Calculating Telicity in Native and Non-native English[1]

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1. Introduction

The present study examines the link between morphosyntax and the acquisition of telicity in second language learners. The study was inspired by Chierchia's (1994) proposal that learners use a form of morphosyntactic bootstrapping in the acquisition of the mass/count distinction. Specifically, Chierchia argued that the morphological plural is the key factor that allows a learner to determine whether a noun is count or mass. The presence of plural morphology will allow the learner to realize she is acquiring a language like English that morphosyntactically distinguishes mass from count nouns, unlike a language like Japanese that does not. This study extends this line of investigation into the relationship between morphosyntax and telicity. I discuss the role that the morphosyntactic properties of the target language play in the acquisition of telicity by second language learners. Furthermore, I argue that we need to refine our understanding of what can serve as a marker of telicity in the native grammar in order to clearly understand the developmental patterns of language learners.

1.1 Composing telicity in English and Japanese

Telic events encode an inherent endpoint (cf. Rosen, 1999 for review of the literature on event structure). In English and other Germanic languages, the presence of a direct object that specifies some specific quantity is necessary to derive a telic interpretation (Borer, 2005; Tenny, 1994; Ritter and Rosen, 1998; Verkuyl, 1972, 1993). Compatibility with the adverbial phrases *in an hour* and *for an hour* is one test used to distinguish atelic and telic verb phrases. Telic verb phrases are generally more compatible with *in an hour* and atelic verb phrases are generally more compatible with *for an hour*. The contrast in behavior between the examples in (1) and (2) shows that a bare plural direct object such as *letters* is most compatible with an atelic reading while a direct object that indicates a specific quantity such as *the letter* or *two letters* is most compatible with a telic reading. The example in (3) shows that on standard accounts, the same interpretation is said to hold when the quantified direct object includes a mass noun such as *soup* (Borer, 2005). However, we will return to this example. Empirical evidence from the present study will challenge the notion that the verb phrase in (3) is telic.

(1) Olivia <u>wrote letters</u> for hours/ $^?$in an hour. (atelic)
(2) Olivia *wrote two letters*/<u>wrote the letter</u> in an hour/ $^?$for hours (telic).
(3) Olivia <u>ate the soup</u> in an hour/ $^?$for hours (telic).

In Germanic languages telicity can also be encoded via goal prepositional phrases. With certain verbs such as *carry*, the presence of a direct that specifies some specific quantity is not sufficient to derive a telic interpretation as is shown in (4). However, the presence of the goal PP *to the car* in (5)

serves to delimit the event by adding an endpoint and then the entire VP *carry the bags to the car* is interpreted as telic.

(4) Victoria carried the bags for five minutes/ [?]in five minutes. (atelic)
(5) Victoria carried the bags to the car in five minutes/ [?]for five minutes. (telic)

   In previous work on the acquisition of telicity, researchers have examined whether learners realize that the morphosyntactic form of the direct object is important with respect to the calculation of telicity. The primary focus has been on the contrast between Germanic languages, which encode telicity in the direct object noun phrase, versus Slavic languages that do not. The two types of languages have been analyzed as representing two different parametric options with respect to telicity (Borer, 2005; Slabakova, 2001). In work with first language learners, Van Hout (1998, in press) proposed that it is easier to acquire telicity in the Slavic languages where telicity is encoded via an overt aspectual marker as opposed to the Germanic languages where the morphosyntax of the direct object is important. In work with L2 learners, Slabakova (2001) argued that Slavic learners of English initially have difficulty realizing that the direct object matters with respect to telicity calculation, but at more advanced levels perform at the level of native speakers.
   The present study takes a slightly different approach, focusing on a language pair that is on the same side of the telicity parameter. Both English and Japanese encode telicity syntactically via the combination of an eventive verb and a quantified direct object or a verb phrase and a goal PP as was shown in (2), (3) and (5) for English. The comparable Japanese examples in (6) and (7) show the interpretations are similar with respect to telicity.

(6) Sam-wa ichi-jikan-de /[?]ichi-jikan futatsu no tegami-o kakimashita.
    Sam-TOP one hour in / one hour for two GEN letter-ACC write-PAST
    Sam wrote two letters in an hour/ [?]for an hour.

(7) Keiko-wa   go-fun-de   /[?]go-fun-kan   futatsu no bagu-o kuruma made hakobimashita.
    Keiko-TOP five minutes in / five minutes for two GEN bag-ACC car   to   carry-PAST
    Keiko carried two bags to the car in five minutes/ [?]for five minutes.

   However, as was pointed out in the introduction, English and Japanese differ at the level of the NP/DP in the morphosyntactic form that they allow the direct object to take. English obligatorily marks the singular/plural distinction as is shown in (8) as well as the mass/count distinction, as is shown in the contrast between (9) and (10). The example in (10) shows that in English, bare singular count nouns cannot appear in argument position.

(8)   John read books/the books/two books. (count)
(9)   John drank juice. (mass)
(10) *John read book. (count)

Japanese, on the other hand, freely allows bare nominals in argument positions as is shown in (11). Japanese also does not have plural morphology. Bare nouns in Japanese are underspecified with respect to number. In order to explicitly encode number, a classifier must be used as in (12). Japanese also does not morphosyntactically distinguish mass from count nouns as can be seen by comparing (11) and (13).

(11) Sam-wa   tegami-o kakimashita. (count)
      Sam-TOP letter-ACC write-PAST.
      Sam wrote letter.
      'Sam read a/the/some book(s).'

(12) Sam-wa   san bai no   jyusu-o nomimashita. (mass)
      Sam-TOP three CL GEN juice-ACC drink-PAST.
      'Sam drank three glasses of juice.'

(13) Sam-wa   jyusu-o nomimashita. (mass)
      Sam-TOP juice-ACC drink-PAST.
      'Sam drank juice.'

These crosslinguistic differences in the nominal system have received a lot of attention in the theoretical literature since Chierchia's influential (1998) paper. Chierchia's original account posited a semantic parameter: in languages like Chinese and Japanese all NPs are individuals (mass) while in a language like English, nouns can be one of two types, individuals (mass) or predicates (count). More recently, Déprez (2005) proposed that the semantic denotation of all nouns in all languages is the same: all nouns are individuals or kinds and are underspecified with respect to number (cf. Borer, 2005). Languages differ with respect to plural morphology. The richness of plural morphology in a particular language determines whether or not the syntactic node NumP is obligatorily projected or not. In a language like English, NumP obligatorily projects for count nouns even when the noun is singular. In order to be satisfied, NumP must contain a counter; the range of possible counters includes overt numerals, determiners, or plural morphology. Crucially, in a language like English, an NP is obligatorily interpreted as either singular or plural. However, Déprez argues that in a language like Japanese, projection of NumP is optional and even when it does project, there is no need for an explicit counter. Therefore, number is underspecified: bare nouns in Japanese can be interpreted as singular or plural as is shown in (11).

The morphological differences outlined above are relevant to the calculation of telicity in English and Japanese. In English it is exactly this type of morphology that will encode whether a verb phrase is telic (*wrote the cards*) or atelic (*wrote cards*). In Japanese, this type of morphology is absent and thus bare nouns are underspecified for number. The result is that bare nouns are potentially ambiguous with respect to telicity (Yoshida, 2006). This is made clear by the example in (11). For a verb phrase to be unambiguously telic in Japanese, an explicit counter such as a classifier needs to be specified. Telicity may also be encoded elsewhere in the syntax such as in resultative verb-verb compounds.

1.2 Goal of the L2 learner

The study presented in this paper is part of a bidirectional study that investigates what role the morphological structure of the target language plays in the acquisition of telicity by second language learners. As was mentioned in the introduction, Chierchia (1994, 1998) proposed that learners use plural morphology as a bootstrap into the mass-count distinction. The proposal in this study is that learners use overt morphosyntax as a bootstrap into the atelic-telic distinction. Gabriele (2007) discusses the case of the English-speaking learners of Japanese. It is argued that the lack of overt morphosyntactic evidence in Japanese presents the L2 learners with a challenging learnability scenario. In this paper I consider the task of the Japanese learners of English. The hypothesis of the study is that it should be easier for the L2 learners of English to acquire telicity as it is encoded via overt elements such as determiners. It is likely that early learners will have difficulty as they first need to sort out what specific elements encode telicity but by advanced levels, it is predicted that learners will perform at the level of native speakers.

I will illustrate in detail what the learning task for the Japanese learners of English involves. First, the learners need to determine which of the available overt morphosyntactic elements encode telicity in English. Although plural morphology does not encode telicity in English as is shown in (14), determiners do (cf. 15 and 16). Telicity is also encoded via overt numerals (17) and particles such as *up* (18).

(14) Esther ate banana<u>s</u>. (atelic)

(15) Esther ate <u>the bananas</u>. (telic-count)
(16) Esther ate <u>the rice</u>. (telic-mass)
(17) Esther ate <u>two bananas</u>. (telic)
(18) Esther ate <u>the bananas up</u>. (telic)

Secondly, Japanese learners of English need to realize that not every verb that takes a quantized direct object will encode telicity. Examples (4) and (5) are repeated below as (19) and (20). In (19) the verb phrase *carried the bags* is atelic. I will refer to this type of verb phrase as the *contrast verb phrase*. The learners must also realize that overt syntactic elements such as goal prepositional phrases can bring about shifts in telicity as in (20), just as they can in Japanese.

(19) Victoria carried <u>the bags</u>. (atelic)
(20) Victoria carried the bags <u>to the car</u>. (telic)

In an earlier pilot study it was discovered that overt numerals (17) and particle phrases (18) were clear markers of telicity for Japanese learners of English. Therefore in the present study I focus on the determiner and goal prepositional phrase as markers of telicity. The study targets the contrast between (14) and (15-16) as well as the contrast between (19) and (20).

2. Methodology
2.1 Participants

There were two groups of participants: 43 Japanese learners of English and 26 English native speakers. The L2 English participants were Japanese undergraduates tested at a university in Japan. The English learners were divided into two proficiency levels on the basis of their scores on the Michigan University Listening Comprehension Test (LCT). The Michigan LCT is a 45-question exam that targets various aspects of English grammar. Learners in the Intermediate group (n = 22) scored between 20-33 on the test and learners in the High group (n = 21) scored between 34-42. The native speakers were undergraduates at the University of Kansas.

2.2 Interpretation Task

The interpretation task tested three types of simple past sentences: sentences with bare nouns/bare plurals, sentences with determiners and distracter sentences. The sentences targeted both mass and count nouns. The distracter sentences will not be discussed here.

Participants looked at pictures and listened to short stories in English. Two versions of each story were presented: a version in which the event came to completion (telic) and a version in which the event was terminated (atelic). Following each story, participants were presented with a sentence and were asked to judge on a scale of 1-5 whether or not the sentence was compatible with the story (1 being least compatible and 5 being most compatible). Examples of each of the three types of stories are presented in (21-23).

(21) Mass
John drinks a lot. After school he pours three glasses of juice. He drinks two glasses of juice. Then he starts to drink the third glass.
Telic: He finishes the third glass of juice. Then he puts the empty glasses in the sink.
Atelic: He cannot finish the third glass. He pours the rest of the juice in the sink.

Predicted Judgments for English Native Speakers	Telic	Atelic
(21a) John drank juice after school.	4-5	4-5
(21b) John drank the juice after school.	4-5	1-2

(22) Count

Today is Ken's birthday. He received four presents. He wants to write thank you cards to his friends. Ken writes three cards. Then he starts to write the last card.

Telic: He finishes the last card. Then he gives the cards to his friends.

Atelic: But Ken has to go to school. He cannot finish the fourth card.

Predicted Judgments for English Native Speakers	Telic	Atelic
(22a) Ken wrote cards on his birthday.	4-5	4-5
(22b) Ken wrote the cards on his birthday.	4-5	1-2

(23) Contrast Verb Phrase + Prepositional Phrase

On Thursday Susan leaves her house to go to the airport. She needs to carry her three bags from her house to the car. She carries two bags to the car.

Telic: Then she carries the last bag to the car.

Atelic: The last bag is very heavy. She cannot carry it all the way to the car.

Predicted Judgments for English Native Speakers	Telic	Atelic
(23a) Susan carried the bags on Thursday.	4-5	4-5
(23b) Susan carried the bags to the car on Thursday.	4-5	1-2

Early learners were expected to have difficulty with (21b) and (22b) as these learners may not know what specific morphosyntactic elements in English encode telicity. Furthermore, determiners such as *the* encode a range of other semantic notions such as definiteness and the learners are likely to have difficulty making these subtle semantic distinctions. In contrast, no difficulty was predicted for (23a) because in this example the determiner *the* does not encode telicity.

It is tricky to make a prediction for (22a) but the low level learners may initially have difficulty if they are unsure of whether or not the plural marker *-s* encodes telicity. In contrast, (21a) was not predicted to cause difficulty because the bare morphology in this example is very similar in English and Japanese. Finally, the example in (23b) was predicted to cause difficulty for early learners if they are unsure whether or not a goal prepositional phrase can serve to delimit an atelic event. It was predicted that by an advanced level of proficiency, learners would be able to perform at the level of native speakers.

3. Results
3.1 Simple transitive verb phrases with bare nouns

Results for the sentences targeting simple transitive verb phrases (21 and 22) are presented first. Results for the bare mass nouns and bare plural count nouns will be presented first followed by results for the sentences with determiners in section 3.2.

Results for the sentences with bare mass nouns such as *juice* in (21a) are summarized in Figure 1 on the following page. The graph presents mean responses to both the telic and atelic contexts. Both learners and native speakers performed accurately with bare mass nouns, giving equivalent scores to both telic and atelic contexts. A repeated-measures ANOVA confirmed that there were was not a significant effect for context.

Results for the bare plural count nouns such as *letters* in (22a) are presented next in Figure 2. Although it was not predicted, there was a significant effect for context (F (1, 66) = 11.652, p < .01). However, a series of independent samples t-tests showed that both the native speakers of English and the L2 learners were responsible for the distinction. Because all groups managed to generally give target-like responses (scores of 4 and above) on both contexts, I will not try to account for this

somewhat surprising result in detail. In summary, results for the bare nouns are generally in accordance with the predictions.

Figure 1. Mean responses to sentences with bare mass nouns with telic and atelic contexts
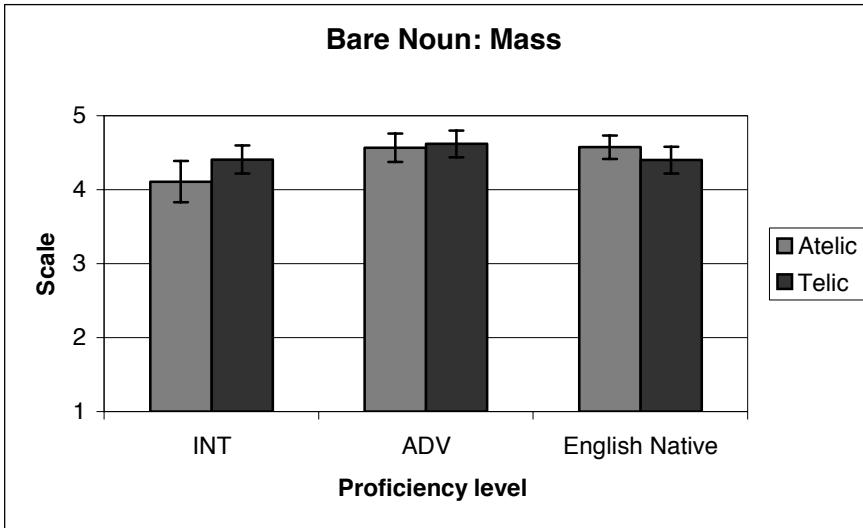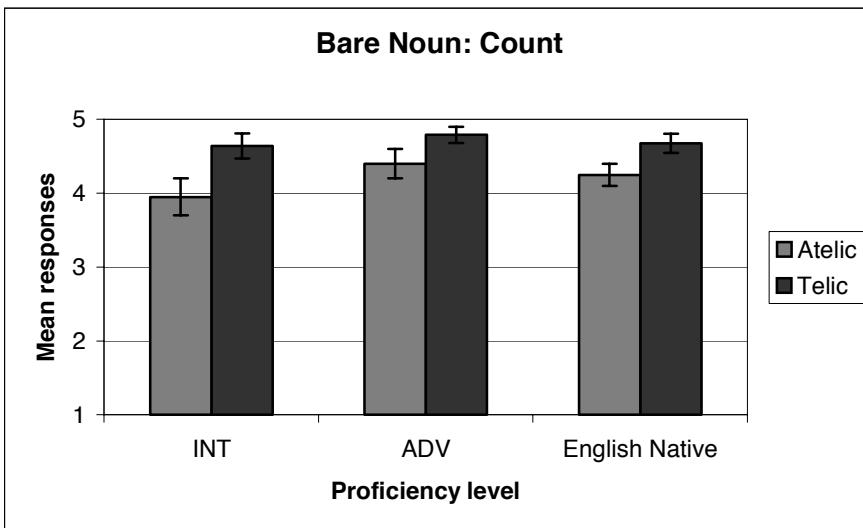

Figure 2. Mean responses to sentences with bare plural count nouns with telic and atelic contexts

3.2 Simple transitive VPs with determiners

Results for the simple transitive verb phrases with determiners are presented next. Figure 3, on the following page, summarizes the results for the determiners with mass nouns such as *the juice* in (21b) and Figure 4 presents the results for the determiners with count nouns such as *the letters* in (22b).

The results in Figure 3 are surprising. A repeated-measures ANOVA showed that there was not a significant effect for context. The learners follow the same patterns as native speakers and accept *John drank the juice* equally with both the telic and atelic contexts. An analysis of individual results showed that 14 out of 26 native speakers accepted *John drank the juice* with the atelic context.

The results in Figure 4 for the count nouns are more in line with the predictions but the contrast between the telic and atelic contexts is still not as strong as predicted. A repeated-measures ANOVA

showed that there was a significant effect for context, (F (1, 66) = 49.837, p < .01). Independent samples t-tests revealed that the distinction was significant for all groups. There was also a significant interaction between proficiency level and context, (F (2, 66) = 4.687, p < .05). Results of post-hoc tests showed that the Intermediate group performed differently from the Native speakers. An analysis of individual results showed that 9 out of 26 native speakers accepted *wrote the letters* on the atelic context. Therefore, there is a mass/count difference with respect to the judgments for native speakers.

It is harder to draw conclusions for the learners. It is unclear whether the Intermediate group encodes telicity because they treat the sentences with bare noun and plurals similarly to how they treat the sentences with determiners. The advanced group on the other hand generally follows the patterns of the native speakers. Like native speakers they treat the determiners + mass nouns differently from the determiners + count nouns, accepting the determiners + count nouns less on the atelic contexts.

Figure 3. Mean responses to sentences with determiners and mass nouns with telic and atelic contexts
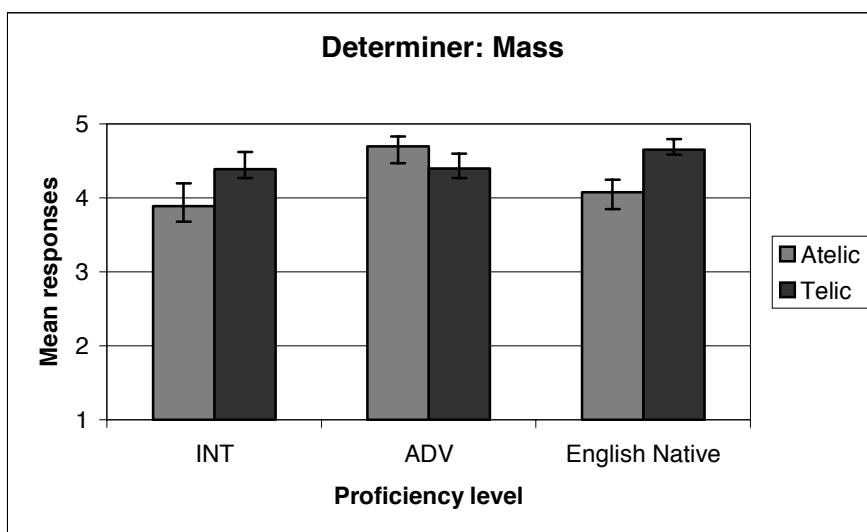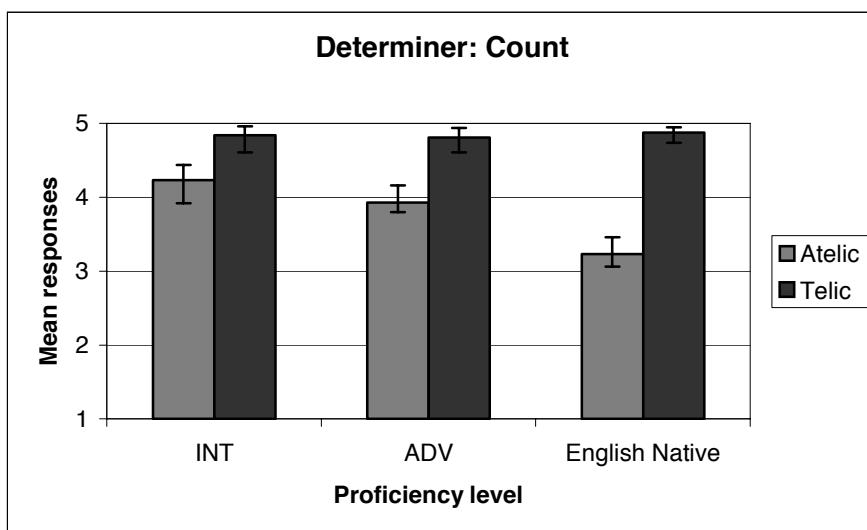

Figure 4. Mean responses to sentences with determiners and count nouns with telic and atelic contexts

3.3 Contrast verb phrases

The final set of results looks at the verb phrases that do not encode telicity even when they take quantized direct object such as *carry the bags* in (23a). These results are presented in Figure 5. Figure 6 presents the results for the same type of verb phrase, only in these examples, a goal prepositional phrase has been added, as in *carry the bags to the car* in (23b).

Figure 5. Mean responses to sentences with contrast verb phrases that do not encode telicity
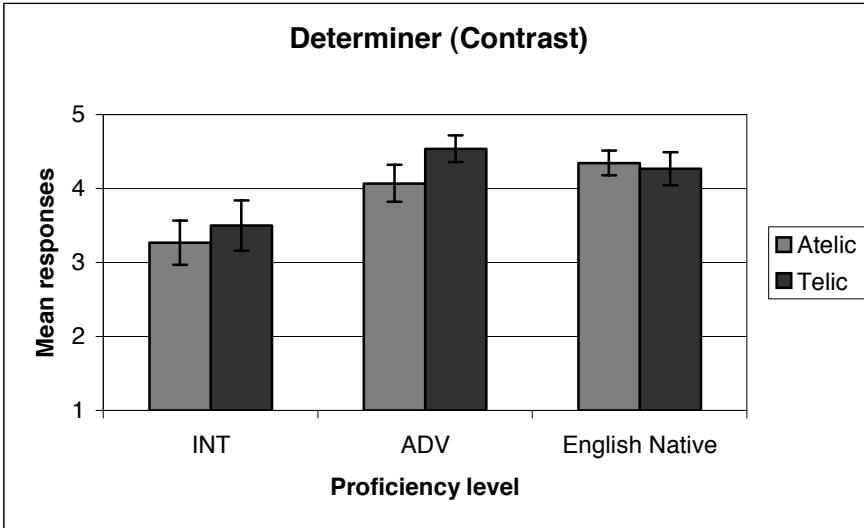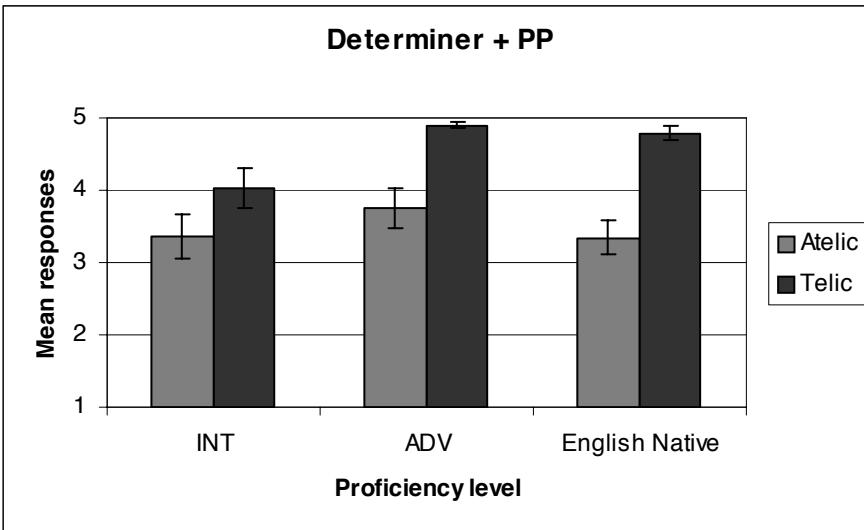

Figure 6. Mean responses to sentences with contrast verb phrases + goal prepositional phrases

The graph in Figure 5 shows that native speakers and advanced learners perform as predicted, accepting the sentence *Susan carried the bags* to the same extent with both the atelic and telic contexts. This shows that they are sensitive to whether or not the verb is capable of encoding telicity with the addition of a quantized direct object. A repeated-measures ANOVA confirmed that there was neither a significant effect for context nor an interaction between proficiency level and context. The Intermediate group had some difficulty with these sentences but they still generally treat the two contexts in the same way.

Finally, Figure 6 presents the results for the sentences such as *Susan carried the bags to car*, which should be accepted on the telic context and rejected on the atelic context. A repeated-measures ANOVA showed that there was a significant effect for context ($F (1, 66) = 51.493, p < .001$) and post-hoc comparisons revealed no significant differences between groups. While the contrast is certainly stronger for the native speakers, all groups correctly give significantly higher scores on the telic context.

4. Discussion

This study tested the proposal that the morphosyntactic properties of English would serve as a bootstrap into the atelic-distinction. The results of the study provide modest support for this proposal. In general, the results suggest that second language learners can acquire telicity but are sensitive to the form in which it is encoded. In earlier work it was discovered that numerals and particles are explicit markers of telicity for second language learners. The present study suggests that the goal prepositional phrase is also an explicit marker as both groups of learners were most successful with that structure. However, when we look within the simple transitive verb phrase, the results for the determiner were not as clear. The advanced group seems to have learned that determiners encode telicity as they performed well on the sentences with the count nouns.

However, it is difficult to truly evaluate the learners' performance on the determiner as the results for the native speakers are somewhat surprising and call into question some of the standard judgments in the syntax and semantics literature on telicity. Smollett (2005) has also recently questioned these judgments. Smollett argued that the judgments of native speakers for verb phrases with determiners such as *ate the apple* are far too variable for determiners to be considered true delimiters in English. Secondly, Smollett argued that whether or not we assign a telic or atelic interpretation to a verb phrase such as *ate the apple* depends to some extent on world knowledge (see similar discussion in Hay, Kennedy and Levin, 1999). She points out that if we change the agent of the event from a human to a small insect such as an ant in (24), then the atelic reading is perfectly acceptable.

(24) The ant ate the apple in an hour/for hours.

For Smollett (2005), the only true markers of telicity in English are particles, resultative phrases and goal prepositional phrases. The results presented here are compatible with the analysis that these syntactic markers of telicity are the clearest and most explicit delimiters in English.

A related issue arises if we compare the results for the count nouns and mass nouns in the sentences targeting the determiner *the*. While verb phrases such as *wrote the letters* were interpreted as telic by the majority of native speakers and by the advanced learners of English, verb phrases such as *drank the juice* were generally treated as ambiguous, with both telic and atelic interpretations available for all participants. The mass/count distinction found in these results should be investigated further with a set of stimuli that eliminates potential confounds. For example, in this study all mass items were targeted in verb phrases involving eating and drinking. While these verb phrases are the most common examples found in the literature, a much wider array of verbs should be tested.

The results of this study suggest that we need to develop a better understanding of what specific elements in the syntax encode telicity and what role the semantics of the NP/DP plays in deriving telicity (cf. Filip, 2005). The issues related to the encoding of telicity are clearly complex and we need to refine our understanding of what can serve as a delimiter in the native grammar in order to clearly understand the developmental patterns of language learners.

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