

On the Role of Aspect in Determining Finiteness and Temporal Interpretation in Early Grammar

Harold Torrence and Nina Hyams
UCLA

1. Introduction

Over the past several years there has been increasing interest in the temporal and aspectual properties of root infinitive (RI) and other non-finite structures in child language. One generalization that has emerged concerns the relationship between finiteness and the lexical aspect of the verb. Various studies have shown that RIs in languages such as Dutch, German and French are restricted to eventive predicates while statives are typically finite (Ferdinand 1996; Wijnen 1997; Becker and Hyams 2000). Hoekstra and Hyams (1998) refer to this finding as the Eventivity Constraint (EC) on RIs. Based on this earlier work, Gavrusseva 2003 develops an analysis of RIs and English bare verbs that purports to derive the RI phenomenon from the aspectual properties of the predicate. We tested Gavrusseva's proposal against data from three monolingual English-speaking children (Nina, Naomi, and Sarah in the CHILDES database). In this talk we describe the results of that study. To anticipate our conclusions, we did not find any support for Gavrusseva's analysis. We did, however, find a very interesting and unexpected relationship between the inherent aspect of the verbs and their temporal meaning, which we describe in the second part of the paper. We begin by discussing Gavrusseva's hypothesis.

2. Aspect and Finiteness in Early Grammar

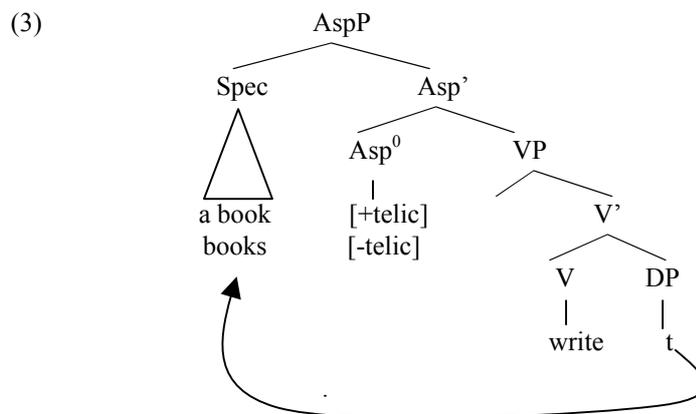
Gavrusseva (2003) proposes an interesting analysis of the RI stage according to which inherent aspectual properties of the predicate such as telicity and punctuality determine which verbs will surface as non-finite and which will not. In a simplification of the aktionsart typology originally proposed by Vendler (1967), Gavrusseva proposes a typology of verb classes based on the semantic features of telicity and punctuality. Atelic verbs, as well as punctual telic verbs enter the syntax with their aspect already specified. Thus, stative verbs such as *want*, *like*, etc. are inherently atelic (they have no intrinsic endpoint) and punctual eventive verbs such as *break*, *fall*, *throw* are inherently telic (they have an intrinsic endpoint.). On the other hand, non-punctual eventive verbs such as *write* are "aspectually transient" (Verkuyl 1999). The telicity of these verbs depends on the other elements in the predicate. In other words the telicity is compositionally determined. Thus, with a verb such as *write* the predicate will be telic in a sentence such as (1a) and atelic in a sentence such as (1b). This is because the complement *a book* is a "specified quantity" (Verkuyl 1999) and hence defines an endpoint, while *books* is an unspecified quantity and thus defines no endpoint.

- (1) a. John wrote a book.
- b. John writes books.

Gavruseva's inventory of aspectual types is schematized in (2)

- (2) Statives: V [-telic]
 Punctual eventives: V [+telic]
 Non-punctual eventives: V [+/- telic]

Gavruseva further assumes, following ideas of Travis (1991), Borer (1994) and others, that telicity is a syntactic feature that is checked by the verb in an AspP projection, as in (3).



On her account only the non-punctual eventives, which are unspecified for telicity, must move through an AspP projection. Their telicity feature is then determined by the argument in the specifier of AspP. In the tree in (3), the complement *a book* would check a [+telic] feature while *books* would check a [-telic] feature.

Gavruseva's final set of assumptions concerns the role of AspP in the temporal specification of the sentence. She assumes that the temporal interpretation of the clause is given by a tense chain (à la Guéron & Hoekstra 1989) of which AspP is a member. RIs result when Asp is underspecified and a tense chain cannot be formed. Gavruseva's various assumptions lead to the prediction that statives and punctual eventives, both of which are inherently specified for telicity, will always license a tense chain, and that non-finite clauses, RIs and bare verbs, will be restricted to non-punctual eventives since these require a grammatical specification of Asp to license a tense chain. These predictions are summarized in (4).

- (4) a. statives (e.g. *love, belong, need*) are finite
 b. punctual eventives (e.g. *break, fall, throw*) are finite.
 c. non-punctual eventives (e.g. *write, paint, draw, run*) are non-finite.

Henceforth, we refer to Gavruseva's proposal as the 'telicity hypothesis.' Gavruseva 2002 reports that the telicity hypothesis correctly predicts the distribution of finite and bare verbs in the English L2 acquisition of an 8-year old Russian-speaking child named Dasha. According to Gavruseva, Dasha's English data showed a strong tendency for punctuals to have past tense marking while non-punctuals were

much less likely to be so-marked. Overall, 68% of Dasha’s punctuals were marked with past tense morphology as opposed to only 19% of the non-punctuals. Statives were not considered (we return to this point below). These figures are reported in table 1.

	<i>Punctual</i>	<i>Non-punctual</i>
Files 1-3	100% (6/6)	0% (0/4)
Files 4-10	66% (48/73)	21% (7/33)
Total	68% (54/79)	19% (7/37)

Table 1: Proportion of finite (-ed) punctual and non-punctual verbs: Dasha (based on Gavrusseva 2002; table 10)

3. L1 English and the Telicity Hypothesis

In a very influential paper, Wexler (1994) proposed that bare verbs such as those in (5) represent the English analogue of the root infinitive

- (5) a. He lose it (Sarah, file 40)
 b. He fall down (Sarah, file 40)
 c. Play ball with him (Nina, file 39)

In analyzing Dasha’s data, Gavrusseva follows Wexler’s hypothesis for L1 acquisition. This is not an uncontroversial hypothesis for L2 acquisition. Hazdenar and Schwartz (1997), for example, argue that the English bare verbs in the Turkish child they studied were actually finite verbs that lack inflection. Their claim is based on the fact that the bare verb sentences showed finite syntax, for example subjects were invariably overt and marked with nominative case. Ionin and Wexler (2002) report similar results for Russian children acquiring English.

In our study we tested the predictions of the telicity hypothesis in English L1 acquisition. We looked at the distribution of inflected and bare verbs in the longitudinal data of 3 children. The ages and files of the children we examined are given in table 2.

	<i>Age</i>	<i>Files</i>	<i>Source</i>
Nina	2;11-3;0	39-45	Suppes 1971
Naomi	2;11-3;5	74-86	Sachs 1970
Sarah	2;11-3;3	39-53	Brown 1973

Table 2: Ages and files of subjects¹

We counted all non-copular verbal utterances with 3rd person subjects (either overt or implicit). Each verb was coded as an -s form, bare form, or past form (regular or irregular). In addition, verbs were classified according to aspectual type,

¹ The data are from the CHILDES data-base (MacWhinney and Snow 1985)

stative or eventive, and within the eventives, verbs were further broken down into punctual and non-punctual. We determined the lexical aspect of the verbs using the standard tests for aspect, such as whether they could be modified by adverbial phrases such as *in x time*, *for x time* (cf. Smith 1997). Stative verbs, punctual, and non-punctual eventives were all represented in our data. The total number and percentage of verbs in each aspectual class for each child is given in table 3.²

	Aspectual Class			<i>Total</i>
	<i>Stative</i>	<i>Punctual</i>	<i>Non-punctual</i>	
Nina	58 (50%)	34 (29%)	25 (21%)	117
Naomi	32 (58%)	13 (24)	10 (18%)	55
Sarah	30 (38%)	29 (37%)	20 (25%)	79
Total	120 (48%)	76 (30%)	55 (22%)	251

Table 3: Frequency of different aspectual classes:
finite and non-finite (bare) verbs

3.1. A methodological point

Before turning to the predictions in (4) and our results, we take a brief methodological detour. In analyzing Dasha’s data, Gavrusseva considered only finite verbs with past tense morphology. Although the telicity hypothesis makes predictions about finiteness, and hence also about the present tense forms, Gavrusseva excluded verbs marked with 3rd person *-s* from her analysis. The rationale for this exclusion is twofold (see Gavrusseva 2002, p. 122, note 13). First, she notes that the present tense *-s* has a limited distribution in that it occurs only in 3rd person contexts. Second, Gavrusseva suggests that children may overgeneralize the “null” 1st and 2nd person morphology to 3rd person contexts, in which case the bare forms with 3rd person subjects could actually be finite forms that simply lack morphology. This would be analogous to what Hazdenar and Schwartz (1997) claim is the case for the L2 Turkish child they studied, discussed in the previous section. However, if Gavrusseva is willing to allow for the possibility that bare forms in Dasha’s data are really finite forms that lack overt morphology, this obviously calls into question all her findings with respect to tense marking, which involve a comparison of bare vs. overtly marked forms.

In this paper we take no position with respect to the status of RIs and bare forms in L2 acquisition since we are concerned with L1 English acquisition. However, Gavrusseva 2003 argues that *-s* forms should also be excluded from the analysis of L1 English for the same reasons (Gavrusseva 2003, p 748, section 4.1). We believe, however, that the exclusion of *-s* forms from the L1 data engenders several methodological and empirical problems. First, by ignoring present tense verbs, Gavrusseva also severely limits the contexts that can be studied. In particular, she ends up excluding statives, which rarely occur in the past tense in the children’s data and which constitute a huge proportion of the early verbs. In our data, for example,

² There were 51 eventive verbs/predicates that could not be classified with respect to punctuality. These are excluded from tables 2, 4 and 5.

Our most serious objection to the exclusion of present tense verbs, however, is that by considering only past tense verbs, Gavrusseva inadvertently stacks the deck in favor of the telicity hypothesis. This is because non-punctual verbs occur disproportionately more often in the present tense, as we will see. Thus, by excluding present tense finite verbs it will necessarily be the case that punctual verbs are more occur in finite form more often than non-punctuals. For these various reasons in our own analysis of the L1 data we follow the standard procedure for English. We restrict our analysis to sentences with 3rd person singular subjects and count both *-s* and *-ed* as finite and bare forms as non-finite.

3.2 The L1 study

Turning now to the predictions in (4), we report the results of our investigation in tables 5-7. With regard to the prediction in (4a), that stative verbs will be finite, we see in table 4 that this appears to be confirmed for 2 of the 3 children.

	Stative verbs		Eventive verbs	
	<i>Finite</i>	<i>Bare</i>	<i>Finite</i>	<i>Bare</i>
Nina	50 (86%)	8 (14%)	62 (73%)	23 (27%)
Naomi	30 (94%)	2 (6%)	28 (85%)	5 (15%)
Sarah	11 (37%)	19 (63%)	29 (47%)	33 (53%)
Total	91 (76%)	29 (24%)	119 (66%)	61 (34%)

Table 5. Proportion of finite (*-s*, *-ed* forms) and non-finite (bare) stative and eventive verbs

For Nina and Naomi the majority of statives were finite, 86% and 94%, respectively. However, in these children's data the eventive verbs are also heavily skewed toward finite - 73% and 85% of eventive verbs were finite for these two children. We cannot therefore conclude that there is an effect of aspect. Equally important, however, is the fact that Sarah's results go in the opposite direction - bare statives outnumber finite statives, and this is also true of her eventive verbs. Overall, then, stativity does not seem to affect finiteness disproportionately, as would be predicted by (4a). Indeed, averaging across children almost a quarter of the statives are bare (e.g. *Eye want that*), contra the prediction in (4a).

Prediction (4b), that punctual verbs are finite, is also not confirmed. As shown in table 6, the rate of bare punctuals (e.g. *Oh, he fall down*) for Nina, Naomi and Sarah was 35%, 23% and 63%, respectively. Collapsing across the 3 children, 43% of punctual verbs are bare.

	<i>Finite</i>		<i>Bare</i>	
	N	%	N	%
Nina	22	65%	12	35%
Naomi	10	77%	3	23%
Sarah	10	37%	17	63%
Total	42	57%	32	43%

Table 6. Proportion of finite (*-s, -ed* forms) and non-finite (bare) punctual verbs⁵

With regard to prediction (4c), that non-punctuals are non-finite, we found that non-punctuals do indeed occur in non-finite form, but that they do less often than the punctual verbs. Table 7 shows that overall, the proportion of bare non-punctual verbs is 33%, as compared to the 43% bare punctuals in table 5. Thus, this last prediction is also not supported by our data.

	<i>Finite</i>		<i>Bare</i>	
	N	%	N	%
Nina	21	84%	4	16%
Naomi	9	90%	1	10%
Sarah	7	35%	13	65%
Total	37	67%	18	33%

Table 7. Proportion of Finite (*-s, -ed* forms) and bare non-punctual verbs⁶

Gavruseva notes that in Dasha's data the past tense morpheme is initially restricted to punctual verbs (the first 3 files), as shown in table 1. This is consistent with the findings of Shirai and Anderson 1995 and Olsen and Weinberg 1999, who observe that L1 English-speaking children (Adam, Eve, Naomi) initially restrict the past tense marker to punctual verbs (achievements verbs in Vendler's sense) and only later extend it to verbs of other aspectual classes. Such 'aspect first' effects, that is, the overly restrictive use of certain tense/aspect morphemes, are a well-known property of early language.⁷ However, the telicity hypothesis does not predict an initial restriction of *-ed* to telic predicates. Rather, it predicts that the bare verbs throughout the RI stage will be non-punctual eventives. As we have seen in tables 6 and 7, however, there is no difference between punctuals and non-punctuals with respect to the proportion of finite verbs. Overall, then we have found no support for the telicity hypothesis in our data.

⁵ 36/42 (86%) of the finite punctuals were *-ed* forms.

⁶ 23/37 (62%) of the finite non-punctuals were *-ed* forms

⁷ See Shirai and Anderson (1995) and Wagner (1999) for review of relevant literature and Olsen and Weinberg (1999) for a learning theoretic account. A more detailed discussion of this issue is beyond the scope of this paper.

4. Aspect and temporal interpretation of non-finite forms

While we did not find a relation between lexical aspect and finiteness, our results did show a clear correlation between lexical aspect and the temporal reference of the English bare verb, i.e., whether the verb denoted a past or non-past event. In table 4 we saw that bare verbs could have either present or past tense reference. When we break down the bare verbs according to telicity, we find that, averaging across children, 73% of telic bare verbs, such as in sentences (5a,b), refer to past eventualities, while 86% of the atelic bare verbs refer to non-past eventualities (e.g. 5c). These results are reported in table 8. The contingency between telicity and temporal reference is highly significant by chi-square test: $\chi^2(1) = 14.3, p < .01$.

	Temporal interpretation		Total
	<i>Past</i>	<i>Non-past</i>	
Telic	27 (73%)	10 (17%)	37
Atelic	2 (14%)	12 (86%)	14

Table 8. Temporal reference and (a)telicity of eventive bare verbs (Nina, Naomi, Sarah)⁸

Table 8 includes only eventive verbs. If we also include in the atelic category the statives (cf. table 3), the contingency is even stronger, as shown in table 9. The results are highly significant by chi-square analysis: $\chi^2(1) = 40.2 p < .01$.

	Temporal interpretation		Total
	<i>Past</i>	<i>Non-past</i>	
Telic	27 (73%)	10 (17%)	37
Atelic (incl. statives)	2 (5%)	41 (95%)	43

Table 9. Temporal reference and (a)telicity of all bare verbs (Nina, Naomi, Sarah)⁹

It is striking that our results are parallel to those obtained by Brun et al. (1999) for early Russian. Russian verbs come in perfective-imperfective pairs. Brun et al. found that the grammatical aspect of Russian RIs correlates with the temporal interpretation: perfective RIs typically have a past meaning while imperfectives RIs denote ongoing eventualities. Brun et al. interpret their results as showing that in the absence of tense, grammatical aspect serves as a temporal anchor (cf. also Becker 2000). Our results seem to go one step further and suggest that when neither Tense nor grammatical Aspect is morphologically specified, inherent aspect, that is, telicity, provides the temporal reference for the clause.

This temporal dependency on the telicity of the predicate does not appear to be an idiosyncratic property of child language. Lin 2002 discusses the temporal interpretation of what he calls “bare” sentences in (adult) Chinese, sentences that

⁸ There were 10 predicates whose telicity could not be reliably determined.

⁹ There were 15 stative verbs whose temporal meaning was indeterminate.

lack aspectual markers and temporal adverbs. Abstracting somewhat, the descriptive generalization is that Chinese bare sentences can have either a past or non-past (present/generic-habitual) interpretation. Stative adjectives, stative verbs, modal/auxiliary verbs, and activity verbs (+ locative PP) receive a non-past interpretation. Otherwise, the verb is interpreted as past. Examples are provided in (6) (from Lin 2002).¹⁰

(6) *Present*

- a. Wo xiangxin ni Atelic/stative
I believe you
‘I believe you’
- b. Ni da lanqiu ma Atelic/activity
you play basketball Q
‘Do you play basketball?’

Past

- c. Ta dapuo yi ge hua ping Telic/achievement
he break one CL flower vase
‘He broke a flower vase’
- d. Ta zai Shanghai chu-sheng Telic/achievement
he in Shanghai give-birth
‘He was born in Shanghai’

The parallel with the English bare verb is clear. In Chinese bare atelic verbs (i.e., states and activities) are interpreted as imperfective or non-past. Bare telic (i.e. achievements and accomplishments) verbs are interpreted as perfective or past.

5. Conclusion

In this paper we have explored the role of aspect in determining finiteness and temporal interpretation in early grammar. The results of our analysis of the three native English-speaking children in the RI, or more appropriately, bare verb stage, revealed no relation between inherent aspect of the early verbs and their finiteness, contrary to the predictions of the telicity hypothesis (Gavruseva 2002, 2003). On the other hand, we did find a very strong relation between lexical aspect of the verbs and their temporal reference. While space limitations prevent us from providing a detailed analysis of this relation, we believe that the formal properties of this relation will be very similar to those of the adult Chinese bare verb construction, whose temporal reference is also sensitive to the actional properties of the predicate.

¹⁰ In this respect the bare verbs pattern partially like aspectually marked verbs. Chinese does not have tense markers, but it has perfective (*le*) and imperfective (*zhe*, *zai*) particles. There are strong aspect/aktionsart correlations in Chinese: the imperfective particle occurs with atelic predicates (*zhe* for stative verbs/*zai* for activity verbs) and the perfective particle with telic predicates (Ping 1989). In this respect as well there is a parallel with child language where we find ‘aspect first’ effects, that is, past/perfective morphology tends to appear on telic verbs while progressive/imperfective morphology occurs most often on atelic predicates. See footnote 7.

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