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Acquiring English Particle Verbs:

Age and Transfer Effects in Second Language Acquisition

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in Linguistics

by

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ABSTRACT OF THE DISSERTATION

Acquiring English Particle Verbs:

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By

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This study tests the Full Transfer/Full Access Hypothesis (Schwartz and Sprouse 1994, 1996) and the Fundamental Difference Hypothesis (Bley-Vroman 1989) by investigating the acquisition of English particle verbs by native Spanish-speaking adults and children.

We assume that there are two classes of particle verbs. Transparent particle verbs retain the compositional meaning of the verb and particle (e.g., *She threw out the garbage*), while idiomatic particle verbs are non-compositional (e.g., *She mixed the batter up*) (Ramchand & Svenonius 2002; Sawyer 1999; Wurmbrand 2000). Particle verbs can be produced with the verb and particle adjacent, or with the verb and particle split by the object. The current study explores how native Spanish-speaking adults and children acquire transparent and idiomatic particle verbs, comparing their acquisition patterns with those observed in first language acquisition as well as looking at similarities and differences between adult and child second language learners (L2ers).

Participants were 33 native Spanish-speaking adults, 32 native Spanish-speaking children and 16 native English-speaking adult and child controls. The native Spanish-speakers completed an English skills assessment (Curtiss and Yamada 1985) and an elicited production task designed to elicit 28 particle verbs.

The results show that both adult and child L2ers demonstrate different acquisition patterns for idiomatic and transparent particle verbs. Both groups omit the idiomatic particle with overwhelming frequency across proficiency levels and when the particle is retained it almost always surfaces in the adjacent form. While children in the lowest proficiency level frequently omit the transparent particle, they show a decline in transparent particle omission coupled with an increase in the split form at the medium proficiency level. We argue that these results are indicative of diminishing transfer effects across proficiency levels and suggest that child L2ers show evidence for structural acquisition of the target grammar at the medium proficiency level. The adults demonstrate a similar developmental trend, but the effect is weak and delayed relative to the L2 children. The difference between adults and children in the acquisition of transparent particle verbs is attributed to transfer effects, which are stronger and more persistent in adults than children.

Chapter 1

Introduction

The current research investigates the acquisition of English particle verbs by native Spanish-speaking children and adults. The simple purpose of this study is to see how second language learners (L2ers) acquire functional structure not instantiated in the first language (L1). More specifically, it is designed to address two questions central to the area of second language (L2) acquisition research: 1) What is the state of the initial L2 grammar? and, 2) Do adult second language learners have access to Universal Grammar (UG)? The breadth of the study and theoretical motivation for this research are described in detail below.

The research described herein involves over 100 native Spanish- and English-speaking children and adults in the Los Angeles area. The native Spanish-speakers were evaluated for English language proficiency and then administered an elicited production test focusing on English particle verbs, both phases taking hundreds of hours to complete and score. Due to the sample size and high personnel overhead, L2 research projects of this scope are rare. We will see that the statistical analyses made possible by the large sample size reveal trends in the L2 production data that might have been overlooked by a more traditional qualitative analysis.

We make two important group comparisons regarding the L2 initial-state grammar and adult access to UG. First, L2 adults and L2 children acquiring English particle verbs are compared to L1 children acquiring English particle verbs (Sawyer

1999).[1] This type of comparison allows us to investigate how L1 and L2 acquisition differ and provides new insight into the nature of native language transfer. The current research also compares the process of adult and child second language acquisition. By investigating group trends we see important similarities between L2 children and adults in the acquisition of functional structure not instantiated in the L1, informing L2 acquisition research on the issue of adult access to UG.

The research described herein explores two key issues in the area of L2 acquisition: native language transfer and adult access to UG. Regarding the issue of native language transfer, we investigate the acquisition of English particle verbs by native Spanish speakers to see how L2ers will acquire functional structure not represented in the L1 grammar. The research is designed to test Schwartz and Sprouse's (1994, 1996) Full Transfer/Full Access hypothesis, which claims that the initial L2 grammar is the L1 grammar, as well as White's (1996) competing claim that there is no native language influence when acquiring functional structure not instantiated in the L1.

By investigating the acquisition of English particle verbs by native Spanish speakers we can explore a number of questions regarding how the L1 might influence L2 acquisition. For example, if the initial state of the L2 grammar is the transferred L1 grammar, in what ways might L2ers parse input and how will this be reflected in their production of English particle verbs? We carefully consider the grammatical representation of the native Spanish speaker, making principled predictions for how a transferred Spanish grammar might accommodate English particle verbs in the input.s

[1] We compare results from L2 participants in the current study to the results of native English-speaking children acquiring particle verbs reported in Sawyer (1999).

This research also offers insight into how the L2er might use positive evidence in the input to move away from the L1 grammar and move toward the target grammar. Section 1.1 provides an overview of the research relevant to the issue of the L2 initial-state grammar.

Regarding the issue of adult access to UG, the experiment described here is designed to test Bley-Vroman's (1989) Fundamental Difference Hypothesis, which claims that adult L2ers do not have access to UG, as well as Schwartz and Sprouse's Full Transfer/Full Access hypothesis, which claims that they do. These theories are tested using two different approaches. First, we investigate whether adult L2ers can acquire functional structure not instantiated in the L1. If this is the case, then it would suggest that they do have access to the UG determined mechanisms that are required for the projection of functional structure. Second, we compare adult L2 acquisition to child L2 acquisition, holding the L1 and the L2 constant, as recommended in Schwartz (1992). Assuming that child L2ers have access to UG, if adult L2ers show the same acquisition patterns as child L2ers then it would suggest that they also have access to UG. This prediction and its relevance to the Fundamental Difference Hypothesis and Full Transfer/Full Access hypothesis are described in more detail in section 1.2.

1.1 What is the nature of the initial L2 grammar?

A great deal of second language acquisition research has focused on questions concerning the L2 initial-state grammar. On one side of the issue are those who claim

that the L1 grammar influences the initial L2 grammar (Haznedar 1997; Schwartz and Sprouse 1994, 1996; Schwartz 1987; Slabakova 2001; White 1985, 1986, among others). As will be discussed below, even among these researchers there is some disagreement over the extent to which L1 transfer influences the L2. Nevertheless, proponents of an L1 transfer account all agree that the initial L2 grammar includes L1-based knowledge. Others have claimed that the L2 initial-state grammar is the same as the initial state of the L1 grammar (Epstein, Flynn and Martohardjono 1996; Flynn and Martohardjono 1994; Platzack 1996). Essentially, under this hypothesis the initial state of the L2 learner is the same as the initial-state of the L1 child and there is no native language influence. Research supporting these two competing positions is discussed in sections 1.1.1 and 1.1.2.

1.1.1 The L2 initial state is the L1 grammar: Full Transfer

As mentioned above, various researchers have claimed that the initial L2 grammar is influenced by the L1. In this section, the issue of transfer is centered around Schwartz and Sprouse's Full Transfer/Full Access (FT/FA) hypothesis (Schwartz 1998, Schwartz and Sprouse 1994, 1996), which claims that the L1 grammar constitutes the initial L2 grammar for both children and adult second language learners. (Schwartz and Sprouse also claim that L2 children and adults have full access to UG, which will be discussed in section 1.2). According to the FT/FA hypothesis, all lexical projections, functional structure, parameter settings and feature values transfer from the L1 to the L2.

Support for the FT/FA hypothesis has been consistently found in a variety of studies (e.g., Chu and Schwartz 2005; Haznedar 1997; Schwartz 1998; Schwartz and Sprouse 1994, 1996; Unsworth 2005; White 1990/1991, among others). Here we review three studies which claim to support a transfer account of second language acquisition, and two that do not. We begin by describing work by Haznedar (1997), which provides evidence for transfer in a longitudinal study of spontaneous speech data. We then turn to a series of experimental studies illustrating an ongoing debate regarding the initial state of the L2 grammar and emphasizing the need for more research in the area (Chu and Schwartz 2005; Eubank, Bischof, Huffstutler, Leek and West 1997; White 1990/1991; Yuan 2001).

Haznedar (1997)

Research involving the analysis of spontaneous speech data can support the FT/FA hypothesis if the L2 data suggest native language parameter settings when the L1 and L2 differ parametrically. This situation is observed in Haznedar (1997), which investigates the spontaneous utterances of Erdem, a native Turkish-speaking child acquiring English. Turkish is a head-final language, while English is head-initial. Evidence for L1 influence is seen in the word order of Erdem's spontaneous speech, as Haznedar reports that Erdem's initial English utterances are head-final (e.g., O-V, V-Neg), followed by an abrupt switch (after 4 months of exposure to English) to head-initial utterances (e.g., V-O, Neg-V). The data suggest that Erdem's initial L2 English grammar contains the Turkish setting for the head direction parameter, thus supporting the FT/FA hypothesis.

In addition to spontaneous speech studies, data from experimental studies also provided evidence in support of a transfer account of L2 acquisition. To illustrate the complicated issue of L1 transfer, we describe a series of experimental studies investigating feature strength and word order in L2 acquisition.

White (1990/1991)

White (1990/1991) investigates the L2 acquisition of English by native French-speaking children. French and English differ parametrically with respect to feature strength (Pollock 1989; Emonds 1978). French contains strong features in the inflectional (Infl) phrase, causing the verb to raise out of V to Infl for feature checking purposes (Chomsky 1995).

(1)	a.	Les chats	attrapent	souvent	les souris	(SVAO)
		Cats	catch	often	mice	
		'Cats often catch mice.'				
	b.	*Les chats	souvent	attrapent	les souris	(SAVO)
		Cats	often	catch	mice	(White 2003:129)

The verb *attrapent* 'catch' in (1a) has raised past the adverb *souvent* 'often', resulting in S(ubject), V(erb), A(dverb), O(bject) word order. The ungrammaticality of (1b) shows that the verb cannot remain in the VP in French and the *SAVO word order is ungrammatical.

While Infl is strong in French, it is weak in English; English main verbs remain in VP and inflection lowers to the verb phrase.

(2)	a.	*Cats catch often mice.	(SVAO)	
	b.	Cats often catch mice.	(SAVO)	(White 2003:129)

The verb *catch* in (2a) cannot not raise past the adverb *often*; SAVO word order is grammatical in English while *SVAO is ungrammatical.

Participants in White's study were native French-speaking elementary school children (aged 10 and 11) enrolled in an intensive ESL program. This program was mainly communicative with no explicit instruction. They completed an acceptability judgment task whereby they were presented with 12 English sentence pairs containing SAVO and *SVAO word orders such as the pair listed in (3) below.

(3) a. *Linda takes always the metro. (SVAO)
b. Linda always takes the metro. (SAVO) (White 1990/1991))

Participants were given the following response options: 1) only (a) is right, 2) only (b) is right, 3) Both are right, 4) Both are wrong, 5) I don't know.[2]

White reports that the native French speakers accepted the *SVAO word order (e.g. (3a) above) for about 8 of the 12 sentence pairs, or 67% of the time. White concluded that these responses could be attributed to L1 transfer; the strong Infl feature transferred from French caused the L2ers to erroneously accept the *SVAO word order.

While many take data such as those presented in White (1990/1991) to provide evidence for a transfer account of L2 acquisition, others have argued against a transfer analysis of White's data. Eubank, Bischof, Huffstutler, Leek and West (1997) claim that

[2] It should be noted that White's study was slightly more complicated than depicted here. Participants were divided into two groups, one that received explicit instruction on question formation and another that received explicit instruction on adverb placement. Participants were given a pre- and post-test using the methodology described above. Results for the pre-test are reported here, as they are most representative of the initial state of the L2 grammar without explicit instruction related to verb placement. Note also that the least proficient L2ers (about one-third) were excluded from the study.

L1 transfer is not an adequate explanation and that White's participants may have had an "impaired" L2 grammar which causes verb raising to be optional. As explained in detail below, according to Eubank et al., White's data can be explained by simply assuming that the L2 grammar contains "inert" features in Infl that allow for optional raising. In this case, the 67% acceptance of *SVAO order by the native French speakers is not due to L1 transfer, but is instead attributed to an L2 grammar that allows for optional verb raising.

Eubank, Bischof, Huffstutler, Leek and West (1997)

Eubank et al.'s (1997) participants were L1 Chinese speakers learning English. The study was designed to test Eubank's (1994) "valueless features" hypothesis, which claims that the initial state of the L2 grammar is impaired for adults. More specifically, they claim that Infl contains "inert" features in the L2 grammar, which allows for optional verb raising. In other words, the L2 grammar is viewed as "impaired" and so either the raising option or the non-raising option is grammatical for the L2er.

Like in English, Infl is weak in Chinese and verbs do not raise out of the VP.

(4) a. Zhangsan changchang chi shuijiao. (SAVO)
Zhangsan often eats dumpling
'Zhangsan often eats dumpling.'
b. *Zhangsan chi hangchang shuijiao. (SVAO)
Zhangsan eats often dumpling (Chu & Schwartz 2005)

We see that the verb *chi* 'eats' remains in the verb phrase in (4a), as it appears to the right of the adverb *changchang* 'often'. The ungrammaticality of (4b) illustrates that Chinese verbs cannot move past the adverb and the *SVAO word order is ungrammatical.

The native Chinese-speaking participants completed a truth value judgment task designed to investigate sensitivity to verb raising. Participants read a short scenario followed by a sentence meant to describe the scenario. They were asked to indicate whether the sentence was true or false. An example of one of the test items is in (5).

(5) Tom loves to draw pictures of monkeys in the zoo. Tom likes his pictures to be perfect, so he always draws them very slowly and carefully. All the monkeys always jump up and down really fast.

Test sentence: *Tom draws slowly jumping monkeys*.

True
False

(Eubank, Bischof, Huffstutler, Leek & West 1997)

According to Eubank et al., if the test sentence is 'false' for the participants, then the adverb *slowly* must modify the local verb *jumping* and the main verb *draws* has not raised out of VP.[3] However, if the test sentence is judged as 'true', this would indicate that the adverb *slowly* modifies *draws* rather than *jumping*, suggesting that the verb has raised past the adverb in the L2 interlanguage grammar.

Eubank et al. reason that if White is correct and the L2 initial-state grammar is the L1 grammar, then weak feature strength should transfer from Chinese. If this is true and since Chinese and English both contain weak Infl features, transfer should cause the native Chinese-speaking participants to choose the non-verb raising option (e.g., example (5) is 'false'). However, if the L2ers instead have an impaired L2 grammar containing

[3] Note that the string *slowly jumping monkeys* is an adverbially-modified attributive adjective of English, which is a construction that is also licit in Chinese.

valueless features, then verb raising will be licit and the participants will thus allow verb raising (e.g., choose 'true' for example (5)) a substantial percentage of the time.

The results show that for examples like (5) above, the L2ers indeed chose 'true' 26% of the time, indicating that the L2 grammar allows verb raising. According to Eubank et al., these results cannot be explained on a transfer account, as both the L1 (Chinese) and the L2 (English) have weak Infl features and neither allows verb raising. Instead, they argue that the results of their study as well as the results of White (1990/1991) can be explained in terms of a permanently impaired L2 grammar that allows for optional verb raising. In other words, Eubank et al. suggest that adult L2ers cannot specify the strength value of Infl and so the verb can either raise to Infl or stay in VP.

Chu and Schwartz (2005)

Chu and Schwartz (2005) take issue with Eubank's conclusions, arguing that if verb raising were truly optional for the adult L2ers in their study, then sentences with verb raising and sentences without verb raising should always be grammatical and should have the same meaning. For L2ers with an "impaired" interlanguage grammar, the adverb *slowly* in example (5) above can modify the verb *draw* (raising option) or the verb *jumping* (no raising option). If this were truly the case for the L2ers, then Chu and Schwartz claim that sentences like (5) should be judged as 'true' 100% of the time. Since Eubank et. al.'s participants judged these sentences as 'true' only 26% of the time, Chu and Schwartz reject the "impaired" interlanguage explanation of Eubank et al.'s (1997) data and White's (1990/1991) data.

In order to test White's claims regarding L1 transfer, Chu and Schwartz replicated White's study with native Chinese speakers learning English.[4] Recall that neither Chinese nor English allows verb raising (i.e., both have weak features in Infl). The participants were presented with the same sentences that White used (see example (3) above). Chu and Schwartz hypothesized that if White (1990/1991) is correct, and the initial state of the L2 grammar is the L1 grammar, then the native Chinese speakers in Chu and Schwartz's study should be less likely than the native French speakers in White (1990/1991) to indicate that *SVAO sentences are grammatical, since this word order is licit in French but not in Chinese.

This prediction was borne out. The native Chinese-speaking participants indicated that *SVAO sentences were grammatical 30% of the time, compared to the native French speakers in White's study, who indicated that *SVAO sentences were grammatical 66% of the time. Thus, Chu and Schwartz conclude that their results and White's (1990/1991) results can be attributed to L1 transfer: the native French speakers accept English *SVAO sentences more often because this word order is licit in the transferred French grammar, and the native Chinese speakers accepted it less often because this word order is not licit in the transferred Chinese grammar.

Although the data from Chu and Schwartz (2005) suggest that their L2 native Chinese-speaking participants were influenced by the L1, Yuan (2001) conducted a similar experiment with different results.

[4] It should be noted that Chu and Schwartz's grammaticality judgment task was more expansive than White's (1990/1991) grammaticality judgment task and contained additional sentence pairs designed to provide information about the position of manner and frequency adverbs relative to thematic/non-thematic verbs as well as negation.

Yuan (2001)

Yuan also looks at verb placement; however in this case the L2 is Chinese and the L1 is either English, French or German. Here we only consider the data from the native English and French speakers. They were divided into low, medium and high proficiency groups; all participants in the low proficiency groups had studied Chinese for less than 6 months.

The design was similar to White (1990/1991) and Chu and Schwartz (2005). The L2 participants were presented with Chinese sentence pairs like those in (6).

(6) a. Wo gege pingchang he Deguo jiu (SAVO)
My brother usually drinks German wine
'My brother usually drinks German wine.'
b. *Wo gege he pingchange Deguo jiu (SVAO)
My brother drinks usually German wine (Yuan 2001)

The *SVAO order shown in (6b) is ungrammatical because the verb cannot move past the adverb in Chinese. Participants were asked to indicate whether or not both sentences in the pair were grammatical.

Yuan reports that all participants, even the low proficiency L2ers, rejected the ungrammatical sentences. Although we might expect to see evidence of L1 influence in the low proficiency native French-speaking L2 learners, they showed no indication of transfer in the domain of feature strength in Infl, as they consistently rejected *SVAO sentences. Thus, Yuan's results do not support a transfer account of L2 acquisition. However, recall that the FT/FA hypothesis also claims that L2ers have full access to UG. This being the case, the FT/FA hypothesis predicts that L2ers will initially transfer the L1

grammar and then converge on the target grammar. Thus, one could argue that the Yuan (2001) participants might have initially transferred the L1 grammar, but had already acquired the relevant aspects of the target grammar by the time they were tested.

The varying results in the studies described above show that the issue of the L2 initial-state grammar merits further investigation. Although the FT/FA hypothesis claims that the initial state of the L2 grammar is the L1 grammar, others argue that the L1 does not influence the L2 grammar. This idea is further explored in the next section, where we describe studies claiming that the initial state of the L2 grammar is not impaired nor is it the L1 grammar, but is "pure UG" without L1 influence.

1.1.2 The L2 initial state is UG

While Eubank et al. claim that the L2 grammar is permanently impaired, others argued that the initial state of the L2 grammar is the same as the initial state of the L1 grammar; the L2 initial-state grammar is "pure UG" without L1 influence (e.g., Epstein, Flynn and Martohardjono 1996; Flynn and Martohardjono 1994; Platzack 1996; White 1996). Similar to the L1 child, the L2er uses UG to project functional structure consistent with the input.

Since the Pure UG hypothesis claims that the initial state of the L2 grammar is the same as the initial state of the L1 grammar, it predicts that L2ers will demonstrate no effects of native language influence and that L2 acquisition will therefore follow the same stages as L1 acquisition. Support for such ideas can be found when L2ers fail to

exhibit transfer effects, even from the earliest stage of acquisition. We see evidence in support of the notion of pure UG as the initial state in Yuan (2001) (reviewed above), which shows that low proficiency native French speakers learning Chinese are target-like with respect to verb placement, as the data could be interpreted to suggest that the strong Infl feature is not transferred from French.

We can also find evidence supporting the idea of pure UG as the initial state when L2ers demonstrate acquisition patterns that are similar to those observed in L1 acquisition, as this would suggest that the L2 acquisition process is driven by the same "mechanisms" that drive the L1 acquisition process (=UG). White (1996) finds support for the Pure UG hypothesis in the L2 acquisition of French clitics by two native English-speaking children (Kenny and Greg) living in Montreal. According to White, when acquiring functional structure not instantiated in the L1, these children 1) show no evidence of native language influence, and 2) demonstrate acquisition patterns similar to those exhibited by native French speaking children. Because White's study supports the notion of pure UG as the initial state when there is no comparable structure in the L1 and specifically investigates the acquisition of functional structure not instantiated in the L1, it is described in detail below.[5]

White (1996)

White (1996) investigates the acquisition of French clitics by two 5-year-old native English-speaking children (Kenny and Greg) over a 3-year period. While English

[5] It is important to note that White's (1996) claim regarding pure UG as the initial state only applies when the L2 contains functional structure not instantiated in the L1. For many other cases, White argues for transfer in L2 acquisition (e.g., White 1985, 1989, 1990/1991, 2003).

contains pronouns but not clitics, French has both clitics and strong pronouns, listed in table 1.1.

Table 1.1 Strong pronouns and clitics in French (White 1996)

	strong pronouns	subject clitics	direct object clitics
1SG	Moi	Je	Me
2SG	Toi	Tu	Te
3SG MASC	Lui	Il	Le
3SG FEM	Elle	Elle	La
1PL	Nous	on, nous	Nous
2PL	Vous	Vous	Vous
3PL MASC	Eux	Ils	Les
3PL FEM	Elles	elles/ils*	Les

*Third person feminine plural is *elles* in Standard French, *ils* in colloquial Quebec French

Except in the case of 3rd person affirmative imperatives (described below), object clitics are generally in complementary distribution with strong pronouns and determiner phrase (DP) objects. Non-imperative object clitics must precede the finite verb (e.g. (7a)) while strong object pronouns must follow it (e.g. (7b)).

(7) a. Marie le connaît // *Marie connaît le
Marie him knows // Marie knows him
'Marie knows him.' (White 1996: 338)

b. Marie connaît mon frère/lui // *Marie mon frère/lui connaît
Marie knows my brother/him // Marie my brother/him knows
'Marie knows my brother/him.' (White 1996: 338)

Third person object clitics must follow the finite verb in affirmative imperatives, resulting in English (VO) word order.[6]

[6] Strong pronoun objects are required with first and second person objects in positive imperatives.

(8) Regarde le! / *le regarde
Look.at him / him look.at
'Look at him!' (White 1996: 338)

French is also similar to English with respect to subject placement, as subject clitics (9a) and subject DPs (9b) both precede the verb.

(9) a. Il partira bientôt
he will leave soon
'He will leave soon.' (White 1996: 337)
b. Jean partira bientôt
Jean will leave soon
'Jean will leave soon.' (White 1996: 338)

Following Kayne (1975), White uses several diagnostics for French clitics, three of which are reviewed here. As (10a) shows, material can intervene between the subject DP and the verb, while clitics cannot be separated from the verb. Further, subject DPs and strong pronouns can be conjoined (10b) and stressed (10c), but clitics cannot.

(10) a. Jean / *Il, paraît-il, est fou
Jean / he it appears is crazy
b. Jean et lui / *il partiront bientôt
Jean and he / he will leave soon
c. LUI / *IL partira le premier
He / he will leave the first (Kayne 1975: 84-85)

Following Sportiche (1992), White assumes that subject and object clitics head their own functional projections, NomP and AccP, respectively. White claims that since English does not have clitics, this functional structure cannot be transferred from the L1. According to White's analysis of Kenny and Greg's spontaneous speech, the children do

not go through an initial transfer stage. Instead, they demonstrate acquisition patterns similar to those observed in L1 children acquiring French.

White reports that Kenny and Greg distinguish clitics and strong pronouns from the onset of their production. This claim is based on the observation that while the children conjoin and stress strong pronouns, clitics are never stressed. Additionally, while the children produce utterances containing strong pronouns separated from the verb by intervening material, clitics are seldom separated from the verb.[7] According to White, these data suggest that clitic functional projections (e.g., AccP) are present in the children's earliest L2 grammar. She argues that the data are incompatible with a transfer account which predicts that the L2ers having access only to the L1 grammar would make no distinction between clitics and strong pronouns.

White also reports that while subject clitics and object clitics in positive imperatives surface early in the children's production, object clitics in non-imperatives are acquired late. She argues that these findings parallel L1 acquisition, as object clitics are reportedly acquired later than subject clitics in L1 French (Hamann, Rizzi and Frauenfelder 1996). Based on the observations that these L2ers initially distinguish clitics from strong pronouns and that they display L1 patterns of acquisition, White claims that there is no evidence for native language transfer and the L2ers instead demonstrate immediate access to UG. In the domain of functional structure not

[7] White does not indicate how many times the children separate the subject clitic from the verb. She provides two examples from Greg (after 20 and 25 months of exposure), and Schwartz (1996) gives one example from Kenny (month 4). White provides no explanation for why the children allow material to intervene between the clitic and verb. Instead, she claims that the very fact of low frequency of this type of error indicates that the children do have knowledge of the target grammar from the onset of clitic production.

instantiated in the L1, White takes what I have referred to as the "Pure UG" position—immediate access to UG without native language transfer. Thus, the Pure UG hypothesis claims that, in the domain of functional structure not instantiated in the L1, the initial L2 grammar is the same and the initial L1 grammar.

Schwartz (1999)

Schwartz (1999) challenges White's assumptions regarding clitics in English as well as her analysis of the data. While White's claims hinge on the assumption that clitics are not found in English, Schwartz argues, in contrast, that clitics are actually attested in the form of reduced pronouns (e.g., *I took 'm with me*, or *Y' need a lift*?) (e.g., Selkirk 1980). Thus, Schwartz claims that the functional structure associated with clitics is actually present in the children's L1 grammar.[8]

Regarding White's analysis, Schwartz argues that the reported data are ambiguous between a clitic and pronoun analysis. In other words, the data are consistent with the claim that the L2 children initially analyzed clitics as pronouns (i.e., an analysis transferred from English). This claim is based on several observations. First, Schwartz suggests that the reason that L2 children do not produce stressed clitics could be attributed to L1 transfer, as clitics of English are also not stressed (e.g., *I took '**m** with me). Second, while intervening material is seldom found between a clitic and verb in the L2 data, there are only a few cases of intervening material found with pronouns. Further, while there are no examples of conjoined clitics, conjoined pronouns do not surface until

[8] It should be noted that reduced pronouns of English do not have the same distributional restrictions exhibited by French clitics. For example, material can intervene between English reduced pronouns and the verb (e.g., *Y' sure do snore loud*) (Schwartz 1999).

late in the data (15 months after initial exposure). Thus, Schwartz argues that there is no clear dissociation between pronouns and clitics in Kenny and Greg's early production data. Since much of the data reported by White are ambiguous between a clitic and pronoun analysis, Schwartz concludes that they do not provide compelling support for a pure UG account of L2 acquisition.

Schwartz further claims that Kenny and Greg's L2 data *are* suggestive of L1 transfer. Recall that while non-imperative object clitics precede the verb in French, affirmative imperative object clitics follow the verb. The word order of positive imperatives is therefore identical to English word order (SVO), and the data indicate that (post-verbal) positive imperative object clitics surface much earlier in the L2 data than (pre-verbal) non-imperative object clitics. Schwartz argues that this is predicted on an initial transfer account, as the construction that matches the L1 grammar surfaces first. Schwartz further points out that while White is correct in claiming that object clitics on the whole are acquired later than subject clitics in L1 acquisition, it is important to note that the difference observed between acquisition of imperative and non-imperative object clitics is unique to L2 acquisition.

In sum, White (1996) claims that in the domain of functional structure not instantiated in the L1, the initial L2 grammar is not influenced by the native language grammar. While White argues that the L2 acquisition of French clitics by native English-speaking children supports a pure UG account of L2 acquisition, Schwartz claims that these data are more compatible with an immediate transfer analysis whereby the L1 grammar imposes itself on the L2 input in order to accommodate it, leading to

misanalyses. The current study provides us with an opportunity to test their conflicting claims by investigating the L2 acquisition of functional structure not instantiated in the L1. The following section explains the importance of this type of design.

1.1.3 Relating the current study to the issue of the L2 initial-state grammar

The current research is designed to address the issue of the L2 initial-state grammar by investigating the acquisition of English particle verbs by native Spanish speakers. I assume that English particle verbs represent a functional category (e.g., particle phrase (PrtP)) specified by UG**.** As will be outlined in section 2.3.1, Spanish does not have particle verbs and thus by hypothesis does not contain PrtP.

The PrtP parameter value has three positions, "off", "neutral" and "on". The acquisition of English particle verbs entails setting the PrtP parameter value to the "on" position. The initial setting for the PrtP parameter is the "neutral" value; the native English-speaking child projects a PrtP (i.e. switches the parameter to "on") based on positive evidence in the input. The native Spanish-speaking infant also has a "neutral" setting for the PrtP parameter, but lacking the relevant input the parameter is switched to "off". Once the PrtP parameter is switched to the "off" setting, native Spanish speakers cannot change the setting until they encounter evidence in the input that cannot be accommodated by the L1 grammar. We discuss triggering data in section 4.4.4.

The question under investigation is the following: What will native Spanish speakers do when confronted with L2 data representing functional structure not attested

in Spanish? The Pure UG hypothesis assumes that in this situation the L2 learner is in the same position as the L1 child with respect to the projection of functional structure; the L2 grammar contains parameters set at a neutral value, and the L2er, like the L1er, will project functional structure based on positive evidence in the input. Thus, the pure UG hypothesis predicts that native Spanish speakers will show no evidence of native language influence but will exhibit patterns of acquisition similar to those observed in L1 children acquiring English particle verbs. However, if L2ers exhibit the effects of native language influence, then it would strongly suggest that the initial state of the L2 grammar is the L1 grammar, supporting the claims of the FT/FA hypothesis.

The current study tests the Pure UG Hypothesis and FT/FA by investigating the L2 acquisition of functional structure not instantiate in the L1. Specifically, we look at the acquisition of English particle verbs by native Spanish speakers. If pure UG as the initial state is correct, then the initial state of the L2 grammar is the same as the initial state of the L1 grammar, and native Spanish speakers should follow the same patterns of acquisition observed in native English-speaking children acquiring particle verbs. With respect to our study, this implies that the L2er (like the L1er) begins with a neutral setting for the PrtP parameter which is switched to "on" based on positive evidence in the input (i.e. exposure to English particle verbs in the input).

Unlike the Pure UG Hypothesis, FT/FA claims that the initial L2 grammar is the L1 grammar. Since we assume that the grammar of the native Spanish speaker contains a PrtP parameter set at the "off" position, FT/FA claims that the L2 initial-state grammar contains the same setting for this parameter. Essentially, the Pure UG hypothesis and

FT/FA differ with respect to their assumptions regarding the initial value of the PrtP projection; the Pure UG hypothesis claims that the PrtP is initially set at a "neutral" value, and FT/FA claims that it is initially set at "off". What we will refer to as "transfer" effects can be attributed to the initial "off" setting of the PrtP; until the L2er has projected a PrtP (i.e. switched the PrtP parameter to "on") his production will reflect the absence of a PrtP projection (e.g., the particle will be omitted in production). If the FT/FA hypothesis is correct, then we should see evidence for L1 transfer in the initial stages of particle verb acquisition. If the Pure UG hypothesis is correct, then the L2ers will begin with a "neutral" setting for the PrtP parameter and will switch it to "on" based on the L2 input. In this case we would see no evidence for L1 transfer and L2 acquisition of English particle verbs should proceed like L1 acquisition. I assume that a parameter setting of "off" and "neutral" can both be reset based on positive evidence in the input, but an "off" setting will result in particle drop while a "neutral" setting will not.

The current study provides us with an opportunity to explore the predictions of a transfer account of L2 acquisition within a generative framework. Using the structural representation of English particle verbs described in chapter 2, we can test a number of predictions regarding how the L1 grammar might influence L2 production of English particle verbs. Section 4.3.2 provides a detailed explanation of three predictions regarding how the transferred Spanish grammar might influence L2 acquisition, assuming that the L2ers will attempt to parse the data and assign some type of analysis. These predictions are reviewed briefly here. First, we predict that if native Spanish transfer the "off" setting of the PrtP parameter, then they will not project a PrtP and will consequently

drop the particle from particle verb constructions. Secondly, FT/FA predicts that native Spanish speakers will transfer AdvP from Spanish. Since English (transparent) particle verbs are semantically like adverbs, then the L2ers should produce particle verb constructions in the "split" order (i.e.Verb^Object^Particle/Adverb, *She picked the cat up*), which represents the same order found in Spanish adverb constructions. Finally, we predict that native Spanish speakers, lacking a PrtP projection, will initially interpret English particles as part of a complex verbal head and therefore will produce English particles "adjacent" to the verb (i.e. Verb^Particle^Object, *She picked up the cat*).

Beyond analyzing the results in terms of transfer, this thesis also provides detailed discussion regarding how L2ers can use triggering data in the input to move from the native language grammar to the target grammar.

1.2 Do L2ers have access to UG?

Adults and children clearly differ in their ability to fully acquire second languages. While most children reach ultimate attainment, adult second language learners rarely do. Bley-Vroman's (1989) Fundamental Difference Hypothesis attempts to account for such adult/child differences by proposing that while children have access to UG, adult second language learners do not. In contrast, Schwartz and Sprouse's FT/FA hypothesis claims that adult L2ers have full access to UG. Below, we briefly discuss these two theories and explain how using developmental sequence data to investigate the L2 acquisition of

functional structure not attested in the L1 can shed light on the issue of adult access to UG.

Access to UG implies access to the (invariant) principles (e.g., Overt Pronoun Constraint) and parameters of UG. With respect to the latter, we assume that access to UG implies that the L2er has access to the full inventory of functional projections specified by UG and the parameter values associated with them -- both the ones that have been turned on in the L1 (active) and those that have been turned off in the L1 (inactive). Finally, access to UG includes the ability to set (or re-set) parameter values.

1.2.1 The Fundamental Difference Hypothesis

Bley-Vroman's (1989) Fundamental Difference Hypothesis (FDH) claims that the process of adult second language acquisition is fundamentally different from the process of L1 acquisition. While children have access to the UG determined mechanisms that drive L1 acquisition, adult L2ers do not. Like the FT/FA hypothesis, the FDH is a full transfer account of second language acquisition. The FDH assumes that adult L2ers fully transfer the L1 grammar, including all UG parameter settings and constraints that are active in the first language grammar. Thus, although adults have access to UG through the L1, they no longer have access to the UG constraints that are inactive in the L1, nor do they have the ability to set or reset parameters.

Bley-Vroman's claims are based on a number of observations. First, as noted above, adult L2ers rarely reach a stage of native speaker competence while L1 children

do. Second, he points out that while normally developing L1ers are uniform in their mastery of the L1, adult L2ers show varying degrees of success. Additionally, he claims that adults do not show the same uniformity in their acquisition patterns as L1ers. He argues that the variation observed in adult second language acquisition is in part a result of variation in the learning strategies employed by adults acquiring second languages: while L1 acquisition is driven by UG determined mechanisms, these mechanisms are not available to adult L2ers so they are forced to employ general problem solving skills. Since adults must use the same type of general cognitive mechanisms necessary to learn, for example, algebra, they vary in acquisition patterns and levels of ultimate attainment.

While the FDH proposes that adult L2ers do not have access to UG, it makes no claims regarding child L2ers. We take the position here that both child L2ers and child L1ers have access to UG. This is supported by research which has shown that children exposed to an L2 before a certain point of maturation, or critical period, are more likely to reach native-like proficiency than adults exposed after the critical period (e.g., Johnson and Newport 1989). The fact that child L2ers are able to reach native-like proficiency suggests that, like L1ers, they have access to the UG determined mechanisms that drive L1 acquisition.

To explore the issue of adult access to UG, we review research focusing on adult sensitivity to UG principles not instantiated in the L2. We begin by discussing a study by Bley-Vroman, Felix and Ioup (1988), which shows that adult L2ers were relatively insensitive to the UG principle of subjacency, supporting the claims of the FDH. We then turn to a study by Kanno (1998), who reports that native English-speaking adults

acquiring Japanese were in fact sensitive to the Overt Pronoun Constraint, thus providing evidence against the FDH.

Bley-Vroman, Felix and Ioup (1988)

In order to test for access to UG principles, it is important to avoid the potential confound of native language transfer. To do this one should focus on UG principles that are instantiated in the L2 but are not instantiated in the L1, or parameters that are set differently than in the L1. For example, if we find that L2ers obey a certain UG principle, such as Binding Principle A, in the L2, but there is also evidence for adherence to that same principle in the L1, we cannot be sure that the L2er has access to UG, since apparent knowledge of Binding Principle A might simply be an effect of transfer from the L1. If, however, we find that adult L2ers are sensitive to a UG principle that is not instantiated in their L1, or the L2er shows the effects of parameter resetting, it would provide stronger support for adult UG access.

With this in mind, Bley-Vroman, Felix and Ioup (1988) investigate whether native speakers of Korean acquiring English as a second language demonstrate sensitivity to the UG principle of subjacency. Subjacency imposes restrictions on how far a phrase can move from its base position. For example, in (11) below, the subjacency principle prevents the *wh*-phrase *who* from crossing more than one barrier node (e.g., DP, IP) (Chomsky 1986 (example from White 2003).

(11) a. *Who did Mary meet the man who saw?
$[_{CP}$ Who$_i$ $[_{IP}$ did Mary meet $[_{NP}$ the man $[_{CP}$ who $[_{IP}$ saw t_i]]]]]?
b. Who did Mary believe that the man saw?
$[_{CP}$ Who$_i$ $[_{IP}$ did Mary believe $[_{CP}$ t_i that $[_{IP}$ the man saw t_i]]]]?
(White 2003: 246)

In English, the subjacency principle prohibits the type of long distance movement exhibited in (11a), while (11b) is grammatical because the *wh*-phrase does not cross more than one barrier (e.g. IP or DP, see Chomsky (1986)). According to Bley-Vroman et al., since Korean is a *wh*-in situ language, subjacency is not instantiated[9] and knowledge of this principle could not be a transfer effect.

Native Korean-speaking participants were presented with English sentences similar to those in (11) and were asked to indicate whether or not they were grammatical. According to Bley-Vroman et al., the native speakers of Korean demonstrated below native-like performance, judging sentences that violate subjacency as grammatical. Schachter (1989) reports comparable results in a similar study with native speakers of Indonesian, Chinese and Korean. Based on findings like those reported in Bley-Vroman et al. (1988) and Schachter (1989) as well as the differences between child L1 acquirers and adult L2ers with respect to acquisition patterns and ultimate attainment, Bley-Vroman argues that adult L2 acquisition is fundamentally different from L1 acquisition, and that adult L2ers' knowledge of UG is limited to what is available through the L1.

Although the FDH can account for adult/child differences in the area of ultimate attainment, we see evidence against it in proficient L2 adults, as it has been reported that adult L2ers exposed to a second language after the critical period can demonstrate native-like proficiency (e.g., Birdsong and Molis 2001). This is not predicted by the FDH. Further evidence against the FDH can be found in Kanno (1998) as well as Unsworth (2005) and Cancino, Rosansky and Schumann (1978), reviewed below.

[9] More recent research by Watanabe (1992) questions this assumption.

Kanno (1998)

Kanno (1998) demonstrates adult L2 access to UG principles not evidenced in the L1, contra the FDH. Languages vary with respect to whether pronouns must be overtly expressed. In languages like English, pronouns in embedded clauses cannot be omitted.

(12) a. Who said that he bought a car?
b. *Who said that __ bought a car?

We see that dropping the pronoun *he* from the embedded clause in (12b) results in ungrammaticality. Unlike English, so called pro-drop languages like Spanish, Italian and Japanese allow null subjects in embedded clauses, as illustrated in the Japanese sentences in (13).

(13) a. Dare$_i$ ga [*pro*$_i$ kuruma o katta to] itta no?
Who$_i$ nom (he$_i$) car ACC bought that said Q
'Who said that (he) bought a car?'
b. *Dare$_i$ ga [kare$_i$ ga kuruma o katta to] itta no
Who$_i$ NOM he$_i$ NOM car ACC bought that said Q
'Who said that he bought a car?'
c. Dare$_i$ ga [kare$_j$ ga kuruma o katta to] itta no
Who$_i$ NOM he$_j$ NOM car ACC bought that said Q
'Who said that he bought a car?' (White 2003: 23)

The grammaticality of example (13a) shows that a null pronoun is possible in embedded subject position in Japanese. In fact, when the subject of the embedded clause is bound by a quantified subject of the matrix clause, the OPC requires that the embedded subject be null, as illustrated by the ungrammaticality of (13b). However, if the matrix clause subject does not bind the pronoun subject of the embedded clause, then the embedded pronoun can be overt, as illustrated in (13c). In other words, sentences like (13c) can

never be interpreted with binding between the subject of the matrix clause and the subject of the embedded clause; in this case the embedded subject must have a clause external referent.[10]

Considering the fact that native Japanese speakers never hear sentences like (13b) in the input and know that it is ungrammatical, it is assumed that this knowledge is determined by UG. Since English is a non-pro-drop language, the OPC is not instantiated in English. Therefore, native English speakers learning Japanese as an L2 would have no way of acquiring this knowledge without access to UG, as it cannot be transferred from English and there is no evidence for it in the L2 input.

Kanno (1998) tests native English speakers' sensitivity to the OPC by providing them with sentences like (13c) and asking them who may have been performing the act described in the embedded clause. It was hypothesized that if the L2ers are not sensitive to the OPC, then they should allow the quantifier subject of the matrix clause to bind the overt pronoun in the embedded clause. The results showed that this was not the case, however, as the native English speakers indicated that the embedded overt pronoun required a clause-external antecedent. Since the L2ers could not have transferred knowledge of the OPC from English (see (12a)) and could not have found evidence for it in the Japanese input, Kanno concludes that the results provide evidence for adult access to UG.[11]

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[10] It should be noted that while co-reference is not allowed between the subject of the matrix clause and the subject of the embedded clause in sentences like (13c), co-reference is allowed when the subject is a referring NP.

[11] It should be noted that participants were not asked to indicate whether English sentences containing overt pronouns in embedded clauses could be co-referenced with a quantified antecedent (e.g. *Who$_i$ said that he$_i$*

While the FDH takes the position that adult L2ers have no access to UG, the results reported in Kanno (1998) indicate otherwise. We now turn to the claims of the FT/FA hypothesis.

1.2.2 The FT/FA hypothesis: Adult L2ers have full access to UG

Bley-Vroman's (1989) FDH and Schwartz and Sprouse's (1994, 1996) FT/FA hypothesis differ on one important dimension: While the FDH claims that adult L2ers do not have access to the UG mediated mechanisms that drive L1 acquisition, the FT/FA hypothesis maintains that adult L2ers have full access to UG. Thus, the FT/FA hypothesis assumes that all L2ers bring to the task of second language acquisition their L1 grammar, along with complete knowledge of UG principles and the same UG determined mechanisms that drive first language acquisition.

1.2.2.1 Testing for access to UG determined mechanisms that drive L1 acquisition

Before reviewing studies which support the "full access" aspect of FT/FA, it is important to first discuss what could potentially constitute evidence for access to a UG mediated language acquisition algorithm. There are in principle three ways to test for access to the UG determined mechanisms that drive L1 acquisition. One can compare the

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bought a car?). Since it is not inconceivable that some native English speakers might reject sentence-internal co-reference in this case, it is not entirely clear that Kanno's results could not be attributed to transfer.

L2 acquisition of functional structure not instantiated in the native language with the L1 acquisition of this structure. If L2ers, like L1ers, use UG determined mechanisms to acquire structures that they have had no prior exposure to, then they should pattern like L1ers in the acquisition of these structures. However, it should be noted that native language influence could still cause L1 and L2 acquisition to differ even in this case.

A second way we can see evidence for access to the UG determined mechanisms that drive L1 acquisition is in the simple ability to project functional structure not instantiated in the L1, regardless of whether the developmental pattern is similar to that observed in L1 acquisition. Since "grammatical structure" is not given in the input (i.e. structure must be derived from a phonological string), then the ability to acquire functional structure not found in the L1 can be attributed to UG.

A third way to test for access to UG, suggested by Schwartz (1987; 1992), is to compare adult L2 acquisition to child L2 acquisition, holding the L1 and L2 constant. In the cases where L1 influence is possible, transfer may cause L2 acquisition to be different from L1 acquisition. However, if the adult and child L2ers follow the same acquisition pattern (albeit sometimes different from L1ers) it would suggest that adults and children are using the same language acquisition algorithm. It is fairly uncontroversial (though not empirically tested) that, prior to a certain maturational point, child L2ers have access to UG, as evidenced by the eventual native-like attainment exhibited by child L2ers.[12] If

[12] There is some controversy as to what age constitutes the maturational point after which L2ers may not have access to UG. For example, Johnson and Newport (1989) report that native Korean and Chinese speakers who were exposed to English before age 7 demonstrated native-like performance on a test of English grammar, while proficiency scores decreased linearly for those who were exposed to English between 8 and 15. However, Birdsong and Molis (2001) report that native speakers of Spanish who were

we assume that children have access to a UG determined language acquisition algorithm, and we observe that adult L2ers exhibit the same acquisition patterns as child L2ers, then we have evidence that adults have access to the same learning algorithm.

Below we review Unsworth (2005), who conducted an experimental study with native English-speaking adults and children acquiring Dutch, as well as Cancino, Rosansky and Schumann (1978), who did a longitudinal investigation of the spontaneous speech of native Spanish-speaking adults and children acquiring English. Both studies report developmental sequence data indicating that adult and child L2ers demonstrate the same acquisition patterns, therefore suggesting that adult L2ers have access to the same UG-determined mechanisms that drive L1 acquisition.

Unsworth (2005)

Unsworth (2005) tests for UG access in adult second language acquisition by investigating the acquisition of Dutch by native English-speaking adults and children, focusing on the acquisition of object scrambling.[13] As background, direct object NPs of Dutch can appear on either side of adverbs/negation.

(14) a. Het meisje heeft twee keer een aap gekieteld (non-scrambled)
The girl has two times a monkey tickled
'The girl tickled a(ny) monkey twice.'
b. Het meisje heeft een aap twee keer gekieteld (scrambled)
The girl has a monkey two times tickled
'The girl tickled a (certain) monkey twice.' (Unsworth 2005: 2)

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exposed to English between the ages of 2 and 16 demonstrated native-like or near native-like performance on the same test of English grammar used in Johnson and Newport (1989).

[13] Unsworth (2005) also investigated L1 acquisition of Dutch. We provide a brief summary of this dissertation, omitting details that are tangential to our purpose.

(15) a. De jongen heft geen (neit + een) vis gevangen (non-scrambled)
The boy has no (not + a) fish caught
'The boy didn't catch a(ny) fish.'

b. De jongen heft een vis neit gevangen (scrambled)
The boy has a fish not caught
'The boy didn't catch a certain fish.' (Unsworth 2005: 2)

In examples (14b) and (15b), the indefinite direct object has moved from its base position to the right of the adverb/negation, to its scrambled position to the left of the adverb/negation. The (b) sentences indicate that scrambling has an effect on the semantic interpretation of the indefinite direct object; the scrambled object receives a specific interpretation, whereas the non-scrambled object receives a non-specific interpretation.

Unsworth's participants were native English-speaking children (N=25) and adults (N=23). Participants were divided into low-, medium- and high-proficiency groups using an independent test of Dutch proficiency and then completed an experiment combining a truth-value judgment task and elicited production. During the experiment, an investigator told a story using 3 pictures, and then a puppet made a comment or asked a question. If the puppet asked a question, they were instructed to answer it. If the puppet made a comment, the participants were asked to indicate whether the comment was true or false; if it was false they were expected to produce the correct sentence. An example is provided below.

(16) Picture 1: Mickey Mouse points to flowers in a garden.

Context: Mickey staat in de tuin
Mickey stands in the garden
'Mickey is standing in the garden.'

Mickey: Kijk, wat mooie bloemen, zeg
Look what beautiful flowers say
'Look, what beautiful flowers!'

Gele bloemen, rode bloemen
Yellow flowers red flowers
'yellow flowers, red flowers.'

Ik hou van bloemen. Ik ga ze plukken
I love from flowers I go them pick
'I love flowers. I'm going to pick them.'

Picture 2: Mickey with a thought bubble above his head. The thought bubble depicts an empty flower garden.

Mickey: Maar dan is de tuin leeg
But then is the garden empty
'But then the garden will be empty.'

Picture 3: Mickey with a thought bubble above his head. Thought bubble depicts the flower garden with one red flower in it, indicating that Mickey has picked all the flowers in the garden except the red one.

Mickey: Dus een rode bloem ga ik niet plukken
So a red flower go I not pick
'So I'm not going to pick a red flower.'

Puppet: Ik zat niet op te letten
I sat not up to pay attention
'I wasn't paying attention.'

Puppet: Wat gaat Mickey niet doen
What goes Mickey not do
'What's Mickey not going to do?'

Expected response A: Mickey gaat een (rode) bloem niet plukken
Mickey goes a (red) flower not pick
'Mickey is not going to pick a red flower.'

Expected response B: Mickey gaat niet een / geen (rode) bloem plukken
Mickey goes not a / no (red) flower pick

(Unsworth 2005: 218-220)

In example (16), the context establishes that there is a specific red flower that Mickey will not pick so that the garden will not be left empty. Since the indefinite object is specific (i.e. a specific red flower), expected response A, representing the scrambled object, is the target.

Participants were tested using three conditions: specific indefinite NPs (target: scrambled), non-specific indefinite NPs (target: non-scrambled) and definite NPs (target: scrambled). The percentage of target responses was calculated. For all conditions the results showed that the low proficiency child L2ers consistently produced a lower percentage of target responses than the medium and high proficiency L2ers.

Further investigation of the individual results suggest that the child and adult L2ers demonstrate a similar developmental sequence in the acquisition of Dutch scrambling. Both the adults and children seem to move through stages that reflected the initial effects of L1 transfer and a gradual progression toward the target, as illustrated in table 1.2.

Table 1.2 Progression for L2 acquisition of Dutch scrambling of definite and specific indefinite object NPs by native English-speaking adults and children (Unsworth 2005)

Stage	**Description**	**Word order patterns produced**
I	No scrambling	Neg^Verb^Object
II	No scrambling	Neg^Object^Verb *and* Neg^Verb^Object
III	No scrambling	Neg^Object^Verb only
IV	Scrambling	Object^Neg^Verb *and* Neg^Object^Verb
V	Scrambling	Object^Neg^Verb only

Table 1.2 indicates that the L2 child and adult participants begin with the English-like Neg^Verb^Object word order (lower proficiency participants), then go through a stage

where the object can precede the verb, and finally reach the target whereby the object precedes both negation and the verb (higher proficiency participants).

Unsworth claims that her results support a transfer account of L2 acquisition, as the low proficiency L2ers seem to transfer the Neg^Verb^Object word order from English. She further claims that the similar developmental sequence demonstrated by the L2 adults and children provide evidence for adult access to UG. According to Unsworth (following Schwartz 1992), if we assume that child L2ers have access to UG, then the similarity between the L2 adult and the L2 child acquisition patterns suggest that they are using the same UG mechanisms to acquire Dutch.

Cancino, Rosansky and Schumann (1978)

Like Unsworth (2005), Cancino, Rosansky and Schumann (1978) find evidence for similar acquisition patterns in a longitudinal study of adult and child Spanish speakers acquiring English as a second language. They investigated the spontaneous utterances of two 5 year-olds, two adolescents and two adults, focusing on negation and interrogatives. Table 1.3 shows the developmental sequence reported by Cancino et al.

Table 1.3 Developmental sequence exhibited by native Spanish speakers acquiring English

Stage	**Word order pattern produced**
I	Neg^Verb
II	(unanalyzed) *don't*^Verb/Aux
III	Aux^Neg
IV	(analyzed) *don't*

According to Cancino et al., the 6 L2 participants all went through an initial stage in which negation proceeded the verb, and followed the same acquisition progression until

the target-like Aux^Neg and analyzed *don't* were produced. Assuming that children have access to UG, the similarities in acquisition patterns between the adults and children suggest that adults also have access to the UG determined mechanisms that drive L2 acquisition.

Much of the work comparing adult and child L2 acquisition has focused on ultimate attainment (e.g., Johnson and Newport 1989; Birdsong and Molis 2001). While this research points to important adult/child differences that must be explained, surprisingly few studies have compared the *process* of adult and child second language acquisition, which could provide further information about similarities or differences. Following the suggestions of Schwartz (1992), the current study attempts to do this using developmental sequence data.

Having laid out some of the relevant theoretical background, the next section provides a brief description of how we will investigate adult access to UG in the current study.

1.2.3 Relating the current study to the issue of adult access to UG

The current study investigates adult access to UG in two ways. First, we investigate the acquisition of functional structure not instantiated in the L1. Since Spanish does not contain particle verbs, we assume that Spanish does not have a positive setting for the PrtP parameter. If native Spanish-speaking adults demonstrate acquisition of the functional structure associated with English particle verbs, then we can assume they have

access to UG by virtue of the fact that they have switched the PrtP parameter to "on" and projected PrtP. We also look for indirect evidence for UG access by comparing adult L2 acqusition to child L2 acquisition. Assuming that children have access to UG, if adult L2ers demonstrate the same acquisition patterns observed in child L2 acquisition, then we can assume that adult L2ers also have access to UG. More specifically, we compare the production of particle verbs by low-, medium- and high- proficiency adult and child L2ers using a cross-sectional experimental design. Like Unsworth (2005), we take similar developmental trends to indicate that the adult and child L2ers use the same UG determined mechanisms to acquire the L2.

Chapter 2

The Syntax of Particles, Prepositions and Adverbs

We begin this section with a discussion of the structure of English particle verbs (PVs). Section 2.1 describes the semantic and structural differences between idiomatic and transparent particle verbs. While the focus of this thesis is the acquisition of English PVs, it is also important to briefly discuss prepositions and adverbs, since they are homophonous with particles and, as we will see, strongly affect the course of development of particle structures in L2 learners. Section 2.2 provides a brief overview of these structures in English and section 2.3 explores differences and similarities between English and Spanish.

2.1 The structure of English particle verbs

This section provides a detailed discussion of English particle verbs, the central focus of this thesis. Following recent suggestions, we assume that particle verbs fall into two semantic classes, which have distinct structural representations (Ramchand & Svenonius 2002; Sawyer 1999; Wurmbrand 2000).

2.1.1 Two classes of particle verbs

English particle verbs contain particles (e.g., *She put the hat <u>on</u>*) that are homophonous with prepositions (e.g., *It is <u>on</u> her head*). However, particles are interesting because, unlike prepositions, they can appear on either side of the object, as shown in example (1). I refer to particle verbs of the verb^particle^object order as "adjacent PVs" (i.e., the verb and particle are adjacent). PVs exhibiting the verb^object^particle order are termed "split PVs" (i.e., the verb and particle are split by the object).

(1) a. She put on her hat. (adjacent PV)
b. She put her hat on. (split PV)

The syntactic analysis I adopt for the structure of English PVs embodies the observation that they fall into two semantic classes: transparent particle verbs and idiomatic particle verbs (Ramchand & Svenonius 2001; Sawyer 1999; Wurmbrand 2000). While the meaning of transparent PVs is compositionally determined by the meaning of the verb and particle, idiomatic PVs have a non-compositional interpretation. For example, the particle verb *threw out* in *She threw the garbage out* is transparent; 'the garbage' becomes literally 'out'. However, for idiomatic particle + verb combinations, the separate meaning of one or both elements is not retained and the PV receives an idiomatic interpretation. As an example, for the sentence *She mixed the batter up*, 'the batter' is not literally 'up'. The lack of compositionality in idiomatic particle verbs like *mix up* compared to the compositionality of transparent particle verbs like *throw out*

indicates that they represent two separate semantic classes and suggests that their structural representations may also be different.

Wurmbrand (2000) argues that transparent and idiomatic PVs are both semantically and structurally distinct. She claims that the differences between the two PV classes can ultimately be attributed to the meaning of the particle. While transparent particles retain their prepositional meaning, idiomatic particles are essentially meaningless; they do not retain their prepositional meaning and can only have meaning in combination with the verb. As Wurmbrand convincingly illustrates, this semantic difference is reflected in German syntax in the extent to which the particle can topicalize or receive contrastive focus.

As the following German sentences indicate, transparent particles can be topicalized (2a-b), while topicalized idiomatic particles result in ungrammaticality (2c-d) (Grewendorf 1990; Stiebels & Wunderlich 1994; Webelhuth & Ackerman 1999).

(2) a. [AUF]$_{PART}$ hat er die Tür t$_{PART}$ gemacht
[open]$_{PART}$ has he the door t$_{PART}$ made
'He opened the door.'

b. [WEG]$_{PART}$hat er den Brief t$_{PART}$ geschickt
[away]$_{PART}$ has he the letter t$_{PART}$ sent
'He sent away/off the letter.'

c. *[AUF]$_{PART}$ haben sie das Stück t$_{PART}$ geführt
[PART]$_{PART}$ have they the piece t$_{PART}$ performed
'They performed the piece.'

d. *[AUF]$_{PART}$ hat sie die Suppe t$_{PART}$ gegessen
[PART]$_{PART}$ has she the soup t$_{PART}$ eaten
'She ate up the soup.' (Wurmbrand 2000)

Although topicalization constructions are more restricted in English than in German, (pseudo-) clefting provides a syntactic context for testing focus in English. Examples (3) and

(4) demonstrate that transparent particles can be stranded in cleft constructions, while idiomatic particles cannot.[14]

(3) a. Where she put her glass was down (not away).
b. How she pulled the box was up (not down).
c. It was down that she put the glass (not away).
d. It was up that she pulled the box (not down).

(4) a. *Where/how she wrote her name was down (not ??).
b. *Where/how she woke the dog was up (not ??).
c. *It was down that she wrote her name (not ??).
d. *It was up that she woke the dog (not ??).

Wurmbrand claims that the sentences in (2c-d) and sentences like those in (4) are ungrammatical because idiomatic particles cannot receive a focus interpretation. However, transparent particles can receive a contrastive interpretation (and topicalize freely in German), as indicated by the grammaticality of the sentences in (3) and (2a-b).

Further evidence for a semantic difference between transparent and idiomatic particle verbs is found in the domain of constituent negation. Assuming that constituent negation is a focus construction, the sentences in (5) show that transparent PVs can have a contrastive focus interpretation in negation contexts while the idiomatic particle verbs in (6) cannot.[15]

(5) a. Melinda pulled her socks not up, but down.
b. Frank took his cap not off, but away.

[14] While the sentences in (3) are somewhat odd for some English speakers, everyone surveyed agreed that the sentences in (3) were markedly more acceptable than the sentences in (4).

[15] Although these sentences might be considered grammatical on a non-particle verb reading (e.g., for (6a), a paper tree might be cut in a downward motion or an upward motion), they are ungrammatical if we assume an idiomatic particle verb interpretation (e.g., for (6a), 'cutting down a tree' (causing it to fall) is a different action than 'cutting up a tree' (cutting it into smaller pieces)).

(6) a. *Francis cut the tree not down, but up.
b. *Mike rolled the sleeping bag not up, but out.

Again, the ungrammaticality of the sentences in (6) can be attributed to the fact that idiomatic particles are non-compositional; they cannot receive a focus interpretation because they are meaningless without the verb.

We see additional differences between transparent and idiomatic PVs in gapping and coordination constructions. As (7) and (8) show, transparent PVs can be gapped and they can serve as constituents in coordination constructions, while idiomatic PVs cannot.

(7) a. Susan pulled her pants up and Jenny [ ] her socks up.
b. Greg took his shoes off and Dave [ ] his coat off.
c. She pulled her pants both down and off.
d. She took the cup both out and away.

(8) a. *Alexis blew the balloon up and Sue [ ] the raft up.
b. *Robby locked the bike up and Matt [ ] the motorcycle up.
c. *She wrote your name both down and off.
d. *She cut the tree both down and up.

The grammaticality of the sentences in (7) and the ungrammaticality of the sentences in (8) appear to be related to locality. As (7a-b) indicate, transparent particles may be in a non-local relationship with an overt verb (i.e. verb at PF); the particle in the gapping clause is related to the overt verb in the antecedent clause. The ungrammaticality of (8a-b), however, suggests that the idiomatic particle and overt verb must be in a local relationship. Similarly, the particle in transparent PVs can be related to a non-local verb outside its coordinate conjunct (7c-d), while the particle in idiomatic particle verbs cannot (8c-d), again suggesting that the idiomatic particle and verb must be in a local relationship. The importance of a local

relationship between the verb and particle in idiomatic PVs is discussed further in section 2.1.4.

2.1.2 Why not a complex verb?

Many have argued for a complex V^0 analysis of particle verbs, claiming that the verb and particle are a single word which enters the syntax as a unit (Ackerman & Webelhuth 1998; Booij 1990; Johnson 1991; Koizumi 1993; Neeleman 1994; Neeleman & Weerman 1993; Stiebels 1996; Stiebels & Wunderlich 1994; Wiese 1996). However, Wurmbrand (2000) and Zeller (1997, 1999) demonstrate that this analysis cannot account for the fact that the verb and particle are obligatorily separated in certain contexts, such as verb second (V2) in German and Dutch. Consider the sentence in (9).

(9) a. Hans Warf seinen Mitarbeiter hinaus t_v
John threw his employee out t_v
'John fired his employee.'
b. *Hans hinauswarf seinen Mitarbeiter t_v
John out-threw his employee t_v (Wurmbrand 2000)

Assuming that the verb moves into C^0 in German V2 and that the particle and verb form a complex head, the ungrammaticality of (9b) is unexplained. If the particle is part of the V head, it is not clear what would restrict it from moving with the verb into C. Further, in order to account for the grammaticality of (9a), in which the particle is separated from the verb, a complex V^0 analysis would need to employ some more complicated syntactic mechanism, such as excorporation, that treats the verb and particle as separate syntactic

units (cf. Koopman 1995). However, if we assume that the particle is not part of the verb, then the grammaticality of (9a) results from head movement of the verb and the ungrammaticality of (9b) can be attributed to the fact that phrasal categories do not undergo head movement. Given these facts, I assume that the verb and particle are not a complex V^0.

2.1.3 Transparent particle verbs

Following Wurmbrand (among others), I assume that the transparent particle forms a small clause structure (Aarts 1992; Den Dikken 1995; Moro 1997; Ramchand & Svenonius 2002; Sawyer 1999). The compositional particle heads its own phrase (PrtP), which I assume is a functional category. The PrtP constitutes the predicate of a small clause, whose category I take to be agreement phrase (AgrP)[16] (Contreras, 1995), as illustrated in (10).[17]

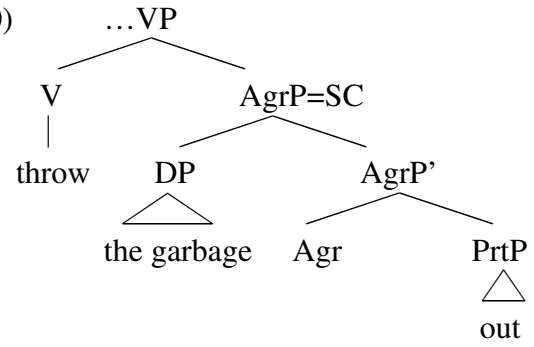
[16] Following Contreras (1995), I assume that small clauses are an AgrP projection. Contreras' claim is based on the observation that the small clause subject can bind an anaphor, pronoun or negative polarity item in the predicate, as indicated by the example in (i).

(i) a. I consider nobody any good.
b. *I consider anybody no good. (Contreras 1995)

Given the asymmetric c-command relationship between the small clause subject and the predicate, the subject must be located in a higher AgrP projection.

[17] Several structures are truncated at VP to save space.

(10)



My assumption regarding the small clause status of transparent PVs is based on the fact that the object is licensed by a predication relationship between the particle and the object (Wurmbrand 2000; Sawyer 1999; Ramchand & Svenonius 2002). Consider the sentences in (11).

(11)

	Particle Verb	Predication
a.	She put her hat on.	The hat is on.
b.	He put the cup down.	The cup is down.
c.	She took off the ring.	The ring is off.
d.	He pulled up his pants.	His pants are up.

For each transparent particle verb in (11), the particle predicates a property of the object. Since predication is typically represented by a small clause structure (e.g., Stowell 1978), I assume that the particle is contained within the AgrP small clause and the DP object is base-generated in Spec-AgrP, as depicted in (10). (As will be discussed in section 2.1.4, idiomatic particles do not predicate a property of the object and are not represented by a small clause structure.)

We find further support for a small clause analysis of transparent PVs in German topicalization. Sentence (12a) shows that the transparent particle and object unit can be

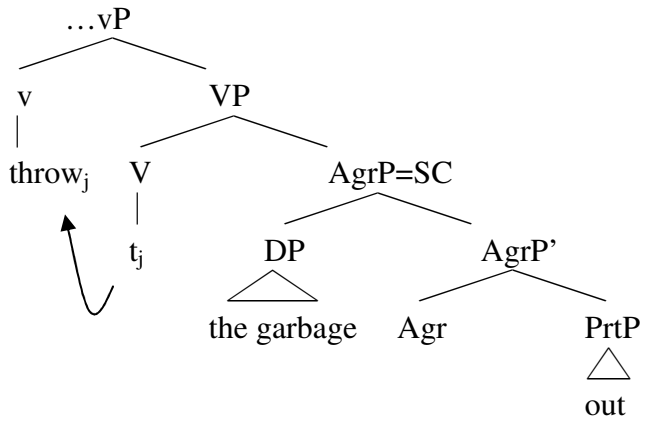
topicalized independent of the verb (Grewendorf 1990; Muller 2000; Stechow & Sternfeld 1988; Wurmbrand 2000), while the idiomatic particle and object unit in (12b) cannot.

(12) a. ?[Die Tür auf]$_{sc}$ hat nur der Hans gemacht
[the door open]$_{sc}$ has only the John t_{sc} made
'Only John opened the door.'
b. *[Das Stück auf]$_{sc}$ haben nur die Philharmoniker gefürht
[the piece PART]$_{sc}$ have only the Philharmoniker t_{sc} performed
'Only the Philharmoniker performed the piece.' (Wurmbrand 2000)

Although (12a) is rather degraded for some speakers, all speakers find (12b) ungrammatical. The relative acceptability of (12a) suggests that the transparent particle and object form a constituent independent of the verb, supporting a small clause analysis. Further, the contrast between (12a) and (12b) offers additional support for the position that transparent and idiomatic PVs are syntactically distinct.

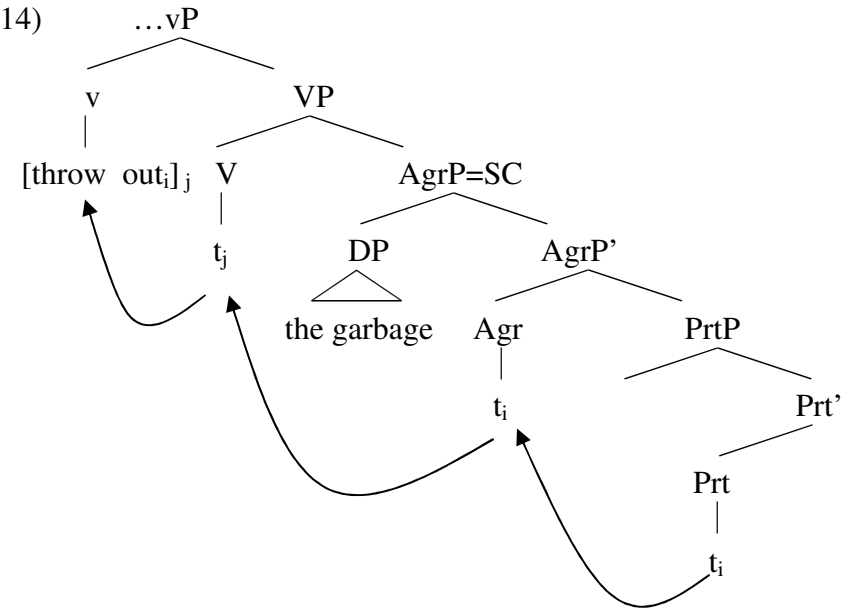
Movement of the verb to vP is triggered by a version of the EPP, which I take to be a syntactic requirement of a functional projection that either its head or its specifier must be overtly filled (cf. Koopman 1996). I assume that case checking requires DPs to be in the Spec of AgrP at S-structure in English (Caponigro & Schütze 2003; Johnson 1991; Koizumi 1993; Lasnik 1999; Runner 1995; Tanaka 1999). In (13) this case requirement on the object it satisfied in its base position.

(13)



The structure in (13) represents the split word order. As will become relevant later, note that even if no movement occurred in this structure, the same surface word order would be derived. By contrast, the adjacent order would be derived by incorporation of the particle into V via Agr before movement to the higher vP (Den Dikken 1995; Harley & Noyer 1997). As the two orders suggest, incorporation is optional. The derived structure for adjacent transparent PVs is provided in (14).

(14)

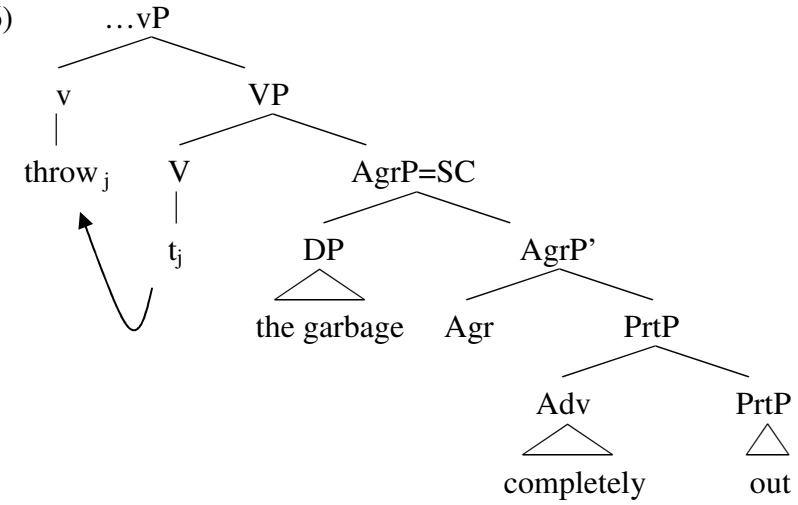


Fraser (1974) observes an interesting asymmetry associated with adverbial modification in PVs. As the sentences in (15) show, while adverbs are grammatical with the split structure, they cannot surface between the incorporated verb + particle unit.

(15) a. She threw the garbage completely out.
b. *She threw completely out the garbage.

The asymmetry observed in (15) is accounted for under a small clause analysis. On the assumption that adverbs adjoin to the XP that they semantically modify, in the case of transparent PVs the adverb modifies the particle and adjoins to PrtP. The structure for (15a) would then be as in (16).

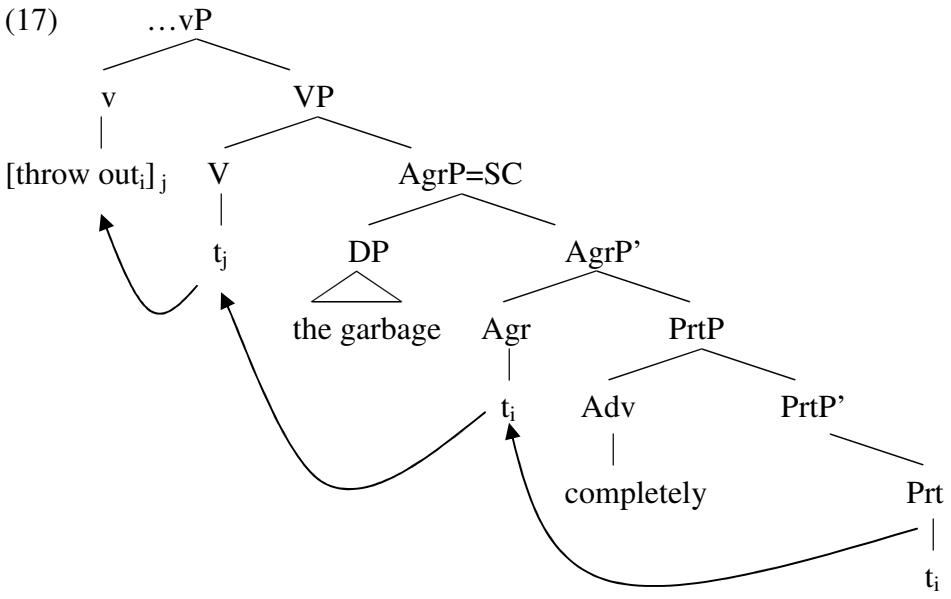
(16)



As (16) illustrates, the adverb remains in its adjoined position and the sentence is grammatical. For (15b), however, the adverb *completely* would have to move past the object *the garbage* and get between the incorporated verb and the particle. Since the adverb plus particle cannot incorporate into the verb and by assumption PrtP cannot

adjoin to the small clause, the linear order in (15b) is not derivable. However, as (17) shows, the in situ adverb can modify an incorporated particle.

(17)



2.1.4 Idiomatic particle verbs

We have seen that the object in transparent PVs is licensed by a predication relationship between the particle and the object, and that transparent particle verbs are represented by a small clause structure. However, this is not the case for idiomatic particles; the idiomatic particle does not predicate a property of the DP object. As an example, the particle *up* in *gave up*, as in *She gave up chocolate*, does not predicate a property of the object: the *chocolate* is not *up*. Since there is no predication relationship, the small clause structure is not motivated.

Further evidence against a small clause structure for idiomatic PVs was provided earlier and comes from German topicalization. Example (12), repeated here in (18), shows that the transparent particle + object can be topicalized (18a), while the idiomatic particle + object cannot (18b).

(18) a. ?[Die Tür auf]$_{sc}$ hat nur der Hans gemacht
[the door open]$_{sc}$ has only the John t_{sc} made
'Only John opened the door.'
b. *[Das Stück auf]$_{sc}$ haben nur die Philharmoniker gefürht
[the piece PART]$_{sc}$ have only the Philharmoniker t_{sc} performed
'Only the Philharmoniker performed the piece.' (Wurmbrand 2000)

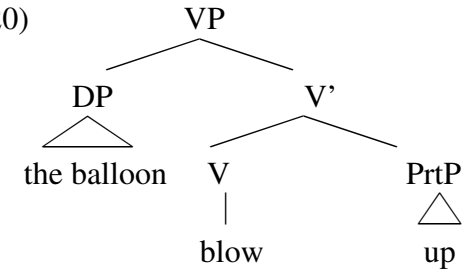
The ungrammaticality of (18b) shows that, unlike transparent PVs, the idiomatic object and particle do not form a constituent. Hence, idiomatic particles are incompatible with a small clause analysis (Grewendorf 1990; Muller 2000; Stechow & Sternfeld 1988, Wurmbrand 2000).

Given the lack of a predication relationship between the particle and object in idiomatic PVs and given the German topicalization facts suggesting that the idiomatic particle does not form a constituent with the object, I reject a small clause analysis of idiomatic PVs. I further assume, as detailed in section 2.1.2 above, that idiomatic particle verbs are not complex verbal heads. The gapping and coordination facts discussed in section 2.1.1 suggest that the idiomatic verb and particle must be in a local relationship. Thus, following Wurmbrand, I adopt a complex V' analysis for idiomatic PVs, and I employ the following licensing requirement for idiomatic interpretations.

(19) IDIOMATIC PARTICLE LICENSING
Idiomatic interpretation of PVs is licensed in a local relation at LF.
Local relation: Head-complement configuration (cf. Bobaljik 1995; Zeller 1999).

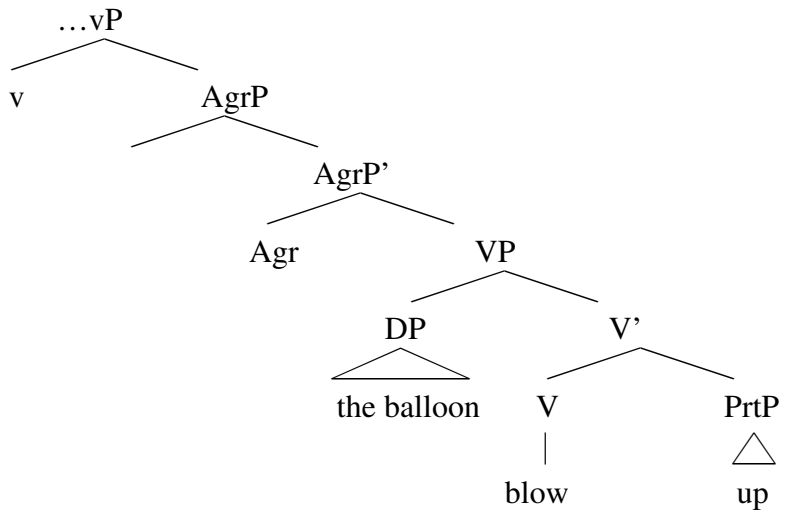
Since idiomatic interpretations are licensed in a local relationship, which is defined as a head-complement configuration, I assume that the particle is a sister to the verbal head of the complex V'. I assume that selection of a particle complement is a lexical property specific to the verb of idiomatic particle verbs. I further assume that, while the object in transparent PVs is licensed by a predication relationship between the object and particle, the object in idiomatic PVs receives a theta role from V, which c-commands the object that is base-generated in Spec-VP. As with transparent particles, idiomatic particles head a PrtP which I assume is a functional category. This structure is provided in (20).

(20)



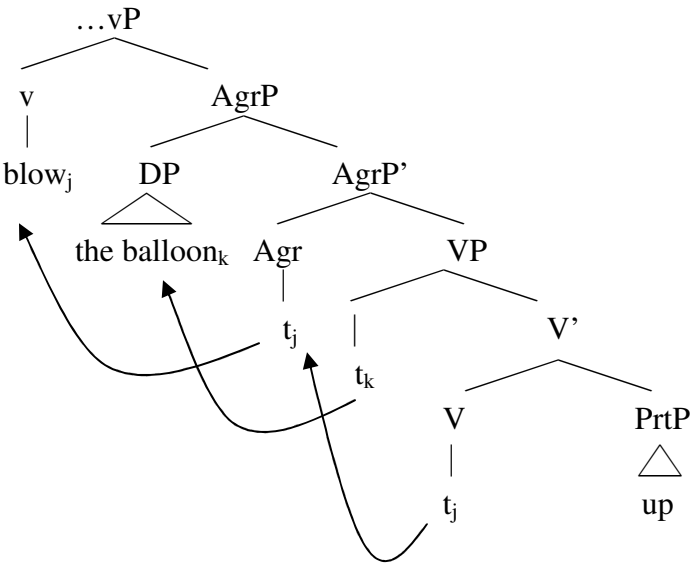
AgrP is projected above VP for purposes of case assignment, as in (21), and the object moves into Spec-AgrP to check case features.

(21)



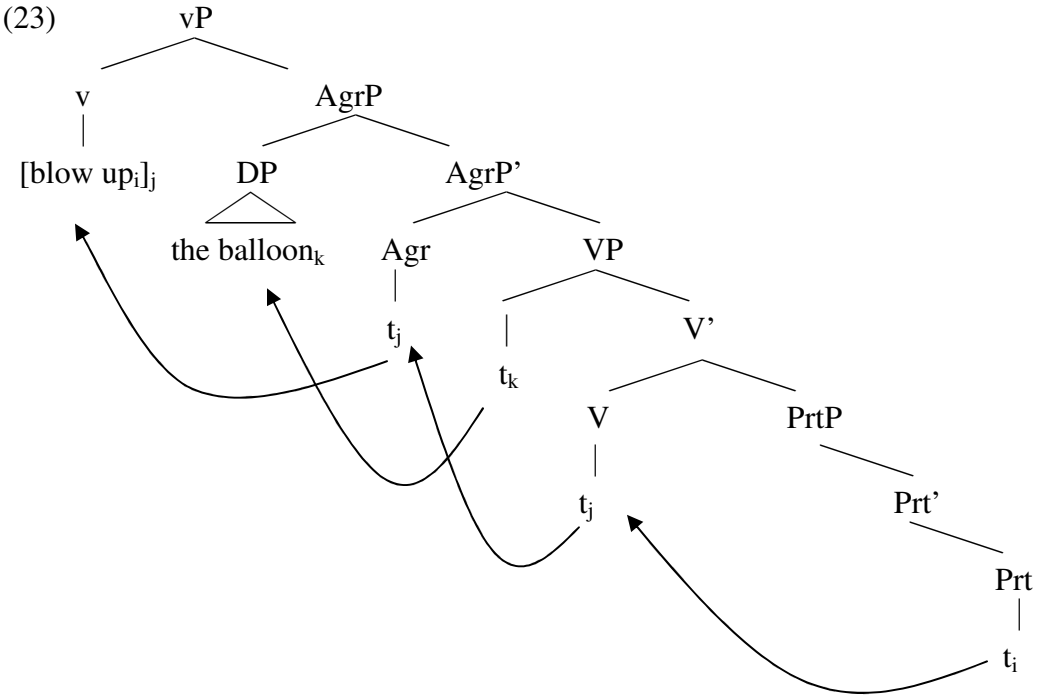
In order to derive the split idiomatic particle verb from the structure in (21), the verb moves to the higher vP to satisfy the EPP. The split PV structure is given in (22).

(22)



To derive the adjacent order, the particle incorporates into the verb and then the verb and particle unit move to the higher vP, as in (23).

(23)



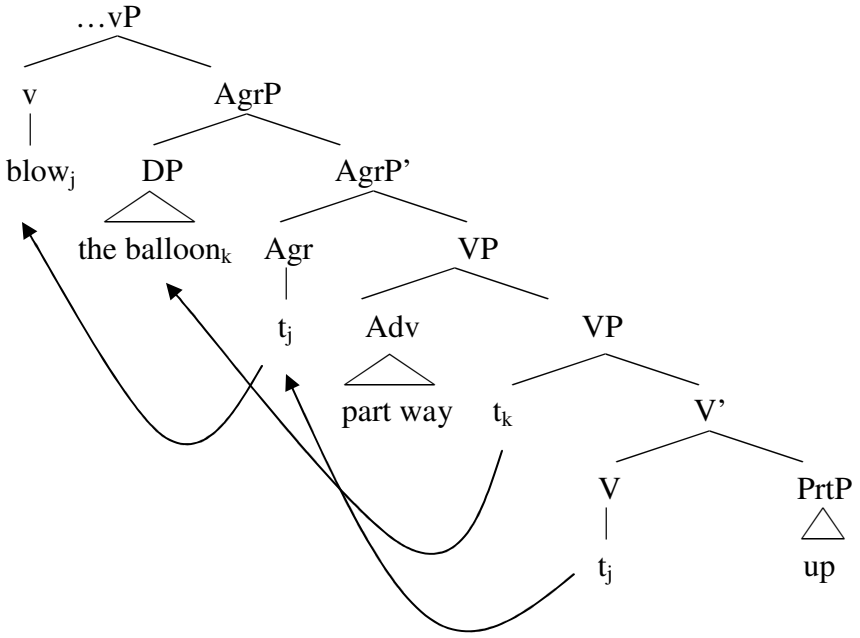
The asymmetry related to adverb modification mentioned in section 2.1.3 also holds for idiomatic PVs, as indicated in (24).

(24) a. She blew the balloon part way up.
b. *She blew part way up the balloon.

As with transparent PVs, adverbs cannot surface between the verb and particle in adjacent idiomatic PVs, and the complex V' structure is consistent with this asymmetry. Again, I assume the adverb adjoins to the XP that it semantically modifies. Unlike transparent PVs, however, the adverb in idiomatic PVs like (24) does not modify the particle alone but instead modifies the entire verb + particle unit (e.g., *part way* does not modify *up* alone, it modifies the entire PV *blow up*) (Wurmbrand 2000). Thus, the

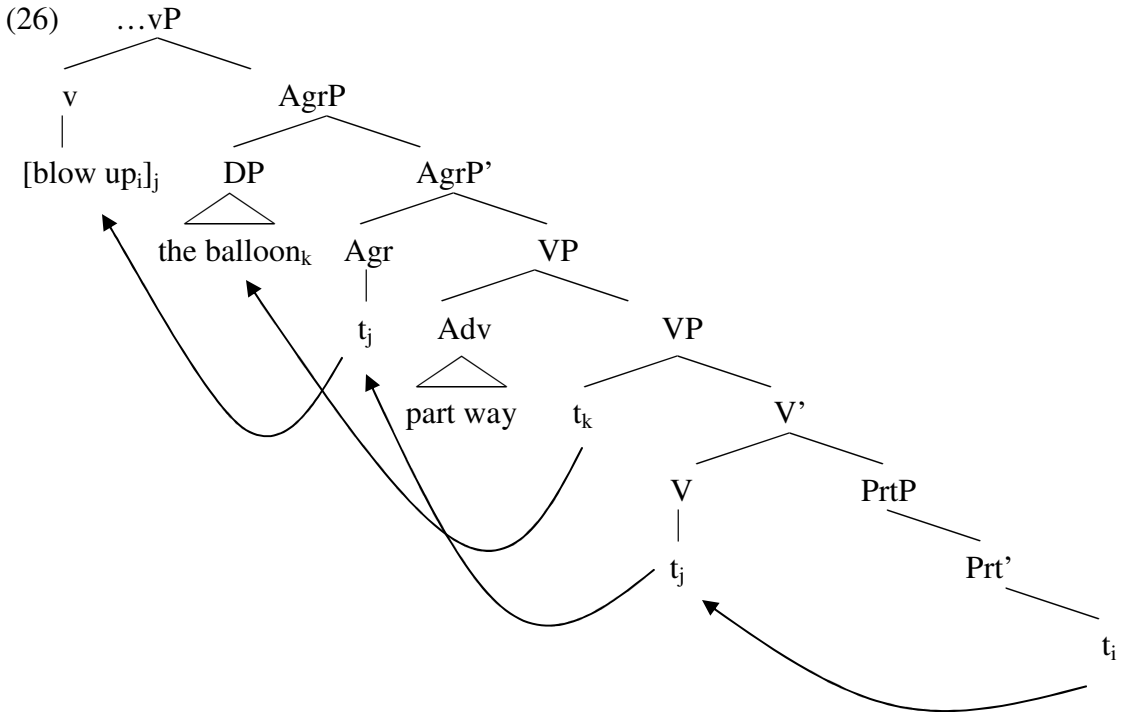
adverb must adjoin to the entire VP. The adverb can surface in the split form, as the verb and object move past it, yielding the correct linear order.

(25)



The word order in (24b) indicates that incorporation has occurred, since *blow up* precedes *the balloon*. Since the adverb adjoins to VP, there is no way for it to surface between the verb and the incorporated particle, and there is, hence, no structural source for (24b). Example (26) shows that adverbial modification is possible with adjacent idiomatic particle verbs as long as the adverb remains in situ.

(26)



2.1.5 Summary of the structure of English particle verbs

Particle verbs of English comprise two distinct semantic classes. While the verb and particle in transparent PVs retain their original meaning (e.g., *She threw the garbage out*), the verb and/or particle in idiomatic PVs do not (e.g., *She mixed the batter up*). This semantic distinction is reflected in their syntactic representations. The transparent PV is a small clause structure; the transparent particle heads the small clause and predicates a property of the object. The split structure for transparent PVs is the base structure and the adjacent order is derived by incorporation of the particle into the verb. Unlike transparent PVs, idiomatic PVs are not represented by a small clause structure. Following Wurmbrand (2000) I assume that because idiomatic interpretations are

licensed in a local relationship, idiomatic PVs represent a complex V' structure whereby the particle is a verbal complement. Like adjacent transparent PVs, adjacent idiomatic PVs are derived by particle incorporation.

2.2 Particles, prepositions and adverbs of English

Although particles are homophonous with adverbs and prepositions, they exhibit different distributional properties. In this section we compare particles to prepositions, exploring differences in word order and argument structure. We also provide a brief discussion of English adverbs and their relation to prepositions.

2.2.1 Differentiating particles and prepositions

Consider the following sentence pairs from Fraser (1976).

(26) a. She sped up the process.
b. She sped up the pole.
(27) a. The man reeled in the line.
b. The man reeled in the street. (Fraser 1976)

The (a) examples in each pair contain particle verbs, while the (b) examples contain prepositional phrases. The most obvious difference between the two categories is related to word order. While particles can appear on either side of the object, prepositions must precede the object.

(28) a. She sped up the process. (PV)
b. She sped the process up. (PV)
c. She sped up the pole. (PP)
d. *She sped the pole up. (PP)
(29) a. The man reeled in the line. (PV)
b. The man reeled the line in. (PV)
c. The man reeled in the street. (PP)
d. *The man reeled the street in. (PP) (Fraser 1976)

Following Fraser, I assume that the difference between particles and prepositions can be attributed to the relationship between the preposition and the object, but the association is more narrowly defined here as a head-complement relationship. While particles do not select a complement, prepositions do.[18] Thus, the ungrammaticality of (28d) and (29d) can be attributed to the fact that the preposition and DP must be in a local relationship.

The same generalizations hold when the preposition occurs with a verb that selects two complements. The examples in (30) show that the preposition *on* must precede the DP complement *her head*. Thus, we can differentiate the preposition in (30) from the particle in (31) in terms of word order and complement structure.[19] While the preposition *on* in (30) selects a DP complement and the PP has a fixed word order, the particle *on* in (31) does not select a DP complement and may appear on either side of the object.

(30) a. She put the hat on her head.
b. *She put on the hat her head.

[18] In section 2.1 I suggested that objects are generated in the specifier of a small clause for transparent particle verbs, and they are generated in the specifier of VP for idiomatic particle verbs.

[19] Since the head precedes the complement in both Spanish and English, I assume that head-complement relationships imply the relevant word order restrictions (i.e. the head must precede the complement).

(31) a. She put the hat on.
b. She put on the hat.

Further, although the preposition *on* in (30) and the particle *on* in (31) are superficially identical, the two have different semantic interpretations. While the preposition *on* in (30) specifies direction, the particle *on* in (31) specifies a destination or goal. The sentence (31a) *She put the hat on* entails that the hat is being worn, while there is no such entailment in (30a) *She put the hat on her head* (the hat could be upside down on top of her head). This is further illustrated by the fact that the preposition *on* can be replaced with the preposition *onto*, which also specifies direction, as in (32a), while the particle *on* cannot be replaced with *onto*, as in (32b).

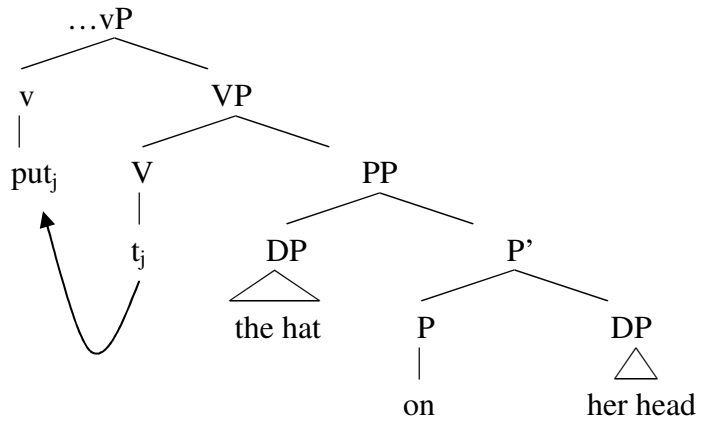
(32) a. She put the hat onto her head.
b. *She put the hat onto.

Following Pesetsky (1995), I assume that when the preposition occurs with a verb that takes two complements, the direct object is located in Spec-PP, as in (33).[20] English verbs move into the upper vP in order to satisfy an EPP feature (cf. Koopman 1996).[21]

[20] Pesetsky's claim is based on a number of diagnostics. For example, the direct object (DO) asymmetrically c-commands the indirect object (IO) (e.g. *She put no coin in any case*, **She put any coin in no case*). Further, the PP acts as a constituent in conjunctions (e.g., John put $_{PP}$[the hat on his head] and $_{PP}$[the boots on his feet]). The only constituent that can contain the DO, IO and P but exclude V is PP.

[21] It should be noted that Pesetsky's (1995) claim did not include EPP features.

(33)



2.2.2 English adverbs

Adverbs such as *up* and *in* are semantically similar to their prepositional counterparts, as illustrated in (35) and (36).

(35) a. She climbed up the ladder. (PP)
b. She climbed up. (AdvP)

(36) a. She jumped in the box. (PP)
b. She jumped in. (AdvP)

We see that *up* specifies the same direction for the sentences in (35), and *in* refers to the same location for the sentences in (36). Despite the semantic similarities between adverbs and prepositions, they are different with respect to argument structure. We see that the prepositions in (35a) and (36a) select DP complements (*the ladder* and *the box*, respectively), while the adverbs in (35b) and (36b) do not.[22]

[22] We might also refer to such adverbs as intransitive prepositions.

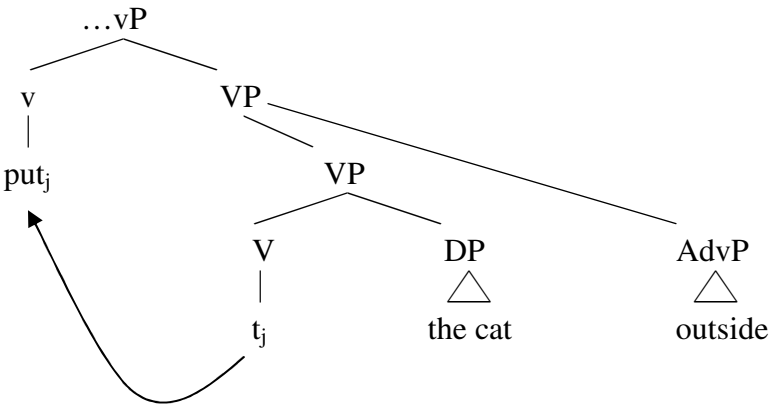
Adverbs differ from prepositions with respect to argument structure and they differ from particles with respect to word order restrictions. Consider (37) and (38).

(37) a. She pulled her sock up.
b. She pulled up her sock.
(38) a. She put the cat outside.
b. *She put outside the cat.

While the particle *up* in (37) can appear on either side of the object, the adverb *outside* in (38) cannot. Thus, adverbs are unlike particles with respect to word order restrictions, and they are unlike prepositions with respect to argument structure (i.e. adverbs do not select a complement).

I assume that adverbs adjoin to the XP they modify, as represented in (39).

(39)



2.2.3 Summary of distributional properties for particles, prepositions and adverbs

The following table provides a summary of the distributional properties associated with English particles, prepositions and adverbs.

Table 2.1 Distributional properties for English particles, prepositions and adverbs

	Selects complement	Variable word order
Particles e.g. 'She put the hat on'	No	Yes
Prepositions e.g. She put the hat on her head'	Yes	No
Adverbs e.g. 'She put the cat outside'	No	No

2.3 Spanish syntax

In the following sections, we discuss similarities and differences between English and Spanish with respect to particles, prepositions and adverbs. While there are no particle verbs in Spanish, there are adverbs and prepositions.

2.3.1 No particle verbs in Spanish

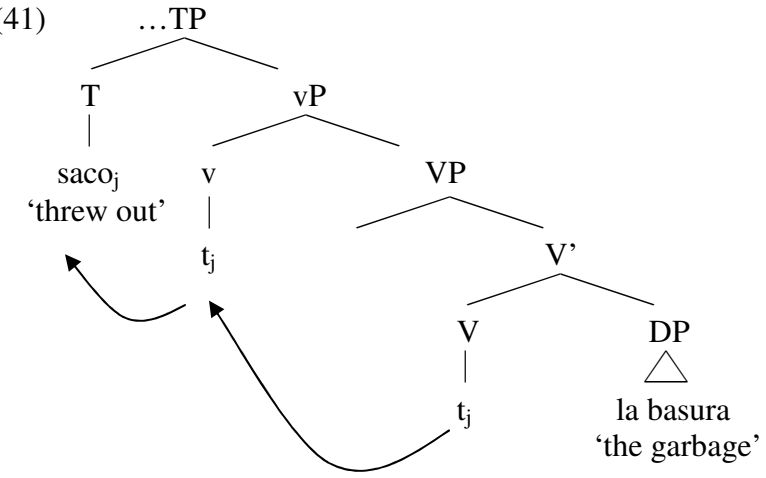
Spanish does not have particle verbs. Events denoted by English particle verbs are expressed by simple verbs in Spanish. Consider the following examples.

(40) a. Sacó la basura
threw out the garbage
'He/she threw out/removed the garbage'
b. Infló el globo
blew up the balloon
'He/she blew up/inflated the balloon'

As the examples in (40) indicate, the action represented by the English particle verb *throw out* (and the simple verb *remove*) must be expressed using the simple Spanish verb

sacar 'to throw out'/'remove'. Similarly, the particle verb *blow up* and the simple verb *inflate* are represented in Spanish by the simple verb *inflar* 'to blow up'/'inflate'. The structure for Spanish (and English) simple verbs is in (41). The parallel structure for Spanish and English simple verbs will be discussed in Chapter 4 when we discuss transfer possibilities in L2 acquisition.

(41)



2.3.2 Spanish adverbs

While Spanish does not have particle verbs, it does have adverbs, as shown in (42).

(42) Puso el gato afuera
he/she put the cat outside
'He/she put the cat outside'

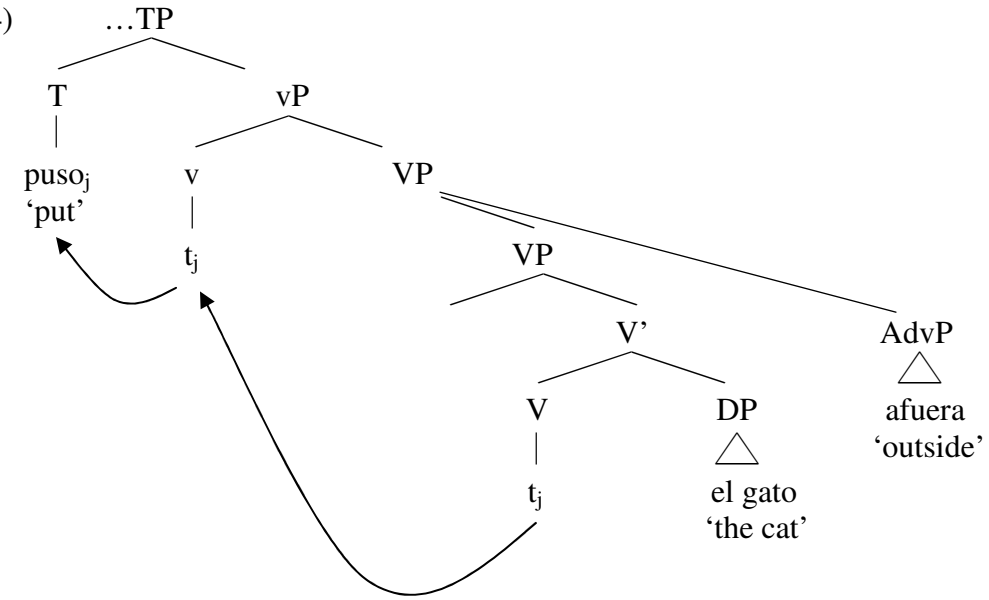
Although the sentence in (42) has the same linear order as split particle verbs (e.g., VP^DP^particle), the Spanish adverb can be differentiated from particles in terms of its

distributional properties. Recall that adverbs do not select a complement but rather modify an XP and, unlike particles, adverbs cannot precede the object. Thus, the adverb *afuera* 'outside' in (43) cannot precede the object *el gato* 'the cat'.

(43) *El hombre puso afuera el gato
The man put outside the cat

The structure for Spanish adverbs (identical to English adverbs), is represented in (44).

(44)



2.3.3 Spanish prepositions

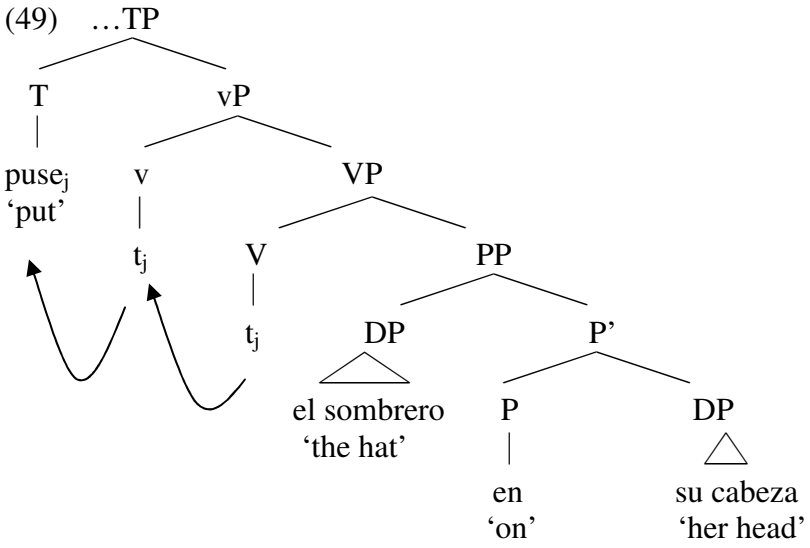
Similar to English, Spanish also has prepositional phrases, as shown in examples (45) and (46).

(45) Ella caminó en el parque
She walked in the park
'She walked in the park.'

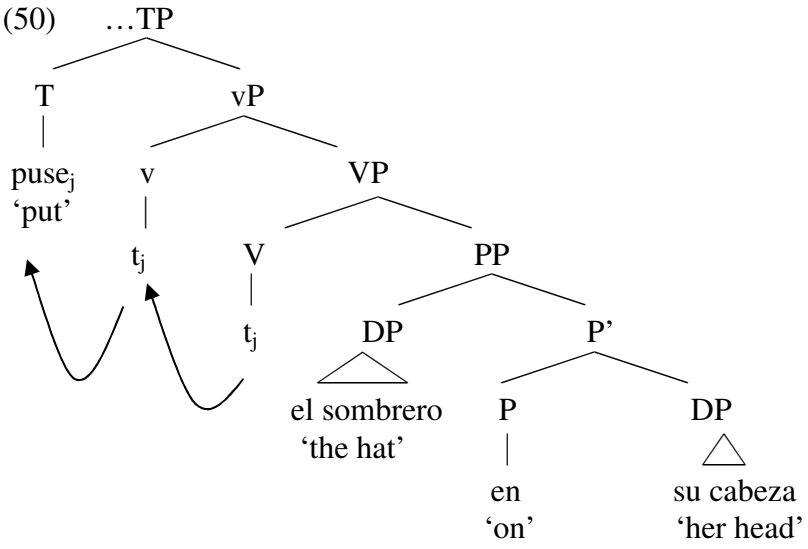
(46) Ella puse el sombrero en su cabeza
She put the hat on her head
'She put the hat on her head.'

The distributional properties of Spanish prepositions are similar to the distributional properties of English prepositions, as Spanish prepositions must select a complement and do not exhibit variable word order. The structure of Spanish PPs, represented in (49) and (50), is identical to the structure of English PPs.

(49)



(50)



2.3.4 Summary of Spanish syntax

Spanish contains both PPs and AdvPs, each of which have the same distributional restrictions and structural representations in English and Spanish. However, unlike English, Spanish does not have particle verbs. What English can represent by either a particle verb or a simple verb (e.g., *throw out/remove*) must be represented by a simple verb in Spanish (e.g., *sacar* 'to throw out'/'remove').

2.4 Summary of Chapter 2

We have seen that particle verbs of English are semantically and syntactically non-uniform. While transparent PVs are compositional, idiomatic PVs are non-compositional. Transparent PVs represent a small clause structure in which the particle

heads the PrtP and predicates a property of the object. Since idiomatic PVs are non-compositional, they are not represented by a small clause structure. Following Wurmbrand (2000), I assume that idiomatic PVs are represented by a complex V' structure.

Regarding the syntax of Spanish, we have seen that Spanish has both prepositions and adverbs. However, since Spanish does not have particle verbs, it does not have a PrtP.

Chapter 3

Method

3.1 Participants

3.1.1 L2 children

Thirty-five native Spanish-speaking children participated in this study. The L2 children were all between 4 and 8 years old,[23] and came from households where Spanish was the primary language (as verified by parents or school records); their first exposure to English was in kindergarten.[24] Twenty-seven L2 children were recruited from Burbank Boulevard Elementary School, located in North Hollywood, California. Eight L2 children were recruited from the community of San Bernardino, California. The data for 2 children were eliminated because they were reported to have developmental disorders that affect normal language development (autism and aphasia), and the data for a third child were eliminated because he was reported to have been exposed to both English and Spanish with equivalent frequency from birth. Thus, the current analysis includes data for 32 L2 children, 11 in the level 1 proficiency group, 10 in the level 2 proficiency group, and 11 in the level 3 proficiency group (see section 4.1.2 for an explanation of

[23] It should be noted that the majority of the child L2 participants (29) were between 5 and 7 years old. Two 4 year-olds and one 8 year-old also participated. Although these children did not fall into the same age range as most of the children tested, their proficiency scores indicated that their grammatical knowledge was the same as the 5-7 year-olds, so their data were included in the analysis.

[24] It is important to note that although the L2 children grew up in mono-lingual Spanish-speaking households, they may have been exposed to some English from television or older siblings prior to entering kindergarten.

how participants were assigned to proficiency groups). Table 3.1 lists the ages and proficiency level for each L2 child participant remaining after participant elimination.

Table 3.1 Age and proficiency level for L2 children

ID Number	Age (year;month.day)	Proficiency Level
C1	8;7.4	Level 3
C2	6;5.7	Level 2
C3	4;4.1	Level 2
C4	4;9.20	Level 2
C5	6;5.5	Level 3
C6	5;3.23	Level 3
C7	5;5.11	Level 1
C8	6;5.26	Level 3
C9	5;4.18	Level 3
C10	5;10.10	Level 3
C11	5;9.1	Level 1
C12	5;10.26	Level 2
C13	5;5.11	Level 2
C14	5;5.15	Level 3
C15	6;6.10	Level 2
C16	6;7.11	Level 2
C17	6;1.14	Level 1
C18	5;5.18	Level 1
C20	5;9.2	Level 1
C22	6;1.29	Level 3
C23	6;10.6	Level 2
C24	6;2.20	Level 1
C25	6;3.1	Level 3
C25	5;6.1	Level 1
C27	5;10.12	Level 2
C28	6;2.23	Level 2
C29	6;3.24	Level 3
C30	6;4.22	Level 3
C32	6;3.19	Level 1
C33	6;5.3	Level 1
C34	7;0.4	Level 1
C35	6;5.14	Level 1

Table 3.1 indicates that there is little relationship between chronological age and proficiency level, as the mean age for each proficiency group is roughly equivalent (mean age level 1 = 6;0. mean age level 2 = 5;12 and mean age level 3 = 6;3).

3.1.2 L2 adults

A total of 46 native Spanish-speaking adults participated. They all immigrated to the U.S. as adults. They had been living in the US between 6 months and 19 years and were between 20 and 49 years of age.[25] The L2 adult participants were recruited from ESL classes at a Los Angeles adult school. Because attendance at the adult school is somewhat sporadic, 13 participants did not attend the second testing session, and so their data were eliminated. As such, the current analysis includes data from 33 L2 adults, 11 in the level 1 proficiency group, 11 in the level 2 proficiency group, and 11 in the level 3 proficiency group. Table 3.2 lists the ages and proficiency levels for each L2 adult participant remaining after participant elimination (five participants did not provide information about their ages, as noted by "Not reported" in the table).

[25] Some participants did not provide information about their age or date of arrival.

Table 3.2 Age and proficiency level for L2 adults

I.D. Number	Age (year;month.day)	Proficiency Level	Years in the U.S.
A1	37;0.17	Level 3	2.5
A2	40;2.0	Level 1	.5
A3	30;2.24	Level 3	3
A5	38;11.6	Level 3	19
A8	45;0.14	Level 1	7
A11	38;11.25	Level 1	14
A13	Approximately 37[26]	Level 2	5
A14	Not reported	Level 2	Not reported
A16	22;8.20	Level 2	1
A17	28;5.0	Level 1	6
A18	36;10.26	Level 3	15
A19	Not reported	Level 2	Not reported
A22	28;11.21	Level 1	9
A25	34;3.25	Level 2	9
A26	48;2.27	Level 2	2
A29	42;3.7	Level 1	16
A30	Not reported	Level 2	Not reported
A31	22.2.9	Level 2	Not reported
A32	26;7.7	Level 3	3
A33	Not reported	Level 3	Not reported
A34	22;5.23	Level 1	Not reported
A35	Approximately 34[3]	Level 1	Not reported
A36	36;3.5	Level 3	1.5
A37	48;9.11	Level 3	10
A38	36;5.11	Level 3	Not reported
A39	Not reported	Level 2	Not reported
A40	Approximately 23[3]	Level 1	Not reported
A41	53;6.17	Level 1	14
A42	37;9.0	Level 2	.5
A43	33;10.16	Level 2	Not reported
A44	28;3.12	Level 1	4.5
A45	23;9.7	Level 3	Not reported
A46	44;10.1	Level 3	19

[26] Participants A13, A35 and A40 only reported year of birth.

3.1.3 Control children

The control children consisted of 12 native English speakers between 5 and 7 years of age who were raised in monolingual English-speaking environments. Five control children were recruited from Burbank Boulevard Elementary School in North Hollywood, California, and 7 were recruited from the community of Sherman Oaks, California. It was necessary that the native English-speaking children be as proficient as the high-proficiency L2 children**,** because the native English-speaking children represent those that have the target grammar for the L2ers.[27] Thus, data for 4 English-speaking children who scored below level 5 on the proficiency test were eliminated (see section 4.1.2 for further details on these eliminations). The remaining 8 participants scored at or above level 5 on the proficiency test. The ages for the native English-speaking child participants remaining after subject elimination are listed in table 3.3.

[27] Ideally, we would have matched the L2ers and control children in terms of proficiency and compared performance between the groups. However, this would require that one-third of the control children score at or below level 2 on the proficiency test. This type of performance can only be expected of normal English-speaking 2 year-olds, who do not have the cognitive capacity to complete the proficiency test that was used. Thus, matching the L2ers and controls with respect to proficiency was impossible. Further, we could not compare the 4 control children who scored below 5 on the proficiency test with L2ers at similar levels of proficiency because the proficiency test scores indicated that 2 of these children were language delayed.

Table 3.3 Ages for native English-speaking child participants

I.D. Number	Age (year;month.day)
CE1	6;2.21
CE4	6;0.24
CE5	6;1.4
CE6	4;9.11
CE7	6;11.20
CE9	5;1.25
CE11	Approximately 5 years[28]
CE12	5;2.12

3.1.4 Control adults

Eight native English-speaking adults participated in this study, serving as the adult controls. All adults were between 21 and 63 years old and were monolingual speakers of American English. Three adult controls were recruited from the Los Angeles area, and 5 were recruited from southwest Missouri.[29]

3.2 Stimuli

The experiment consisted of two tasks: an English language proficiency assessment and an elicited production task. Participants first completed the assessment, which was designed to provide information about their individual level of English language

[28] The parent of CE11 could not be contacted, but a close personal acquaintance verified that the child was 5 years old.

[29] There are fewer control participants (16 total) than L2 participants (65 total) due to time constraints. Because controls were not grouped into three levels of proficiency, fewer control participants were required.

proficiency. Following the assessment an elicited production task was administered. This tested participants' spontaneous production of various transparent and idiomatic particle verbs. Stimuli for the assessment and elicited production task are described below.

3.2.1 Assessment stimuli

The current study provides a cross-sectional comparison of L2 children and adults. Although the study is not longitudinal and thus does not track individuals over time, a cross-sectional comparison traditionally assumes that as individuals pass through each proficiency stage over time, they will demonstrate behavior similar to others at that same level of proficiency. The current cross-sectional study is designed to see whether L2 children and adults at similar levels of proficiency demonstrate the same behavior with respect to particle use, thus providing information about similarities and difference between adult and child L2 acquisition.

In order to group the participants by different levels of English language proficiency, it was necessary to give them a proficiency test. The assessment instrument was a modified version of the Curtiss & Yamada (1985) Comprehensive Language Evaluation—Elicited Production (CYCLE-E). The CYCLE-E is a normalized test of English language proficiency, consisting of an elicited production task involving sentence completion. Although the CYCLE-E was designed primarily for use with native English-speakers, we used it to assess both children and adults because it was necessary to match

adult and child L2ers with respect to proficiency.[30] The CYCLE-E was chosen over other L2 proficiency tests because most of the others are designed to assess adult proficiency and would have been inappropriate for use with children**.**

The modified version of the CYCLE-E used in the current study focuses mainly on knowledge of English morphosyntax (e.g., tense and aspect, plurals, case marking, etc.), and consisted of 23 items encompassing 6 levels of proficiency. Each level of the CYCLE-E corresponds to the age at which normal English-speaking children have mastered the particular grammatical structures tested. For example, participants who provide correct responses to the items on level 3 but not level 4 demonstrate the proficiency of a normal English-speaking 3 year-old, but are not yet at the level of a normal English-speaking 4 year-old.[31]

The structures tested at each level of the modified CYCLE-E are listed in table 3.4 below. See appendix A for an example item representing each property.

[30] While the CYCLE-E contained pictures for children, the adult L2ers were not affected by this beyond a slight amusement.

[31] It is important to note that we also initially used a modified version of the Curtiss & Yamada (1985) Comprehensive Language Evaluation—Receptive (CYCLE-R) to test participants' comprehension of English grammar. The CYCLE-R is largely a picture-matching task testing grammatical comprehension, which requires that participants listen to an English sentence and point to a matching picture. Although native English-speaking children normally reach the same level on both the CYCLE-E and the CYCLE-R (a level that corresponds to the proficiency of other children their age), we did not see a correspondence between the two tests for the L2 participants. There was often a large discrepancy between participants' performance on the CYCLE-E and the CYCLE-R. Due to the discrepancy between the two assessments and because this dissertation focuses on production data only, we chose to match participants with respect to productive competence using the CYCLE-E rather than the CYCLE-R.

Table 3.4 Item-level analysis for assessment instrument

Property tested	Level	Number of items
Locative prepositions	2	1
Active voice word order	2	1
Simple negation	2	1
Possessive determiners	3	2
Direct/indirect object	3	2
Tense and aspect -ed	3	1
Subject pronouns	3	1
Possessive morpheme	4	1
Verb plural	4	1
Modals (can/may)	4	2
Subject pronouns	4	2
Noun plurals	5	2
Aux-be plurals	5	1
Verb singular	5	1
Past participle	6	1
Relativized subject	6	1
Tense and aspect (be+gonna/will)	7	1
Relativized object	7	1

3.2.2 Elicited production task stimuli

For the elicited production task, participants were asked to describe actions that were designed to elicit target sentences containing particle verbs. A total of 14 particle verbs served as target experimental items, 8 compositional and 6 idiomatic; each particle verb was elicited in two different sentences. There were also 27 filler items and 2 practice items. Thus, the elicited production task contained 57 items (28 experimental items and 27 filler items plus 2 practice items).

The compositional particle verbs are listed in table 3.5 and the idiomatic particle verbs are listed in table 3.6. Classification of each particle verb as compositional or

idiomatic is based on Sawyer's (1999) analysis and Wurmbrand (2000), which took into account semantic and syntactic differences between the two verb types (see section 2.1.1 above). Some particle verbs contain particles that must be overtly pronounced for the meaning of the particle verb to be retained (e.g. *She took the hat off* vs. *She took the hat*), while for others the particle is optional (e.g. *She wrote the number down* vs. *She wrote the number*). As will be discussed in more detail in the results section, particle verbs containing obligatory particles were analyzed separately from particle verbs containing optional particles. Asterisks in tables 3.5 and 3.6 identify particle verbs containing optional particles.[32]

[32] The obligatory/optional classification of each particle was largely based on the grammaticality of the sentence without the particle. If the sentence was ungrammatical without the particle (e.g., **She put the hat*), then the particle was classified as obligatory. In some cases, however, dropping the particle resulted in a grammatical sentence that did not accurately describe the action (i.e., the verb lost the particle verb meaning in the absence of the particle). For example, although *She took the hat* is a grammatical sentence, it does not accurately describe an event in which a woman lifts a hat from her own head and stands holding the hat, since the woman is still the possessor of the hat, and 'take' alone implies complete removal. Thus, if dropping the particle resulted in 1) ungrammaticality, or 2) loss of the original particle verb meaning, it was considered to be obligatory.

Table 3.5 Compositional particle verbs in the elicited production task

Compositional PVs	Target Sentence	Action performed by experimenter (E.)
Put on	She put <on> the hat <on>	E. puts a hat on
	She put <on> the necklace <on>	E. puts a necklace on
Take off	She took <off> the hat <off>	E. takes a hat off
	She took <off> the ring <off>	E. takes a ring off
Put down	She put <down> the cup <down>	E. places a cup on a table
	She put <down> the phone <down>	E. places a cellular phone on a table
*Push over[33]	She pushed <over> the chair <over>	E. makes toy figure push over a toy chair
	She pushed <over> the dog <over>	E. makes toy figure push over a large stuffed dog
Knock down	She knocked <down> the blocks <down>	E makes toy figure knock down a 2x4 tower of wood blocks
	She knocked <down> the cups <down)	E. makes toy figure knock down a 2x4 tower of plastic cups
*Take out	She took <out> the spoon <out>	E. opens a box and removes a spoon
	She took <out> the hammer <out>	E. opens a box and removes a toy hammer
*Pull down[34]	She pulled <down> the bag <down>	E. makes toy figure pull a bag down from the surface of a box onto the table
	She pulled <down> his pants <down>	E. pulls a toy figure's pants down
Pull up	She pulled <up> her pants <up>	E. pulls a toy figure's pants up
	She pulled <up> her sock <up>	E. pulls her sock up

[33] The verb *push* and the particle verb *push over* are semantically different. While *push over* has a telic interpretation, *push* is durative. Given the criteria described above, the change in meaning in the absence of the particle would suggest that the particle is obligatory. However, in this case, there was a subevent (about 5 seconds in duration) during which the participant watched the experimenter push an object before it fell over. This being the case, if participants described the past event with the verb *push* (e.g., *She pushed the chair*), they would not technically be wrong. Thus, in order to avoid penalizing participants for such a response, we considered particle verbs with durative subevents to contain optional particles (e.g., *push over the chair*/*push the chair*; *push over the dog*/*push the dog*; *pull down the bag*/*pull the bag*).

[34] For the particle verb *pull down*, the particle is only optional for the first experimental sentence *She pulled <down> the bag <down>*, since there was a 5-second 'pulling' subevent as the bag was being pulled down, but no 'pulling' subevent occurred when the participant pulled the doll's pants down (it was more or less instantaneous).

Table 3.6 Idiomatic particle verbs in the elicited production task

Idiomatic PVs	Target Sentence	Action performed by experimenter (E.)
*Write down	She wrote <down> his number <down>	E. asks assistant for her phone number and writes it on a pad of paper
	She wrote <down> his name <down>	E. asks assistant for her name and writes it on a pad of paper
Blow up	She blew <up> the balloon <up>	E. blows up a balloon
	She blew <up> the beach ball <up>	E. blows up a beach ball
*Wake up	She woke <up> the dog <up>	E. makes toy figure wake up a toy dog
	She woke <up> the cat <up>	E. makes toy figure wake up a toy cat
Cut down	She cut <down> the tree <down>	E. makes toy figure cut down a toy tree
	She cut <down> the bush <down>	E. makes toy figure cut down a toy bush
Roll up	She rolled <up> the towel <up>	E. rolls up a towel
	She rolled <up> the mat <up>	E. rolls up a mat
*Lock up	She locked <up> the bike <up>	E. makes toy figure lock a bike to a toy bike stand
	She locked <up> the box <up>	E. shows participant necklaces in a box, then closes the box and locks it

The choice of particle verbs selected for use in this study was limited in two respects. First, all particle verbs had to represent actions that could be easily acted out by the experimenter. Second, they all had to be particle verbs that were likely to surface in children's spontaneous production; otherwise we would have no reason to expect the kindergarten-aged children to be familiar with their usage. Thus, we selected only particle verbs that were produced by the 2-5 year-old children as reported in Sawyer (1999) or Hyams, Schaeffer and Johnson (1993).

The 27 filler items and two practice items are listed in table 3.7 below.

Table 3.7 Filler and practice sentences in the elicited production task

Item Type	Target Sentence	Action performed by experimenter (E.)
Practice	She scratched her arm	E. scratches her arm
Practice	She gave the dog a pen	E. gives a pen to a stuffed dog
Filler	She kicked the chair	E. kicks a chair
Filler	She kissed the dog	E. kisses a toy dog
Filler	She ripped the paper	E. rips a piece of paper
Filler	She drank some water	E. drinks some water
Filler	She tied her shoe	E. ties a tennis shoe
Filler	She ate a cookie	E. eats a cookie
Filler	She touched her watch	E. touches her watch
Filler	She drew a square	E. draws a square
Filler	She touched her nose	E. touches her nose
Filler	She sneezed	E. pretends to sneeze
Filler	She pulled her hair	E. pulls her own hair
Filler	She cried	E. pretends to cry
Filler	She threw her pen	E. throws a pen on the ground
Filler	She sharpened her pencil	E. sharpens a pencil
Filler	She touched her shoe	E. touches her shoe
Filler	She touched the stickers	E. touches some stickers
Filler	She touched her knee	E. touches her knee
Filler	She dropped a book	E. drops a book on the floor
Filler	She bit her finger	E. bites her finger
Filler	She touched her tooth	E. touches one of her teeth
Filler	She blew her nose	E. pretends to blow her nose into a tissue
Filler	She coughed	E. pretends to cough
Filler	She drew a happy face	E. draws a happy face
Filler	She pointed to her elbow	E. points to her elbow
Filler	She hugged the dog	E. hugs a dog
Filler	She drew a circle	E. draws a circle
Filler	She drew a house	E. draws a house

As tables 3.5 and 3.6 illustrate, each particle verb was elicited in two different sentences (e.g., *She put <on> the hat <on>, She put <on> the necklace <on>*). All sentences were presented in fixed block randomized order. Each experimental sentence containing a particular particle verb was elicited once in the first block and once in the

second block. The fillers were randomly interleaved between each experimental sentence containing a particle verb.

The fillers were included for two reasons, 1) to draw the participants' attention away from the focus of the study (viz. particle verbs), and 2) to eliminate the most recent particle verb response from the participant's short term memory, so responses to the experimental items would not be so heavily influenced by a previous particle verb response.[35]

The items were presented in two lists. List A was the mirror image of list B in reverse order, so the last item of list A was the first item of list B (the presentation order of list A is provided in appendix B).

3.3 Procedure

Following is a detailed description of the procedures for each task. Two experimenters, referred to as experimenter 1 and experimenter 2,[36] were present at all times throughout the experiment. All participants completed all phases of the experiment, except the adult controls, who were not required to complete the assessment. Some of the participants completed the experiment in one session, and others completed it over two sessions. The

[35] Although syntactic priming has been shown to last across sentences, I do not believe that this was a potential confound for the L2 participants for two reasons. First, it took most of them several seconds to provide responses to both filler and experimental items, thus decreasing the potential for syntactic priming. Second, as we will see in the results section, the L2 participants commonly provided responses that did not contain particle verbs or failed to include the particle. Others simply refused to answer some items. Given the scarcity of responses containing particle verbs as well as the presence of the filler items between each experimental item, syntactic priming is not likely to be an issue.

[36] Experimenter 2 was a fluent Spanish speaker. The participants were told from the onset that if they needed any clarification in Spanish, she could provide it.

control adults and control children, as well as the 8 L2 children from the San Bernardino community who participated in their homes, completed the experiment in one hour-long session. The rest of the participants completed the experiment over two separate sessions, with approximately one week separating the two sessions.

Session 1 lasted approximately 30 minutes and was terminated during the elicited production task.[37] Session 2 lasted about 30 minutes. Table 3.8 summarizes the relevant information concerning the experimental sessions for the participants.

Table 3.8 Session information for each participant group

Participant group	# of sessions
33 L2 adults from Los Angeles adult school	Two 30-minute sessions
24 L2 children from Los Angeles Elementary School	Two 30-minute sessions
8 L2 children from San Bernardino Community	One hour-long session
12 control children	One hour-long session
8 control adults	One 30-minute session

All procedures described below were the same for both the adult and child participants.

3.3.1 Assessment procedure

As described above, the assessment instrument was an elicited production task involving sentence completion. For each item, participants were shown two pictures. To establish

[37] Session 1 was usually terminated somewhere around the middle of the elicited production task. Since the assessment took 10-15 minutes, this only left 15 minutes for the elicited production task, which takes about 30 minutes to complete. Thus, the elicited production task was usually interrupted in the middle of the first session and resumed again at the beginning of session 2.

context, experimenter 1 made a statement describing the first picture. Then, she began a sentence describing the second picture, asking the participant to finish the sentence. Participants were instructed to say "I don't know" if they did not know the answer. An example is provided below.

(1) Assessment example item

Target construction: Locative preposition *on*
Picture 1: a cup on the floor beside a table
Picture 2: the same cup on top of the table
Experimenter 1 (instructions): "I'm going to talk about the first picture, and I'm going to have you help me talk about the second picture."
Experimenter 1: Points to picture 1 and says "Here the cup is *off* the table."
Experimenter 1: Points to the second picture and says, "But here the cup is…" and waits for the participant to finish the sentence.
Expected Participant response: "…on the table."

Experimenter 1 interacted with the participant, while experimenter 2 wrote responses and scored the assessment. Feedback was not provided.

The assessment was scored on-line and participants were grouped into 3 levels of proficiency based on assessment scores. A detailed discussion of the scoring and grouping procedures is in section 4.1. The assessment took about 10-15 minutes to complete and participants seemed to enjoy the assessment.

3.3.2 Elicited production task procedure

For the elicited production task, the experimenter performed different actions designed to elicit particle verbs, and the participant described the action. Experimenter 1 told the

participant to watch her as she performed each action, and instructed the participant to tell experimenter 2 what experimenter 1 had done once each action was terminated. Participants were instructed to say "I don't know" if they did not know the answer. An example item is provided below.

(2) Elicited Production—Particle verb example item

> Experimenter 1 (instructions): "I am going to perform some different actions. I want you to tell <<Experimenter 2>> what I did. <<Experimenter 2>> is going to turn her chair around so she can't see me; so you have to tell her what I did."
> Experimenter 1: Picks up a hat and puts it on.
> Expected Participant response: "She put a hat on."

As example (2) illustrates, the participant's response was expected to contain a 3rd person singular subject. In order to avoid a situation in which the participant spoke directly to experimenter 1 (thus using a 2nd person subject), experimenter 2 turned around so that she could not see the actions. This ensured that the participant would report experimenter 1's actions to experimenter 2, forcing the use of a 3rd person subject. Because we wanted to control the inflection of each verb, all actions were telic; thus each action was completed by the time the participant responded.[38]

Each participant completed two practice trials before beginning the experimental items. During the practice trials, if the participant spoke directly to experimenter 1 while describing the action, s/he was reminded to report the action directly to experimenter 2. If the participant used a progressive verb during the practice trials, he was reminded to wait until the action was completed to report the action. The elicited production task took

[38] An exception is the filler item "She's eating a cookie." Many participants responded before I had swallowed the cookie, thus producing a progressive verb.

about 30 minutes to complete. As mentioned above, this task was sometimes completed over two sessions. Participants seemed to enjoy the elicited production task.

3.3.3 Procedure summary

The sequential order of the entire experiment was the same for each participant and is listed in table 3.9 below.

Table 3.9 Sequential order and approximate duration of the experimental phases

Order	Task	Approximate Duration (min.)
1st	Assessment	10-15
2nd	Elicited production—particle verbs	30

3.4 Summary of Chapter 3

Thirty-three native Spanish-speaking adults and 35 native Spanish-speaking children participated in the current study. Twenty native English speakers (8 adults, 12 children) served as controls. The native Spanish-speaking participants completed an English language proficiency test (Curtiss and Yamada 1985) and were grouped into low-, medium- and high-proficiency groups. All participants completed an elicited production task whereby an experimenter performed an action and the participants were asked to describe the action. The elicited production task was designed to elicit 28 particle verbs (16 transparent, 12 idiomatic) and 27 distracters. The proficiency test and elicited production task took about 1 hour to complete, and were administered over two sessions.

Chapter 4

Results and Discussion

4.2 Assessment Results

The Curtiss & Yamada Comprehensive Language Evaluation—Elicited Production (CYCLE-E) (1985) was used to evaluate each participant's knowledge of English and to group the participants according to their spoken English proficiency. A detailed discussion of the scoring procedure is provided in section 4.1.1. Section 4.1.2 discusses the procedures for grouping the participants into three different levels of proficiency.

4.2.1 Scoring

Participants received one point for each correct answer. Recall that each item focused on a particular grammatical structure (e.g., active voice word order, specific subject pronouns, past tense inflection, etc.). Answers were correct if they contained a well-formed version of the structure under investigation, regardless of whether the entire utterance was well-formed or not. As an example, (1) below depicts an assessment item focusing on active voice word order (i.e., SVO with a transitive active verb).

(1) Target: Active voice word order (SVO)
Picture 1: a boy kicking a girl.
Picture 2: a girl kicking a boy.
Experimenter (pointing to picture 1): *Here the boy is kicking the girl.*
Experimenter (pointing to picture 2): *But here…*
Target response: *…the girl is kicking the boy.*
Ungrammatical but correct responses: *…girl kicking boy*, *the girl kick the boy.*
Incorrect responses: *The boy is kicking the girl*, *The boy is kicking*, *kicking the girl*, *kicking*; failure to respond (e.g., "I don't know", "pass").

In order to receive a point for this item, the participants were required to demonstrate knowledge of active voice word order by placing the subject (the girl, depicted in picture 2) before the verb and direct object (the boy). Because errors like determiner omission or nonfinite main verbs are unrelated to word order, such errors were ignored for this item. Thus, responses such as *Girl kicking boy* or *The girl kick the boy* were counted as correct. Participants received no points for incorrect responses (i.e., responses that showed lack of the relevant grammatical knowledge) or failures to respond (i.e., "pass" responses).

Occasionally, participants gave responses that were logical given the pictured situation, but which failed to provide information about the grammatical structure under investigation. Such logical alternative responses were counted as correct because these answers did not specifically indicate a lack of the relevant grammatical knowledge and we did not want to penalize the participants in this case, affecting thereby their measured proficiency level. Example (2) demonstrates this situation for an item focusing on the subject pronoun "they".

(2) Target: Subject pronoun "they"
Picture 1: a girl kicking a ball.
Picture 2: a boy kicking a ball and a girl kicking a ball.
Experimenter (pointing to picture 1*): I'm going to tell you about this girl, SHE*[39] *is kicking.*
Experimenter (pointing to picture 2): *Now you tell me about this BOY and girl…*
Target response: …*They are kicking.*
Logical alternative response: …*The boy and the girl are kicking*
Pragmatically incorrect: *The girl is kicking*

As example (2) shows, the participant was expected to use the 3rd person plural subject pronoun, *they*, as in, *They are kicking*. However, use of the full DPs *the boy* and *the girl*, as in *The boy and the girl are kicking*, is also an appropriate response. Although such alternatives provided no information about the participant's knowledge of the subject pronoun "they", they are technically not incorrect responses. This being the case and following standard procedure for the CYCLE-E, participants were not penalized for providing logical alternative non-target responses. Participants also occasionally produced responses that were grammatically correct and true, but were pragmatically incorrect given the situation. In the above example, the response *The girl is kicking* is grammatical and true of picture 2, but it is not a logical response given the lead question *Now you tell me about this boy and girl...*. Such responses were considered to be incorrect. It should be noted that these types of responses were infrequent.

[39] Words in capital letters are stressed for emphasis.

4.2.2 Grouping Procedures

As discussed in section 3.2.1, the modified CYCLE-E used in this study consisted of 6 levels of difficulty (level 2 through level 7), containing a total of 23 items.[40] Participants could not advance to a higher level of difficulty until they had "passed" the previous level. The proportion of correct responses for each proficiency level constituted the passing criteria and determined the number of points necessary to pass a given level.[41] Passing criteria for each difficulty level are listed below.

Table 4.1 Passing criteria for each level

Difficulty level	Passing criteria: # correct/total
2	2/3
3	4/6
4	4/6
5	3/4
6	2/2
7	2/2

Each participant was assigned a single CYCLE-E score which corresponded to the highest level of difficulty he/she passed.[42]

[40] L2 participants began the assessment at difficulty level 2 and child controls began at difficulty level 4. Because the native English-speaking children were expected to be at stages of grammatical development corresponding to their ages, it was not necessary to start at level 2 and all control children began at level 4. Following standard procedure for the CYCLE-E, if the control children did not pass the first level given, the experimenter administered the test starting at a previous level until the child passed. One control child did not pass level 4. For this case, items for levels 2 and 3 were subsequently administered.

[41] Passing criteria were determined based on the number of items on a given level of difficulty. As the level of difficulty increased, the proportion of correct items necessary to pass the level also increased.

[42] Because the assessment ended when the participant failed a level, those who failed at the lower levels were not given an opportunity to complete any subsequent proficiency level. It has been suggested that some of these individuals might have successfully passed higher levels had they been provided the

The CYCLE-E scores were used to group participants into three proficiency levels. Participants scoring 5 or higher on the CYCLE-E were placed into proficiency level 3; participants scoring between 3 and 4 were placed into proficiency level 2; and participants who scored 2 or below[43] were placed into proficiency level 1. The CYCLE-E scores and proficiency levels of all the L2 participants are listed in table 4.2, and the scores for the child controls are listed in table 4.3.

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opportunity. This objection calls into question the validity of the assessment instrument. However, as we will see, results indicate that the CYCLE-E successfully grouped the participants into representative proficiency levels. If the results had failed to show significant differences between groups or developmental trends, I might consider the possibility that the proficiency groups did not adequately represent proficiency levels of its individual members. However, since the results suggest that the groups are homogenous (i.e. statistical significance indicates little variation within groups), I assume that the CYCLE-E, as it was administered, is a successful indicator of English language proficiency.

[43] Those participants who did not meet the passing criterion for difficulty level 2 were given a score of <2. Those who passed level 2 but failed level 3 received a CYCLE-E score of 2. Although proficiency level 1 contained participants who received 2 or <2 on the CYCLE-E, we assume that the group is homogeneous for the purposes of this study, since the results that will be reported in Chapter 4 demonstrate a developmental trend.

Table 4.2 CYCLE-E scores and proficiency levels for adult and child L2ers

L2 adults	CYCLE-E score	Proficiency Level	L2 children	CYCLE-E score	Proficiency Level
A1	6	3	C1	6	3
A2	2	1	C2	3	2
A3	5	3	C3	3	2
A5	5	3	C4	3	2
A8	2	1	C5	6	3
A11	<2	1	C6	5	3
A13	4	2	C7	2	1
A14	3	2	C8	5	3
A16	3	2	C9	5	3
A17	2	1	C10	5	3
A18	5	3	C11	<2	1
A19	4	2	C12	3	2
A22	<2	1	C13	4	2
A25	3	2	C14	5	3
A26	3	2	C15	3	2
A29	2	1	C16	3	2
A30	4	2	C17	2	1
A31	4	2	C18	2	1
A31	7	3	C20	2	1
A33	5	3	C22	5	3
A34	<2	1	C23	4	2
A35	<2	1	C24	2	1
A36	5	3	C25	5	3
A37	5	3	C26	2	1
A38	5	3	C27	3	2
A39	4	2	C28	4	2
A40	2	1	C29	5	3
A41	<2	1	C30	6	3
A42	3	2	C32	2	1
A43	3	2	C33	<2	1
A44	2	1	C34	<2	1
A45	5	3	C35	<2	1
A46	5	3			

Table 4.3 CYCLE-E scores and proficiency levels for control children

Control children	CYCLE-E Score	Proficiency Level
CE1	5	3
CE4	5	3
CE5	5	3
CE6	5	3
CE7	5	3
CE9	5	3
CE11	5	3
CE12	7	3

Four control children received CYCLE-E scores below 5.[44] Since the responses of the control children were used to determine the target grammar for the kindergarten-aged L2 children, it was necessary that the control children demonstrate English proficiency scores similar to normal English-speaking 5 year-olds (i.e. proficiency level 3). Thus, data for the four children who were not yet at this level were eliminated.

The number of L2 participants in each proficiency level is listed in table 4.4.

Table 4.4 Number of L2 participants at each proficiency level

	Proficiency Level 1	Proficiency Level 2	Proficiency Level 3
Child L2ers	11	10	11
Adult L2ers	11	11	11

4.3 Coding

The analysis described below refers to coding of data from the experimental items. Responses for these items fall into 8 general categories or response types. Each response type is described below; all examples are taken from the experimental data.

[44] CE2 received a CYCLE-E score of 2; CE3, CE8 and CE10 each received a CYCLE-E score of 4.

"SPLIT" RESPONSE

Target particle verbs containing a full DP object that appears between the particle and verb are referred to as "split" responses. It should be noted that the participants' responses consistently contained a variety of semantically appropriate particle verbs. For example, in describing a man pulling a bag from a high shelf, the participants might have used a number of different particle verbs such as *pull down*, *get down*, or *take down*. All semantically appropriate particle verbs were considered to be "target" PVs.

(3) Examples of "split" responses

a. She put the cup down.	(C25)
b. She took her ring off.	(C1)
c. She pulled his pant up.	(A29)
d. She put her hat on.	(A5)
e. He cut the tree off. (target PV: cut down)	(C16)
f. She put the glass away. (target PV: put down)	(C17)
g. He pushed the bag down. (target PV: pull down)	(C26)
h. That boy dropped the blocks down. (target PV: knock down)	(A38)

Occasionally, participants produced responses that contained a target verb with an incorrect particle (3e-f) or the target particle with an incorrect verb (3g-h). These cases were all counted as "split" responses.

"ADJACENT" RESPONSE

"Adjacent" responses include a particle verb with a full DP object that does not intervene between the particle and verb (i.e., the particle and verb are adjacent).

(4) Examples of "adjacent" responses

a. She take off the pants.	(A25)
b. She put on her necklace.	(C22)
c. Blowing up the ball.	(C29)
d. Tooked out a hammer.	(C9)

e. You take out the ring. (target PV: took off) (A34)
f. He cut up the bush. (target PV: cut down) (A31)
g. You wear off the hat. (target PV: take off) (A35)
h. He break down the cups. (target PV: knock down) (C23)

Responses containing a target verb with an incorrect particle (4e-f), or a target particle with an incorrect verb (4g-h), were also counted as "adjacent" responses.

"PARTICLE OMISSION" RESPONSE

"Particle omission" responses contain a target particle verb without the particle.

(5) Examples of "Particle omission" responses
a. She put her necklace. (A16)
b. She's blowing a balloon. (A37)
c. She knocked the blocks. (C5)
d. Put the pants. (C35)

"PRONOUN" RESPONSE

Particle verbs with a pronoun object are referred to as "pronoun" responses.[45]

(6) Examples of "pronoun" responses
a. You take it off. (A46)
b. She wrap it up. (A42)
c. Pull them up. (C34)
d. He waked him up. (C4)

[45] Since pronoun objects always correctly appeared in the split order, there is not a separate response category for pronouns surfacing in the adjacent order. See sections 4.4.3.1 and 4.5.3.1 for an analysis of this result.

"SIMPLE VERB" RESPONSE

"Simple verb" responses refer to instances in which the participants used an appropriate simple verb rather than a particle verb. Simple verb responses contained both cognate (e.g., *inflate* 'inflar') and non-cognate (e.g., *wear* rather than *put on*) forms.

(7) Examples of "simple verb" responses

a. She's inflating a balloon. (target PV: blow up)	(A38)
b. She's wearing a necklace. (target PV: put on)	(A36)
c. Wear a beanie. (target PV: put on)	(C11)
d. Her have a spoon. (target PV: take out)	(C18)

"PP" RESPONSE

Responses containing a verb with both a DP and PP complement are referred to as "PP" responses.

(8) Examples of "PP" responses[46]

a. She put a hat on her head.	(A32)
b. She took a spoon from the box.	(A3)
c. Putting the necklace on your neck.	(C8)
d. She put the glass on the table.	(C5)

"PASS" RESPONSE

Instances in which participants made no attempt to respond are referred to as "pass" responses.

[46] Note that some of the PP responses include preposition/verb combinations that are homophonous with the target PV (e.g., *She put a hat on her head*, target PV=*put on*) while other PP responses contain preposition/verb combinations that are not the same as the target PV (e.g., *She put the glass on the table*, target PV=*put down*).

"ALTERNATIVE" RESPONSE

The category "alternative" encompasses responses that were infrequent or unclassifiable. Examples of responses included in the "alternative" category are instances of object or verb omission, word order violations and unintelligible utterances.

(9) Examples of "alternative" responses

a. Up the sock. (verb omission)	(C18)
b. He pull up. (object omission)	(C24)
c. A spoon in the box up. (word order violation)	(A35)

4.4 Predictions

This study was designed to address two central questions. *What is the nature of the initial L2 grammar*?, and *Do adult L2ers have access to UG*? In sections 1.1 and 1.2 we reviewed three hypotheses that address these issues. Recall that the Full Transfer/Full Access hypothesis claims that the initial L2 grammar is the L1 grammar, while the Pure UG hypothesis argues that the L2 initial-state grammar is the same as the initial-state grammar of L1 acquisition. Here, we are specifically testing White's version of the Pure UG hypothesis, which claims that when acquiring functional structure not instantiated in the L1, the L2 initial-state grammar is pure UG.[47] We reformulate the claims of the FT/FA hypothesis and the Pure UG hypothesis in terms of parameter settings. The Pure UG hypothesis claims that the initial L2 grammar contains the same parameter settings as

[47] It is important to note that White's (1996) claim regarding what I am referring to as "Pure UG" as the initial state is intended to apply only to situations in which the L2 contains functional structure not instantiated in the L1. Elsewhere, White argues for transfer in L2 acquisition (e.g., White 1985, 1989, 1991).

the initial-state grammar of L1 acquisition, while the FT/FA hypothesis claims that L2 parameter settings are transferred directly from the L1.

Regarding the issue of adult access to UG, Bley Vroman's (1989) Fundamental Difference Hypothesis (FDH) takes the position that the process of adult L2 acquisition is fundamentally different from the process of L1 acquisition; adult L2ers do not have access to UG while children do.[48] In contrast, the Full Transfer/Full Access hypothesis claims that adult and child L2ers have access to UG. With respect to the current study, the FDH claims that adult L2ers cannot reset UG parameters or acquire argument structure that is not already specified in the L1.[49] In contrast, the FT/FA hypothesis claims that UG parameters can be reset and new argument structure can be acquired. We now turn to the specific predictions of these hypotheses.

4.4.1 Predictions of the Pure UG hypothesis

The Pure UG hypothesis argues that adult and child L2ers have UG access without L1 transfer. Essentially, the Pure UG hypothesis assumes that the L2 learner is in the same position as the L1 child with respect to the projection of functional structure; the L2 grammar contains "unspecified aspects of UG" (White 1996:363) (i.e., parameters set at a neutral value) and the L2er, like the L1er, will project functional structure based only on

[48] Bley-Vroman (1989) argues that adult L2 acquisition is different from L1 acquisition because (among other things) adult L2ers never reach native-like proficiency while L1ers do. Given the fact that L2 children generally reach native like proficiency in the second language (cf. Newport and Johnson 1989; Birdsong and Molis 2001), we extend claims about L1 access to UG to L2 children.

[49] I assume that the ability to acquire argument structure requires access to UG.

the input and is not affected by the native language. With respect to the current study, the Pure UG hypothesis claims that the L2 initial-state grammar contains a PrtP parameter at a "neutral" setting, as in the initial state of L1 acquisition. Like the L1 child, the L2er sets the PrtP parameter to "on" and projects a PrtP upon sufficient exposure to particle verbs in the input. (The precise triggering data are discussed in section 4.4.4.)

Because the Pure UG hypothesis claims that the initial state of the L2 grammar is equivalent to the initial state of the L1 grammar, it predicts that, 1) native Spanish speakers will exhibit patterns of acquisition similar to those observed in native English-speaking children acquiring particle verbs, and, 2) that they will demonstrate no evidence of native language influence. In order to test the Pure UG hypothesis, we compare L2ers in the process of acquiring English particle verbs with native English-speaking children acquiring particle verbs.

4.4.1.1 Sawyer (1999)

Sawyer (1999) investigated the acquisition of English particle verbs by 3 native English-speaking children: Adam (2;3-4;10), Eve (1;6-2;3) and Sarah (2;3-5;0) (Brown Corpus (Brown 1973), CHILDES database (MacWhinney 2000)). She performed a detailed analysis of their spontaneous utterances, comparing the acquisition of transparent PVs to the acquisition of idiomatic PVs. Her results indicate that native English-speaking children go through an initial phase in which transparent PVs are more frequent than idiomatic PVs. During this initial phase, their early transparent PVs are predominantly

split. She further reports that there are proportionately more errors (e.g., particle/object omission, double particle, word choice error) for transparent PVs than idiomatic PVs, arguing that idiomatic PVs are rotely learned and thus result in few errors. Finally, her results indicate that object omissions, as opposed to particle omissions, account for most omission errors.[50]

The Pure UG hypothesis predicts that native Spanish speakers acquiring particle verbs will demonstrate the same developmental pattern exhibited by L1 children. Specifically, the Pure UG hypothesis predicts that the L2ers will show an initial preference for split transparent PVs. Additionally, object omission should account for most errors. We will test these predictions in sections 4.4.5 4.5.4, 4.8.4 and 4.9.4.[51]

4.4.2 Predictions of a transfer account of second language acquisition

While the Pure UG hypothesis claims that the native language does not influence the L2 initial state, FT/FA argues that the L1 constitutes the initial L2 grammar. In terms of parameter setting, the FT/FA hypothesis claims that the initial L2 grammar contains a PrtP parameter set at "off" as a result of transfer from the L1. According to FT/FA, the

[50] Sawyer (1999) claims that the base structure for transparent PVs is a small clause structure. She argues that the object of transparent PVs is located in the specifier of the small clause, thus accounting for the high frequency of the V^DP^particle order observed in the early production of transparent PVs. She further claims that the high frequency of object omission during this stage is similar to the pro-drop phenomenon (e.g., Hyams 1983, 1986) observed in early L1 acquisition; the L1ers analyze the objects in transparent PVs as small clause subjects and omit them just as they omit matrix clause subjects.

[51] As will be discussed in more detail in section 4.4.5, since L1 children begin to acquire language before they begin to speak, it is possible that we could observe L1/L2 differences in production even if the two groups begin with the same initial-state grammar. However, as we will see, the data collected in this study suggest that L1/L2 differences in production also imply differences in L1/L2 initial-state grammar.

PrtP parameter will remain at the "off" setting in the L2 interlanguage grammar until the L2er is provided with enough relevant data (i.e., triggering data) to "reset" that parameter. Until the parameter is reset, L2 production will reflect the absence of the PrtP projection.

In the next section we describe three ways in which lack of a PrtP projection may be manifested in the early production of English particle verbs by native Spanish speakers. It is important to note that the transfer analyses described below do not suggest a misparse of the input string. Instead, we assume that these transfer possibilities represent options for expressing intended meaning given the available grammar (i.e., the initial L2 or interlanguage grammar).

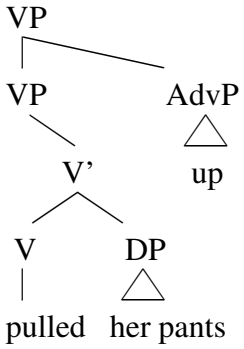
To be more concrete, the input string must be parsed by the native Spanish speaker's existing grammar, which, on a transfer account, does not contain PrtP. In this situation, the L2 grammar will apply transfer analyses, parsing the input in a way that is consistent with the existing grammar. Three predictions for how the initial L2 grammar may parse the input are described below.

ADVERB ANALYSIS

Transparent particles are homophonous with adverbs and have the same meanings as adverbs. Given the similarities between transparent particles and adverbs and since native Spanish speakers have no PrtP projection to accommodate the particle, they might assign an adverb analysis to the transparent particle. In this case, the L2er analyzes the transparent particle as an adverb and projects an AdvP, as in Spanish. As the structure in

(10) illustrates, an adverb analysis yields the same surface word order as split particle verbs: verb^DP^particle.

10)



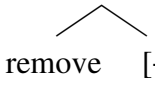
Although an adverb analysis is predicted for transparent PVs, L2ers should not adopt an adverb analysis for idiomatic particles because they are semantically unlike adverbs. For example, the particle *up* in the idiomatic PV *blew up*, as in *She blew the balloon up*, does not have the same directional meaning as the adverb *up* in *She climbed up*. Given the semantic difference between idiomatic particles and adverbs, it is unlikely that L2ers would initially analyze the English idiomatic particle as an adverb, and should not project an AdvP structure as in (10).

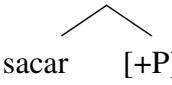
COMPLEX VERB ANALYSIS

Following Talmy (1985), I assume that transparent particles of English carry semantic features, which I will refer to as preposition features. These preposition features specify or expand on information in the verb. For example, the particle *on* in the PV *turn on* as in *She turned on the light* specifies a change of state (e.g., the light changes from "off" to "on"). Similarly, the particle *up* in the PV *pull up* specifies a path (e.g., the pants follow an upward path toward a destination). Although transparent particles can

encode different types of semantic features, the 16 transparent particles considered in the current study all contain path features. For ease of exposition we refer to this class of semantic features as "P-features" for the current analysis.

While English can specify P-features either in the transparent particle (e.g., *out* in the PV *throw out*) or in a single verb (e.g., *remove*), P-features are specified in the verb in Spanish for the actions associated with the PVs used in the current study (e.g., the single Spanish verb *sacar* means 'throw out/remove'). We might think of Spanish and English verbs which specify P-features as complex verbal heads, as in (11a-b).

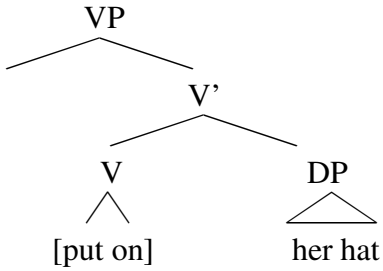
(11) a. 

b. 

L2ers applying what I will refer to as a "complex verb" analysis identify the P-feature on the particle, but require that the P-feature be specified directly on the verb due to influence from the L1 grammar. In other words, the L2er associates the P-feature with the particle by identifying the meaning of the particle, but because this semantic feature is located in V in the L1 grammar the particle is analyzed as part of a complex verb. Thus, the L2ers analyze the verb + particle as a unit which is inserted into the V head, as indicated below. Since the verb and particle form a single unit, a complex verb analysis results in the same surface word order as adjacent particle verbs: verb^particle^DP.[52]

[52] We cannot assume that adjacent PVs represent PP structures because it would imply that the particle is analyzed as a preposition that selects a DP complement, which would yield an incorrect semantic interpretation. For example, the string *on her hat* in *She put on her hat* could not represent a PP structure because it would imply that *on* is a preposition that selects the DP *her hat*, which yields a semantic interpretation that is different from the PV *put on* (i.e. that *on her hat* was the destination of a "putting" action).

(12)



Although a complex verb analysis is predicted for transparent PVs, we do not expect L2ers to apply a complex verb analysis to idiomatic PVs. Unlike transparent particles, idiomatic particles do not contain P-features. For example, while the particle *up* in the transparent PV *pull up* as in *She pulled up her pants* contains a P-feature, the particle *up* in the idiomatic PV *lock up* as in *She locked up the safe* does not**.** Since idiomatic particles do not contain P-features, L2ers will not identify P-features on idiomatic particles. This being the case, L2ers will have no reason to analyze idiomatic particles as part of the verb and a complex verb analysis is thus not predicted for idiomatic PVs.

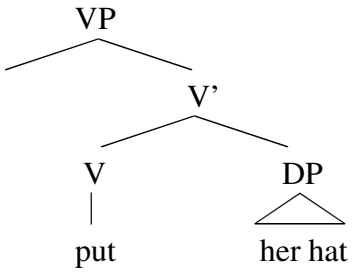
PARTICLE OMISSION

Given the fact that Spanish contains no PrtP and therefore no head position for a particle, a transfer account also predicts that the particle may be omitted in the earliest stages of acquisition. Thus, early transparent and idiomatic particle omission can be attributed to the absence of PrtP in the early L2 grammar (=L1 grammar).[53]

[53] As will be discussed in more detail in section 4.4.3, the adverb and complex verb analyses both presuppose that the learner has assigned some sort of semantic interpretation to the particle. Thus, we would not expect L2ers who have assigned a semantic interpretation to these particles to also omit them. This assumption leads to interesting predictions that merit further research.

In the case of transparent PVs, we can propose a slightly more detailed description of how the interlanguage grammar can accommodate transparent particle omission. As noted above, simple Spanish verbs contain the P-features encoded in English transparent particles. Thus, L2ers lacking a PrtP projection to house the particle may assume that English verbs, like Spanish verbs, contain these P-features. Thus, particle omission is possible in the interlanguage grammar if the intended meaning is part of the verb. In this case, the verb (including the P-feature) is inserted into the VP without the particle, as in (13).

13)



It should be noted that this type of analysis does not apply for idiomatic particle omission, as idiomatic particles do not contain P-features. Thus, particle omission is attributed to the absence of a PrtP projection for both transparent and idiomatic PVs. We further suggest that L2ers who omit the transparent particle must assign P-features to the remaining verb.

In sum, the Pure UG hypothesis predicts that native Spanish speakers will show no evidence of native language influence in the acquisition of English particle verbs and will instead exhibit patterns of acquisition similar to those observed in L1 acquisition. In contrast, a transfer account predicts that the L2ers will show the effects of L1 transfer

(i.e. an "off" value to the PrtP projection), in the form of particle omission, a complex verb analysis and an adverb analysis.

We now consider the issue of adult access to UG and predictions for the current study.

4.4.3 Predictions regarding adult access to UG

The FDH claims that adult L2ers do not have access to UG and thus cannot reset parameters or project functional structure not instantiated in the L1. According to the FDH, since Spanish does not have particle verbs, the L2 grammar will never project a PrtP. In contrast to the FDH, FT/FA claims that adult L2ers have full access to UG. If adult L2ers demonstrate knowledge of the functional structure for English particle verbs, then this would suggest that they have projected a PrtP (i.e. reset the PrtP parameter), thus supporting the claims of the FT/FA hypothesis and refuting the FDH.

The FT/FA hypothesis claims that the initial state of the L2 grammar is the L1 grammar. This predicts that the effects of L1 transfer could delay the projection of a PrtP or make it less obvious**.** Comparing adult L2 acquisition to child L2 acquisition can provide indirect evidence about adult access to UG. By holding the L1 and the target language constant, we can compare the paths of adult and child L2 acquisition, neutralizing the effects of L1 transfer (Schwartz 1992). Assuming that children have access to UG, if adult L2ers pattern like child L2ers, then it would suggest that adults also have access to UG. In regards to the current study, if the L2 adults pattern similarly to

the L2 children in the acquisition of English particle verbs, then it would provide indirect evidence in support of the claim that adults, like children, have access to UG. However, the claims of the FDH would be supported if the adult and child L2ers demonstrate different patterns of acquisition.

In sum, the FT/FA hypothesis predicts that the L2 adults will be able to switch the PrtP parameter from "off" to "on," while the FDH predicts that the adult L2ers will be unable to switch the PrtP setting. Further, FT/FA predicts that the adult and child L2ers will demonstrate similar acquisition patterns, while the FDH predicts that L2 children and adults will pattern differently.

4.4.4 Summary of predictions

The predictions of each hypothesis are listed in table 4.5 below.

Table 4.5 Summary of predictions

Issue	Hypothesis	Predictions
L2 initial state	Pure UG	• No transfer • L2 acquisition similar to L1 acquisition: 1) initial preference for split PVs 2) frequent errors of object omission
	FT/FA	• Transfer <u>Transparent PVs</u> particle omission, complex verb/adverb analysis, <u>Idiomatic PVs</u> particle omission
Adult access to UG	FT/FA	• Similarity in adult and child L2 acquisition • Adults will acquire functional structure for PVs
	FDH	• Differences in adult and child L2 acquisition • Adults will not acquire functional structure for PVs

4.4.5 Rationale for comparisons and statistical analyses

Before turning to the data, it is important to briefly discuss the comparisons and statistical analyses that will be made. Our analyses will 1) compare L2 responses across proficiency groups, and 2) compare L2 responses to control responses. The rationale for these analyses follows.

Comparing behavior across proficiency levels can give information about change over time. A significant difference between groups of L2ers at different proficiency levels would provide evidence in support of the claim that the two groups are dissimilar in some way (e.g., they have different grammatical representations for the structures under investigation).

While statistical differences between proficiency levels point to important differences that must be addressed, lack of statistical difference across groups may be uninteresting in some cases due to the influence of transfer. As noted above, an early L2 interlanguage grammar could produce what appear to be split PVs (adverb analysis) or adjacent PVs (complex verb analysis) before the PrtP parameter has been set. Thus, although the initial grammar lacks a PrtP projection, the number of "split" PV or "adjacent" PV responses could potentially be high due to transfer. In this situation, there may be no difference between the lower proficiency group and the higher proficiency group in the number of "split" or "adjacent" responses, as the number for the low proficiency group is inflated due to transfer, and the number for the high proficiency group is high due to acquisition of the target structure. Thus**,** comparing across

proficiency levels may fail to produce statistically significant results even when the L2ers do in fact have different grammatical representations. Given this potential problem, we consider lack of statistical difference between proficiency groups to be less important than a statistically significant difference between proficiency groups for "split" and "adjacent" responses.[54]

We might also compare the L2ers to controls. In this case, differences would suggest that the L2ers have not acquired the target grammar. For example, if we see that the level 1 children produce significantly more particle omission responses than controls, it would suggest that the L2ers are not target-like (i.e., they have not set the PrtP parameter to "on"). Again, for the split and adjacent PV responses, lack of statistical difference between L2ers and controls might not be informative, since high frequency of "split" or "adjacent" PVs could be the result of a transferred grammar. Thus, for these responses statistical differences are given more consideration than null results.

We now discuss the results of the elicited production experiment.

[54] When using a statistical model, the general assumption is that a statistical difference between two groups at the .05 level suggests that there is a 95% chance that the groups are different according to some variable and a 5% chance that there is no difference. A statistical model maintains that a null result (i.e., lack of significant difference) could indicate 1) that there is no difference between the groups under comparison, or 2) there is a difference between the groups, but the measurement was not sensitive enough to show the difference. Therefore, we take statistical differences between groups to suggest that the two groups have different grammars, but we do not take null results to definitively indicate that there is no difference between groups.

4.5 Child Results—Transparent PVs

As discussed in section 3.2, some target particle verbs contain obligatory particles and for others the particle is optional.[55] The following analysis focuses primarily on PVs containing obligatory particles; PVs with optional particles are discussed briefly in section 4.6. As we will see, L2ers treat these two classes of particle verbs similarly.

Table 4.6 shows the frequency of each response type for child L2ers in the level 1, level 2 and level 3 proficiency groups, as well as for the control children. Note that for all tables, the pass, pronoun[56] and alternative responses are collapsed and placed into the category labeled "Other"[57]. Specific data for "Other" response types are listed in appendix C.

[55] As a reminder, the particle *on* in *She put her hat on* is obligatory, as the sentence is ungrammatical without it (e.g., **She put her hat*). However, since both *She took the spoon out* and *She took the spoon* are grammatical, I assume that the particle is optional here.

[56] The L2ers never produced PVs containing pronoun objects in the adjacent form. In sections 4.4.3.1 and 4.5.3.1 we argue that this is a transfer effect related to a clitic analysis of English pronouns. In order to avoid disproportionately inflating the number of split responses in a situation where transfer likely has prevented the adjacent form from being a viable alternative, PVs with pronoun objects are not included in the "split" responses.

[57] The pass and alternative responses are not discussed because they provide no information about the structure of the L2 grammar. Pronoun cases are discussed separately in section 4.4.3.1.

Table 4.6 Child production of transparent PVs with obligatory particles

Response Type	Level 1			Level 2			Level 3			Controls	
	N	%		N	%		N	%		N	%
Simple Verb	28	23.1		14	12.7		10	8.3		6	6.8
Split	22	18.1		53	48.1		35	28.9		27	30.7
Adjacent	18	14.9		17	15.4		40	33.1		40	45.5
Particle omission	18	14.9		9	8.2		4	3.3		1	1.1
PP	8	6.6		10	9.1		18	14.9		1	1.1
Other	27	22.3		7	6.4		14	11.6		13	14.8
Total	121	100		110	100		121	100		88	100

4.5.1 Child Results—Simple Verbs and PPs in lieu of transparent PVs

It is not surprising that the level 1 L2 children are not target-like. The most common response at this level is to describe the action using a simple English verb. The L2ers produced both cognate (e.g., 'inflate' (*inflar*) instead of 'blow up') and non-cognate (e.g., 'wear' instead of 'put on') simple verb responses. Although simple verb responses are acceptable alternatives to particle verbs, it is important to note that the frequency of this response type is initially high and decreases across proficiency levels. While the level 1 L2 children use the simple verb response at a rate of 23%, by level 3 the L2 children are target-like at 8%. A t-test indicates that while the level 1 L2 children choose the simple verb response significantly more often than the control children ($t(17)=4.98$, $p<.001$), there is no difference between the level 2 L2 children and controls ($t(16)=1.59$, $p=.13$), or the level 3 L2 children and controls ($t(17)=.40$, $p=.69$) in this domain.

Simple verb responses are grammatical in English and they represent a simple VP structure found in both the L1 and the target grammar. Thus, the high frequency of

simple verb responses in the level 1 L2 children relative to the more proficient children is in line with a transfer account of L2 acquisition. Assuming that the initial L2 grammar contains a VP but does not contain a PrtP projection, the L2ers produce a structure that is represented in the L1 grammar. Alternatively, it is possible that the level 1 children simply have not heard the target particle verbs and produce simple verb responses rather than PVs due to lexical deficiency. Thus, although the high frequency of simple verb responses in the level 1 L2 children is in line with a transfer account, it does not provide direct evidence against the Pure UG hypothesis.

Like simple verbs, PP responses are grammatical and correct; the utterance *She put a hat on her head* is an acceptable response given the task. Table 4.6 indicates that the frequency of PP responses increases across proficiency levels. A t-test shows that the level 3 L2 children use PPs significantly more often than child controls ($t(17)=3.97$, $p<.01$), and the effect approaches significance for the level 2 L2 children ($t(16)=1.91$, $p=.07$). There is no difference between level 1 L2 children and controls in the use of PP responses ($t(17)=1.29$, $p=.21$).

As discussed in section 2.3.3, English PPs are structurally identical to Spanish PPs. Hence, again we see an apparent overlap between the L1 and the L2; the initial interlanguage grammar contains a target-like structure. This being the case, L1 transfer might facilitate the PP response option as compared to the PrtP, which is not represented in the L1 grammar. While a PP response such as *She put her hat on her head* represents a target structure and a correct analysis of the English preposition *on*, unusually frequent use of this structure by L2ers compared to English language controls might be attributed

to the fact that the L1 grammar contains this target-like structure. Thus, as with the simple verb responses, it is possible that the high frequency of PP responses in levels 2 and 3 are indicative of transfer: the L2ers use the PP response more than controls because it represents structure that is attested in the L1 and the target language. However, if this is the case, it is unclear why the level 1 children, who are more likely to show transfer effects, would not show a higher PP response rate. Further, as noted above, it is possible that the L2ers choose non-particle verb responses simply because they have not heard the target particle verbs. As such, although the high frequency of PP responses is consistent with a transfer account, it does not refute the Pure UG hypothesis.

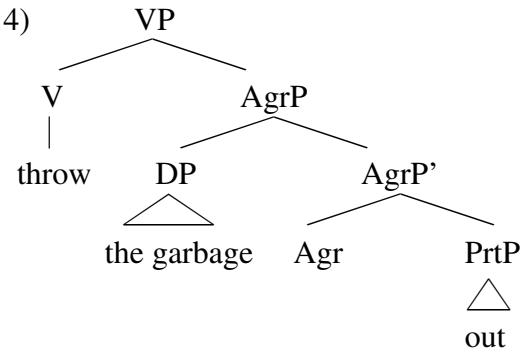
We now turn the discussion away from transfer as we focus on the structural acquisition of particle verbs. The issue of transfer will be discussed in more detail in section 4.4.3.

4.5.2 Child results—Evidence for acquisition of the target structure for transparent PVs

The data in table 4.6 illustrate several developmental trends. However, the most striking change is seen in the frequency of split PVs between level 1 and level 2. While the level 1 L2 children use the split form 18% of the time, its frequency increases to 48% at level 2. Importantly, at the same time that we see an increase in the use of the split form, there is a decline in particle omission. How can we explain these complementary findings? I assume that a decline in particle omission is indicative of acquisition of the target structure: once the L2er has set the PrtP parameter to "on" and projected a PrtP, the

particle head becomes obligatory. The base order of transparent particle verbs, repeated here in (14), is the split form.

(14)



Once the L2er has acquired the structure in (14), the frequency of split PVs increases and, since the head of PrtP is obligatory, the frequency of particle omissions decreases. Thus, the dramatic increase in frequency of the split form coupled with the decrease in particle omission indicates that acquisition of the base structure in (14) occurs at level 2 for the L2 children.[58]

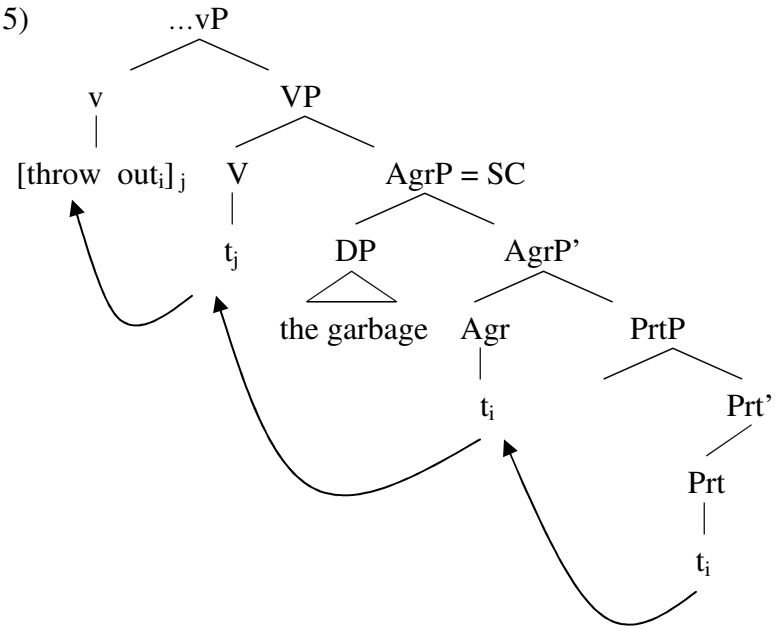
A statistical analysis confirms that level 2 L2 children use split PVs significantly more often than level 1 L2 children ($t(19) = 3.00$, $p<.01$). While the statistical test shows that the level 2 L2 children use the split structure with higher frequency than the level 1 L2 children, there is no statistical difference between the two groups with respect to particle omission ($t(19) = 1.31$, $p=.21$). Although we see no statistical difference here comparing across proficiency levels, we do see a statistical difference when comparing the L2ers to controls; a t-test indicates that the level 2 L2 children are target-like with respect to particle omission while the level 1 children are not. The level 1 children drop

[58] In section 4.4.3 we address the "adjacent" and "split" responses of the level 1 children, who, according to the current analysis, have not yet acquired the target structure for transparent PVs.

the particle significantly more often than the child controls ($t(17) = 3.04$, $p<.01$), but there is no significant difference between the frequency of particle omission in the level 2 group and particle omission in the controls (($t(16) = 1.76$, $p=.10$), again suggesting acquisition of the target structure at proficiency level 2. The level 3 children are also target-like with respect to particle drop, as there is no statistical difference between level 3 children and controls in the frequency of particle omission ($t(17) = .91$, $p=.38$).

As discussed in section 2.1.3, the adjacent PV structure is derived by incorporation of the particle into the V head, as in (15).

(15)



Since incorporation of the particle is not possible until a PrtP has been projected, I assume that acquisition of incorporation will either follow acquisition of the base structure or be simultaneous with it, but will not precede it. This predicts that split PVs (which represent the base order) will be produced before adjacent PVs (which require

particle incorporation). The prediction is borne out. We see no increase in the use of adjacent PVs until after the base structure has been acquired. Table 4.6 shows that the frequency of adjacent PVs stays at 15% for the level 1 and level 2 children. Although the structure associated with particle verbs has been acquired at the second level of proficiency, the frequency of adjacent PVs does not change at this point because incorporation has not been acquired. However, we do see evidence of particle incorporation at level 3, where the frequency of adjacent PVs increases to 33%. Thus, the data support the claim that acquisition of incorporation follows acquisition of the base structure.

Although the frequency of adjacent PVs is higher for the level 3 children (33%) than the level 2 children (16%), there is no statistical difference between the two groups ($t(19) = 1.70$, $p=.10$). However, comparing these two groups to controls yields interesting results. If the level 3 children have acquired particle incorporation, then we would expect them to be target-like in their use of adjacent PVs, while the level 2 children, who have not yet acquired incorporation, should use adjacent PVs significantly less frequently than the controls. A t-test indicates that this is the case: there is no difference between the level 3 children and controls with respect to use of the adjacent structure ($t(17)=.89$, $p=.39$), while the level 2 children produce adjacent PVs significantly less often than controls ($t(16)=2.19$, $p<.05$). In sum, the data suggest that the functional structure for transparent particle verbs is acquired by the second level of proficiency, while acquisition of particle incorporation is acquired at a later stage.

The trends discussed above are summarized in Figure 4.1, which includes only particle verb data relevant for acquisition of functional structure (e.g., only split, adjacent and particle omission responses).[59]

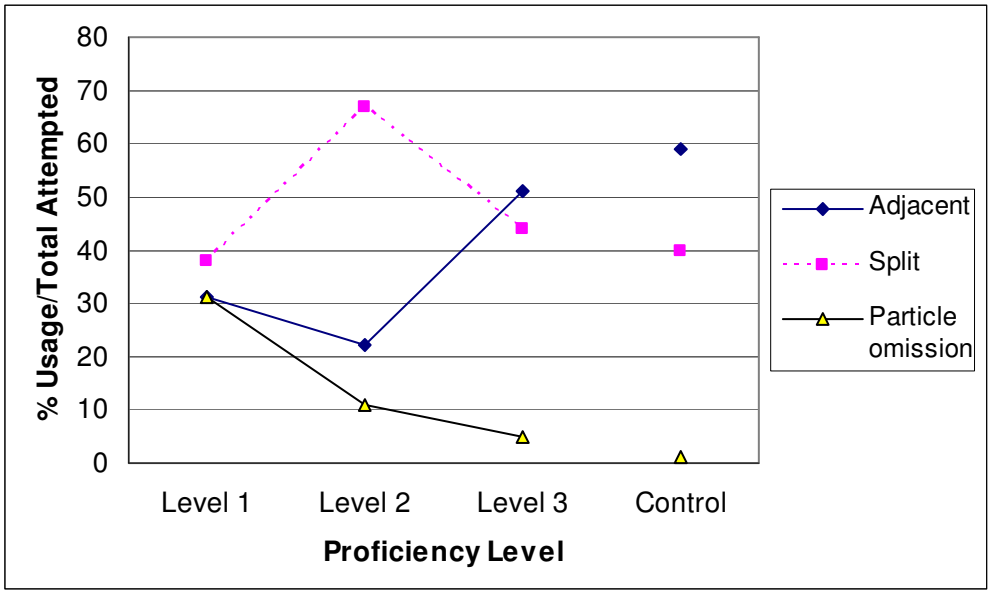


Figure 4.1 Children—Transparent PVs with obligatory particles

Acquisition of the base structure at level 2 is seen in Figure 4.1 in the striking increase in frequency of split PVs coupled with a decrease in particle omission. Movement toward target-like use of adjacent PVs at the third level of proficiency suggests acquisition of incorporation.

The above analysis suggests that the sharp increase in split PVs coupled with the decrease in particle omission between level 1 and level 2 indicates acquisition of the

[59] Because the current analysis is concerned with the acquisition of the target structure for transparent PVs, we limit our focus here to adjacent, split and particle omission responses. Thus, the percentages in Figure 4.1 include only split, adjacent and particle omission responses and do not include simple verb, PP and other responses.

target structure. To be sure that the percentages reported in table 4.6 represent the entire group and are not skewed by individual results, an individual-level analysis was conducted. Table 4.7 reports the number and percentage of split PVs and particle omission responses for each individual L2 child in levels 1 and 2.[60]

Table 4.7 Number of split and particle omission responses for level 1 and level 2 children

		Split Responses		Particle Omission Responses	
		#	%	#	%
Participant	Level				
C11	1	3	27	3	27
C17	1	4	36	1	9
C18	1	2	18	2	18
C20	1	1	9	0	0
C24	1	0	0	2	18
C26	1	6	55	0	0
C32	1	0	0	1	9
C33	1	1	9	3	27
C34	1	1	9	0	0
C35	1	1	9	4	36
C7	1	3	27	2	18
C12	2	3	27	3	27
C13	2	2	18	3	27
C15	2	8	72	0	0
C16	2	9	81	0	0
C2	2	9	81	1	9
C23	2	6	55	0	0
C27	2	5	45	0	0
C28	2	4	36	0	0
C3	2	0	0	1	9
C4	2	7	64	1	9

The individual results listed in table 4.7 support the statistical analyses reported above. If, as we have claimed, the level 2 children have acquired the target structure for

[60] Recall that there were a total of 11 transparent PVs with obligatory particles, so the percentages reported in table 4.7 are out of 11 possible responses per individual participant.

transparent PVs, then we would expect to see few particle omission responses per individual. This prediction is borne out, as 8 of the 10 children in level 2 never omit the particle or omit it only once. Further, we see that the percentages reported in table 4.6 are not skewed by individual responses. Half of the level 2 children produced over 5 split PV responses, and 5 of the 11 participants in level 1 omit the particle more than once, suggesting that the level 1 children do not have the target structure for transparent PVs and the level 2 children do. Thus, the individual data provide additional evidence in support of the claim that the level 2 children as a group have reset the PrtP parameter, (although a few of the level 2 children may not have reset it).

4.5.3 Transparent PVs—Evidence for transfer in child second language acquisition

Section 4.3.2 outlined three different transfer analyses that native Spanish speakers might assign to English particle verbs. As we will see, the data suggest that the L2 children indeed employ these transfer analyses, providing a strong argument for native language influence in second language acquisition and challenging White's (1996) claims regarding immediate UG access without transfer.

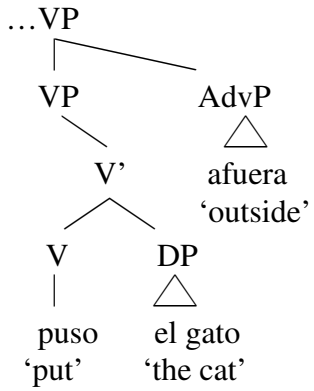
The data discussed above suggest that the child L2ers at the second level of proficiency have acquired the functional structure for transparent particle verbs (split PV), and child L2ers at the third level of proficiency have acquired incorporation (adjacent PV). However, the data in table 4.6 also indicate that the L2ers produced both the split order (18%) and the adjacent order (15%) at proficiency level 1. If the level 1

children have neither the base structure nor incorporation of PVs, why do we find both the split and adjacent forms? I propose that the early use of split and adjacent particle verbs is a result of L1 transfer.

Adverb analysis

According to the adverb analysis discussed in section 4.3.2, the particle is analyzed as an adverb and inserted into the AdvP structure available in the initial L2 grammar (=L1 grammar).

(16)



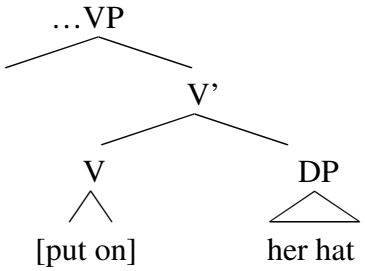
L2ers assign an analysis available in the L1 that is also consistent with the L2 input. Since particles are homophonous with adverbs, the L2ers (mis)analyze the English particle as an adverb, projecting an AdvP found in both Spanish and English. L2ers assigning an adverb analysis to particles will produce the structure in (16), which displays the same surface word order as split PVs. Since the level 1 children have not set the PrtP parameter, I attribute the early instances of verb^DP^particle order listed as "Split" responses in table 4.6 to an initial adverb analysis based on the L1 grammar.

Complex Verb analysis

How do we know that the adjacent PVs produced by the level 1 L2 children are not the result of incorporation? This is because such an analysis would require that they have the functional structure associated with particle verbs, the base structure from which incorporation occurs, and there is no evidence of that. As mentioned above, L2ers at the second level of proficiency show evidence for acquisition of the functional structure associated with PVs, while the level 1 children do not. I thus propose that the early utterances labeled as "Adjacent" responses in table 4.6 are the result of transfer and analysis of the English particle verb as a complex verb.

As discussed above, the P-features associated with transparent particles are specified in the verb in Spanish. If the initial L2 grammar is the L1 grammar and the PrtP parameter has not been set, native Spanish speakers might initially assign a complex verb analysis to the English PV, assuming that the P-features contained in the particle are part of the verb. In this case, the particle and verb are inserted into V, as illustrated below.

(17)

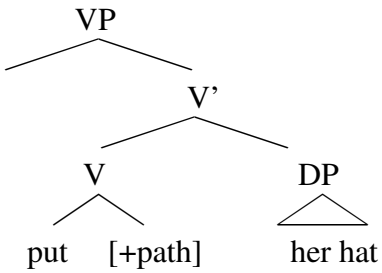


The complex verb analysis will always result in the verb^particle^DP order, which has the same surface order as particles that have undergone incorporation.

Particle Omission

Another way in which L1 transfer may manifest itself is in particle omission. Since the L1 grammar does not contain a PrtP projection (i.e., the PrtP parameter has not been reset), the particle is simply dropped. In this case, the remaining verb is inserted into VP, as in structure (18).

(18)



We have suggested that since the P-features associated with transparent particles are specified directly on the Spanish verb, L2ers who drop the transparent particle must specify the relevant P-features directly in the English verb.

The relatively high incidence of particle omissions (15%) observed in the level 1 children is compatible with a transfer analysis. If particle omissions indicate lack of structure, then the level 1 children should drop the particle more often than controls. Conversely, since by hypothesis the level 2 children have set the PrtP parameter, they should not differ from controls with respect to particle omission. Indeed, the statistical analyses reported above indicate that the level 1 children drop the particle significantly more often than the controls, while there is no difference between controls and the level 2 and level 3 children.

We have established that the child L2ers go through an initial stage in which PrtP is not projected and particles are systematically omitted. During this early stage, L2ers apply an adverb or complex verb analysis to some PVs. Given the fact that a complex verb analysis and an adverb analysis assign some sort of semantic interpretation to the particle, we would not expect these particles to be omitted.

Recall that each particle verb was presented in two variants (e.g., *She took off the hat*, *She took off the ring*). The above analysis predicts that a level 1 L2er should not assign an adverb/complex verb analysis to one example of a particular PV (e.g., *She took the hat off*) and also drop the particle in the other example of the same PV (e.g., *She took the ring* instead of *She took the ring off*). This sort of individual-item analysis could not be conducted for the current study because it requires the comparison of minimal pairs, which were too infrequent in the data.[61]

4.5.3.1 Pronoun word order—L2 children

Although Sawyer does not report data for word order errors with pronoun objects, it is well documented that native English-speaking children erroneously produce the V^Particle^Pronoun order (e.g., **She picked up it* (Hyams, Schaeffer and Johnson 1993)). While this is a robust phenomenon observed in L1 English acquisition, there are no

[61] It was often the case that an individual L2er produced a split or adjacent response for one variant of a minimal pair (e.g., *She put her necklace on*), but then produced a simple verb response for the other (e.g., *She wears the ring* instead of *She put the ring on*). Participants also frequently produced PP or 'pass' responses for one half of a minimal pair, or produced two different PVs (e.g., *She took off her ring*, and *She pulled the hat* (omitted particle for PV 'pull off').

instances of pronoun word order errors in the L2 child data. The L2 children produced a total of 43 split transparent PVs containing pronoun objects, 95 adjacent transparent PVs with full DP objects and 137 split transparent PVs with full DP objects. Given that the adjacent form accounts for 40% of the children's transparent PVs with full DP objects, we might expect the children to produce a comparable number of adjacent PVs with pronoun objects. However, there is not a single instance of ungrammatical adjacent PVs with pronoun objects in the data.

We propose that the low frequency of pronoun word order errors observed in the L2 child data can be attributed to morphological transfer. Spanish weak pronouns are clitics that must be adjacent to the verb.

(19) a. Yo lo conozco personalmente
I him know personally
'I know him personally.'

b. *Yo lo personalmente conozco
I him personally know

Examples (19a-b) show that the Spanish pronoun *lo* is bound to the verb, because inserting an adverb between the verb and clitic results in ungrammaticality.

We propose that the early L2 grammar (=L1 grammar) contains this morphological constraint. Like Spanish pronouns, the L2ers analyze English pronouns as clitics that must be adjacent to the verb. Until the L2er learns that English pronouns are free morphemes, particle verbs with pronoun objects will always be produced in the split order.

4.5.4 Acquisition of the target structure: Triggers for setting the PrtP parameter

The preceding analysis argues that split and adjacent PVs produced by the level 1 children can be attributed to structures available in the transferred L1 grammar, while split and adjacent PVs produced by L2ers at the higher levels of proficiency can be attributed to acquisition of the target structure. Why would the higher proficiency L2ers reject an analysis that results in grammaticality and adopt the target structure? In other words, how can the L2ers move from the initial L1 grammar to the L2 grammar? To answer this question, we must consider what kind of input would provide the L2er with evidence that the interlanguage grammar must be restructured. I propose that the alternate word order associated with English particle verbs serves as a trigger for resetting the PrtP parameter. Once the L2er encounters a particular particle verb in both the split and adjacent order, the L1 grammar cannot provide an optimal analysis and the PrtP parameter is reset.

To provide a concrete example for this proposal, imagine a low proficiency L2er who has initially applied an adverb analysis to the PV *put on* as in *She put her hat on*. In this case the L2er has analyzed the particle *on* as an adverb and projected an AdvP, as in Spanish (cf. structure (16)). Although this (mis)analysis results in a grammatical string with (by assumption) the intended meaning, it will not match L2 input containing the adjacent order. Thus, the sentence containing the adjacent PV *She put on her hat* provides

positive evidence that the adverb structure is incompatible with the L2 input.[62] In the same way, low proficiency L2ers applying a complex verb analysis in the early production of the PV *pull up*, for example, will be forced to reject this analysis when they hear *pull up* in the split form (e.g., *She pulled her pants up*). Once the L2er encounters a particle verb in both the adjacent and split orders, the PrtP parameter is reset to the "on" position and PrtP is projected. In sum, I assume that positive evidence in the form of variable word order acts as a trigger for acquisition of the target structure for transparent PVs.

4.4.5 Child results—A pure UG account

A pure UG account of L2 acquisition makes two predictions. First, there should be no evidence of L1 influence. Clearly, the data are not compatible with this prediction, as we have seen several types of transfer in the L2 child data. Based on the assumption that L2ers begin with the same initial state as L1ers, the Pure UG hypothesis also predicts that L2ers will demonstrate patterns of acquisition similar to those observed in L1 acquisition. We will see that this prediction is also not borne out.

Recall that Sawyer (1999) investigated the acquisition of English particle verbs by 3 native English-speaking children. Although Sawyer's analysis is based on a longitudinal study of spontaneous speech, the data she reported can be compiled and compared to the data in our study. To anticipate, a comparison of the L1 and L2

[62] According to this analysis, the L2ers must assume that a given particle verb in the split and adjacent order has the same semantic interpretation and thus must come from the same base order.

acquisition patterns shows striking differences between the two groups in the frequency of split and adjacent PVs as well as particle vs. object omission rates.

The following analysis compares the L1 production of English PVs reported by Sawyer with the L2 production of English PVs by L2 children in the current study. It should be noted that we are comparing data from a longitudinal analysis of spontaneous speech with data from a cross-sectional elicited production situation. Given the differences between the two tasks, comparisons should be made with caution. In order to see whether L2ers follow the same developmental path as L1 children, it is necessary to consider L1 children in the process of acquiring particle verbs. While responses from the child controls in the current study provide crucial information about the target grammar, the control children are not in the process of acquiring PVs and thus can provide no information about L1 acquisition, per se.[63]

Table 4.8 compares the proportion of split and adjacent PVs produced by native English-speaking children acquiring particle verbs and the L2 children in the current study. It should be noted that although Sawyer's data span 5 developmental stages and data for the current study include 3 proficiency levels, the data from both studies are pooled across proficiency level/developmental stage in the following analysis. We could not make direct comparisons between Sawyer's developmental stages and proficiency groups in the current study because Sawyer used mean length of utterance (MLU) to determine developmental stages and the current study used a proficiency test, and so the

[63] As noted in Chapter 3, children in the process of acquiring particle verbs are younger than 3 years old. Children of this age are not cognitively developed enough to complete the elicited production task in the current study and thus could not serve as controls. Although 4 native English-speaking children scored below level 5 on the CYCLE-E (and were eliminated), all of these children were over 4 years of age and thus were no longer in the process of acquiring particle verbs.

groups could not be matched with respect to proficiency. Further rationale for collapsing the data can be found by comparing data from Sawyer's first developmental stage and the level 1 children in the current study (see appendix D) to the collapsed data in table 4.8 below. Since data for these lower levels are similar to the pooled data, we assume that there was little change over time and believe that the collapsed data provide a clear representation of general group trends in both data sets.

Table 4.8 Split and adjacent transparent PVs produced by L1 and L2 children[64]

	Total split	Total adjacent
L1 children (Sawyer 1999)	94% (677)	6% (43)
L2 children	65% (180)	35% (95)

As table 4.8 clearly illustrates, L2 children differ markedly from L1 children in the production of English particle verbs. Native English-speaking children use adjacent PVs quite infrequently (6%) compared to split PVs (94%). This is not the case for the L2 children, whose use of adjacent PVs is at 35%. Thus, while L1 children rarely use adjacent PVs, the L2 children in the current study produced them with substantially higher frequency. It is unclear how the data can be accounted for on a pure UG account, which predicts that L2ers will demonstrate patterns of acquisition similar to L1 children.

In addition to the production of split and adjacent PVs, we can also compare L1 and L2 acquisition with respect to type of production errors. We limit the discussion to

[64] Because Sawyer (1999) does not distinguish between PVs containing pronoun objects (e.g., *She put it on*) and PVs containing full DP objects (e.g., *She put the hat on*), the PVs in table 4.8 include both full DP and pronoun objects. Further, since Sawyer included both PVs with optional and obligatory particles in her analysis of the L1 data, the PVs in table 4.8 contain both optional and obligatory particles for L1 and L2 children.

errors of omission, as this error type is most easily compared across the two studies. Table 4.9 shows the number of tokens of object omission and particle omission errors for the L1 and L2 children.[65] Data are pooled across proficiency levels for both groups.

Table 4.9 Errors of object and particle omission in transparent PVs produced by L1 and L2 children

	Particle omission	Object omission
L1 children (Sawyer 1999)	6	182
L2 children	31	3

Again, we see stark differences between L1 and L2 children. As table 4.9 indicates, most of the omission errors made by the L1 children are instances of object omission (182 tokens), while particle omission (6 tokens) is rare. This is in striking contrast to the L2 children in the current study, who produce more particle omission errors (31 tokens) than object omission errors (3). Thus, as predicted on a transfer account, the L2 children do not exhibit L1 error patterns in the acquisition of transparent PVs.

In principle, we can imagine a scenario in which L1ers and L2ers might demonstrate different production patterns even if the L2 initial-state grammar were the same as the L1 initial-state grammar. It has been established that L1ers begin to acquire language before the onset of language production (cf. Hirsh-Pasek and Golinkoff 1996), while L2ers can already speak at the onset of language acquisition. In such a situation,

[65] As discussed in footnote 26, Sawyer (1999) does not differentiate between PVs with obligatory particles and PVs with optional particles. This being the case, it is unclear what proportion of PVs with obligatory particles contained particle omission errors in the L1 child data. Thus, we cannot compare error rates across the two studies. Further, we are unable to compare the proportion of object and particle omission errors because the pool of utterances that could produce an object omission error (e.g. PVs containing both optional and obligatory particles) is larger than the pool of utterances that could result in particle omission errors (e.g. PVs containing obligatory particles). However, since the raw data suggests that the L1ers and L2ers demonstrate different behavior, they are included in the analysis.

the L1ers have already passed through the initial stages of language acquisition by the time they begin to speak, while the L2ers are speaking during the initial stages of L2 acquisition. We might think of the early stages of L1 production as representing an inter-language grammar, since by the time L1ers produce their first words the grammar may have changed from the initial state, as illustrated in Figure 4.2 below.

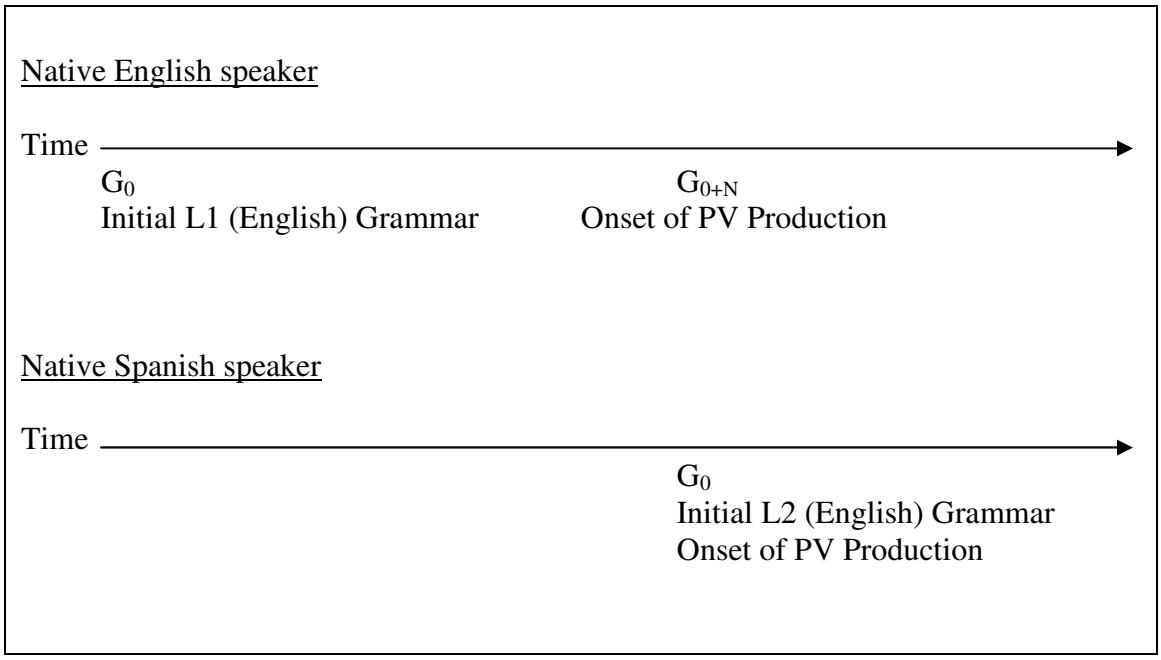


Figure 4.2 Initial L1/L2 English Grammars

As Figure 4.2 shows, by comparing the initial L1 production of PVs with the initial L2 production of PVs, we may be comparing G_{0+N} (L1ers) with G_0 (L2ers). In other words, it is possible that the L1ers in Sawyer's (1999) study and the L2ers in the current study may indeed begin with the same grammar (G_0 in Figure 4.2), but since the L1ers are past the initial stage of acquisition by the time they produce PVs their production is different from the initial production of the L2ers. If this were the case, then an observed difference

between the two groups in the initial production of PVs may not indicate that the initial L2 grammar is different from the initial L1 grammar.

Although this is a logical possibility, our data indicate that the native Spanish-speaking children's L2 initial-state grammar could not be the same as the native English speaking children's L1 initial-state grammar. This claim is based on the large number of object omissions observed in the L1 production of PVs**.**

Frequent errors of object omission in the early stages of L1 production (G_{0+N}) give us a window into the L1 initial-state grammar (G_0). Since the L1 interlanguage grammar (G_{0+N}) allows object deletion in the initial production of particle verbs, we can assume that the earliest L1 grammar (G_0) also allows object drop. Under the assumption that the initial L1 grammar (G_0) allows object drop, we can now compare it to the initial L2 grammar (G_0), which does not. As table 4.8 indicates, there were only 3 instances of object omission in the child L2 data. Thus, we can safely conclude that the initial L2 grammar is unlike the initial L1 grammar.

In sum, a comparison of L1 and L2 children acquiring PVs has shown markedly different acquisition patterns between the two groups with respect to the production of split and adjacent PVs as well as omission errors. The results are incompatible with the predictions of a pure UG analysis and are more in line with an initial transfer account.

Let us now turn to the adult results for transparent PVs.

4.6 Adult Results—Transparent PVs

Table 4.10 lists responses for adult L2ers across all proficiency levels as well as adult controls. Specific information about "other" responses is in appendix E.

Table 4.10 Adult production of transparent PVs with obligatory particles

Response Type	Level 1			Level 2			Level 3			Controls	
	N	%		N	%		N	%		N	%
Simple Verb	30	24.8		25	20.7		30	24.8		5	5.7
Split	1	.8		0	--		8	6.6		24	27.3
Adjacent	37	30.6		48	39.7		43	35.5		59	67.0
Particle Omission	11	9.1		12	9.9		7	5.8		0	--
PP	23	19.0		21	17.4		25	20.7		0	--
Other	19	15.7		15	12.4		8	6.6		0	--
Total	121	100		121	100		121	100		88	100

4.6.1 Adult Results—Simple Verbs and PPs in lieu of transparent PVs

As table 4.10 indicates, when adult L2ers are confronted with a context for using a particle verb, they choose the simple verb alternative about one fourth of the time across all proficiency levels. Although the simple verb response is grammatical and is also used by the adult controls, the adult L2ers consistently employ this response type with higher frequency. A statistical analysis confirms that the level 1 adults use simple verbs significantly more often than adult controls ($t(17)=2.69$, $p<.05$). The same result holds for level 2 ($t(17)=3.11$, $p<.01$) and level 3 ($t(17)=3.65$, $p<.01$). As mentioned above, the high frequency of simple verb responses relative to controls is in line with a transfer

account; assuming that the initial grammar contains a VP but does not contain a PrtP projection. However, since it is also possible that the L2ers have never heard the target PVs and have no lexical knowledge of them, the results cannot be used to refute the Pure UG hypothesis.

A comparison of tables 4.6 and 4.10 shows an interesting difference between adult and child L2ers in the distribution of simple verb responses. While the number of these responses decreases across proficiency levels for the L2 children (see table 4.6), their frequency remains roughly constant over time for the L2 adults (see table 4.10). We return to the issue of adult/child differences in Chapter 5.

Although PP responses, like simple verbs, are acceptable and grammatical in English, the adult L2ers produce these responses much more than the controls. A t-test shows that the level 1 adults use PPs significantly more often than adult controls ($t(17)=10.89$, $p<.001$). The same effect is found for the level 2 adults ($t(17)=17.77$, $p<.001$) and the level 3 adults ($t(17)=4.28$, $p<.001$). We see a similarity here between L2 children and adults with respect PP responses. Both adult and child L2ers use PP responses more than their native English control counterparts, even at the highest level of proficiency.

Again, we might attribute the high frequency of PP responses to transfer. Since the initial L2 grammar (=L1 grammar) contains a PP projection but no PrtP projection, the L2ers produce responses consistent with this. However, as stated above, since the L2ers may not have knowledge of the particular PVs tested, the high frequency of PP

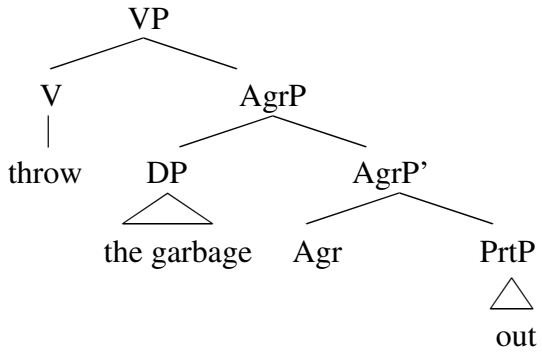
responses could simply be related to lexical deficiency and they cannot be used as transfer-based evidence against the Pure UG hypothesis.

We now explore evidence for acquisition of the target structure in the adult L2 data and return to issues of transfer in section 4.5.3.

4.6.2 Adult results—Evidence for acquisition of the target structure for transparent PVs

Evidence for acquisition of the target structure is less obvious in the adult data than the child data. Table 4.10 shows almost no use of split PVs until level 3, which is still low at 7%. This is in striking contrast to the L2 children, whose split PV frequency is at 48% at the second level of proficiency. However, careful scrutiny of table 4.10 reveals an adult acquisition pattern similar to L2 children. While the production of split PVs is generally much lower for L2 adults than L2 children, we still see the same increase in split PVs coupled with a decrease in particle omission at level 3 for the adults. Table 4.10 shows that the frequency of split PVs increases from 0% for the level 2 adults to 7% for the level 3 adults. At the same time, we see a decrease in particle omission from 10% at the second of proficiency to 6% at level 3. As with the L2 children, I assume that the decrease in particle omission and concurrent increase in split PVs is indicative of acquisition of the base structure provided in (20).

(20)



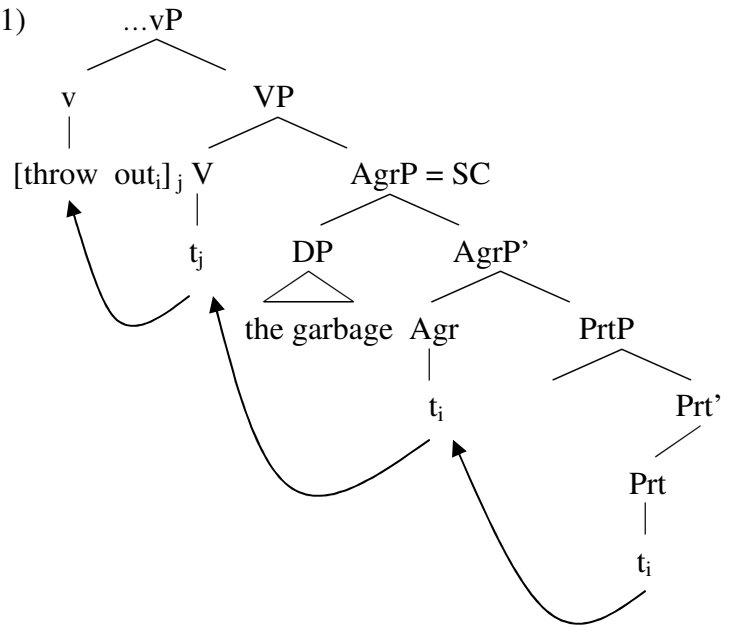
More specifically, I assume that the level 3 adults have set the PrtP parameter to "on." Thus, the data in table 4.10 suggest that although the L2 adults demonstrate acquisition of the target structure at a later stage than L2 children, both groups follow a similar path in the acquisition of transparent particle verbs.

While the effect is weaker for the adults than the children, a t-test shows that the difference between the level 2 and level 3 adults in frequency of the split form approaches significance at the .05 level ($t(20)=1.90$, $p=.07$). Although the frequency of transparent particle omission is lower for the level 3 adults (6%) than the level 2 adults (10%), there is no statistical difference between the two groups $t(20) = 1.14$, $p=.27$). A t-test also indicates that the level 3 adults are not target-like with respect to particle omission, as they drop the particle significantly more often than controls ($t(17)=2.21$, $p<.05$). Thus, although the L2 adults demonstrate some evidence for structural acquisition at level 3, they have not reached the target grammar by this stage.

While we see evidence for acquisition of incorporation in the L2 child data, we would not expect to see incorporation in the L2 adult data until after the base structure is acquired. Recall that for the L2 children, acquisition of incorporation (at level 3)

followed acquisition of the base structure (at level 2). It is unclear how incorporation, represented in (21), would be possible without a PrtP projection.

(21)



As discussed above, we see no evidence for acquisition of the base structure (cf. 20) in proficiency levels 1 and 2, and only modest evidence for acquisition of a PrtP projection at proficiency level 3. We would not therefore expect the adult L2ers to acquire incorporation until a later stage of grammatical development, at a level of proficiency not tested in the current study.

Figure 4.3 provides a visual description of the data that are most revealing of structural development. Note that because we are interested in responses that can provide information about acquisition of the target structure, the frequencies in Figure 4.3 are based on split, adjacent and particle omission responses; frequencies do not include simple verbs, PP or "other" responses.

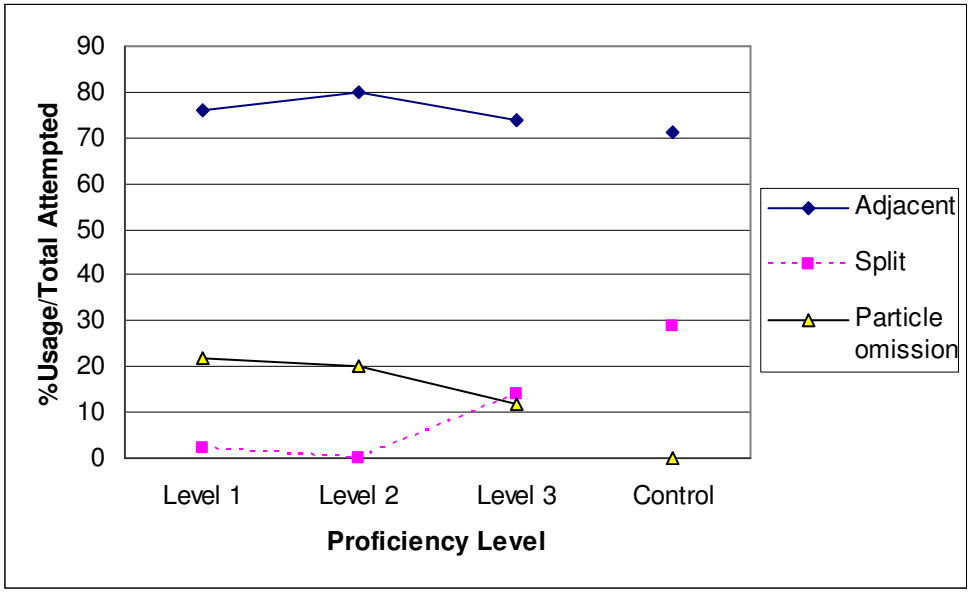


Figure 4.3 Adults—Transparent PVs with Obligatory Particles

As Figure 4.3 illustrates, the difference between the level 2 and level 3 adults in the frequency of split PVs is more obvious when we consider only particle verb responses. At level 3 we see an increase in use of the split form intersecting with a decrease in particle omission. Changes taking place at level 3 support the claim that, while these L2 adults are not yet target-like, they are moving toward a target grammar.

We have argued that the slight increase in split PVs along with the slight decrease in particle omission between levels 2 and 3 suggests acquisition of the target structure for transparent PVs. An individual-level analysis was conducted to be sure that the percentages reported in table 4.10 represent group trends. Table 4.11 shows the number

and percentage of split PV and particle omission responses for adult L2ers in levels 2 and 3.[66]

Table 4.11 Number of split PV and particle omission responses for level 2 and level 3 adults

		Split Responses		Particle Omission Responses	
		#	%	#	%
Participant	Level				
A13	2	0	0	2	18
A14	2	0	0	1	9
A16	2	0	0	1	9
A19	2	0	0	0	0
A25	2	0	0	3	27
A26	2	0	0	2	18
A30	2	0	0	0	0
A31	2	0	0	0	0
A39	2	0	0	1	9
A42	2	0	0	0	0
A43	2	0	0	2	18
A1	3	0	0	0	0
A18	3	0	0	2	18
A3	3	0	0	1	9
A32	3	0	0	0	0
A33	3	1	9	0	0
A36	3	0	0	0	0
A37	3	2	18	1	9
A38	3	4	36	0	0
A45	3	0	0	0	0
A46	3	0	0	2	18
A5	3	1	9	1	9

Table 4.11 shows that while no one in the level 2 group ever produced a split transparent PV, 4 out of 11 individuals in the level 3 group use split PV responses. Two of these 4

[66] Recall that there were a total of 11 transparent PVs with obligatory particles, so the percentages reported in table 4.11 are out of 11 possible responses per individual participant.

never dropped the particle, suggesting that they had acquired the structure for transparent PVs.[67]

The data in table 4.11 also show that there were two individuals in the level 3 group who used split PVs and also omitted the particle, suggesting that the L2 grammar allows some optionality and can vacillate between the L1 grammar with no PrtP and the target grammar. The generally low frequency of split PV responses in the adult data compared to the child data suggests that the adults are slow to transition toward the target grammar. It is possible that if we tested the adult L2ers at a later period, they would be more similar to the L2 children, using more split PVs and dropping the particle less frequently. However, it is equally possible that adults would demonstrate an inability to move beyond a non-target-like grammar (i.e. "fossilization", see Selinker 1972; Lardiere 1998) in this domain. The issues of fossilization and a vacillating grammar are addressed in more detail in section 5.1.2.1.

In sum, the adult L2ers use split PVs less often than the child L2ers, and evidence for acquisition of the target structure is weaker for the L2 adults than the L2 children. Importantly, however, the data reveal that the adults and children demonstrate a similar pattern of acquisition: both groups exhibit an increase in split PVs coupled with a decrease in particle omission responses. We also see three important differences here between L2 adults and L2 children. First, L2 children set the PrtP parameter at an earlier stage of proficiency than L2 adults; L2 children's use of split PVs increases at level 2,

[67] It should be noted that 4 of the level 3 participants never dropped the particle and also never produced split PVs. Although production of split PVs coupled with failure to omit particles can provide evidence for the base structure for transparent PVs, it is unclear what information we can derive from individuals who neither omit particles nor use split PVs.

while an increase in split PVs is not seen until level 3 for the L2 adults. Second, while evidence for structural acquisition (i.e. increase in split PVs) is robust in L2 children, it is substantially weaker for the L2 adults. Third, while the L2 children reach a target-like state with respect to particle omission, the adult L2ers continue to omit the particle significantly more often than the controls.

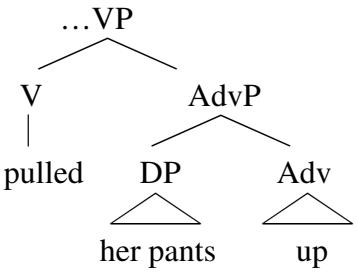
4.6.3 Transparent PVs—Evidence for transfer in adult second language acquisition

In section 4.3.2 we discussed how native language influence might be manifested in the L2ers' responses. Native Spanish speakers might initially analyze the transparent particle as an adverb. Additionally, transfer might result in a complex verb analysis or particle omission. Each of these transfer possibilities is discussed in turn below.

Adverb analysis

In contrast to what we observe in the L2 children, we see no evidence that the adult L2ers apply an adverb analysis to English PVs. Recall that an adverb analysis results in the verb^DP^particle order (identical to the split PV surface word order), as illustrated in (22).

(22)



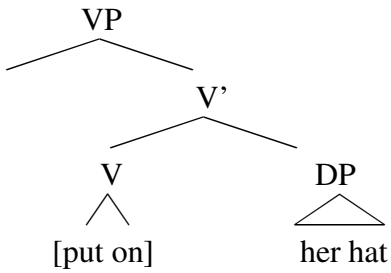
It is unclear why the L2 children assign an adverb analysis to particles but the L2 adults do not.

Complex Verb analysis

Another difference between L2 adults and L2 children is found in the adjacent PV responses. Table 4.10 shows a high frequency of adjacent PVs in the adult data, even at the lowest level of proficiency (31%), while the children's use of adjacent PVs is initially low (15%) (cf. table 4.6). Recall that when analyzing the L2 children's data, we took the high frequency of adjacent PVs (33%) at level 3 as evidence of incorporation. However, we cannot put forward the same analysis for the adults. As discussed previously, acquisition of the base structure ((20) above) is a necessary prerequisite for incorporation ((21) above). Since we see no evidence for acquisition of the base structure (=split PVs) at proficiency levels 1 and 2, it is implausible that their early adjacent PVs result from particle incorporation. If the frequent use of the adjacent form in the level 1 adults were indicative of target structure acquisition, then we would have to assume that they had already acquired a number of syntactic properties not evidenced in Spanish, including setting the PrtP parameter and particle incorporation. Since we have already seen that the adults show little sign of target-like behavior in use of the split form until level 3, it seems unwarranted to conclude that the high number of adjacent PVs observed in the level 1 adults are evidence of incorporation. Thus, I attribute the initial adult usage of adjacent PVs to native language influence. Specifically, I propose that L2 adults initially treat the transparent PV as a complex verb.

As discussed above, the P-feature in English particles is a feature of the relevant verbs in Spanish. For example, the particle verb *throw out* is expressed with the single Spanish verb *sacar* 'to throw out'/'remove'. Since the particle in English carries the path feature, the native Spanish speaker might assume that it is a necessary part of the verb and assign a complex verb analysis to the English particle-and-verb. On this analysis, the verb and particle are merged into V, as illustrated in (23).

(23)



Since the particle and verb are housed together in V, this analysis will always result in the verb^particle^DP order, the adjacent PV order.

In sum, I assume that the adult "adjacent" responses in table 4.10 are instances of transfer; adult L2ers assign a complex verb analysis to the English verb plus particle. In this respect, adults are like the level 1 children, whose use of adjacent PVs results from transfer.

Particle omission

As mentioned above, particle omissions are attributed to L1 transfer. Because the PrtP parameter in the L2 grammar is initially set to the "off" position, the PrtP is not projected and the transparent particle is not produced. In the case of transparent PVs, we claim that L2ers who drop the particle assume that the necessary P-features are encoded

directly in the English verb (as they are for Spanish). On this account, the verb is merged in V as in (24).

(24)

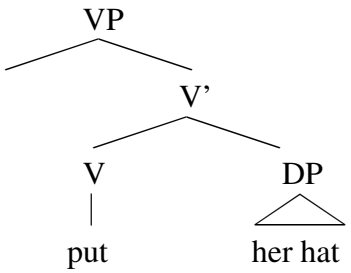


Table 4.10 shows that the L2 adults continue to drop the particle across all proficiency levels (9%, 10% and 6% respectively). A t-test indicates that the level 1 adults omit the particle significantly more often than the controls ($t(17)=2.81$, $p<.05$). The same result holds for level 2 ($t(17)=2.93$, $p<.01$) and level 3 adults ($t(17)=2.21$, $p<.05$). Although the use of split PVs provides some evidence for development in the level 3 adults, they clearly have not yet reached the target grammar and continue to be influenced by the native language even at this higher proficiency level.

4.6.3.1 Pronoun word order—Adult results

Recall that L1 children go through a stage in which they erroneously produce adjacent PVs with pronoun objects (e.g., **She picked up it*) (cf. Hyams, Schaefffer and Johnson (1993)). However, like the L2 children, when the adult L2ers use a pronoun object it always correctly precedes the particle. The adjacent form accounts for 89% of the adult L2ers' PVs with full DP objects, but 0% of the adult L2ers' PVs with pronoun objects.

Again, we claim that the high frequency of split PVs containing pronoun objects is due to transfer. The adult L2ers, like the child L2ers, analyze the English pronoun as a clitic (cf. discussion in section 4.4.3.1). The L2ers assume that English pronouns, like Spanish pronouns, are clitics that must be adjacent to the verb and thus always produce PVs containing pronouns objects in the split form.

4.6.4 Adult results—A pure UG account

The pure UG hypothesis predicts that 1) L2ers will show no evidence of L1 influence, and 2) L2 acquisition will pattern like L1 acquisition. We have already seen evidence against the first prediction; adult L2ers display a variety of transfer effects in the acquisition of English particle verbs. In order to test the second prediction, we compare the adult L2 participants' acquisition of particle verbs to the acquisition of particle verbs by native English-speaking children in Sawyer's (1999) longitudinal study.

Table 4.12 shows the proportion of split and adjacent PVs in Sawyer's L1 data and L2 adult data from the current study. The data in table 4.12 are collapsed across proficiency levels for both groups (see section 4.4.5 for a general rationale). A comparison of the collapsed data in table 4.12 with the data in appendix D (Sawyer's first developmental stage and the level 1 L2 adults) suggests that there was little change over time and collapsing the data does not skew the results.

Table 4.12 Split and adjacent transparent PVs produced by L1 children and L2 adults[68]

	Total Split	Total adjacent
L1 children (Sawyer 1999)	94% (677)	6% (43)
L2 adults	17% (30)	83% (149)

The data in table 4.12 demonstrate striking differences between L2 adults and L1 children acquiring English particle verbs. In fact, the adult L2ers exhibit a pattern that is opposite from that observed in L1 acquisition. While the L1ers show a strong preference for split PVs (94%) compared to adjacent PVs (6%), the adult L2ers strongly prefer the adjacent form (83%) over the split form (17%).

We see further differences between L1 children and L2 adults in errors of omission. Table 4.13 shows the number of object omission and particle omission errors produced by the L1 children and the L2 adults.[69]

Table 4.13 Errors of omission in transparent PVs produced by L1 children and L2 adults

	Particle omission	Object omission
L1 children (Sawyer 1999)	6	182
L2 adults	30	4

While the L1 children omit more objects (182 tokens) than particles (6 tokens), we see the opposite pattern for the L2 adults, who drop more particles (30 tokens) than objects (4 tokens).

[68] The PVs in table 4.12 include both full DP objects (e.g., *She put the hat on*) and pronoun objects (e.g., *She put it on*) and contain both optional and obligatory particles. See footnote 26 for a detailed explanation.

[69] Since Sawyer (1999) did not differentiate between optional and obligatory particles, we were unable to compare proportion of object and particle omission across the two studies. See footnote 27 for a detailed explanation.

In sum, the data reported in tables 4.12 and 4.13 suggest that L2 adults show acquisition patterns that are strikingly different from the acquisition patterns of native English-speaking children acquiring PVs. We see no similarities between L1 children and L2 adults in the production of split/adjacent PVs, omission errors or word order errors with pronoun objects. Our data are therefore incompatible with a pure UG account and instead support the claims of initial L1 transfer in adult L2 acquisition.

4.7 Optional Particles in Transparent PVs—Adults and Children

The analysis described above is based on transparent particle verbs that contain obligatory particles (e.g., *She put the hat on*, **She put the hat*). We now turn to the acquisition of transparent particle verbs with optional particles (e.g., *She pulled the bag down*, *She pulled the bag*). As we will see, the L2ers provide the same analysis for PVs with optional particles as they do for PVs with obligatory particles. We will therefore discuss the results for the optional particles only briefly. Tables containing a summary of each response type for children and adults are in appendices F and G.

Child responses for transparent PVs containing optional particles are summarized in Figure 4.4. Since Figure 4.4 contains only responses relevant to the acquisition of transparent PVs, the percentages are based on the total number of split, adjacent and particle omission responses.

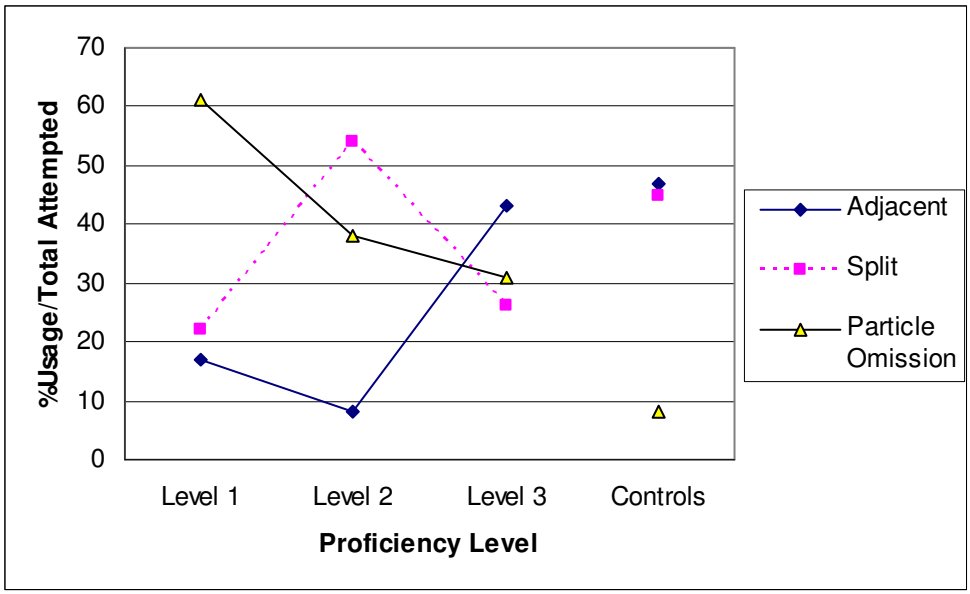


Figure 4.4 Children—Transparent PVs with Optional Particles

Note first that child L2ers omit optional particles more often than obligatory particles (cf. Figure 4.1). This is not surprising since these particular PVs are grammatical without the particle. Yet, despite the high frequency of particle omission, we still see the same pattern of acquisition observed for PVs with obligatory particles. The L2 children show an increase in split PVs coupled with a decrease in particle omission at level 2, the same point at which this occurs with particle verbs containing obligatory particles. This provides additional support for the claim that the PrtP projection has been acquired at this stage. Figure 4.4 also shows a dramatic increase in the adjacent form at level 3, again supporting the hypothesis that the acquisition of particle incorporation follows acquisition of the base structure.

Adult responses for transparent PVs containing optional particles are in Figure 4.5. Again the frequencies are based on the total number of split, adjacent and particle omission responses; they do not include simple verb, PP, or "other" responses.

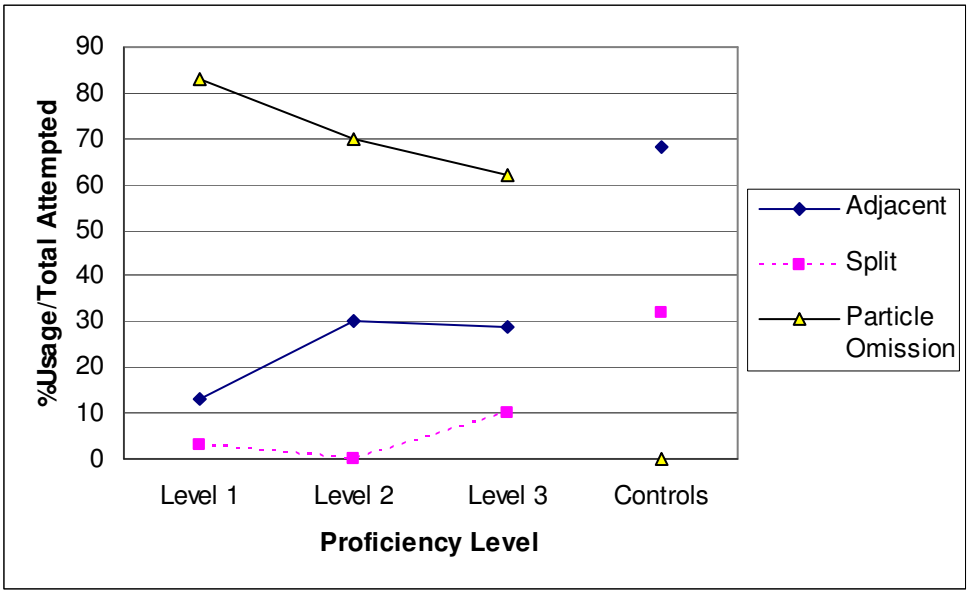


Figure 4.5 Adults—Transparent PVs with Optional Particles

As was the case for the children, the high frequency of particle omission in adult L2ers is not surprising, given that it is optional in the target grammar (and hence also in the input).[70] Although the frequency of particle omission is much higher here, we still see the same acquisition patterns observed in PVs with obligatory particles. As Figure 4.5 demonstrates, the adult L2ers show an increase in split PVs coupled with a decrease in particle omission at level 3, providing evidence for projection of a PrtP at this stage. As we saw with obligatory PVs, adult acquisition of the base structure for transparent

[70] Figure 4.5 shows that the adult controls almost never omitted the optional particle. I believe that this is an artifact of the testing situation; because the participants were hyperaware of their production, they attempted to provide "complete" responses which included any optional material.

particle verbs occurs when the adults are at a later proficiency level than the L2 children, who acquire the base structure for transparent PVs at level 2 (cf. Figures 4.1 and 4.4). Since we do not expect the adults L2ers to show evidence of incorporation until after the base structure is acquired, our analysis predicts that the adjacent PVs will be reanalyzed and possibly increase at a subsequent proficiency level not investigated in the current study.

4.8 Transparent PVs—Summary

Table 4.14 provides a summary of the patterns observed in the adult and child data.

Table 4.14 Summary of L2 adult and L2 child production data for transparent PVs

	Child L2ers	Adult L2ers
Split PV responses	Sharp increase at level 2	Increase at level 3
Adjacent PV responses	Sharp increase at level 3	Consistently high
Particle omission errors	Decrease across proficiency levels	Slight decrease at level 3
Simple verb responses	Decrease across proficiency levels	Consistently high
PP responses	Increase across proficiency levels	Consistently high

We have seen similarities and differences between L2 children and adults in the acquisition of transparent particle verbs. With respect to the acquisition of the target PrtP structure, the L2 children set the PrtP parameter to "on" at an earlier stage of proficiency than the L2 adults, and the children show more robust evidence for acquisition of the target grammar. For example, while split PVs, indicative of acquisition of the base structure for transparent particle verbs, surface with 48% frequency at level 2 for L2

children, they are not evidenced until level 3 for L2 adults, at a meager 7%. We have suggested that the adult delay may be attributed to the prolonged effects of L1 transfer; while the L2 adults seem to vacillate between the L1 grammar and the target grammar with a PrtP projection, the L2 children demonstrate more stability with the target grammar.

Although children converge on the target grammar sooner than adults, we see transfer effects in both groups, as shown in table 4.15.

Table 4.15 Summary of L2 transfer effects

	Child L2ers	Adult L2ers
Adverb analysis	Yes	No
Complex verb analysis	Yes	Yes (prolonged)
Particle omission	Yes	Yes (prolonged)

Adults seem to consistently apply a complex verb analysis, producing adjacent PVs across all levels of proficiency. Additionally, we see robust evidence for prolonged transfer in the adults' particle omission responses. While the rate of particle omission decreases (and the use of particles increases) across proficiency levels for the L2 children, reaching or approaching the L1 norms, the adults drop the particle more often than controls.[71] Thus it seems that, unlike the L2 children, the L2 adults can vacillate between the L1 grammar with a PrtP projection and the target grammar.

While the L2 responses for adults and children provide ample evidence for transfer, neither group demonstrates acquisition patterns that are similar to those observed in L1 acquisition. The adult and child L2ers in our study produce adjacent PVs with

[71] Although the rate of particle omission for level 3 adults is only about 6%, it is still significantly higher than the adult controls, suggesting that they have not yet reached the target grammar.

much higher frequency than L1 children. Further, the L1ers and L2ers differ with respect to omission error types and frequencies.

Having reviewed the results for transparent PVs, we now turn to the production of idiomatic PVs.

4.9 Child Results—Idiomatic PVs

Table 4.16 lists the frequency of each response type for child participants. The category "other" collapses alternative, pass and pronoun responses. Specific information on "other" responses for all idiomatic PVs is in appendix H. Table 4.16 contains data for idiomatic PVs with obligatory particles; PVs with optional particles are discussed in section 4.10

Table 4.16 Child production of idiomatic PVs with obligatory particles

Response Type	Level 1			Level 2			Level 3			Controls	
	N	%		N	%		N	%		N	%
Simple verb	17	25.7		10	16.7		10	15.1		5	10.4
Split	0	--		4	6.7		4	6.1		4	8.3
Adjacent	2	3.0		0	--		12	18.2		21	43.7
Particle omission	36	54.5		36	60.0		37	56.1		10	20.8
PP	0	--		0	--		0	--		0	--
Other	11	16.7		10	16.7		3	4.5		8	16.7
Total	66	100		60	100		66	100		48	100

4.9.1 Child Results—Simple Verbs in lieu of idiomatic PVs

Recall that simple verb responses represent grammatical single-word alternatives to particle verbs. For example, a response such as *She inflated the balloon* (rather than *She blew up the balloon*) is a simple verb response.

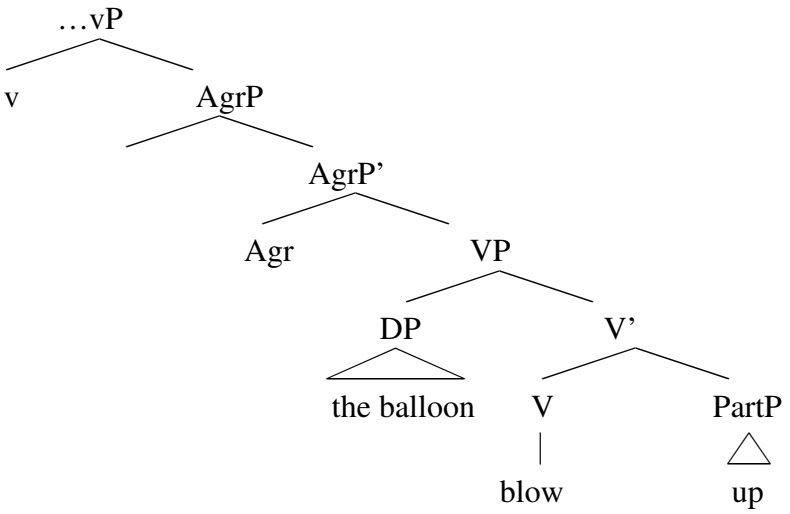
Table 4.16 shows that the frequency of simple verb responses decreases over time for the L2 children. However, there is no statistical difference between controls and L2ers in the frequency of simple verb responses. A t-test indicates that level 1 children do not produce significantly more simple verb responses than control children ($t(17)=1.72$, $p=.10$). The same is true for level 2 ($t(16)=.79$, $p=.44$) and level 3 ($t(17)=.55$, $p=.60$) children. Thus, statistical analyses indicate that the L2 children are target-like with respect to the frequency of simple verb responses. Although the L2 children use the simple verb response with the same frequency as controls, we will see that there are few further similarities between L2ers and controls in the production of idiomatic PVs.

4.9.2 Child results—No evidence for acquisition of target structure for idiomatic PVs

In our analysis of transparent particle verbs, a decrease in particle omission was taken as evidence for acquisition of the target structure. Following this reasoning, the high frequency of idiomatic particle omission (55%-60%) across all levels of proficiency indicates that the L2 children have not acquired the structure for idiomatic PVs.

We have established that the level 2 children have set the PrtP parameter. However, table 4.16 indicates that they omit the idiomatic particle with overwhelming frequency (between 55%-60% of the time). If these children have set the PrtP parameter**,** then why do they consistently omit the idiomatic particle more often than controls? The high frequency of idiomatic particle omission can be attributed to the complex V' structure associated with idiomatic PVs. Recall that idiomatic particles of English are predicative arguments that serve as complements to V, as in the base structure for idiomatic PVs, given in (25) below.

(25)



In order to acquire the structure for idiomatic PVs, the L2ers must learn that the PrtP is selected by V. In the Spanish L1 grammar verbs do not select predicative arguments (i.e. particles). We assume that this added complexity, in addition to the non-compositionality of the idiomatic particle**,** causes the acquisition of idiomatic PVs to be delayed relative to the acquisition of transparent PVs which are compositional and whose verbs do not have this additional selectional property.

A comparison of tables 4.6 and 4.16 shows that level 3 children are target-like with respect to transparent particle omission; they drop the transparent particle 3% of the time and controls drop it 1% of the time (table 4.6). However, the L2 children are never target-like with respect to idiomatic particle omission (table 4.16). A t-test indicates that the level 3 children drop the idiomatic particle significantly more often than child controls ($t(17)=2.89$, $p<.05$). The same is true for level 2 ($t(16)=3.31$, $p<.01$) and level 1 children ($t(17)=2.60$, $p<.05$).

The fact that child controls drop the idiomatic particle 21% of the time but almost never (1%) drop the transparent particle is consistent with the hypotheses that the idiomatic particle makes no independent contribution to the meaning of the sentence. Given the fact that the adult controls never omit the obligatory particle (see table 4.19 below), we must assume that the control children have not reached a final adult-like grammar with respect to idiomatic PVs. Omission of obligatory idiomatic particles is observed at least once in 5 of the 8 control children. Further, it is not limited to one idiomatic PV type, the particle is dropped in production of the PVs *roll up*, *cut down* and *blow up*. Given the robustness of the phenomena, we cannot consider the omission of obligatory particles in the control children to be a speech error. While we attribute this unadult-like behavior to the non-compositionality of the particle and the selectional properties associated with verbs that make up idiomatic PVs, future research should investigate the anomaly in more detail.

In sum, the L2 child participants fail to demonstrate knowledge of the structure of idiomatic PVs, as particle omission is consistently high across all levels of proficiency.

Due to the non-compositionality of the idiomatic particle, in addition to setting the PrtP parameter, the L2ers must learn that the idiomatic particle is a predicative complement to the verb. As will be discussed in more detail below, until this knowledge is acquired, the L2er will assume that the verb cannot select a predicative argument (as in the transferred L1 grammar) and continue to omit the particle.

4.9.3 Idiomatic PVs—Evidence for transfer in child second language acquisition

Adverb analysis

As discussed above, an adverb analysis results in the VP^DP^particle (=split) word order. We have established that in the grammar of the level 1 L2 children, the PrtP parameter has not been switched to "on." Table 4.6 indicates that these children apply an adverb analysis to transparent particles, producing "split" responses 15% of the time. However, the same children do not apply an adverb analysis to idiomatic particles, as they never produce split idiomatic PVs. We propose that the child L2ers do not apply an adverb analysis to idiomatic PVs because the idiomatic particle is semantically unlike adverbs. Recall that L2ers applying an adverb analysis assume that the transparent particle is an adverb and project an AdvP as in Spanish. Since the idiomatic particle is semantically unlike adverbs, the L2ers do not assume that it is an adverb and therefore do not apply an adverb analysis.

Table 4.16 indicates that the frequency of split idiomatic PVs is 7% for the level 2 children and 6% for the level 3 children. Although their behavior is similar to the

controls, who produce split idiomatic PVs 8% of the time, this similarity is coincidental given the fact that the L2 children have not acquired the knowledge that English verbs select predicative arguments (i.e., particles). Since the L2 children have not acquired this selectional restriction associated with English verbs, we assume that the few split and adjacent PVs observed in table 4.16 are rote learned forms.

Complex Verb analysis

Recall that L2ers sometimes assign a complex verb analysis to transparent PVs. This type of analysis is attributed to the P-features in transparent particles; since Spanish verbs contain P-features, the L2ers assume that the transparent particle (i.e. the P-feature) is part of the verb. Given the fact that idiomatic particles do not contain P-features, we predicted that the L2ers would not analyze the particle as part of the verb. The prediction is borne out, as evidenced by the relatively low frequency of adjacent PVs in table 4.16.

A comparison of Tables 4.6 and 4.16 shows that while the level 1 children, who have not yet reset the PrtP parameter, analyze the transparent particle as part of a complex verb, they do not apply the same analysis to idiomatic PVs. Table 4.6 indicates that the level 1 children produce adjacent transparent PVs 15% of the time, suggesting a complex verb analysis. However, the same children produce only two adjacent idiomatic PVs. We also see that the control children produce far more adjacent idiomatic PVs than the L2ers. While nearly half of the control responses are adjacent idiomatic PVs (44%), the level 1 and level 2 children almost never produce them and the level 3 children produce them only 18% of the time. Since the child L2ers do not know that English verbs can select predicative arguments and they do not seem to apply an adverb analysis

to idiomatic particles, we assume that the 14 adjacent responses in table 4.16 are formulaic expressions.

Particle Omission

As discussed above, table 4.16 indicates that the L2 children omit idiomatic particles with overwhelming frequency. This is predicted on a transfer account. The level 1 children have no structural location for the particle in the initial L2 grammar (i.e., the L1 grammar), so it is dropped. Although the level 2 and level 3 children have set the PrtP parameter and projected PrtP, because Spanish does not have particles they must additionally learn the selectional properties associated with verbs that make up idiomatic PVs. We assume that this added complexity delays the acquisition of the target structure for idiomatic PVs relative to transparent PVs and thus results in idiomatic particle omission.

4.8.4 Child results—A pure UG account

To reiterate, in a situation in which the L2 contains functional structure not instantiated in the L1, a pure UG account of L2 acquisition makes the following predictions: 1) L2ers will demonstrate no effects of L1 transfer, and 2) L2 acquisition will proceed like L1 acquisition.

We have seen that the first prediction does not hold for the L2 acquisition of idiomatic PVs; the L2 children demonstrate transfer effects in the omission of idiomatic particles. To test the second prediction, we must compare L2ers in the process of

acquiring particle verbs with native English-speaking children acquiring particle verbs. The following analysis contrasts the L1 acquisition of idiomatic PVs reported in Sawyer (1999) with the L2 acquisition of idiomatic PVs by L2 children in the current study.

Table 4.17 lists the proportion of split and adjacent PVs produced by the L1 and L2 children. Note that data are collapsed across proficiency levels and include PVs with both obligatory and optional particles (see section 4.4.5 for a rationale for pooling the data). A comparison of the collapsed data in table 4.17 with the data in appendix I containing (Sawyer's first developmental stage as well as the level 1 children in the current study), suggests that there was little change over time and that the collapsed data provide a valid representation of the results.

Table 4.17 Split and adjacent idiomatic PVs produced by L1 and L2 children[72]

	Total split	Total adjacent
L1 children (Sawyer 1999)	90% (136)	10% (15)
L2 children	47% (36)	53% (40)

Table 4.17 shows that the proportion of adjacent PVs is higher for the L2 children (53%) than the L1 children (10%). As with transparent PVs (table 4.8), the L2 children do not show the same aversion to the adjacent form that is observed in the L1ers.

We see further differences between the L1 and L2 children in the number of particle omission errors, given in table 4.18.[73]

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[72] The PVs in table 4.17 include both full DP objects (e.g., *She blew the balloon up*) and pronoun objects (e.g., *She blew it up*) and contain both optional and obligatory particles**.** See footnote 26 for a detailed explanation.

Table 4.18 Errors of object and particle omission in idiomatic PVs produced by L1 and L2 children

	Particle omission	Object omission
L1 children (Sawyer 1999)	1	5
L2 children	109	7

While there are few instances of object omission for both groups, table 4.18 indicates that the L2 children drop the idiomatic particle far more than the L1 children. While the L2 children omitted the idiomatic particle 109 times, there was only one token of idiomatic particle omission in the L1 data. Similar L1/L2 differences are also observed in the production of transparent PVs (table 4.9).

In sum, the differences observed between L1 and L2 children do not support the Pure UG hypothesis. The two groups show differences in the frequency of adjacent PVs and in patterns of omission errors. If the L2 children projected functional structure based on the L2 input with no interference from the L1 grammar, it is unclear why the Spanish-speaking children acquiring PVs would omit the particle so much more often than the native English-speaking children. However, if we assume that the initial L2 grammar is the L1 grammar, then the data are explained, as the L2er must reset the PrtP parameter and learn the phrase structure rules associated with idiomatic particles before the target structure can be acquired.

[73] Since Sawyer (1999) did not differentiate between optional and obligatory particles, we were unable to compare proportion of object and particle omission across the two studies. See footnote 27 for a detailed explanation.

4.9 Adult Results—Idiomatic PVs

Data for adult responses are in table 4.19. The response category "other" includes alternative, pronoun and pass responses. Appendix H contains specific information about responses in the "other" category.

Table 4.19 Adult production of idiomatic PVs with obligatory particles

Response Type	Level 1			Level 2			Level 3			Controls	
	N	%		N	%		N	%		N	%
Simple verb	16	24.2		12	18.2		20	30.3		1	2.1
Split	0	--		0	--		0	--		4	8.3
Adjacent	1	1.5		6	9.0		9	13.6		43	89.5
Particle omission	36	54.5		34	51.5		25	37.9		0	--
PP	0	--		0	--		0	--		0	--
Other	13	19.7		14	21.2		12	18.2		0	--
Total	66	100		66	100		66	100		48	100

4.9.1 Adult results—Simple verbs in lieu of idiomatic PVs

Table 4.19 indicates that the frequency of simple verb responses is fairly high across all proficiency levels. While the child L2ers are consistently target-like in the proportion of simple verb responses (cf. table 4.16), statistical analyses show that the L2 adults produce simple verb responses with higher frequency than adult controls across all levels of proficiency. A t-test indicates that the frequency of simple verb responses is significantly higher for level 1 adults than adult controls ($t(17)=2.67$, $p<.05$). The same result holds for level 2 ($t(17)=2.16$, $p<.05$) and level 3 adults ($t(17)=3.70$, $p<.01$).

As mentioned above, given the fact that simple verb responses are grammatical and correct, it is unclear how to interpret them. The statistical difference between adult L2ers and controls in the frequency of simple verb responses is in line with the claims of a transfer account of L2 acquisition; lacking the target structure for particle verbs, the L2er may choose a simple verb response. However, it is also possible that the L2ers choose the simple verb response because they have never heard the PV alternative. Thus, simple verb responses cannot be used as transfer evidence to refute the Pure UG hypothesis.

4.9.2 Adult results—No evidence for acquisition of the target structure for idiomatic PVs

L2 adults show no evidence for knowledge of the target structure of idiomatic particle verbs, as the frequency of idiomatic particle omission is consistently high across all levels of proficiency. In fact, while the adult controls never drop the particle, the L2 adults omit the particle between 38%-55% of the time. Statistical analyses confirm that the L2ers drop the particle significantly more often than adult controls. According to t-tests, the level 1 adults omit the particle significantly more often than controls ($t(17)=6.17$, $p<.001$). The same is true of the level 2 ($t(17)=5.10$, $p<.001$) and level 3 ($t(17)=4.49$, $p<.001$) adults.

A comparison of particle omission responses in tables 4.19 and 4.10 reveals an important difference between transparent and idiomatic PVs: the adult L2ers omit the idiomatic particle with much higher frequency than the transparent particle, even at the

highest level of proficiency. We see that the level 3 adults omit the transparent particle only 6% of the time (table 4.10), while the idiomatic particle is omitted 38% of the time (table 4.19). Thus, while the level 3 adults have set the PrtP parameter, they have not acquired the selectional properties associated with idiomatic PVs.

It is important to note that the L2 children and adults show similar patterns of behavior here. Both groups consistently drop the idiomatic particle more than controls across all levels of proficiency (see table 4.16 and table 4.19), suggesting that neither group has acquired the structure associated with idiomatic PVs.

4.9.3 Idiomatic PVs—Evidence for transfer in adult second language acquisition

Adverb analysis

Since idiomatic particles are semantically unlike adverbs, we predicted that the L2ers would not apply an adverb analysis to idiomatic PVs. As discussed above, an adverb analysis results in the VP^DP^particle/adverb order (=split order). Adult L2ers produce no split idiomatic PVs and thus there is no indication of an adverb analysis.

The adult and child L2ers exhibit similar behavior in this domain, as neither group applies an adverb analysis to idiomatic PVs. A comparison of tables 4.16 and 4.19 shows that the child L2ers produced only 8 split idiomatic PVs across all proficiency levels, and the adult L2ers produced none.

Complex Verb analysis

We predicted that the L2ers would not apply a complex verb analysis to idiomatic particle verbs because idiomatic particles, unlike transparent particles, do not contain lexical features conducive to a complex verb analysis (e.g. P-features). As expected, the low frequency of adjacent PVs in table 4.19 indicates that the adult L2ers indeed do not apply a complex verb analysis to idiomatic PVs. A comparison of tables 4.10 and 4.19 indicates that for transparent PVs, the level 1 adults apply a complex verb analysis and use adjacent PVs 31% of the time, but that for idiomatic PVs the same participants use adjacent PVs only 2% of the time. Likewise, the level 2 adults produce adjacent transparent PV responses 40% of the time, but only use adjacent idiomatic PVs 9% of the time. Thus, while these L2ers analyze the transparent particle and verb as a single unit, they do not apply a complex verb analysis to idiomatic PVs. We attribute this difference to the semantic difference between transparent and idiomatic PVs. Since idiomatic PVs do not contain P-features, the L2ers do not analyze these particles as part of the verb. Given the fact that the L2 adults do not know the selectional properties of idiomatic PVs and they do not apply a complex verb analysis, we assume that the adjacent PVs observed in table 4.19 are rote learned forms.

Particle Omission

As discussed above, the adult L2ers consistently drop the idiomatic particle across all levels of proficiency. The high incidence of particle omission is attributed to L1 transfer. The level 1 and 2 adults have not set the PrtP parameter; with no structural position for the particle, it is dropped. Although the level 3 adults have set the PrtP

parameter, they have not learned the selectional properties of verbs that make up idiomatic PVs. More specifically, since Spanish does not contain particles, they must learn that PrtP can be a predicative complement to V. Until this knowledge is acquired, the PrtP structure is not extended to idiomatic PVs and the idiomatic particle is omitted.

We see further similarity here between adult and child second language acquisition, as neither group demonstrates knowledge of the selectional properties of idiomatic PVs. As noted above, the frequency of particle omission is much higher for idiomatic PVs than transparent PVs, providing further evidence for the claim that the L2ers distinguish the two classes of PVs.

4.9.4 Adult results—A pure UG account

The pure UG hypothesis claims that the L2 acquisition of functional structure not present in the native language will proceed like L1 acquisition and there will be no evidence of native language influence. Thus, it predicts that native Spanish speakers will demonstrate acquisition patterns similar to those exhibited by native English-speaking children acquiring particle verbs. We now compare the L1 acquisition of idiomatic particle verbs reported in Sawyer (1999) with data from the L2 adults in the current study.

Table 4.20 lists the proportion of split and adjacent idiomatic PVs produced by L1 children and L2 adults. Note that the data in the following table are pooled across proficiency levels, and include particle verbs with both obligatory and optional particles. See section 4.4.5 for an explanation of pooling the data. A comparison of the compiled

data in table 4.20 with the data in appendix I (Sawyer's first developmental stage and the level 1 adults) suggests that there is little difference between the first developmental stage/level 1 data and the compiled data.

Table 4.20 Split and adjacent idiomatic PVs produced by L1 children and L2 adults[74]

	Total split	Total adjacent
L1 children (Sawyer 1999)	90% (136)	10% (15)
L2 adults	11% (8)	89% (62)

Table 4.20 shows that L1 children and L2 adults acquiring idiomatic particle verbs pattern differently in the production of split and adjacent PVs. While the proportion of split idiomatic PVs is 90% for the L1 children, it is only 11% for the L2 adults: the L1 children strongly prefer split idiomatic PVs, but the L2 adults prefer the adjacent form. The L2 adults show a similar preference for adjacent transparent PVs (see table 4.12).

Table 4.21 lists the number of particle and object omission errors in the L1 and L2 production of idiomatic PVs.[75]

Table 4.21 Errors of object and particle omission in idiomatic PVs produced by L1 children and L2 adults

	Particle omission	Object omission
L1 children (Sawyer 1999)	1	5
L2 adults	95	1

[74] The PVs in table 4.20 include both full DP objects (e.g., *She blew the balloon up*) and pronoun objects (e.g., *She blew it up*) and contain both optional and obligatory particles. See footnote 26 for a detailed explanation.

[75] Since Sawyer (1999) did not differentiate between optional and obligatory particles, we were unable to compare proportion of object and particle omission across the two studies. See footnote 27 for a detailed explanation.

While there is little difference between the L1ers and adult L2ers with respect to object omission, we see that the adult L2ers omit the idiomatic particle much more often than the L1 children. While there are 95 tokens of idiomatic particle omission in the adult L2 data, the L1 children omitted the idiomatic particle only once. Thus, the results clearly show that adult L2ers acquiring idiomatic PVs omit the particle more than L1 children acquiring PVs.

In sum, we have seen that there is no evidence for similarity between the L2 adults and L1 children in the acquisition of idiomatic particle verbs. The observed differences in particle omission and proportion of split and adjacent PVs provide evidence against the Pure UG hypothesis and instead support a transfer account of adult L2 acquisition.

4.10 Optional particles in idiomatic PVs—Adults and children

We now discuss the production results for idiomatic PVs containing optional particles. As we will see, the adult and child L2ers demonstrate trends similar to those observed for idiomatic PVs with obligatory particles. Because the results for PVs with optional particles provide little information beyond what we have reviewed thus far, the following discussion is brief.

Tables 4.22 and 4.23 contain response data for idiomatic PVs with optional particles. The category "other" collapses alternative, pronoun and pass responses.

Specific information about responses in the "Other" category is in appendix H. We now turn to the child data.

Table 4.22 Child production of idiomatic PVs with optional particles

Response Type	Level 1			Level 2			Level 3			Controls	
	N	%		N	%		N	%		N	%
Simple verb	17	25.8		7	11.7		10	15.2		6	12.5
Split	1	1.5		4	6.7		3	4.5		4	8.3
Adjacent	9	13.6		6	10.0		11	16.7		9	18.8
Particle omission	28	42.4		34	56.7		34	51.5		22	45.8
PP	0	--		1	1.7		1	1.5		0	--
Other	11	16.7		8	13.3		7	10.6		7	14.6
Total	66	100		60	100		66	100		48	100

A comparison of tables 4.16 and 4.22 indicates that the child L2ers treat idiomatic PVs with optional particles similar to idiomatic PVs with obligatory particles. We have seen that child L2ers demonstrate no knowledge of the target structure for idiomatic PVs, as evidenced by the high frequency of omission with obligatory idiomatic particles at all levels of proficiency (table 4.16). Table 4.22 shows that the child L2ers also consistently drop the optional particle across all levels of proficiency. However, since the control children omit the optional particle with comparable frequency, this result reveals little about lack of target structure.

Table 4.22 also indicates that the frequency of simple verb responses for level 2 (12%) and level 3 (15%) children is similar to the frequency of simple verb responses for the child controls (13%). The same trend is observed in table 4.16; there is no difference between L2 children and controls in the frequency of simple verb responses when the particle is obligatory. Since the L2 children do not have knowledge of the structural

representation for idiomatic PVs, the split and adjacent forms in table 4.22 are assumed to be rote memorizations.

Data for the adult participants are listed in table 4.23.

Table 4.23 Adult production of idiomatic PVs with optional particles

Response Type	Level 1			Level 2			Level 3			Controls	
	N	%		N	%		N	%		N	%
Simple verb	10	15.2		6	9.1		4	6.1		2	4.1
Split	0	--		0	--		0	--		10	20.8
Adjacent	14	21.2		11	16.7		21	31.8		21	43.8
Particle omission	36	54.5		42	63.6		34	51.5		15	31.3
PP	0	--		0	--		0	--		0	--
Other	6	9.1		7	10.6		7	10.6		0	--
Total	66	101		66	102		66	101		48	100

The adult L2ers demonstrate similar results for idiomatic obligatory particles and idiomatic optional particles. We have established that the adult L2ers do not have knowledge of the target structure for idiomatic PVs, based on the fact that they consistently drop the obligatory idiomatic particle with high frequency across all levels of proficiency (cf. table 4.19). The same result is observed for idiomatic PVs with optional particles; table 4.23 indicates that adult L2ers consistently drop the optional particle over 50% of the time. Again, given the fact that the particle is optional and the adult controls omit it frequently, this result cannot provide information about acquisition of the target structure for idiomatic PVs. Since the adult L2ers do not have structural knowledge of idiomatic particle verbs, we assume that the adjacent PVs in table 4.23 are due to rote memorization.

Table 4.23 also indicates that the frequency of simple verb responses decreases across proficiency levels for idiomatic PVs containing optional particles. This is surprising, given the fact that the frequency of simple verb responses is consistently high for idiomatic PVs containing obligatory particles (cf. table 4.19). It is possible that the adult L2 participants were more familiar with the particular idiomatic PVs containing optional particles, and thus were less likely to choose the simple verb alternative for those particular PVs.

4.11 Summary of production results for idiomatic PVs

The results reviewed above show that L2 children and L2 adults demonstrate similar behavior in the acquisition of idiomatic PVs. Neither adult nor child L2ers analyze the idiomatic particle as an adverb, and neither group applies a complex verb analysis to idiomatic particle verbs. However, both adult and child L2ers show the effects of prolonged L1 transfer in the persistent omission of idiomatic particles. More specifically, neither the adult L2ers nor the child L2ers demonstrate knowledge of the selectional properties associated with idiomatic PVs. Since the L2ers do not know that the idiomatic particle is a predicative argument selected by the verb, the PrtP structure is not extended to idiomatic PVs and the particle is omitted.

The data on idiomatic PVs provides no support for a pure UG account of L2 acquisition. We have seen that the adult and child L2ers' production of idiomatic PVs is persistently influenced by the L1 grammar, as evidenced by consistently high frequency

of particle omissions. Further, there is no evidence that child or adult L2 acquisition proceeds like L1 acquisition, as neither the adult L2ers nor the child L2ers demonstrate acquisition patterns similar to the native English-speaking children. However, we have argued that the data provide strong support for an initial transfer hypothesis.

4.12 Summary of Chapter 4

We have seen that adult and child L2ers demonstrate the effects of L1 transfer in the acquisition of transparent and idiomatic PVs. The low proficiency L2 adults and children omit both transparent and idiomatic particles more often than respective controls do. Although omission of the transparent particle decreases across proficiency levels for the adults and children, omission of the idiomatic particle is consistently high for both groups. We see some evidence for an adverb (mis)analysis in the early production of "split" PVs by the L2 children. Curiously, the adult participants do not apply an adverb analysis to transparent PVs. However, both groups of L2ers fail to apply an adverb analysis and complex verb analysis to idiomatic PVs, as predicted.

A comparison of L1 and L2 acquisition has shown that adult and child L2ers do not demonstrate patterns of acquisition similar to those observed in native English-speaking children. The L2 children and adults use adjacent PVs much more often than the L1 children acquiring particle verbs. Additionally, while the L1 children rarely err in the production of idiomatic PVs, particle omission errors are abundant in the L2 production of idiomatic PVs. There is also a striking difference between L1 and L2

acquisition in the quality of omission errors: while the L1 children omit the object with overwhelming frequency, the L2 adults and children omit the particle with overwhelming frequency. Thus, results support the Full Transfer component of the Full Transfer/Full Access hypothesis, and thus the Pure UG hypothesis is refuted.

With respect to acquisition of the target structures, we have seen evidence for similarities and difference between adult and child L2 acquisition. They follow a similar path in the acquisition of transparent particle verbs: there is an increase in split transparent PVs coupled with a decrease in particle omission for both groups (although the effect is much more pronounced in the L2 child data). Additionally, neither adult nor child L2ers demonstrate knowledge of the target structure for idiomatic PVs.

Although the L2 children and adults follow similar paths in the acquisition of transparent PVs, children set the PrtP parameter at an earlier stage of proficiency than adults. Further, evidence for acquisition of the target structure is "stronger" for the L2 children than for the L2 adults in two respects. First, the L2 children produce a higher frequency of split transparent PVs (the base structure) than the L2 adults. Second the L2 children, unlike the adults, become target-like with respect to transparent particle omission, indicating that the children have fully acquired the target grammar, while the adults seem to vacillate between the transferred L1 grammar and the target grammar with a PrtP projection. These differences are not necessarily predicted by the FT/FA hypothesis, and it is unclear whether or not this kind of delay supports the idea that adults are fundamentally different from children, since it is possible that a more proficient group of adult L2ers might show a clearer replication of the trends observed in the child L2

data. However, if we take acquisition of functional structure not instantiated in the L1 as evidence for access to UG, then some of the adult L2ers do demonstrate evidence for UG access in the acquisition of transparent PVs.

Finally, the acquisition of English particle verbs by native Spanish speakers provides further support for the claim that transparent PVs and idiomatic PVs represent two distinct classes of particle verbs, as the L2ers consistently demonstrate different acquisition patterns for the two types.

Chapter 5

Conclusions

The study described above was designed to address two broad questions: 1) What is the nature of the initial L2 grammar, and 2) Do adult L2ers have access to UG? In order to address these questions we conducted a tightly-controlled elicited production experiment with 65 native Spanish speakers learning English and 16 native English-speaking control participants. Our large sample sizes allowed us to conduct statistical tests with the goal of comparing 1) adult L2 acquisition to child L2 acquisition, and 2) adult/child L2 acquisition to L1 acquisition. This research design made it possible for us to provide a detailed syntactic analysis of transfer phenomena within a generative framework.

The research questions are related to several theoretical issues, and the current study tests a number of theories. The FT/FA hypothesis and the FDH differ crucially with respect to claims about adult access to UG, while the Pure UG hypothesis and the FT/FA hypothesis take different positions on the L2 initial-state grammar. In the following sections we address the research questions and discuss how our data can influence current theories of L2 acquisition.

5.2 Adult access to UG: The FDH vs. the FT/FA Hypothesis

The issue of adult access to UG was approached from two perspectives. First, we investigated the acquisition of functional structure not available in the L1. We reasoned

that if native Spanish-speakers eventually demonstrate knowledge of the structure of particle verbs, then we could conclude that this knowledge is UG-based, since the relevant functional structure is not given in the input string or derived from the L1. We additionally compared adult L2 acquisition to child L2 acquisition. Assuming that child L2ers have access to UG, we reasoned that if adult native Spanish speakers demonstrated the same acquisition patterns as native Spanish-speaking children, then we could conclude that adults also have UG access. In this way, adult/child comparisons would provide indirect evidence for adult UG access (Schwartz 1992; 2003).

5.1.1 Acquiring functional structure not instantiated in the L1

The FDH takes the position that the L2 initial-state grammar is the L1 grammar for adults. Adult access to UG is limited to what is made available by the L1 grammar**;** adult L2ers cannot reset parameters or acquire new functional projections. Assuming that the initial L2 grammar contains a PrtP parameter set at the "off" value, the FDH predicted that adult L2ers would be unable to switch the parameter and acquire the functional structure associated with English PVs. However, the FT/FA hypothesis predicts that adult L2ers will be able to reset the PrtP parameter.

Acquisition of the target structure was measured by comparing frequency of particle omission in the L2 and control responses. When a particular L2 group (i.e. level 1, level 2, level 3) omitted the particle significantly more often than the relevant control group, we assumed that the L2ers had not yet acquired the target grammar. However,

when a statistical comparison showed no difference between L2 and control groups, we took this as indication that the PrtP parameter had been reset. We additionally compared the frequency of particle omission across proficiency levels. If a higher proficiency L2 group dropped the particle significantly less often than a lower proficiency group, we took this to indicate a meaningful difference between proficiency levels and movement toward the target structure.

Neither the adult L2ers nor the child L2ers demonstrated the ability acquire the functional structure associated with idiomatic particle verbs, as they omitted the idiomatic particle more than controls across all levels of proficiency. It is unclear how these data can confirm or refute the FDH. We have established that the L2ers' difficulty with acquiring idiomatic PVs is related to the idiosyncratic selectional properties associated with idiomatic PVs. Since these properties are not related to UG, L2 acquisition of idiomatic PVs cannot provide information about adult access to UG.

Although the idiomatic PV data cannot address the claims of the FDH, the L2 acquisition of transparent PVs seems to provide some evidence against it. We have argued that the level 2 children set the PrtP parameter and projected PrtP, as evidenced by the increase in split transparent PVs coupled with a decrease in particle omission. Although the effect was not as strong as for the L2 children, the adult L2ers nevertheless also showed an increase in split transparent PVs coupled with a decrease in particle omission at proficiency level 3. The fact that the adult and child L2ers followed similar paths in the acquisition of transparent particle verbs suggests that the adults, like the L2

children, have the ability to acquire functional structure for particle verbs, contra the FDH.

The results also indicated that after the L2 children had acquired the target structure for transparent PVs (level 2), the frequency of adjacent transparent PVs increased to target-like frequency (level 3). This increase in adjacent transparent PVs provided evidence that the child L2ers had acquired particle incorporation. Since acquisition of incorporation seemed to follow acquisition of the underlying structure for the L2 children, we did not expect to see a similar increase in adjacent transparent PVs in the adult data until after they had shown evidence of the target structure. Because the adults did not demonstrate acquisition of transparent PVs until level 3, we conjectured that there would be an increase in adjacent transparent PVs for the adult L2ers at a higher proficiency level than the level tested in the current study. This type of difference in the rate at which adult and child L2ers acquire the target structure is an important one, and an explanation for such differences is provided in section 5.1.2.1.

5.1.2 Adult/child comparisons

Additional support for the FT/FA hypothesis is provided in the adult/child comparisons. Following Schwartz (1992), we looked for indirect evidence for adult access to UG by investigating whether adult L2ers follow the same acquisition pattern as child L2ers, holding the L1 and the L2 constant.

We saw that the L2 children and adults followed similar paths in the acquisition of transparent PVs. The data also suggested that L2 adults and L2 children were influenced by transfer effects. Further, neither group demonstrated knowledge of the structure of idiomatic particle verbs. It seems that although both adult and child L2ers reset the PrtP parameter, neither group was able to learn the selectional restrictions associated with idiomatic PVs. Assuming that child L2ers have access to UG, the observed similarities between L2 adults and L2 children provide indirect evidence for adult UG access and thus support the "full access" aspect of the FT/FA hypothesis.

Although the adult and child L2ers showed some similarities in the acquisition of English particle verbs, they also exhibited several differences. Importantly, while the L2 children seemed to move away from the L1 grammar at proficiency level 2, the L2 adults did not demonstrate knowledge of the structure of transparent PVs until level 3, and the effect was weaker for the adults as a group. Further, while the L2 children were target-like with respect to transparent particle omission at level 3, the adult L2ers omitted the transparent particle far more than controls even at the highest level of proficiency. Thus, while the L2 children showed evidence for target-like attainment, evidence for acquisition of transparent PVs is less clear for the adult L2ers. This difference is not necessarily predicted by FT/FA. It is possible, however, that a more proficient group of adult L2ers might show a clearer replication of the trends observed in the child data. In the following section we provide an analysis of the observed adult/child differences in terms of a transient or "vacillating" grammar and fossilization.

5.1.2.1 A Vacillating grammar and fossilization

If, as we have argued, the level 3 adults have knowledge of the functional structure for PVs, then we must account for why they continued to omit the transparent particle more than controls at this stage. In Chapter 4, we suggested that the level 3 adults were exhibiting a grammar which can vacillate between the L1 grammar and the target grammar. Thus, for L2ers at this stage, any given utterance could represent either the target grammar with a PrtP, or the L1 grammar.

The notion of a vacillating or "competing" grammar is not new. The issue of optionality in L1 acquisition can be thought of as a kind of movement between two grammars, or as a single grammar with two different options. As an example, it is well-established that English-speaking children go through a stage in which root verbs are frequently uninflected or marked with infinitival morphology (i.e., the "root infinitive (RI)" stage). Wexler (1994) suggested that children in the RI stage can optionally inflect main verbs; according to Wexler, Tense is optionally underspecified.[76] Child utterances containing inflected root verbs represent a target-like tense specification, and utterances containing RIs represent an underspecified TP. In the same way, our adult L2ers at the third level of proficiency optionally projected PrtP. At this developmental stage, utterances containing particles represent the option of a target-like PrtP projection, while particle omission represents the option of a non-target-like structure (i.e., PrtP is not

[76] It should be noted that Wexler (2004) takes the position that "optionality" is defined as a single grammar with more than one option for tense specification.

projected as in the L1 grammar). Thus, like child L1ers, the L2 grammar of the Spanish-speaking adults optionally projects PrtP.

If the notion of a "vacillating" grammar is correct, then we might assume that adult L2ers stay in a transient stage for an extended period of time as compared to the L2 children. We propose that this adult/child difference can be labeled in terms of fossilization, or an inability to fully acquire the target grammar (Selinker 1972; Lardiere 1998). For some reason the grammar of the adult L2ers remains in a transient state and cannot fully reach the target grammar. Further research should investigate why children are able to stabilize at the target grammar while adults continue to vacillate between the L1-based interlanguage grammar and the target.

Despite the observed differences between adult and child L2 acquisition, by conducting statistical comparisons within a generative framework this study has pointed to important similarities between adult and child L2ers in the acquisition of functional structure not instantiated in the L1. Essentially, by going beyond the simple production data and applying predictions based on the structural representation of transparent particle verbs, we have uncovered similarities between adult and child L2ers that are not immediately apparent on the surface.

5.2 The L2 initial state: Pure UG vs. FT/FA

The Pure UG hypothesis claims that the initial state of the L2 grammar is the same as the initial state of the L1 grammar. According to the Pure UG hypothesis, the native Spanish

speakers should have followed the same developmental patterns as native English-speaking children in the acquisition of particle verbs and they should not have demonstrated the effects of L1 transfer. These predictions were not borne out. Instead, data from the current study showed that L2ers and L1ers do not demonstrate similar patterns of acquisition, contra the Pure UG hypothesis, and L2ers are strongly influenced by L1 transfer, supporting the FT/FA hypothesis.

5.2.1 L1/L2 Comparisons

We compared the data for the L2ers in the current study to the spontaneous speech data of native English-speaking children acquiring particle verbs (Sawyer 1999). Our results indicated that both adult L2 acquisition and child L2 acquisition of English particle verbs differ markedly from L1 acquisition. First, the native English-speaking children produced far fewer adjacent PVs than either the L2 children or the L2 adults. Sawyer's data indicated that the adjacent form accounted for 6% of L1 children's transparent PVs and 10% of their idiomatic PVs. However, the L2 participants in the current study showed no aversion to adjacent PVs. The adjacent form accounted for 35% of the native Spanish-speaking children's transparent PVs, and 53% of their idiomatic PVs. The results are even more striking for the adult L2ers, whose proportion of adjacent PVs was above 80% for both transparent and idiomatic PVs (see tables 4.12 and 4.20). In sum, although native English-speaking children acquiring particle verbs produced few adjacent

PVs, the native Spanish-speaking adults and children in the current study produced them much more frequently.

We saw further evidence for L1/L2 differences in particle and object omission errors. The L2ers dropped both transparent and idiomatic particles much more often than the L1ers. Sawyer reported only 6 tokens of particle drop in the L1 production of transparent PVs, while the L2 children omitted the transparent particle 31 times and the L2 adults omitted it 30 times. This L1/L2 difference is even more striking in the frequency of idiomatic particle omission. While Sawyer reported only one instance of idiomatic particle drop in the L1 production data, the L2 children in the current study omitted the idiomatic particle 109 times, and the L2 adults omitted it 95 times. Although the L2ers in the current study dropped the particle more often than L1 children, the L1ers dropped the object in transparent PVs more often than the L2ers. The L1 children omitted the object 182 times in the production of transparent PVs, while there were only 9 tokens of object omission in the L2 adult and child data combined. In sum, we have seen evidence for L1/L2 differences in the acquisition of English particle verbs. While the L2ers tended to drop the particle and infrequently dropped the object, the L1 children rarely dropped the particle and tended to omit the object in transparent PVs.

The observed differences between L1 and L2 acquisition argue against the Pure UG hypothesis. If the initial state of the L2 grammar were the same as the initial state of the L1 grammar, then the native English-speaking children and native Spanish-speaking L2ers should have demonstrated the same behavior in the acquisition of English PVs.

The current research has shown that this is not the case, as the L2ers demonstrated acquisition patterns that were markedly different from patterns observed in L1ers.

5.2.2 Evidence for transfer in second language acquisition

The Pure UG hypothesis also predicted that native Spanish speakers would show no evidence of native language influence in the acquisition of English particle verbs. However, the data reported herein suggest that the native language clearly influences L2 acquisition of English particle verbs by both child and adult native Spanish speakers. The high frequency of particle omissions discussed above indicates that the initial L2 grammar (=L1 grammar) cannot accommodate English particles, and the early production of split and adjacent transparent PVs is also in line with a transfer account of L2 acquisition.

The adult and child L2ers dropped both transparent and idiomatic particles. While the level 1 children omitted the transparent particle more than controls, the level 2 and level 3 children were target-like with respect to transparent particle omission. Although the frequency of transparent particle omission decreased across proficiency levels for the adult L2ers, even the level 3 adults omitted the transparent particle more frequently than controls. Idiomatic particle omission was consistently high across all proficiency levels for both the adult and child L2ers. We take high frequency of particle omission as evidence for L1 transfer; L2ers omit the particle because they do not have a target-like structural representation for particle verbs in their grammar.

We have argued that the lower proficiency L2ers do not have knowledge of the target structure for particle verbs, and the "split" and "adjacent" transparent PVs observed in their production are consistent with a transfer account. The initial "adjacent" PVs were attributed to a complex verb analysis and the initial "split" PV were attributed to an adverb analysis.

In sum, the results reviewed above do not support the claim that the L2 initial-state grammar is pure UG with no L1 influence. The Pure UG hypothesis cannot account for the reported L1/L2 differences in acquisition patterns or the high frequency of particle omission. Thus, the data provide clear evidence against the notion of pure UG as the L2 initial-state grammar and instead support the "full transfer" aspect of the FT/FA hypothesis.

5.2.2.1 Transfer phenomena: a syntactic analysis

The current study provided a detailed syntactic analysis of the transfer phenomena associated with the acquisition of English particle verbs by native Spanish speakers. Assuming that the initial L2 grammar is the L1 grammar, we proposed that native Spanish speakers begin the acquisition process with a PrtP parameter set at the "off" value. Until this parameter is switched to "on," there is no structural position for the particle and it is dropped. In this case, since the L1 grammar contains a VP, the verb is inserted alone into V.

In addition to particle omission, we have also suggested that the L1 grammar can produce what appear on the surface to be English particle verbs. In this case, the lower proficiency L2 children produce "split" and "adjacent" transparent PVs which actually represent interlanguage-based (mis)analyses. The early "split" PVs can be attributed to an adverb analysis. Since the initial grammar contains an AdvP and transparent particles are semantically like adverbs, the L2er misanalyzes the transparent particle as an adverb and projects an AdvP, producing the the V^DP^particle/adverb (=split PV) string. The early "adjacent" PVs are due to a complex verb analysis; the L2er identifies the path features on the transparent particle, but assumes that it is part of the verb. In this case, the verb plus particle unit is inserted into V, and the V^Particle^DP (=adjacent) order results.

In sum, the analyses described above provide an explanation for how an L1-based interlanguage grammar can produce "split" and "adjacent" PVs along with PVs containing deleted particles. The high frequency of particle omission suggests that the initial L2 grammar is influenced by the L1 grammar and the early instances of "split"/"adjacent" PVs can also be explained on a transfer account. The results are clearly consistent with the idea that the initial L2 grammar contains L1-based knowledge, and are thus compatible with the "full transfer" component of the FT/FA hypothesis.

5.2.2.2 Learnability issues: Movement away from the L1 grammar

We have established that the initial state of the L2 grammar is the L1 grammar. We have also established that adult and child L2ers can move from the L1 grammar to the L2 grammar, projecting new functional structure. The current research also addressed the issue of learnability, or the question of how the L2er moves from the L1 grammar to the target grammar. This issue is particularly complicated with respect to the current analysis, because L1 transfer can result in grammatical output. For example, the adverb analysis produces a V^DP^Particle surface string (=split PV) and the complex verb analysis produces a V^Particle^DP surface string (=adjacent PV).

We have proposed that exposure to PVs with alternating word orders constitutes the triggering data necessary for projection of PrtP. Once the L2er hears a particular PV in both the split and adjacent orders, the data are incompatible with the transferred structure (i.e., the complex verb/adverb analysis). In this case the L1 grammar cannot accommodate the input and a PrtP must be projected.

5.3 Two classes of particle verbs

Finally, it is important to point out that the data collected in this study support the claim that there are two distinct classes of particle verbs (Ramchand & Svenonius 2001; Sawyer 1999; Wurmbrand 2000). Both the L2 adults and the L2 children demonstrated different acquisition patterns for the two PV types. While the L2ers exhibited knowledge

of the target structure for transparent PVs, they did not acquire the structure for idiomatic PVs, as the instances of idiomatic particle omission were consistently high across all levels of proficiency for both adults and children. We have argued that these different acquisition patterns can be attributed to the semantic and structural differences between transparent and idiomatic PVs. The structure for transparent PVs is acquired early because, once the PrtP projection has been extended, the L2 grammar immediately contains the base structure for transparent PVs. However, the selectional restrictions associated with idiomatic PVs add a level of complexity that delays the acquisition of the target structure for idiomatic PVs. Until the L2er learns that the idiomatic particle is a predicative argument to the verb, the structure for idiomatic PVs is not projected.

5.4 Summary

The issues of adult access to UG and the initial state of the L1 grammar are essential to the study of second language acquisition. Data collected in this study provide evidence in support of the FT/FA hypothesis: the initial state of the L2 grammar is the L1 grammar, and adult L2ers have access to UG. Through statistical analyses guided by a generative framework, we have seen that adult and child L2ers both demonstrate evidence for acquisition of functional structure not instantiated in the L1. The data also unequivocally show that the adult and child L2ers were influenced by the L1 grammar.

Results from the current analysis have also brought important questions to the fore. If, as we have argued, adult and child L2ers both have access to UG, then why do

they acquire the target grammar at different rates? We have described this phenomenon as being related to a prolonged transient grammar state and fossilization. If this explanation is correct, then it could have an important impact on the direction of L2 acquisition research. Future studies could also focus on whether adults and children are more similar in certain areas (e.g., projection of function structure) but different in others (e.g., lexical acquisition). The question of learnability in L2 acquisition has also been given some attention in this work. Beyond describing the data, we have offered a detailed syntactic analysis for how input is parsed and how the transferred grammar is restructured. Future research can test our claims regarding triggering data and the influence of positive evidence in the input.

We hope that L2 research will continue integrating controlled experimental research and statistical analyses within a generative framework. It is our belief that when results from cross-sectional and longitudinal experiments converge with data from the analysis of spontaneous speech corpora, the area of second language research will be closer to understanding the intricacies involved in second language acquisition.

Appendix A. Example Items from the Modified CYCLE-E

The modified CYCLE-C is an elicitation task using picture prompts. For each item, the child sees two pictures. The experimenter begins by saying "Here are some pictures. I'm going to talk about the first picture, and I'm going to have you talk about the second picture." The experimenter points to the first picture and describes it. Pointing to the second picture, she begins to describe it but pauses before the sentence is completed, prompting the child to finish it.

In the examples below, words in all capital letters are stressed.

(1) Locative prepositions

Picture 1: A cup under a table.
Picture 2: A cup on top of a table.
Experimenter (pointing to picture 1): "Here the cup is OFF the table."
Experimenter (pointing to picture 2): "But here the cup is____."
Target response: *on the table, on it*

(2) Active voice word order

Picture 1: A boy kicking a girl.
Picture 2: A girl kicking a boy.
Experimenter (pointing to picture 1): "Here the boy is kicking the girl."
Experimenter (pointing to picture 2): "But here____."
Target response: *the girl is kicking the boy, she is kicking him*

(3) Simple negation

Picture 1: A boy pulling a wagon.
Picture 2: A boy standing next to a wagon; the wagon handle rests on the ground.
Experimenter (pointing to picture 1): "This boy is pulling the wagon."
Experimenter (pointing to picture 2): "But this boy____."
Target response: *isn't; is not pulling the wagon*

(4) Possessive determiners

Picture 1: A boy wearing a hat.
Picture 2: A girl wearing a hat.
Experimenter (pointing to hat in picture 1): "This hat belongs to MARK."
Experimenter (pointing to hat in picture 2): "And this hat belong to TERRY."
Experimenter (pointing to hat in picture 1): "This is HIS hat."
Experimenter (pointing to hat in picture 2): "And this is____."
Target response: *her hat*

(5) Direct Object—Indirect Object

Picture 1 (only one picture): A girl is handing a picture of a tree to another child.
Experimenter (pointing to picture 1): "This girl drew a picture for her friend. Look what she's doing. She's giving ____."
Target response: *the picture to her friend; it to him*

(6) Tense and Aspect: *-ed*

Picture 1: A girl standing in front of a blank canvas holding a paintbrush.
Picture 2: A girl standing in front of a completed picture.
Experimenter (pointing to picture 1): "Here the girl is getting ready to paint a picture."
Experimenter (pointing to picture 2): "But here she already____."
Target response: *painted it; painted a picture*

(7) Subject Pronouns

Picture 1: A group of children holding ice cream cones.
Picture 2: A boy sitting by himself holding an ice cream cone.
Experimenter (pointing to picture 1): "I'm going to tell you about these kids. THEY have ice cream."
Experimenter (pointing to picture 2): "Now you tell me about this boy."
Target response: *he has ice cream*

(8) Possessive Morpheme

Picture 1: A girl with a plate of food in front of her.
Picture 2: A boy with a plate of food in front of him.
Experimenter (pointing to picture 1): "This lunch belongs to Amy."
Experimenter (pointing to picture 2): "And this lunch belongs to Jeffrey."
Experimenter (pointing to picture 1): "Who's lunch is this?"
Target response: *Amy's lunch; Amy's*

(9) Verb Plural

Picture 1: One deer eating grass.
Picture 2: Several deer eating grass.
Experimenter (pointing toward both pictures): "Every day these deer do the same thing."
Experimenter (pointing to picture 1): "Every day THIS deer eats."
Experimenter (pointing to picture 2): "And every day these deer____."
Target response: *eat; do the same thing*

(10) Modals (can/may)

Picture 1: A girl with her mother.
Picture 2: A girl holding an ice cream cone.
Experimenter (pointing to picture 1): "Sandy asked her mom if she could have some ice cream."
Experimenter (pointing to picture 2): "And mom said, "Yes, because you've been a good girl, you____."
Target response: *may have some ice cream; can*

(11) Subject Pronouns

Picture 1: A girl kicking a ball.
Picture 2: A boy kicking a ball.
Experimenter (pointing to picture 1): "I'm going to tell you about this girl. SHE is kicking"
Experimenter (pointing to picture 2): "Now you tell me about this boy and girl."
Target response: *They are kicking; they're doing it, too*

(12) Noun Plurals

Picture 1: One cat.
Picture 2: Four cats.
Experimenter (pointing to picture 1): "Here is one cat."
Experimenter (pointing to picture 2): "Here are four____."
Target response: *cats*

(13) Aux-be plurals

Picture 1: One sheep jumping over a fence.
Picture 2: Several sheep jumping over a fence.
Experimenter (pointing toward both pictures): "These sheep all like to do the same thing."
Experimenter (pointing to picture 1): "See? Here THIS sheep is jumping."
Experimenter (pointing to picture 2): "And here THESE sheep ____."
Target response: *are jumping; are doing the same thing*

(14) Verb Singular

Picture 1: Several sheep jumping over a fence.
Picture 2: One sheep jumping over a fence.
Experimenter (pointing toward one both pictures): "Every day these sheep do the same thing."
Experimenter (pointing to picture 1): "Every day THESE sheep jump."
Experimenter (pointing to picture 2): "And every day THIS sheep____."
Target response: *jumps; does the same thing*

(15) Past Participle

Picture 1: A girl stepping on a banana peel and beginning to slip.
Picture 2: A girl lying on the ground.
Experimenter (pointing to picture 1): "Here the girl is about to fall."
Experimenter (pointing to picture 2): "But here she has already____."
Target response: *fallen; fallen down*

(16) Relativized subject

Picture 1: A girl standing by a completed picture.
Picture 2: A girl standing by an opened box holding a toy.
Experimenter (not pointing to any picture): "One of these girls painted a picture. One of these girls opened a present."
Experimenter (pointing to picture 2): "This is the girl____."
Target response: *that opened the present; who opened a present*

(17) Tense and aspect (be+gonna/will)

Picture 1 (only one picture): A boy with dirt on his face stands in front of a sink and reaches toward a bar of soap.
Experimenter (pointing to picture 1): "Look, this boy has a dirty face, and he's reaching for the soap. What's about to happen?"
Target response: *he's gonna wash his face; he will get himself clean*

(18) Relativized object

Picture 1: A boy wearing a hat.
Picture 2: A girl wearing a hat.
Experimenter (pointing to hat in picture 1): "The boy is wearing one hat."
Experimenter (pointing to hat in picture 2): "The girl is wearing the OTHER hat."
Experimenter (pointing to hat in picture 1): "This is the hat____."
Target response: *the boy is wearing; that the boy has on*

Appendix B. Table 3.10 Presentation Order for List A

Item	Type	Target sentence	Item	Type	Target sentence
1	Exp	She pulled <up> her sock <up>	29	Exp	She blew <up> the balloon <up>
2	Fill	She kicked the chair	30	Fill	She touched her shoe
3	Exp	She wrote <down> your name <down>	31	Exp	She took <off> her ring <off>
4	Fill	She kissed the dog	32	Fill	She touched the sticker
5	Exp	She took <off> the hat <off>	33	Exp	She wrote <down> the number <down>
6	Fill	She ripped the paper	34	Fill	She touched her knee
7	Exp	She blew <up> the balloon <up>	35	Exp	She pulled <up> his pants <up>
8	Fill	She drank some water	36	Fill	She dropped the book
9	Exp	She put <down> the glass <down>	37	Exp	She pulled <down> his pants <down>
10	Fill	She tied her shoe	38	Fill	She bit her finger
11	Exp	She woke <up> the cat <up>	39	Exp	She put <on> the necklace <on>
12	Fill	She ate a cookie	40	Fill	She touched her tooth
13	Exp	He pushed <over> the dog <over>	41	Exp	He locked <up> the bike <up>
14	Fill	She touched her watch	42	Fill	She blew her nose
15	Exp	He cut down <the tree> down	43	Exp	He pushed <over> the chair <over>
16	Fill	She drew a square	44	Fill	She coughed
17	Exp	She put <on> the hat <on>	45	Exp	He cut <down> the bush <down>
18	Fill	She touched her nose	46	Fill	She drew a face
19	Exp	She rolled <up> the sleeping bag <up>	47	Exp	She took <out> the hammer <out>
20	Fill	She sneezed	48	Fill	She touched her elbow
21	Exp	He knocked <down> the blocks <down>	49	Exp	She rolled <up> the mat <up>
22	Fill	She pulled her hair	50	Fill	She hugged the dog
23	Exp	She locked <up> the box <up>	51	Exp	He knocked <down> the cups <down>
24	Fill	She cried	52	Fill	She drew a circle
25	Exp	She took <out> the spoon <out>	53	Exp	He woke <up> the dog <up>
26	Fill	She threw the pen	54	Fill	She drew a house
27	Exp	He pulled <down> the bag <down>	55	Exp	She put <down> the phone <down>

Appendix C. Instances of Pronoun, Pass, and Alternative Responses in the Child Production of Transparent PVs with Obligatory Particles

Table 4.24 Instances of pronoun, pass, and alternative responses in the child production of transparent PVs with obligatory particles[77]

Response Type	Level 1			Level 2			Level 3			Controls	
	N	%		N	%		N	%		N	%
Pronoun	13	11		4	4		11	9		13	15
Pass	4	3		0	--		0	--		0	--
Alternative	10	8		3	3		3	2		0	--

[77] The percentages in table 4.24 are derived from the total number of PVs listed in table 4.6.

Appendix D. Early Acquisition Stages for Transparent PVs

Table 4.25 Split and adjacent transparent PVs produced by L1 and L2 children[78]

	Total split	Total adjacent
L1 children, stage 1 (Sawyer 1999)	100% (4)	--% (0)
L2 children, level 1	67% (43)	33% (21)

Table 4.26 Errors of object and particle omission in transparent PVs produced by L1 and L2 children

	Particle omission	Object omission
L1 children, stage 1 (Sawyer 1999)	--% (0)	100% (4)
L2 children, level 1	93% (26)	7% (2)

Table 4.27 Split and adjacent transparent PVs produced by L1 children and L2 adults[79]

	Total Split	Total adjacent
L1 children, stage 1 (Sawyer 1999)	100% (4)	--% (0)
L2 adults, level 1	18% (9)	82% (41)

Table 4.28 Errors of omission in transparent PVs produced by L1 children and L2 adults

	Particle omission	Object omission
L1 children, stage 1 (Sawyer 1999)	--% (0)	100% (4)
L2 adults, level 1	97% (36)	3% (1)

[78] The PVs in table 4.25 include both full DP objects (e.g., *She put the hat on*) and pronoun objects (e.g., *She put it on*) and contain both optional and obligatory particles.

[79] The PVs in table 4.27 include both full DP objects (e.g., *She put the hat on*) and pronoun objects (e.g., *She put it on*) and contain both optional and obligatory particles.

Appendix E. Instances of Pronoun, Pass, and Alternative Responses in the Adult Production of Transparent PVs with Obligatory Particles

Table 4.29 Instances of pronoun, pass, and alternative responses in the adult production of transparent PVs with obligatory particles[80]

Response Type	Level 1			Level 2			Level 3			Controls	
	N	%		N	%		N	%		N	%
Pronoun	6	5		1	.8		5	4		0	--
Pass	7	6		7	6		2	2		0	--
Alternative	6	5		7	6		1	1		0	--

[80] The percentages in table 4.29 are derived from the total number of PVs listed in table 4.10.

Appendix F. Child Production of Transparent PVs with Optional Particles

Table 4.30 Child production of transparent PVs with optional particles

	Level 1			Level 2			Level 3			Controls	
	N	%		N	%		N	%		N	%
Simple verb	30	56		15	30		11	20		3	8
Split	4	7		14	28		9	16		12	30
Adjacent	3	5		2	4		15	27		12	30
No PE	11	20		10	20		11	20		2	5
PP	0	--		1	2		1	2		5	13
Pronoun	4	7		4	8		7	13		6	15
Pass	0	--		2	4		0	--		0	--
Alternative	3	5		2	4		1	2		0	--

Appendix G. Adult Production of Transparent PVs with Optional Particles

Table 4.31 Adult production of transparent PVs with optional particles

	Level 1			Level 2			Level 3			Controls	
	N	%		N	%		N	%		N	%
Simple verb	19	35		13	24		20	36		1	3
Split	1	2		0	--		2	4		9	23
Adjacent	4	7		11	20		6	11		19	48
No PE	25	45		26	47		13	24		0	--
PP	0	--		2	4		9	16		11	28
Pronoun	1	2		0	--		5	9		0	--
Pass	2	4		0	--		0	--		0	--
Alternative	3	5		3	5		0	--		0	--

Appendix H. Instances of Pass, Alternative and Pronoun Responses in the Production of Idiomatic PVs

Table 4.32 Instances of pass, alternative and pronoun responses in the child production of idiomatic PVs with obligatory particles

Response Type	Level 1		Level 2		Level 3		Controls	
	N	%	N	%	N	%	N	%
Pronoun	2	3	4	7	2	3	8	17
Pass	8	12	5	8	0	--	0	--
Alternative	1	2	1	2	1	2	0	--

Table 4.33 Instances of pass, alternative and pronoun responses in the adult production of idiomatic PVs with obligatory particles

Response Type	Level 1		Level 2		Level 3		Controls	
	N	%	N	%	N	%	N	%
Pronoun	1	2	1	2	2	3	0	--
Pass	12	18	13	20	8	12	0	--
Alternative	0	--	0	--	2	3	0	--

Table 4.34 Instances of pass, alternative and pronoun responses in the child production of idiomatic PVs with optional particles

Response Type	Level 1		Level 2		Level 3		Controls	
	N	%	N	%	N	%	N	%
Pronoun	3	5	4	7	5	8	7	15
Pass	4	6	1	2	1	2	0	--
Alternative	4	6	3	5	1	2	0	--

Table 4.35 Instances of pass, alternative and pronoun responses in the adult production of idiomatic PVs with optional particles

Response Type	Level 1		Level 2		Level 3		Controls	
	N	%	N	%	N	%	N	%
Pronoun	0	--	1	2	3	5	0	--
Pass	2	3	3	5	0	--	0	--
Alternative	4	6	3	5	4	6	0	--

Appendix I. Early Acquisition Stages for Idiomatic PVs

Table 4.36 Split and adjacent idiomatic PVs produced by L1 and L2 children[81]

	Total split	Total adjacent
L1 children, stage 1 (Sawyer 1999)	--% (0)	--% (0)
L2 children, level 1	35% (6)	65% (11)

Table 4.37 Errors of object and particle omission in idiomatic PVs produced by L1 and L2 children

	Particle omission	Object omission
L1 children, stage 1 (Sawyer 1999)	0	0
L2 children, level 1	64	5

Table 4.38 Split and adjacent idiomatic PVs produced by L1 children and L2 adults[82]

	Total split	Total adjacent
L1 children, stage 1 (Sawyer 1999)	--% (0)	--% (0)
L2 adults, level 1	6% (1)	94% (15)

Table 4.39 Errors of object and particle omission in idiomatic PVs produced by L1 children and L2 adults

	Particle omission	Object omission
L1 children, stage 1 (Sawyer 1999)	0	0
L2 adults, level 1	72	0

[81] The PVs in table 4.36 include both full DP objects (e.g., *She put the hat on*) and pronoun objects (e.g., *She put it on*) and contain both optional and obligatory particles.

[82] The PVs in table 4.38 include both full DP objects (e.g., *She blew the balloon up*) and pronoun objects (e.g., *She blew it up*) and contain both optional and obligatory particles.

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