı.*
window break-PAST
"The window broke."

As with the reflexive clitic in Spanish, this suffix is obligatory and acts as a detransitivizing morpheme by reducing the valency of the predicate and deriving the inchoative form (4b). The anticausative morpheme is homophonous with the passive morpheme and also appears in middle constructions. Thus, example (4b) is also ambiguous with an eventive or a stative meaning (*The window was broken* and *The window is broken*).

Despite the productivity of this verb class cross-linguistically, there seem to be universal semantic restrictions on the causative/inchoative alternation. Not all verbs alternate in transitivity: Some are only transitive, but others are only intransitive. Semantically, alternating verbs denote a change of state; the transitive form has a causative meaning, whereas the intransitive emphasizes the final state. Transitive change-of-state verbs correspond to the aspectual class *accomplishments* (in the Vendler [1967]–Dowty [1979] classification) and, most of the time, intransitives to *achievements,* as represented in (5) by their corresponding semantic templates.

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(5) a. The thief broke the window. [x CAUSE [y BECOME *broken*]]
b. The window broke. [y BECOME *broken*]

Thus, semantically, the intransitive form is considered less complex than the transitive one because it has only one subevent (BECOME) whereas the transitive form has two (CAUSE and BECOME).

There are transitive verbs that have a causative meaning and also denote a change of state, such as *cut*. Yet these transitive verbs do not alternate in transitivity and are ungrammatical with causative (for transitive) or anticausative (for intransitive) morphology in all three languages (6b, 7b, 8b).

(6) a. Julia cut the chicken. English
b. *The chicken cut.

(7) a. *Julia cortó el pollo*. Spanish
"Julia cut the chicken."
b. **El pollo (se)* cortó.
"The chicken cut."

(8) a. *Kadın et-i kes-mış*. Turkish
woman meat-ACC cut-PAST
"The woman cut the meat."
b. **Et kes(-il)*-mış.
meat cut(-PASS)-PAST
"The meat cut." (inchoative)

The agent cannot be deleted with nonalternating transitive verbs to yield an inchoative interpretation, and this is what the examples above show. Note that, because anticausative morphology is homophonous with passive morphology in Spanish and Turkish, the intransitive form of transitive verbs with anticausative morphology could trigger a passive interpretation and be grammatical. Thus, although the passive reading is possible (given an appropriate context), the inchoative is not.

The causative morpheme in Turkish is also ungrammatical with transitive nonalternating verbs in transitive configurations. Although the causative suffix can in principle attach to all kinds of verbs, if the verb is already transitive it increases the verb's valency and adds an (implied) external argument, like a syntactic causative. Thus, (9) is ungrammatical if there is only one agent involved in the action.

(9) **Kadin et-i kes-tir-miş*.
woman meat-ACC cut-CAUS-PAST
"The woman cut the meat."
(but OK if the woman made someone else cut the meat)

The semantic relationship between the two variants of alternating verbs is also evident in their argument structure. The object of the transitive sentence is the subject of the intransitive one. Because the same thematic role—Theme—is involved in the two constructions, it has been assumed that these

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verbs are unaccusative in the intransitive form (Burzio, 1986; Levin & Rappaport Hovav, 1994, 1995; Perlmutter, 1978; Rosen, 1984).

The fact that intransitive alternating verbs are unaccusative would explain why unergative verbs do not alternate in transitivity, as examples (10b), (11b), and (12b).

(10) a. The boy cried. English
b. *The dentist cried the boy.

(11) a. *El niño lloró.* Spanish
"The boy cried."
b. **El dentista lloró al niño.*
"The dentist cried the boy."

(12) a. *Çocuk ağla-mış.* Turkish
child cry-PAST
"The child cried."
b. **Diş doktoru çocuğ-u ağla-mış.*
tooth doctor child-ACC cry-PAST
"The dentist cried the child."

Furthermore, in Spanish and Turkish, unergative verbs are ungrammatical with anticausative morphology:

(13) *El niño (*se) lloró.*
"The boy cried."

(14) *Çoçuk ağla(*-l)-mış.*
child cry(-PASS)-PAST
"The child cried."

However, other unaccusative verbs (including verbs of existence and appearance and verbs of directed motion) do not alternate either, as the examples in (15b), (16b), and (17b) illustrate.

(15) a. The rabbit disappeared. English
b. *The magician disappeared the rabbit.

(16) a. *El conejito desapareció.* Spanish
"The little rabbit disappeared."
b. *El mago desapareció al conejito.*
"The magician disappeared the little rabbit."

(17) a. *Papağan pencere-den kaç-mış.* Turkish
parrot window-ABL escape-PAST
"The parrot escaped through the window."
b. **Kız papağan-ı pencere-den kaç-mış.*
lady parrot-ACC window-ABL escape-PAST
"The lady escaped the parrot through the window."

As far as anticausative morphology is concerned, most unaccusative verbs (especially verbs of appearance and verbs of directed motion) in Spanish can

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optionally take the reflexive clitic, but there is often a change of meaning involved. The reflexive appears when the event contradicts normal expectations (Maldonado, 1988) or to mark the pointlike manner (telicity) of the action (Nishida, 1994), as shown in (18).

(18) *Juan apareció (se) apareció en la fiesta.*
"Juan appeared at the party."
(with *se,* he was probably uninvited)

Unlike in Spanish, the anticausative morpheme in Turkish is ungrammatical with other unaccusative verbs because it does not have a similar aspectual function, as (19) demonstrates.

(19) *Papağan pencere-den kaç(*-ıl)-mış.*
parrot window-ABL escape(-PASS)-PAST
"The parrot escaped through the window."

In short, unaccusative and unergative verbs in English, Spanish, and Turkish do not alternate in transitivity. The only way the meaning of causation can be expressed with these verbs is by resorting to other syntactic means, such as the periphrastic causative construction. In Spanish and English, the verbs *make* (20a, 21a) and *hacer* (20b, 21b) are required, whereas in Turkish, the same causative morpheme that attaches to a subset of alternating verbs also applies at the syntactic level (20c, 21c).[7] (The abbreviation AM in the glosses in [20] and [21] means "animacy marker.")

(20) a. The dentist made the boy cry.
b. *El dentista hizo llorar al niño.*
the dentist made cry AM-the boy
"The dentist made the boy cry."
c. **Diş doktoru çocuğ-u ağla-mış.*
tooth doctor child-ACC cry-PAST
"The dentist cried the child."

(21) a. The magician made the rabbit escape.
b. *El mago hizo desaparecer al conejito.*
the magician made disappear AM-the rabbit
"The magician made the rabbit disappear."
c. *Kız papağan-ı pencere-den kaç-ır-mış.*
lady parrot-ACC window-ABL escape-CAUS-PAST
"The lady let/made the parrot escape through the window."

THEORETICAL APPROACH: LEXICAL DECOMPOSITION

Having laid out the facts of verb classes and transitivity alternations in English, Spanish, and Turkish, in this section I outline the theoretical model as-

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sumed. This analysis, although controversial for some researchers, will prove to be helpful in accounting for the linguistic strategy that children resort to when learning transitive and intransitive verb classes in English and other languages.

According to lexical decomposition, verbs have two meanings: (a) the noncompositional idiosyncratic meaning of the verbal root, and (b) the structural meaning or event type information that can be decomposed into primitive meaning components and is syntactically transparent (Jackendoff, 1990). Most traditional analyses of the causative/inchoative alternation (Chomsky, 1970; Lakoff, 1968; Parsons, 1990; Pesetsky, 1995) have assumed that there is a semantic relationship between transitive and intransitive forms, as expressed by lexical decomposition. The intransitive form has the semantic template [*y* BECOME *predicate*]. The transitive form is derived from the intransitive one by the addition of an extra element cause ([*x* CAUSE [*y* BECOME *predicate*]]). In contrast, Chierchia (1989) and Levin and Rappaport Hovav (1994, 1995) assumed that the transitive form is the basic one and that the intransitive form is derived by a process of detransitivization, as represented in (22).

(22) $[x \text{ CAUSE } [y \text{ BECOME } \textit{predicate}]] \rightarrow [x \text{ CAUSE } [y \text{ BECOME } \textit{predicate}]]$
$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad \downarrow$
$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad \varnothing$

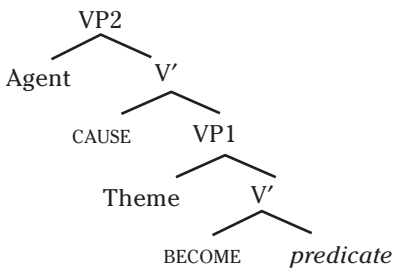
In this article I follow Levin and Rappaport Hovav's general proposal while adopting more recent modifications of a templatic approach to verb classes (Baker, 1997; Hale & Keyser, 1993; Travis, 1994).

Recent proposals in lexical semantics have assumed the distinction between S-syntax (or clausal syntax, i.e., above VP) and L-syntax (or lexical-syntax, i.e., below VP; Hale & Keyser, 1993). Structural verb meaning is decomposed into at least two types of information: event type and participants in the event (arguments). Event type information is further decomposed into primitive semantic elements such as CAUSE, BE, and BECOME, as in Dowty (1979). Following Amberber (1996), Harley (1995), Marantz (1997), and Travis (1994), I assume that these semantic primitives map onto an X-bar configuration as the heads of light verbs. Some transitive verbs are bi-eventive and consist of two VPs, headed by two subpredicates. Other verbs, such as some intransitives, are mono-eventive and have only one VP. Linking rules, or the way arguments map onto syntactic positions, are determined configurationally, as in Baker (1996, 1997) and Hale and Keyser (1993). Agents occupy the specifiers of CAUSE subevent (the upper VP in a bi-eventive predicate), whereas themes or patients occupy the specifiers of the BECOME subpredicate (the lower VP).[8]

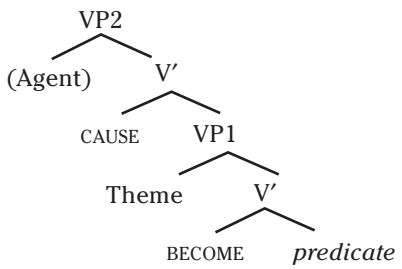
Transitive (and intransitive) forms of verbs that participate in the causative/inchoative alternation (henceforth *alternating*) as well as transitive change-of-state verbs that do not alternate in transitivity (*nonalternating*) are derived from a transitive, bi-eventive template with two VPs, as in (23a) and (23b).

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(23) a. Nonalternating: *cut*



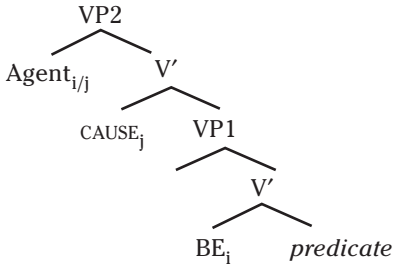
b. Alternating transitive and intransitive: *sink*



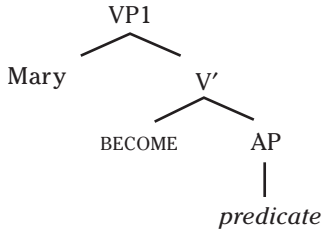
The upper VP (VP2) is headed by CAUSE and hosts the agent in its specifier. The head of the lower VP (VP1) is the BECOME subpredicate, which expresses the result. The theme occupies the specifier of BECOME. Though alternating and nonalternating verbs share the same lexical representation (they are both accomplishments) and broad aspects of meaning (argument structure and type of event), they differ with respect to narrower aspects of meaning, such as the nature of the agent. It is precisely this aspect of meaning that constrains the alternation. In nonalternating verbs, the agent is usually volitional and implies animacy. Unlike nonalternating verbs, the agent of alternating verbs is not necessarily volitional. It can be a natural force, an animate agent, or the object itself. Levin and Rappaport Hovav (1995) described this narrow semantic constraint as specified versus unspecified agency. Because the agents of alternating verbs are left unspecified, they argue, these verbs can alternate in transitivity by projecting the agent or not.[9] The verbal roots (*cut* and *sink*) are inserted in the template below VP1 and then move to the head of VP1 and conflate, in the sense of Hale and Keyser (1993), with the subpredicate BECOME. By head-to-head movement, they then proceed to the head of VP2 to pick up CAUSE on the way to the tense phrase (TP). By conflating with CAUSE, the verbs acquire a transitive-agentive interpretation.

Unergative and unaccusative verbs are represented in the templates in (24).

(24) a. Unergative: *laugh*



b. Unaccusative: *disappear*

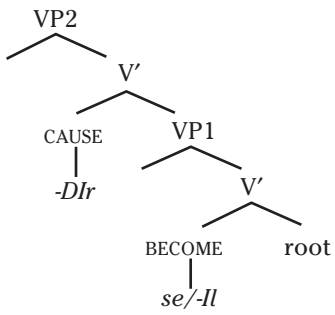


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Unergative verbs have an agentive (volitional) subject, whereas the subject of unaccusative verbs is nonvolitional and can also be inanimate. According to Levin and Rappaport Hovav (1995), these verbs are internally caused, because the volition of the agent makes the agent perform the activity.[10] Following Baker (1997), Hale and Keyser (1993), and Travis (1994), I assume that unergatives are also decomposed into two VPs, the higher one headed by CAUSE and the lower one by BE (or DO, for some authors). The lower predicate does not host any arguments in its specifier position. The agent is the argument of CAUSE and BE.[11] Finally, I assume that nonalternating unaccusative verbs are monadic. There is no CAUSE implicated in the event (hence no upper VP); only a result, depicted by BECOME (24b).

Having shown how alternating and nonalternating verbs are decomposed and how their lexico-syntactic structure is represented in the L-syntax, I will now illustrate the interaction of the basic template of alternating verbs in (23b) with causative and anticausative morphology in Spanish and Turkish. Following Amberber (1996), Harley (1995), and Travis (1994), I assume that the causative suffix in Turkish (*-DIr*) is the overt manifestation of the unconflated CAUSE predicate. Following Amberber, I also assume that anticausative morphology (Spanish reflexive *se* and Turkish passive *-Il*) can be taken as the overt manifestation of the BECOME subpredicate, base generated under the head of VP1. Generating these morphemes under BECOME captures their aspectual functions as well. However, the anticausative suffix also has the function of suppressing the agent; so it somehow has to block the specifier of CAUSE from being filled by an agent (25). English does not have overt morphemes.

(25)



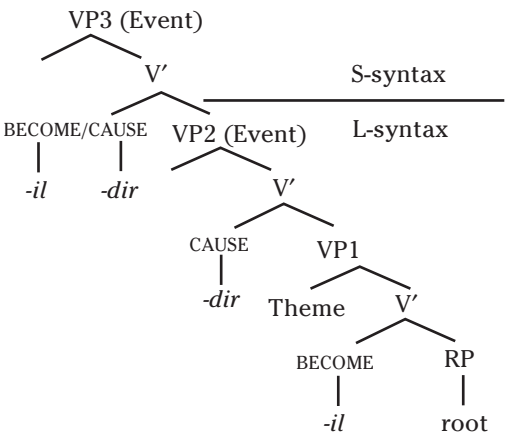
Those alternating verbs in Turkish whose intransitive form is morphologically simple (*batmak* "sink-INTR") are compatible with causative morphology (*bat-ır-mak* "sink-TRANS"). The causative morpheme activates the predicate CAUSE subevent and licenses the agent. Turkish roots that conform to the Spanish anticausative pattern (whose transitive form is morphologically simple, such as *kırmak* "break-TRANS") require anticausative morphology to suppress the agent and accusative case (*kır-ıl-mak* "break-INTR").

Finally, because I have mentioned that English, Spanish, and Turkish also

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have syntactic means of expressing causation with verbs that are not lexical causatives, such as unaccusative and unergative verbs, I need to show where these periphrastic causatives (the verbs *make* and *hacer*) are generated in the model presented. In fact, because these causatives are considered syntactic, they are generated at the S-syntax level, in another VP (VP3) that subcategorizes for a VP2, as complex predicates. As for Turkish, the causative morpheme applies both at the lexical level (with alternating verbs) and at the syntactic level (with other verbs; see note 5).

(26)



To illustrate this last point, in Turkish *kır-dır*-mak can only mean that someone made someone else break something, in which case the causative morpheme is generated in VP3, in the S-syntax, subcategorizes for a VP2, and introduces another Agent. The anticausative morpheme is also the passive morpheme, so it too applies at both levels of structure. Thus, the difference between L-syntax and S-syntax allows the structural distinction between these suffixes to be captured.

TRANSITIVITY ERRORS IN L1 ACQUISITION

Because the FAM claims that L1 and L2 acquisition are essentially the same (as opposed to the FT/FA), in order to evaluate the predictions of this theory with L2 acquisition data it is crucial to examine how children learn transitivity alternations in their L1. Additionally, after reviewing the major research in this area, I show how the theoretical model outlined in the previous section can explain the linguistic procedure that children utilize when learning this aspect of the lexicon.

The acquisition of transitive and intransitive verbs has been extensively investigated in L1 acquisition, in English (Bowerman, 1982, 1990; Braine, Brody, Fisch, & Weisberger, 1990; Hochberg, 1986; Lord, 1979; Maratsos, Gudeman, Gerad-Ngo, & DeHart, 1987) and in other morphologically complex languages

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(see Allen, 1996, for Inuktitut; Berman, 1993, 1994, for Hebrew; Pye, 1994, for K'iche Maya, among many others). Children learn the vocabulary of their language very fast and are usually very accurate. Occasionally, however, they make errors that are not reflected in the input, but these errors are usually very systematic, revealing in interesting ways the kinds of hypotheses that children entertain in their grammar construction process. Bowerman (1982) and Lord have documented transitivity errors in the speech of their own children. According to Bowerman, causative errors, when an intransitive verb is used in a transitive configuration with a causative meaning, as the examples (27a) and (27b) show, are more prominent than anticausative errors—that is, when a transitive verb is used in an intransitive configuration, as in (27c) and (27d). However, Lord claims that both types of errors occur equally often.

(27) a. Unergatives: *I'm *singing him.* (C, 3;1)
b. Unaccusatives: *I'm gonna put the washrag and *disappear something under the washrag.* (E, 3;7)
c. Causative: *I think I better put it down here so it won't *lose.* (B, 3;7)
d. Activity: *Do you think it'll *fix?* (J, 8;3)

These errors suggest a U-shaped development because their onset is preceded by a period (18–24 months) when children use some of these verbs (namely, intransitive verbs) correctly. At this stage, children also use alternating verbs (*open, close, drop*) in transitive and intransitive forms correctly. The second stage starts at about 24 months of age, which coincides with the child's first use of periphrastic causative constructions. At this time, the child starts to produce novel lexical causatives productively by taking any intransitive predicate (unaccusative, unergative, or adjective) and using it transitively to express a causative meaning. Finally, causative errors disappear gradually by age 6.

According to Bowerman (1990), linking rules (the way arguments map to syntactic positions) are not innate (cf. Pinker, 1989). Children make these errors because of the existence of verbs that participate in the causative/inchoative alternation. Because this alternation is not morphologically mediated in English, children assume that if the verb *break* can be optionally transitive or intransitive, so can *laugh* or *fix* or *disappear*. In essence, Bowerman contended that children are attuned to the patterns and frequencies in the input, and it is the input and language typology that drive the language-learning mechanism (Bowerman, 1997).

This explanation, based purely on language-particular properties, predicts that children whose languages express the causative/inchoative alternation morphologically should not assume that any verb can alternate because transitive and intransitive forms of alternating verbs bear different morphology. Yet this does not seem to be the case. For example, Allen (1996) reported that Inuit children use intransitive verbs in transitive configurations and fail to mark them with the required causative morphology. A similar type of error was reported by Aksu-Koç and Slobin (1985) with children learning Turkish.

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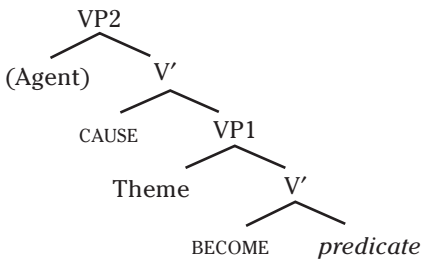
Berman (1993, 1994) noticed that children learning Hebrew initially choose a verb pattern that is neutral for transitivity and later on learn the correct binyam (consonantal template or root in semitic languages) for each verb class, as well as the relevant morphology. Thus, the above findings indicate that children learning morphologically complex languages also assume the incorrect intransitivity of some verbs, as if they had not yet learned the appropriate lexical-semantic information of these lexical items.

The fact that children eventually unlearn overgeneralizations and manage to apply the rules to the correct type of verb suggests that acquisition of this alternation is a clear poverty-of-the-stimulus phenomenon given that input alone cannot explain how children recover from these errors. At some point in their development, children discover the structural aspects of meaning that define verb classes and learn to constrain argument-structure alternations.

With the acquisition of derivational morphology, initially, children either tend to omit the relevant morphology, as in Turkish and Inuktitut, or adopt a neutral pattern that they apply to newly acquired verbs, as in Hebrew. Once the relevant morphology is acquired, children overapply the morphology in systematic ways until they finally expunge ungrammatical forms from their grammars. Given the above cross-linguistic findings, these transitivity errors appear to be universal, arising from incomplete learning of lexical entries initially, and the application of innate linking rules, as Pinker (1989) proposed.

Assuming the templatic approach to verb classes described in the section on transitivity alternations, templates are part of knowledge of UG. It appears that children fall back on a default transitive template (repeated in [28]) when they know the broad meaning of a given verb but have not yet learned the specific semantic contents of the template that determine which verbs are only transitive, which ones are only intransitive, and which ones alternate. Of the four templates represented in the section on lexical decomposition, perhaps this template is perceived by learners as the most basic because it generates both transitive and intransitive verbs. Children rely on this template when they confuse the content of the lower subpredicates (BE, BECOME, STATE) and fail to notice the specific semantic restrictions on the agent (specified vs. unspecified) that determine when the CAUSE subpredicate should be activated.[12]

(28)



If it is assumed that children resort to this default option, an explanation can be given for why causative and anticausative errors occur. In the case of

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causative errors, children map an intransitive verb onto this template, activate the CAUSE subpredicate, and project an agent in its specifier. Conversely, anticausative errors result when a transitive verb is mapped onto this template, thereby suppressing CAUSE and the external argument.

THE LEXICON IN L2 ACQUISITION

If children's transitivity errors are the result of reliance on a default template available from UG, the question arises whether L2 learners also rely on this linguistic procedure when learning aspects of argument structure and the lexicon. According to the claims of the FAM, given that L1 and L2 acquisition are alike because they are constrained by UG from the very beginning, then L2 learners should make similar transitivity errors when acquiring transitive, intransitive, and alternating verb classes in a second language, regardless of their L1 and of the target language. In contrast, the FT/FA, according to which the initial state of L1 and L2 acquisition are different, predicts that L2 learners should not make transitivity errors in the target language, because adopting the analysis of their respective L1s should converge on the right analysis of the L2, at least at the level of argument structure.[13]

There has been some investigation of the causative/inchoative alternation in English as a second language. Moore (1993) reported that L2 learners of different language backgrounds overgeneralize causativity to unaccusative and unergative verbs. Similar findings were reported for unergative verbs by Juffs (1996) and Ju (2000) with Chinese learners of English, and Oshita (1997) with Spanish, Italian, Korean, and Japanese learners. There is another type of error discussed in the L2 literature that may be related to the issue of transitivity. This error type concerns passive unaccusatives, or when learners incorrectly use unaccusative verbs in passive sentences (e.g., *The most memorable experience in my life was happened when I was . . .*), as found in studies of production data by Zobl (1989) and Yip (1995) and experimental studies by Hirakawa (1995), Balcom (1997), Oshita, and Ju. Yip and Balcom have independently explained these errors by analogy with alternating unaccusatives, which can be passivized (*The window was broken by the thief*). Not everybody agrees with this explanation (cf. Juffs, Oshita).

All of these studies seem to suggest that L2 learners, like L1 learners, make causative errors with intransitive verbs in English, regardless of their L1. If L2 learners are also making these errors because they resort to the template of alternating verbs, errors should be observed errors in the opposite direction—that is, transitive verbs in intransitive configurations (*The chicken cut*) as well. However, very little is known about these errors in English interlanguage. If the phenomenon is universal, as it appears to be in L1 acquisition, an issue worth investigating is whether these transitivity errors also occur in the L2 acquisition of different languages, in particular languages that signal the causative/inchoative alternation with overt morphology on the verb. My intuition is that learning the derivational morphology of alternating verbs will

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be greatly affected by the learner's L1. I turn to the next section to present the hypotheses of a cross-linguistic study that addresses precisely these issues.

THE L2 ACQUISITION OF TRANSITIVITY ALTERNATIONS IN ENGLISH, SPANISH, AND TURKISH

In this section I describe three related experimental studies on English, Spanish, and Turkish as second languages. The research questions that underlie the studies are as follows:

1. How do L2 learners learn transitivity alternations? Do they make errors similar to those reported in L1 acquisition?
2. How do UG and the L1 constrain the acquisition of the lexicon in interlanguage grammars?
3. If L2 learners make errors, do similar developmental paths emerge in the three languages?

Before formulating the hypotheses in terms of whether UG or the L1 constitutes the initial state, it is important to spell out what acquiring the lexicon entails. In order for learners to acquire the causative/inchoative alternation, they must first learn the noncompositional idiosyncratic meaning of a verb. If learners cannot distinguish the difference in meaning between *break* and *cut* then they are unlikely to know the syntactic behavior of these lexical items. To acquire that a verb expresses a change of state (a broad range constraint in Pinker's [1989] sense), for instance, a learner must know that there is a systematic relationship between semantic predicates (CAUSE, BECOME, BE) and how the participants of the event (Agent, Patient) map onto syntactic functions (subject, object). These are linking rules. Finally, in order to acquire whether a change-of-state verb alternates or not, a learner must acquire the narrow aspects of meaning that constrain the causative/inchoative alternation, such as the nature of the Agent (specified or nonspecified) and the nature of the cause event (internal or external). Though linking rules are universal and do not vary from language to language, narrow aspects of meaning, which are also part of the UG inventory in Pinker's system, may be syntactically relevant for some languages but not for others.

Hypotheses

If the L1 as a block is the initial hypothesis for the acquisition of the lexicon, as Schwartz and Sprouse (1996) contended, then, unlike the L1 acquisition situation, no transitivity errors with unaccusative, unergative, and nonalternating verbs should occur because, given that the three languages converge at this level of representation, L2 learners should transfer both broad and narrow aspects of meaning directly from their L1. Nonconvergence with the target languages in this domain would constitute evidence against transfer. If L2

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learners make the same type of errors attested in L1 acquisition, this might constitute evidence for UG.

If there is initial transfer in the morphological domain, errors with the overt or covert, causative or anticausative morphology of alternating verbs will be systematic and will conform to the learners' L1s. Thus, different error patterns are to be expected in the acquisition of English, Spanish, and Turkish, as well as qualitative differences between L2 learners of different L1s. In particular, in the English study, Turkish-speaking and Spanish-speaking learners are expected to have difficulty with the zero morphology of intransitive alternating verbs. In the Spanish study, English learners are expected to have difficulty with the reflexive morphology of intransitive forms but no difficulty with the zero-derived transitive forms of alternating verbs. Turkish learners of Spanish will not have problems with the reflexive morphology of intransitive forms. Finally, in the Turkish study, English and Spanish learners of Turkish are expected to behave alike with transitive and intransitive forms of alternating verbs of the causative pattern but to behave differently with alternating verbs of the anticausative pattern. Spanish speakers should have no problems with the morphology of intransitive verbs because this same morphological pattern exists in their language, whereas English speakers, whose language differs in this respect, will be quite inaccurate. Evidence against transfer and for UG would be provided if the patterns of errors are alike in the three languages, regardless of the L1 of the learners.

Participants

A total of 66 subjects participated in the English study, 70 in the Spanish study, and 60 in the Turkish study, including learners and native speaker controls. Information regarding the number of participants in each study by language group, as well as their mean age at the time of testing and mean age of first exposure to the target language, is summarized in Table 1. Except for the Spanish- and Turkish-speaking learners in the English study, whose mean age and age of exposure are significantly different, there were no other differences between the groups in the other two studies.

Participants in the three studies were recruited from different educational institutions and tested in different countries. The 18 Turkish-speaking learners of English were tested in İstanbul, Turkey. They were enrolled in an intermediate intensive English class at the Tömer School of foreign languages. Testing for this group took place after their regular class time. The 29 Spanish-speaking learners of English were adolescents taking an intermediate English class in a private high school in Mar del Plata, Argentina, where the testing took place. These students took the test during their regular class time. Some of these learners had been exposed to English at an earlier age in elementary school, and some others were taking additional private English lessons on top of the regular course offered in high school.

The 19 native speakers of Turkish in the Spanish study were taking interme-

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Table 1. Participants' information

Participant groups	*n*	Mean age (range)		Mean age of exposure (range)	
English study (*n* = 66)					
English-speaking controls	19	24.89	(17–40)	—	
Spanish-speaking learners	29	15.62	(15–17)	8.10	(6–12)
Turkish-speaking learners	28	19.16	(14–22)	12.83	(10–19)
Spanish study (*n* = 70)					
Spanish-speaking controls	20	40.45	(21–65)	—	
English-speaking learners	31	20.45	(18–28)	16.75	(12–25)
Turkish-speaking learners	19	21.68	(18–42)	19.31	(17–33)
Turkish study (*n* = 60)					
Turkish-speaking controls	18	28.61	(21–52)	—	
Spanish-speaking learners	24	31.57	(27–36)	26.85	(24–31)
English-speaking learners	18	31.05	(20–55)	27.50	(20–43)

diate Spanish at İstanbul Technical University, where the testing took place. This was their third semester of Spanish language study. As for the English-speaking learners of Spanish, 14 of them were tested in Montreal and were enrolled in an intermediate Spanish class at McGill University. These learners had intermediate knowledge of French. The remaining 17 participants were recruited in the United States and did not have knowledge of any other foreign language. They were students of intermediate Spanish at the State University of New York, in Plattsburgh.

All of the English- and Spanish-speaking learners of Turkish were recruited and tested in İstanbul, Turkey. Thirteen of the English-speaking learners were enrolled in an intermediate intensive Turkish language class at Boğaziçi University Summer Program. The remaining five English-speaking learners of Turkish were recruited individually; these were American and British people, married to Turks, who were living in the city at the time and who had studied Turkish at the Tömer School of foreign languages. The 24 Spanish-speaking learners of Turkish were adults of Latin American and Spanish origin living in Turkey for work or marriage reasons. Four of them were taking the same intensive intermediate Turkish language course that the English participants were taking at the Tömer School. The remaining subjects had already completed the intermediate Turkish course at the same institution. Some of them worked at the Spanish Consulate, and others had been living in İstanbul for up to 8 years. The native speakers who acted as controls for each study were tested in Montreal (the English native speakers), Turkey (the Turkish native speakers), and Argentina (the Spanish native speakers), respectively.

Given that the participants in these studies were at the intermediate level, the issue of the initial state cannot be directly assessed. However, recall that the FT/FA (and the FAM) are theories not only of the initial state, but also of development. Thus, it is still possible, although certainly not ideal, to make

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indirect inferences about the initial state by looking at a particular point in development.[14]

Test Instruments

In order to be able to make direct comparisons across the three studies, the exact same tests were used in the three studies. Two native speaker informants assisted with the translations of the Turkish versions. One of the most difficult but fundamental steps in studies involving different target languages and L2 learners recruited from different language backgrounds, countries, and educational institutions is to ensure that the participants are comparable in proficiency. Most studies on English adopt sections of the TOEFL or the Michigan Proficiency Test, both validated measures, to establish a baseline of proficiency in English. However, no such equivalent validated tests exist in Spanish or Turkish.[15] Thus, a cloze test was used for these purposes in the three studies.[16] The original English passage, which was translated into Spanish and Turkish for this study, has been successfully used in other studies, such as Chen (1996) and Slabakova (1997). In the Spanish and English versions of the cloze test, every sixth word was deleted. Because Turkish is an agglutinative language (as opposed to Spanish and English, in which morphemes stand for independent words), every fifth word was deleted from the original passage. The number of blanks for the Spanish and English tests was 40, but for the Turkish test it was 28. Because of the different number of blank spaces in the English, Spanish, and Turkish versions, results were computed on percentages rather than raw scores, so as to make the three tests as comparable as possible. All of the native speakers and the learners took the cloze test.

The second test used was a vocabulary translation task (VTT), which only learners took. The purpose of this task was to ascertain that L2 learners knew the meaning of the lexical items involved in the main task. If learners did not know the broad meaning of a lexical item, it would be even less likely that they would know the verb's transitivity. Again, as much as possible, care was taken to keep the tests in the three languages as comparable as possible and to choose lexical items that worked for the three languages, so that the same test could be used throughout. Here, learners were presented with a list of 40 verbs in infinitive forms, 21 of which were relevant to the investigation (the other 19 were fillers). Learners had to translate each verb into their respective L1s. The list of the 21 verbs in each language is presented in Table 2.

The main hypotheses were investigated using a picture judgment task (PJT). This test consisted of pairs of sentences presented in the context of a picture. Next to each sentence in the pair there was a 7-point scale ranging from 3 (=very natural) to –3 (=very unnatural). Participants had to judge each sentence in the context provided by the picture both for grammaticality and for meaning. A plain grammaticality judgment task was not appropriate to test transitivity alternations because a sentence like *The thief made the window break,* for instance, could be grammatical if no specific context is provided.

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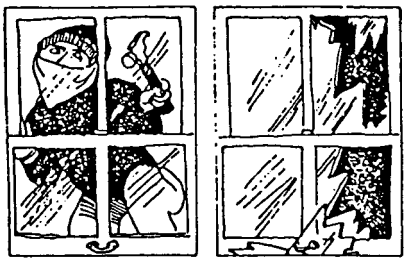
Table 2. Verbs used in the English, Spanish, and Turkish vocabulary translation tasks

Verb type	English	Spanish	Turkish
Alternating	open	abrir	açmak
	close	cerrar	kapamak
	break	romper	kırmak
	sink	hundir	batmak
	melt	derretir	erimek
	burn	quemar	ölmek (“die”)
Nonalternating	cut	cortar	kesmek
	write	escribir	yazmak
	paint	pintar	boyamak
	hang up	colgar	asmak
	pack	empacar	hazırlamak (“gather”)
Unaccusative	disappear	desaparecer	yokolmak
	enter	entrar	içeri girmek
	escape	escapar	kaçmak
	leave	salir	çıkmak
	appear	aparecer	görünmek
			kanamak (“bleed”)
Unergative	bleed	sangrar	—
	cry	llorar	ağlamak
	laugh	reir	gülmek
	dance	bailar	dans etmek
	fly away	volar	uçmak

However, if this same sentence appears in a context where the thief is breaking the window himself, then such a sentence, although not necessarily ungrammatical, it is not appropriate.

Half of the pictures depicted actions involving only one participant (e.g., the window as Theme), and the other half depicted actions involving two participants (e.g., the window as Theme and the thief as Agent). Pictures with two participants were presented with transitive pairs of sentences, and intransitive pairs were used with pictures depicting only one participant. All verbs appeared in transitive and intransitive forms. In the transitive sentence pairs, one sentence used the verbal root in the past tense and the other sentence in the pair used the periphrastic verbs *make* and *hacer* in the English and the Spanish versions and the causative morpheme *-DIr* in the Turkish version. Intransitive sentence pairs consisted of one sentence with the underived verb in the past tense and another sentence that had the periphrastic verb *get* in the English version, the reflexive clitic *se* in the Spanish version, and the anticausative morpheme *-il* in the Turkish version. An example is given in Figures 1 and 2. The advantage of this task over a production task (which has also been used widely to investigate this issue in L1 and L2 acquisition) is that, first, L2 learners do not have to produce any form, they just have to give a judgment over correct and incorrect forms. Furthermore, very often with production tasks, learners fail to produce the structure(s) that the researcher is

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The thief broke the window. -3 -2 -1 0 1 2 (3)

The thief made the window break. (-3) -2 -1 0 1 2 3

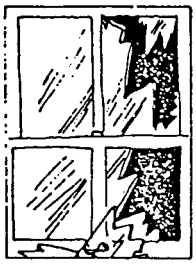
El ladrón rompió la ventana.

El ladrón hizo romper la ventana.

Hırsız pencere-yi kır-mış.

Hırsız pencere-yi kır-dır-mış.

Figure 1. Picture with transitive sentence pairs.



The window broke. -3 -2 -1 0 1 2 (3)

The window got broken. (-3) -2 -1 0 1 2 3

La ventana rompió.

La ventana se rompió.

Pencere kır-mış.

Pencere kır-ıl- mış.

Figure 2. Picture with intransitive sentence pairs.

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looking for and many answers end up being discarded. The Spanish and English versions of the test included a total of 83 pictures and pairs of sentences, whereas the Turkish version had a total of 78 pictures and sentence pairs. There was an approximately equal number of grammatical and ungrammatical sentences in each test.

RESULTS

The Cloze Test

The cloze test in each language was graded following an exact word criterion. If a blank was filled with exactly the same word as in the original passage, 1 point was assigned. No point was given for blank spaces or synonyms of the word in the original passage. To illustrate how the proficiency levels were decided, the English cloze test is examined.

The native speakers scored between 57.5% and 77.5% accuracy, the mean being 66.8%. The 47 learners in the English study scored between 12.5% and 47.5%. The Turkish speakers scored the lowest, their scores ranging between 12.5% and 22.5%, and the Spanish speakers scored between 25.0% and 47.5%. No learner scored between 50.0% and 57.5%, which was the lowest score of the native speakers. Thus, all learners were considered intermediate, and there were no advanced learners. The 47 intermediate learners were split into three proficiency levels: low-intermediate (12.5–22.5%), intermediate (25–35%), and high-intermediate (37.5–47.5%). Admittedly, this is an arbitrary criterion, but a statistical test was used to support such a division: the goodness-of-fit test (a regression test).[17] In short, based on the scores of the native speakers and the learners in each study, L2 learners were split into levels of proficiency, following the criteria described above.

The same procedure was used in the Spanish and Turkish studies. Subjects are thus grouped by language and, in some cases, a language group is split into two different proficiency levels. In each study, there were significant differences in the mean accuracy score between all the proficiency groups (i.e., the native speakers, high-intermediate, intermediate, and low-intermediate learners). The means, standard deviations, and ranges for each cloze test are presented in the Appendix. Table 3 shows the final grouping of subjects in each study according to L1 and proficiency level. As Table 3 shows, in all of the studies there were two language groups; but in terms of proficiency levels, in the English study there were three proficiency levels, whereas in the Turkish and Spanish studies there were only two.

The Vocabulary Translation Task

Results of the VTT show that most verbs in all the verb classes tested were known to almost all learners, but some groups had difficulty with particular verbs within a single class. Table 4 summarizes the accuracy percentage for

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Table 3. Number of participants in each study according to L1 and proficiency level

English study	Spanish study	Turkish study
19 Native English speakers	20 Native Spanish speakers	18 Native Turkish speakers
12 High-intermediate learners (Spanish L1)	19 Intermediate learners (Turkish L1)	18 Intermediate learners (English L1)
17 Intermediate learners (Spanish L1)	15 Intermediate learners (English L1)	14 Intermediate learners (Spanish L1)
*18 Low-intermediate learners (Turkish L1)	16 High-intermediate learners (English L1)	10 High-intermediate learners (Spanish L1)

*Only the English study involved learners classified as low-intermediate.

Table 4. Accuracy percentage in the vocabulary translation task

	Learner level	Accuracy
English study		
Turkish L1	Low-intermediate	83%
Spanish L1	Intermediate	93%
Spanish L1	High-intermediate	98%
Spanish study		
Turkish L1	Intermediate	83%
English L1	Intermediate	86%
English L1	High-intermediate	92%
Turkish study		
English L1	Intermediate	80%
Spanish L1	Intermediate	84%
Spanish L1	High-intermediate	93%

the three studies.[18] These percentages show that, on average, learners were quite accurate with the translation of individual verbs. Interestingly, there are problems with specific lexical items and these items are consistent across the three languages. For example, among the alternating class, the most problematic lexical items were *sink* and *melt,* for the lower level learners (low-intermediate and intermediate) in each study. *Appear* and *disappear* were problematic for the Turkish learners both in the Spanish and English studies, as was the unergative verb *bleed*. The Turkish verb *kana-mak* "bleed" was also problematic for intermediate learners of Turkish. All of the verbs that were unknown to individual learners were excluded from subsequent analyses of their results in the main task. Thus, the results for verbs like *melt* or *sink,* for instance, are only based on those subjects who gave an accurate translation in the VTT, following the same procedure carried out by Juffs (1996) and White et al. (1998, 1999).

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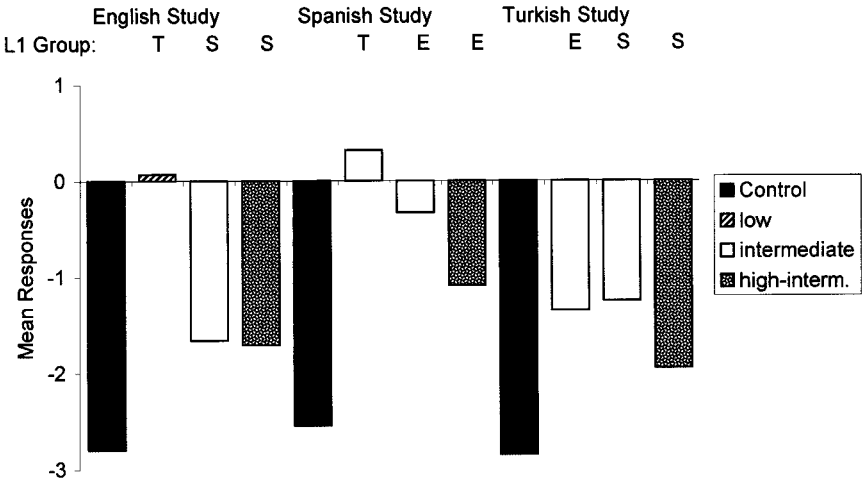


Figure 3. Acceptance of transitivity errors with unaccusative verbs across the three studies; E = English, T = Turkish, S = Spanish.

The Picture Judgment Task

Results of the PJT are discussed in terms of the research questions and hypotheses formulated.[19] The three studies were treated independently for statistical analysis. Results were computed on mean accuracy scores based on the numerical responses of the scale provided. In each case an omnibus MANOVA with repeated measures was performed for all grammatical and ungrammatical sentences with sentence types and language groups as variables. For post hoc procedures, independent one-way ANOVAs and *t* tests for specific contrasts were computed.[20] The results of the three studies are presented and discussed together in the text, especially in the discussion of argument-structure errors. This procedure has been questioned by a reviewer, but I consider that such presentation is warranted to appreciate the developmental trends across studies that I want to emphasize, at least visually. In the discussion of the morphological properties of alternating verbs, I deal with each language independently because the languages vary in this respect.

Evidence for Overgeneralization Errors. One of the research questions underlying the three studies was whether L2 learners overgeneralize the default template and accept causative errors with unergative and unaccusative verbs, as children acquiring their L1 do. If they do, the results would support the FAM, but if they fail to do so, they provide support for the FT/FA. Figure 3 presents the mean accuracy scores of causative errors (when an intransitive verb is used in a transitive configuration with a causative meaning) with unaccusative verbs (**The magician disappeared the rabbit*). Responses from 0 to 3

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represent grammatical responses and responses ranging from –3 to 0 represent ungrammatical responses.

The trends are very similar across studies. The control groups in the English, Turkish, and Spanish studies responded similarly in rejecting these ungrammatical sentences. The English study involved low-intermediate Turkish learners of English and two groups of Spanish learners (intermediate and high-intermediate). Significant differences were found across language groups (Turkish vs. Spanish; $F(3, 62) = 20.886$, $p < .0001$). However, because the Spanish and Turkish groups are not comparable in proficiency, this result cannot be explained through L1 influence. In other words, these results could suggest an L1 effect or a proficiency effect, but it cannot really be determined because both factors appear to be confounded.

The other two studies suggest that proficiency level, rather than L1 transfer, might be responsible for lower rates of responses among learners. The Spanish study involved two intermediate-level groups (Turkish and English) and a high-intermediate group (English). In this study, the control group was significantly different from the three groups, $F(3, 66) = 10.02$, $p < .0001$, and there were statistical differences between the intermediate and high-intermediate levels, $p < .004$, which suggests that causative errors disappear gradually over time and with increasing proficiency.

Additionally, significant differences between the control group and the two intermediate-level groups (English and Spanish) were also found in the Turkish study, $F(3, 56) = 5.3$, $p < .003$. The high-intermediate Spanish group was not statistically different from the controls, although the mean scores are much lower. In short, the emerging trends with transitive unaccusative errors in the Spanish and Turkish studies fail to show clear L1 effects. The same cannot be categorically claimed for the English study owing to the discrepancy of proficiency levels, but the possibility that the statistical effects are related to language proficiency cannot be ruled out, either. Thus, the overall trends of the Turkish and Spanish studies and probably the English study suggest that these errors are better characterized as developmental in nature.

Figure 4 summarizes the results of transitivity errors with unergative verbs (**The dentist cried the child*), which are very similar to the results of unaccusative verbs. As with unaccusative verbs, in general, the statistical effects found also appear to be related to language proficiency rather than language group. For example, in the English study there were significant differences between the low-intermediate Turkish learners and the three other groups, $F(3, 62) = 15.025$, $p < .0001$. In the Spanish study, there were significant differences between the control group and the three groups of learners, $F(3, 66) = 8.79$, $p < .0001$, whereas in the Turkish study the two intermediate groups (English and Spanish) were significantly different from both the control group and the high-intermediate Spanish group, $F(3, 56) = 6.31$, $p < .001$. Except for the Spanish study, in which there were no significant differences among levels, the trends observed across studies fail to attest clear L1 effects (although the effect of proficiency in the English study is again confounded with L1 group).

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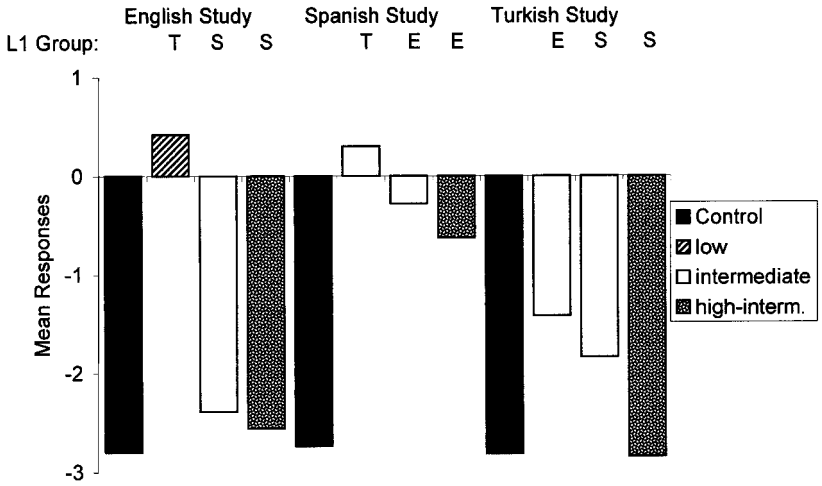


Figure 4. Acceptance of transitivity errors with unergative verbs across the three studies; E = English, T = Turkish, S = Spanish.

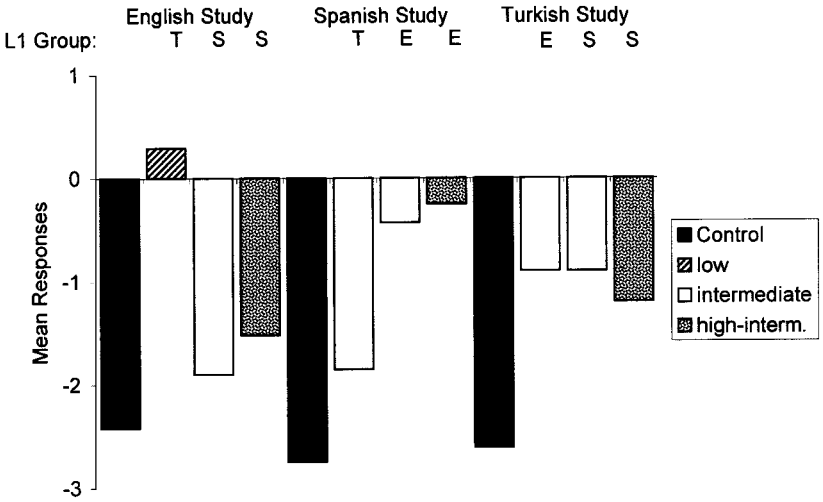


Figure 5. Acceptance of transitivity errors with nonalternating verbs across the three studies; E = English, T = Turkish, S = Spanish.

If L2 learners make causative errors due to analogy with alternating verbs, then one could expect overgeneralization of the anticausative operation as well. Figure 5 presents the results of anticausative errors (when a transitive verb is used in an intransitive sentence; e.g., **The picture painted*). In contrast to the results of unaccusative and unergative verbs, these results are less uni-

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form across studies. The results of the English study show that the low-intermediate Turkish learners are very inaccurate at rejecting incorrect intransitive versions of nonalternating verbs, but the two Spanish groups are not, $F(3, 62) = 6.309$, $p < .0001$. Given that the Turkish group is of lower proficiency, this result cannot possibly be attributed to an L1 effect, but again, there is no way to tell.

However, a clear unexpected L1 effect emerges from the Spanish study, in which the intermediate Turkish group was significantly different from the two English groups, $F(3, 66) = 15.26$, $p < .0001$. The sharp contrast between language groups attests to morphological considerations rather than to the internalization of the incorrect lexico-semantic structure for these verbs. This is evident from the results from intransitive versions of nonalternating verbs with the *se* clitic (**El cuadro se pintó* "The picture painted"), which showed that the Turkish learners accepted these sentences but the control group and the English groups rejected them. In contrast to the Spanish and the English studies, the Turkish study revealed no significant differences among language groups, levels, or learners, but there were significant differences between the learners and the control group, $F(3, 56) = 3.76$, $p < .016$.

Although errors with nonalternating verbs did occur in the three languages, in some cases these errors are due to language proficiency (as appears to be the case in the English or Turkish studies), yet in other cases they are due to morphological form (as in the Spanish study).[21] Overall, results of unaccusative, unergative, and nonalternating verbs in the three studies seem to be related to language proficiency rather than L1 influence as the source of these transitivity errors.[22]

Having discussed the results of the nonalternating classes, I now turn to alternating verbs. In both the L1 and L2 acquisition literature, transitivity errors with unaccusative and unergative verbs have been linked to overgeneralizations on the basis of alternating verbs. It is crucial, therefore, to find out how accurate L2 learners are with these verbs and to see whether learners know that these verbs can optionally be transitive or intransitive. I will then discuss their morphological form.

Syntactically, the transitive form is less marked than the intransitive one because it consists of a canonical transitive structure in which the prototypical alignment of thematic roles to syntactic positions has been preserved, whereas the intransitive form is more marked because the prototypical Theme/Patient appears in subject position rather than in object position (the Unaccusative Hypothesis). Semantically, however, the opposite is the case: The intransitive form is less marked than the transitive one because there is less semantic information in the lexical structure (the CAUSE subpredicate and the Agent role have been suppressed). However, if L2 learners across the three languages tested are more accurate with the transitive form than with the intransitive one, in the first place, this result will provide support for the syntactic analysis undertaken in this study, which argues for the basic nature of the transitive form (Chierchia, 1989; Levin & Rappaport Hovav, 1995), and,

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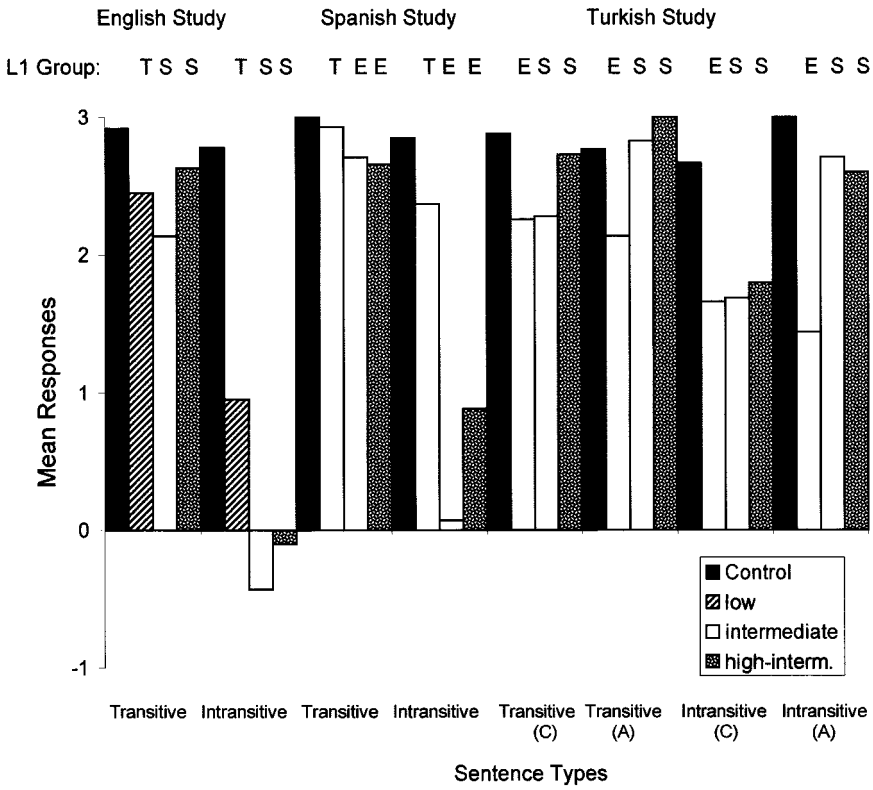


Figure 6. Patterns of responses with transitive and intransitive forms of alternating verbs; E = English, T = Turkish, S = Spanish, C = Causative, A = Anticausative.

second, it will imply that L2 learners are guided by syntactic rather than purely semantic considerations when initially learning these verbs.

Figure 6 presents the results of transitive and intransitive alternating verbs in the three studies. Recall that Turkish has two morphological patterns, causative (C) and anticausative (A). The general trend indicates similarities between the Spanish and English studies, in which the responses for transitive alternating verbs were rated higher than those for the intransitive forms. The results of the English study (the first two sets of bars) indicated significant differences between transitive and intransitive alternating verbs for all language groups and proficiency levels; LI-Turkish: $t(17) = -1.67$, $p < .005$; I-Spanish: $t(16) = 5.063$, $p < .0001$; HI-Spanish: $t(11) = 5.619$, $p < .0001$. However, there were also significant differences between the two intermediate groups, Turkish and Spanish: $F(3, 3, 62) = 14.97$, $p < .0001$. In the Spanish study, there was also an important language effect, $F(3, 66) = 18.04$, $p < .0001$: The English learners, but not the Turkish learners, were less accurate with alternating intransitives than with alternating transitives. Results of the Turkish study with

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verbs of the causative and the anticausative pattern showed that learners were most accurate with the transitive forms of both patterns. Even though the mean responses for intransitive versions of alternating verbs of the causative pattern were lower than those of their transitive counterparts, the difference was not significant for any of the groups. With respect to intransitive verbs of the anticausative pattern, there were significant differences between the English group and the Spanish groups, $F(3, 56) = 8.68$, $p < .0001$, but no significant differences between transitive and intransitive alternating verbs for any of the groups.

Summarizing, it has been found in the three studies that learners overall knew the transitivity possibilities of the four classes of verbs. However, L2 learners were less accurate than native speakers at rejecting transitivity errors with the nonalternating classes, in particular with unaccusative and unergative verbs. Learners also failed to reject anticausative errors with transitive verbs. As for alternating verbs, in general learners were more accurate with the transitive variant than with the intransitive one, and I suspect that this response pattern is related to the morphological shape of these forms rather than to whether the intransitive form is more marked than the intransitive one. The next section examines the effects of the L1 on the acquisition of the morphological form of alternating verbs in the three languages.

Evidence for Transfer Errors with Derivational Morphology. I will now examine the results of the derivational morphology of alternating verbs. Because the morphological derivation of these verbs is different in English, Spanish, and Turkish, the FAM and the FT/FA make different predictions. The FAM predicts similar patterns of responses across groups in the three studies with no necessarily targetlike behavior on the part of any group. The FT/FA predicts differences among groups, reflecting L1 influence. Overall, the results of the three studies show support for the FT/FA for this module of the grammar.

In the English study it was hypothesized that, in the case of transitive sentences, Turkish learners would prefer periphrastic causatives over lexical causatives with alternating verbs because Turkish has an overt causative morpheme in an important group of these verbs. By contrast, the Spanish learners would be more accurate than the Turkish learners because Spanish and English are alike with respect to the morphological shape of transitive alternating verbs (i.e., they are zero derived in both languages). As for the inchoative forms of alternating verbs, it was predicted that Spanish learners would reject zero-derived intransitive forms, because in Spanish the alternation is morphologically marked on the intransitive form with the reflexive clitic *se*. The Turkish learners were expected to reject these forms, but to a lesser extent, given that Turkish has both morphologically simple and complex inchoative forms. These results are presented in Figure 7.

With respect to the transitive sentences, there were no significant differences between groups with lexical causatives (e.g., *The thief broke the window*) or periphrastic causatives (e.g., *The thief made the window break*): The results did not confirm that Turkish learners showed a particular preference

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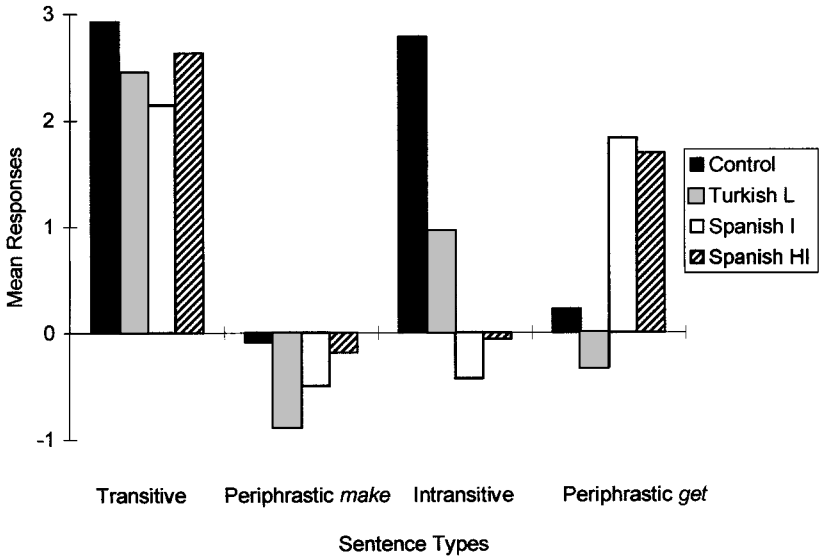


Figure 7. English study: transitive and intransitive sentences with alternating verbs.

for sentences with the periphrastic verb *make* over the lexical causative, contrary to what previous L2 studies on Chinese learners, such as Juffs (1996) and Wong (1983), have found. The explanation is that, because Turkish has transitive verbs that are morphologically complex (verbs of the causative pattern) and others that are simple (verbs of the anticausative pattern), there is no particular reason why they would prefer to transfer one form over the other. Because one pattern matches the target language, this is what they transfer. Thus, the three languages have alternating verbs with zero morphology in the transitive form.

With regard to intransitive versions of alternating verbs, there are clear L1 effects, $F(3, 62) = 5.861$, $p < .001$. The two Spanish groups rejected zero-derived forms but instead accepted alternating verbs with the *get* passive (e.g., *The window got broken*) significantly more than the control group and the Turkish-speaking group. These results were also confirmed at the individual level for the Spanish groups: More than 50% of the subjects in each group rejected intransitive *break* and accepted *got broken* instead. The Turkish group was more accurate than the Spanish group, as predicted by the FT/FA, and there was no clear preference of the *get* passive with these verbs. However, the possibility of L1 transfer of the morphological pattern from Turkish cannot be ruled out completely, because these learners have both complex and zero-derived intransitive forms in their grammar.

As in the English study, in the Spanish study it was predicted that Turkish learners would prefer the periphrastic verb *hacer* "make" with transitive alternating verbs over the lexical form. English-speaking learners were expected to

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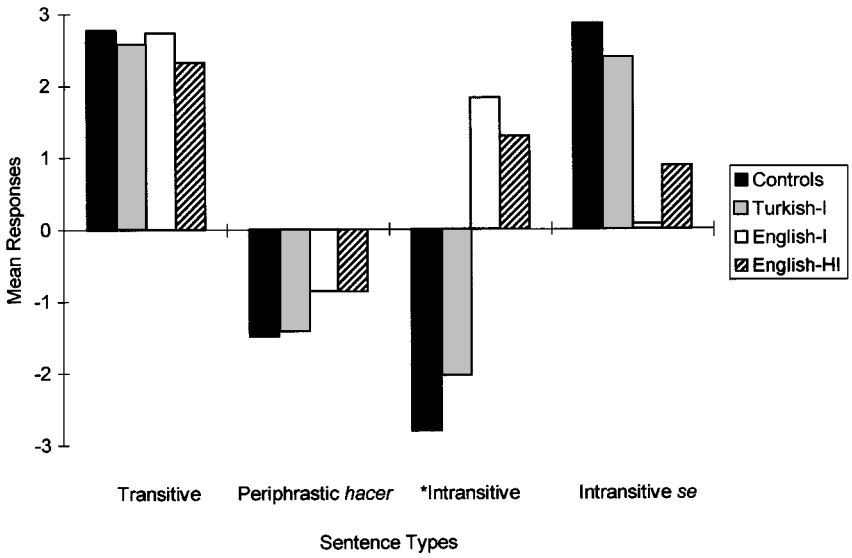


Figure 8. Spanish study: transitive and intransitive sentences with alternating verbs.

be more accurate than the Turkish-speaking learners with transitive alternating verbs. Additionally, the Turkish-speaking learners were expected to be more accurate than the English-speaking learners with morphologically marked intransitive alternating verbs in Spanish (the anticausative pattern) because such a pattern exists in their language. In contrast, English-speaking learners would have a tendency to accept incorrect zero-derived intransitive alternating verbs. Figure 8 presents the results of the Spanish study.

Reflecting the results of the English study, all learners were very accurate with transitive alternating verbs. As in the English study, the Turkish learners did not prefer the sentences with the periphrastic verb *hacer* "make." Because Turkish has both zero-derived and morphologically complex transitive alternating verbs, the Turkish native speakers did not necessarily prefer the causative pattern; thus L1 influence can also account for these results in Spanish. Again, there is an important language effect with intransitive sentences. Here, the Turkish group patterned with the controls and there were significant differences with the two English groups, $F(3, 66) = 18.04$, $p < .0001$. These subjects rejected correct intransitive forms with *se* and incorrectly accepted intransitive zero-derived forms, which are grammatical in their L1.

L1 effects were also attested in the Turkish study. Recall that Turkish has two patterns of alternating verbs, and the following hypotheses were formulated for Spanish- and English-speaking learners of Turkish. With verbs of the causative pattern, Spanish- and English-speaking learners of Turkish tend to omit the causative morpheme with transitive verbs, and Spanish speakers are less accurate than English speakers with the zero-derived intransitive forms.

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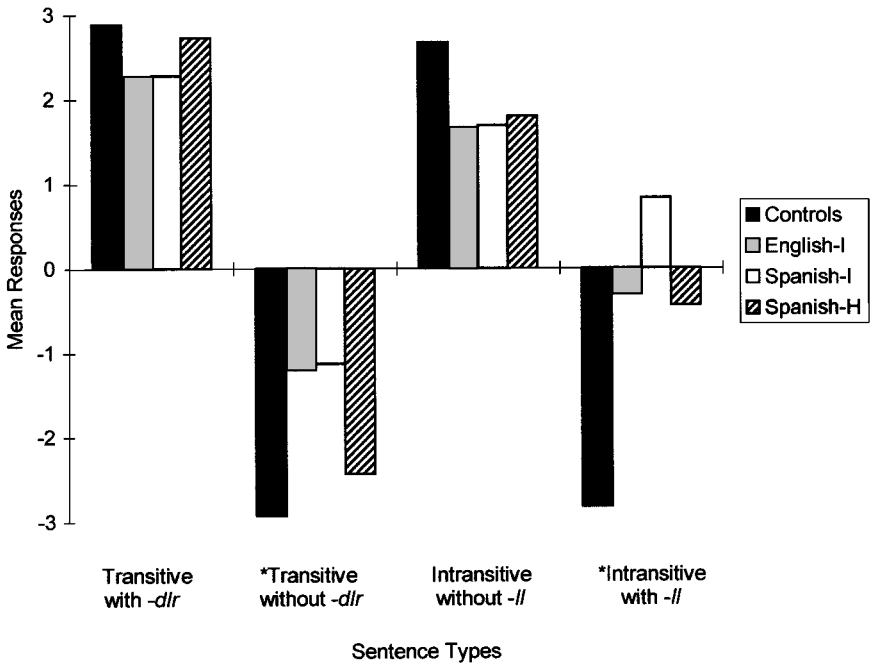


Figure 9. Turkish study, causative alternating verbs: mean responses on transitive and intransitive sentences.

With verbs of the anticausative pattern, both groups are more accurate with zero-derived transitive forms. However, the Spanish-speaking learners are more accurate than the English-speaking learners with the overt morphology of intransitive forms because this is the predominant pattern with alternating verbs in Spanish. English learners accept more incorrect zero-derived intransitive forms than the Spanish learners. Figure 9 shows correct and incorrect responses with transitive and intransitive sentences of verbs of the causative pattern. English- and Spanish-speaking learners showed relatively accurate acceptance of the causative morpheme with verbs of the causative pattern in transitive sentences. However, as predicted, both English and Spanish learners at the intermediate level failed to accurately reject sentences without the required causative morpheme. A number of participants (six in the English group and five in the Spanish group) accepted forms with and without the causative morpheme, treating this morpheme as if it were optional. Contrary to what was expected with intransitive forms, all learners were equally accurate at accepting zero-derived intransitive forms and were equally inaccurate at rejecting incorrect intransitive forms with anticausative morphology. Here, there was a significant difference between the control group and the three groups of learners, $F(3, 56) = 14.12$, $p < .0001$.

Figure 10 shows correct and incorrect responses with transitive and intran-

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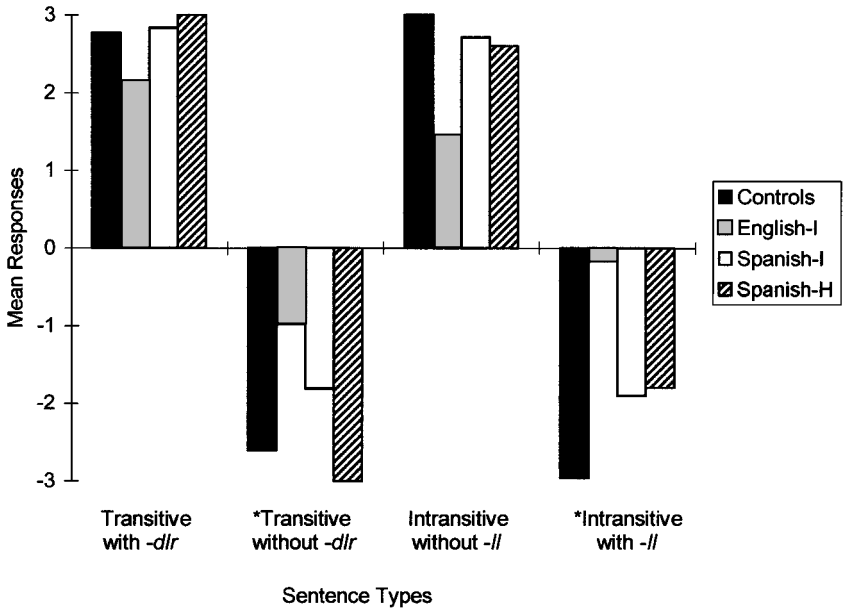


Figure 10. Turkish study, anticausative alternating verbs: mean responses on transitive and intransitive sentences.

sitive sentences of verbs of the anticausative pattern. With verbs of the anticausative pattern, the Spanish groups are more accurate than the English group with zero-derived transitive forms, $F(3, 56) = 5.12$, $p < .003$, as well as with incorrect transitive forms with causative morphology, $F(3, 56) = 6.06$, $p < .001$. As predicted, there were important language effects with the intransitive form, for which, again, the English group was less accurate than the Spanish groups at accepting intransitive forms with anticausative morphology, $F(3, 56) = 8.68$, $p < .0001$, and at rejecting zero-derived intransitive forms, $F(3, 56) = 5.29$, $p < .003$.

To summarize the results for the morphology of alternating verbs, overall there are important language effects in the three studies. Errors are systematic and can be traced back, to a large extent, to the learners' respective L1s.

DISCUSSION AND CONCLUSION

The three studies set out to investigate how L2 learners learn transitivity alternations in English, Turkish, and Spanish, and how UG and L1 knowledge interact in the acquisition of argument structure and derivational morphology. Overall, group results confirmed (a) that L2 learners know that alternating verbs alternate in transitivity and (b) that transitive nonalternating, unaccusative, and unergative verbs do not. However, transitivity errors with the transitive and intransitive nonalternating classes were attested in the three studies.

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Inaccuracy at rejecting these errors occurred regardless of L1 (as attested in the Spanish and Turkish studies and suggested in the English study); thus, these errors appear to be developmental, as in L1 acquisition. These findings appear to suggest that, at this level of structure, L1 and L2 acquisition are guided by the same linguistic mechanisms, namely UG. If the entirety of the L1 grammar were operative at this level, no errors should have been observed because the three languages are alike with respect to the transitivity possibilities for these classes of verbs and, in particular, the lexical items chosen. In other words, learners should have transferred both the argument structure and specific aspects of meaning involved in each class and each verb, yet this does not seem to have happened. These results are consistent with previous findings on the causative alternation by Moore (1993), Hirakawa (1995), Juffs (1996), and Ju (2000), who found that L2 learners assumed the incorrect transitivity of unaccusative and unergative verbs, and these errors were consistent among learners with different mother tongues (see also results reported by Oshita, 1997).

As for the morphological marking of alternating verbs in each language tested, important language effects were found in the three studies; these findings support the view of strong L1 influence at the morphological level and are consistent with the claims of FT/FA. Thus, with the acquisition of transitivity alternations, L1 and UG knowledge appear to be dissociated at this particular stage of interlanguage development. I will return to possible explanations shortly.

Transitivity errors with unaccusative, unergative, and nonalternating verbs across studies can be explained if it is assumed that L2 learners, like L1 learners, resort to a default transitive template when they do not know the specific semantic constraints on certain lexical items—that is, these errors are consistent with the operation of universal properties rather than L1 per se because they reflect the operation of default (or unmarked) linguistic mechanisms that are part of UG but are not necessarily instantiated in an obvious way in the L1. This is consistent with previous findings and conclusions by Ard and Gass (1987) for other argument structure alternations in English: Lower level learners learn semantically based alternations through syntax, whereas higher level learners display a higher degree of semantic and syntactic differentiation. In other words, L2 learners may initially have a general idea of the noncompositional meaning of a verb and the kind of syntactic structure in which it occurs. As learners increase in proficiency, they learn to discriminate semantically among verb classes and do not produce or accept as many syntactic errors with particular lexical items. The results of Juffs' (1996) study on the locative alternation in English further support this conclusion, in that early stages were marked by overgeneralization errors that are the "result of surface patterns and canonical sentence schemas" (Juffs, 1996, p. 217), and later stages are characterized by a more refined semantic knowledge of different verb classes and argument structure, knowledge closer to that of native speakers.

As for the acquisition of alternating verbs in particular, two issues deserve

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commentary: (a) whether transitive forms are less marked and thus easier to learn than intransitive forms, and (b) how the derivational morphology is learned. Although the general trend across the three studies suggests that L2 learners are more accurate at accepting transitive forms than intransitive forms, it is very difficult, if not impossible, to conclude from these results that L2 learners find the intransitive form syntactically more marked than the transitive form, mainly because there were differences between language groups and differences across the three studies. These differences indicate that the language typology or the L1 of the learners, rather than syntactic structure exclusively, is partly responsible for the results. It is therefore difficult to tell whether the effects found in some studies are due to the argument structure or to the verbal morphology. This is clear from the English study, in which all groups were significantly different from the controls. Yet the results can equally be explained by the effect of L1 influence at the morphological level, given that, in both Spanish and Turkish, intransitive forms carry anticausative morphology and learners might be rejecting zero-derived intransitive forms in English precisely because of the morphology and not necessarily because they find inchoative forms less natural that transitive forms. Thus, I conclude that it is the particular way in which the intransitive forms manifest themselves morphologically in each language and their interaction with the L1 of the learners that explains the effects found. Although it is possible, in principle, that the transitive form is syntactically more basic than the intransitive one (and the overall trends in all studies seem to indicate as much), the morphological factor confounds this explanation.

With respect to how the derivational morphology of alternating verbs is learned, it is obvious from the results reported here that this type of learning is in large part guided by the learners' respective L1s, and this is also consistent with previous findings. For example, Moore (1993) attributed different response patterns among L2 groups to the way the causative/inchoative alternation is morphologically manifested in their languages. The Spanish learners in her study, whose L1 (like English) does not have overt causative morphology, were more accurate than the Korean, Japanese, Chinese, and Arabic learners, whose L1s mark the alternation with overt causative morphology. Juffs (1996) argued that Chinese learners of English, whose L1 has an overt causative verb *shi* and rules out lexical causatives, have to figure out that English has a null morpheme (or conflates ACT GO STATE in a root verb) to reset the argument-structure parameter that he proposed. Chinese learners seem to be constrained by their L1 at the beginning, given that they failed to notice this morphological distinction and therefore accepted incorrect forms in English. The fact that Japanese learners of English preferred short passives (*The snow was melted*) over inchoatives (*The snow melted*) in Hirakawa's (1995) study on unaccusatives is also suggestive, as Juffs pointed out, that L2 learners were looking for overt morphological forms as in their L1. Finally, Chen's (1996) and White et al.'s (1998) studies on psychological predicates also confirmed that different language groups, whose L1s have overt morphological

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forms, failed to notice zero morphology in English. In short, these results reveal a clear dissociation of L1 and UG knowledge, which suggests that transfer might be subject to modularity.

Taken together, the findings of this crosslinguistic investigation raise the question of the etiology of the UG-L1 interaction at different levels of linguistic representation in an intermediate stage of interlanguage development. One possibility is to assume that the dissociation of L1 and UG knowledge can be traced back to the initial state. For instance, it could be argued that the initial state for morphology is the L1, but that the initial state for the lexico-syntactic interface is UG. Although this scenario is logically viable, at this point I cannot provide a conceptual explanation of why full transfer is not or cannot be operative at the lexico-syntactic level.

Another possibility is to assume that the initial state for different grammatical domains is the same, but the dissociation is attributed to how these develop and restructure after the initial state. The results of my investigation do not support the view that the initial state is UG in both domains, as the FAM predicts, because this position does not provide a clear role for the L1. Thus, the results of the language effects at the morphological level cannot be accommodated.

If the initial state is the entirety of the L1, as the FT/FA claims, how can the developmental errors found at the argument-structure level be explained? One can argue that the errors at the argument-structure level are an instance of U-shaped development in L2 acquisition, as claimed by Kellerman (1985). As explained in the section on L1 acquisition data, U-shaped behavior is characterized by a stage of targetlike performance, a second stage marked by errors, and a third stage of returning to targetlike behavior. Assuming that those learners who overgeneralize the causative/inchoative alternation are in stage two, this raises the question of what happened in stage one. Considering that the learners are intermediate rather than true beginners, if L1 influence is found at an intermediate level, as it is with the morphology, it can be assumed that such influence existed from the very beginning. However, if no L1 influence is evident, as in the argument-structure level, it may be the case that either there was never L1 influence to begin with or there was L1 influence initially but that period is over. Thus, it could be the case that the L2 learners in the present study are past the Full Transfer stage and are in the Full Access stage of Schwartz and Sprouse's (1994, 1996) model. The reason that dissociation of UG and L1 knowledge is found is probably that the lexico-syntactic level has restructured earlier in the interlanguage grammar of these learners, whereas the morphological level has not yet done so.

In conclusion, this explanation suggests that the L1 could be considered the initial state in all domains but that it does not necessarily operate as a block. The findings of this cross-linguistic study suggest that UG and L1 knowledge interact in discrete ways in constraining interlanguage grammars by operating at different levels of linguistic structure and by reconfiguring at different times. (White, 1992, also entertained the possibility that transfer can

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operate at different levels of linguistic representation.) In fact, the proposal that interlanguage grammars might provide empirical evidence for the modularity of linguistic knowledge has already been advanced by Eubank and Gregg (1999), who speculated on the existence of multiple critical periods in SLA that "may affect different theory-defined areas" (p. 67), "perhaps with different timings, or that some components (modules) of linguistic competence may be subject to [critical periods] whereas others are not" (p. 74). Although the study presented here suggests that the same scenario can be applicable to L1 transfer, what remains to be articulated more precisely is what makes particular areas of grammar more susceptible or impervious to L1 knowledge in the L2 acquisition process, and what triggers restructuring at different levels of linguistic representation and different stages of development.

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NOTES

1. Some researchers have even begun to wonder whether this question is worth pursuing anymore, given that in recent formulations of the Minimalist Program (Chomsky, 1995) the L1 constitutes a proper subset of UG and thus it might be impossible to distinguish UG from the L1 (see Hale, 1996).

2. However, Rex Sprouse (personal communication, January, 1999) has indicated that he and Bonnie Schwartz do not necessarily view the relationship between full transfer (L1 knowledge) and full access (UG knowledge) as occurring in stages. What may vary is the initial stage of full transfer, which may be longer for some learners and shorter for others, depending on the L1 and input from the L2. Thus, in principle, L1 and UG can interact from the very initial stage, provided that positive evidence is sufficiently abundant and parameter resetting takes place almost immediately.

3. There are empirical investigations that appear to support my position rather than the view that transfer is a monolithic phenomenon. It has always been noticed that L2 learners do not learn and master all aspects of the target language with the same ease: Phonology appears to be highly influenced by L1 transfer (Brown, 1998), but not all aspects of syntax appear to be so (Grondin & White, 1996); even Parodi, Schwartz, and Clahsen (1997) suggested that the earlier stages of acquisition of plural morphology in German are independent of native language.

4. The verb *lose* and most causative psych verbs also participate in the causative/inchoative alternation. However, the inchoative has to appear with the verb *get* (*I lost my money, My money got lost, My money *lost*). The verb *get* in English can also have a causative meaning. The intransitive form is usually referred to as the passive *get* (*John got his feet wet, His feet got wet*). Haegeman (1985) argued that *get* has an unaccusative (inchoative) meaning. (See also Carpenter, 1993.)

5. For example, the causative affix *-DIr* contains a [+high] vowel and a dental stop /d/ in its underlying representation, for which the language has a voiceless counterpart /t/. It can surface as *-dir, -dır, -dür, -dur; -tir, -tır, -tür, -tur.*

6. According to Göksel (1993), the affix *-il* in Turkish has the following variants:

(i) *-n* (attached to stems ending in a vowel)
(ii) *-in* (attached to stems ending with the consonant *l*)
(iii) *-il* (attached to stems ending with all consonants)

With the effects of vowel harmony, the passive affix has the following forms: *-n, -ın, -in, -un, -ün, -ıl, -ul, -ül.*

7. Evidence that the causative morpheme in Turkish operates at the lexical and syntactic levels comes from the fact that its reading is ambiguous with respect to the semantic distinction between direct and indirect causation (e.g., *öldürmek* = "kill" and "cause to die"), and the fact that when the causative morpheme is added to unergative and unaccusative verbs the meaning is always analytical rather than noncompositional.

8. For the specific motivations of having syntax at the lexical level, see Hale and Keyser (1993) and Travis (1991, 1994).

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9. Pustejovsky (1995) captured this same idea through the notion of event headedness. In a series of subevents, the head subevent is the most prominent in temporal sequence and importance within the whole event. In nonalternating verbs, the CAUSE subevent is the head of the whole event and cannot be suppressed because the agent is crucial to bringing about the event. Alternating verbs have headless events: They are unspecified for head. Therefore, the CAUSE subevent can be suppressed, deriving the inchoative variant.

10. I depart from Levin and Rappaport Hovav (1995) in the representation of unergative verbs. For these authors, these verbs are monadic (one VP).

11. Note that the reading of this particular decomposition should be that "John caused John (himself) to laugh" (i.e., he did the laughing himself) rather than "John caused to laugh," where the laughing can be done by somebody else. Thus, a way to get this reading would be to coindex the two subevents to the agent argument, as in (24a). Some researchers have assumed that DO or ACT rather than CAUSE is involved in unergative verbs (Levin & Rappaport Hovav, 1995; Pinker, 1989).

12. In a recent proposal, Rappaport Hovav and Levin (1998) motivated the process of *template augmentation* to account for variable behavior of verbs (similar to the default template hypothesis that I proposed in my dissertation): "Event structure templates may be freely augmented up to other possible templates in the basic inventory of event structure templates" (p. 111). Although certain semantic conditions need to be met for this process to take place in adult grammars, it is possible that children do not know the restrictions on the process and apply it more freely.

13. It is true that languages carve semantic space in different ways and that certain argument-structure alternations can have broader or narrower application cross-linguistically. For instance, change-of-state verbs as well as verbs of manner of motion (*roll, bounce, move,* etc.) participate in the causative/inchoative alternation in English, whereas the latter (with the exception of *mover* "move") do not alternate in Spanish. However, in this study I specifically chose lexical items with the same syntactic properties in the three languages, especially with the verbs of the alternating class.

14. Relying on data from intermediate learners is more problematic for the FAM than for the FT/FA. If no L1 effects are found at an intermediate stage of development, this is not necessarily an argument for UG: It can always be argued that L1 influence was present before, but that the very initial stage was not documented. If L1 influence is found at intermediate stages, then it can also be assumed that the L1 was present earlier and that it is still exerting influence. In fact, Schwartz and Sprouse (1996) used data from White's (1991b) French-speaking intermediate learners of English to support their theory. Thus, the use of intermediate learners in experimental studies to draw conclusions on issues of the initial state and development is not unheard of.

15. An anonymous reviewer questioned why hours of exposure was not used as a measure of proficiency, together with the cloze test. Given the cross-linguistic design, hours of exposure was not a sufficiently reliable measure for my purposes. One might certainly need more hours of exposure to achieve an intermediate level of proficiency in Turkish than to achieve the same level in Spanish or English, for instance. Additionally, in the case of the learners of Turkish, these participants were studying the language in Turkey, so it is very hard, if not impossible, to calculate the exact number of hours of exposure to the Turkish language. In all instances, intermediate learners, as defined by the particular educational institutions, were considered. I later used an independent measure to identify further discrepancies in level.

16. For the validity of the cloze procedure as a measure of proficiency, see Jonz (1990).

17. The procedure is as follows: The best fit of subjects is made by dividing the 47 subjects into 47 groups (a fit of 100%), and the worst fit is if all subjects are in one group (a fit of 0%). I first divided the subjects into two groups (scores from 12.5% to 30.0% and from 32.5% to 47.5%) and the R^2 value was 0.53. The scores were then divided into three groups (12.5–22.5%, 25–35%, and 37.5–47.5%) and the R^2 value jumped to 0.81. I could have split the subjects into four groups, but there were not enough subjects to fill the gap between 47.5% and 57.5%, which could be considered the advanced group. I therefore left the division into three groups.

18. An *SSLA* reviewer pointed out that there is a discrepancy between the scores of the VTT and the leveling of subjects in proficiency groups according to the cloze test. The results of the Spanish and Turkish studies seem quite comparable. However, in the English study, the low-intermediate and intermediate learners scored much higher than the other intermediate learners in the Spanish and Turkish studies. Although every measure was taken to keep the results as comparable as possible, I have no explanation for these results. It is likely that this discrepancy is related to the particular challenge presented by trying to compare different target languages.

19. Owing to scope limitations, individual scores cannot be presented in any detail.

20. In each study, the omnibus MANOVA with repeated measures yielded statistically significant L1 effects, sentence-type effects, and L1-by-sentence-type interactions. Because such a powerful test

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was used, there was no need to control for type II errors when conducting independent ANOVAs and *t* tests.

21. Morphological shape is an important confounding factor with anticausative errors with nonalternating verbs, especially in the Turkish and Spanish studies. If morphological form is a key factor in the Spanish study, then a language effect cannot be ruled out. Recall that the same anticausative morpheme that appears in the inchoative form of alternating verbs is homophonous with the impersonal passive in Spanish and the adjectival-verbal-impersonal passive in Turkish. Thus, if Turkish-speaking learners interpret intransitive nonalternating verbs with the clitic *se* as impersonal passives, it is probably due to L1 influence. This is also suggested by the results of intransitive nonalternating verbs without reflexive morphology (**El cuadro pintó* "The picture painted"). These sentences were problematic for the English learners but not for the Turkish learners.

22. An important caveat needs to be mentioned: Although the same independent measure of proficiency was used in the three studies, there were significant differences between the performance of the control groups across the three studies, $F(2, 54) = 58.446$, $p < .0001$. The English control group performed at around 67% accuracy, whereas the Turkish and Spanish control groups performed barely above 50% and were not statistically significant from each other. In the Chen (1996) and Slabakova (1997) studies, the English control groups also scored around 65% and 66% accuracy, so it is not uncommon for native speakers to score below 70% accuracy in this type of cloze procedure. The difference between the English controls and the Spanish and Turkish controls may be due to the fact that the Turkish and Spanish tests were translations of the original English test. Although measures were taken to make the studies as comparable as possible, admittedly, caution should be exercised in the interpretation and possible generalization of results.

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APPENDIX

Table A1. English cloze test: Mean percentage accuracy scores

Language group	*M*	*SD*	Range	Proficiency
Control ($n = 19$)	66.84*	5.26	57.5–77.5	—
Spanish ($n = 12$)	39.79*	6.43	32.5–52.5	High-intermediate
Spanish ($n = 17$)	27.47*	5.93	25.0–32.5	Intermediate
Turkish ($n = 18$)	18.83*	5.07	12.5–22.5	Low-intermediate

*ANOVA: $F(3, 62) = 343.118$, $p < .0001$; Tukey procedure, $p < .0001$.

Table A2. Turkish cloze test: Mean percentage accuracy scores

Language group	*M*	*SD*	Range	Proficiency
Control ($n = 18$)	51.38*	4.76	42–57	—
Spanish ($n = 10$)	34.28*	3.01	32–39	High-intermediate
Spanish ($n = 14$)	21.16*	4.53	17–28	Intermediate
English ($n = 18$)	20.82*	4.11	14–28	Intermediate

*ANOVA: $F(3, 56) = 195.33$, $p < .0001$; Tukey procedure, $p < .0001$.

Table A3. Spanish cloze test: Mean percentage accuracy scores

Language group	*M*	*SD*	Range	Proficiency
Control ($n = 20$)	50.67*	5.54	40.0–62.5	—
English ($n = 16$)	28.75*	3.97	27.5–37.5	High-intermediate
English ($n = 15$)	17.83*	3.38	10.0–22.0	Intermediate
Turkish ($n = 19$)	17.10*	3.65	10.0–25.0	Intermediate

*ANOVA: $F(3, 66) = 250.675$, $p < .0001$; Tukey procedure, $p < .0001$.

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