

FINITENESS AND TEMPORAL INTERPRETATION IN  
EARLY GRAMMAR: THE ROLE OF  
LEXICAL ASPECT

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1. INTRODUCTION

Over the past several years there has been increasing interest in the temporal and aspectual properties of 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 condition (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 Root Infinitive (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,

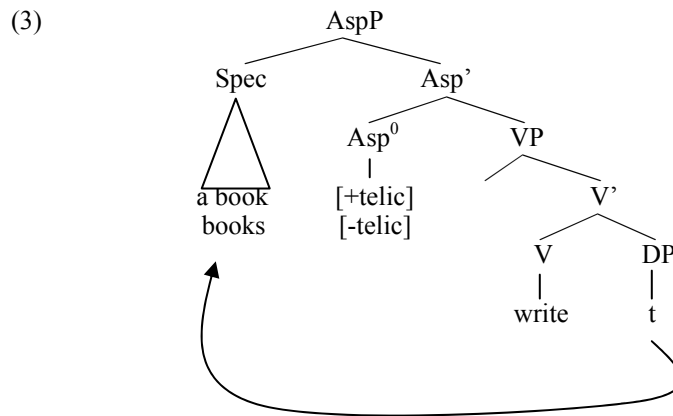
non-punctual eventive verbs such as *write* are “aspectually transient” (Verkuyl 1999). The telicity of these verbs depends on the other elements in the predicate, in other words the telicity is compositionally determined. Thus, with a verb such as *write* the predicate will be telic in a sentence (1a) and atelic in sentence (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. Gavrusseva'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 Gavrusseva's proposal as the 'telicity hypothesis'.

Gavrusseva 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 Gavrusseva, 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 past tense vs. 19% of non-punctuals. Statives were not considered (we return to this point below). These figures are reported in table 1.<sup>1</sup>

Table 1. Proportion of finite (-ed) punctual and non-punctual verbs

	<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)

### 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)

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<sup>1</sup> Dasha (based on Gavrusseva 2002; table 10)

In analyzing Dasha's data, Gavrusseva follows Wexler's (1994) 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 nominative. 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 first language 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.

Table 2. Ages and files of subjects<sup>2</sup>

	<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

We counted all non-copular verbal utterances with 3<sup>rd</sup> 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, 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.<sup>3</sup>

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

	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

<sup>2</sup> The data are from CHILDES (MacWhinney and Snow 1985)

<sup>3</sup> There were 51 eventive verbs/predicates that could not be classified with respect to punctuality. These are excluded from tables 2, 4 and 5.

3.1. *A methodological point*

Before turning to the predictions in (4) and our results, we make a brief methodological detour. In analyzing Dasha's data, Gavrusseva considered only finite verbs with past tense morphology. She did not include verbs marked with 3<sup>rd</sup> person *-s* although the telicity hypothesis makes predictions about finiteness and hence also about the present tense forms. Gavrusseva excluded the 3<sup>rd</sup> person *-s* from her analysis because of its limited distribution, but this reduced the number of contexts that can be studied. She also suggests that children may "overgeneralize" the null 1<sup>st</sup> and 2<sup>nd</sup> person tense morpheme to 3<sup>rd</sup> person contexts, in which case 3<sup>rd</sup> person bare forms may actually be finite (p.133, note 13). By ignoring present tense verbs, however, Gavrusseva also severely limits the contexts that can be studied since she ends up excluding statives, which rarely occur in the past tense in the children's data. Statives constitute a huge proportion of the early verbs. In our data, for example, 48% of the children's verbs during the RI period were stative. (We return to this shortly (cf. section 3.2))

With regard to the overgeneralization issue, we know from studies of other languages that children rarely if ever overgeneralize agreement (agreement errors are under 4% across languages - cf. Hoekstra and Hyams (1998) for review). We see no reason why English should differ in this regard from the other languages that have been studied. Indeed, as discussed in Hyams (2001) there are interesting interpretive differences between English finite and bare verbs English. Table 4 presents the breakdown of bare and finite verbs according to their temporal reference.

Table 4. Aspectual/temporal interpretation of bare and finite (*-s*) eventive verbs in English<sup>4</sup>

	Finite ( <i>-s</i> ) verb			Bare verb		
	<i>ongoing</i>	<i>habitual</i>	<i>past</i>	<i>ongoing</i>	<i>habitual</i>	<i>Past</i>
Nina	0	16(100%)	0	8 (35%)	3 (13%)	12(52%)
Naomi	0	7 (89%)	1(11%)	2 (40%)	0	3 (60%)
Sarah	0	10 (100%)	0	5 (16%)	5(16%)	22(68%)
Total*	0	33 (97%)	1	15(25%)	8(13%)	37(62%)

<sup>4</sup> (Nina 2;11-3;0, Naomi 2;11-3;5, Sarah 2;11-3;3). There were 3 *-s* verbs and 1 bare verb whose temporal/aspectual meaning could not be determined

We see in table 4 that the overwhelming proportion of present tense verbs (97% averaging across children) have a habitual or property reading in early English. Thus, in child English as in the adult language, present tense *-s* does not occur in ongoing event contexts. On the other hand, averaging across children, only 13% of bare verbs occur in habitual contexts while more than 25% occur in ongoing event contexts. The bare forms have a much broader distribution than the *-s* forms. In the second part of this talk we will provide an explanation for this result. At this point we wish merely to point out that since finite verbs do not occur in ongoing contexts, the overgeneralization hypothesis fails to provide a source for ¼ of the bare verbs. It seems unlikely therefore that the bare forms are really hidden finite forms<sup>5</sup>. Our most serious objection to the exclusion of present tense verbs, however, is that by considering only past tense verbs Gavruseva inadvertently stacks the deck in favor of the telicity hypothesis since 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 occur in finite form more often than non-punctuals. Thus, in our own analysis of we follow the standard procedure for English. We restrict our analysis to sentences with 3<sup>rd</sup> persons subjects and include both *-s* and *-ed* as 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.

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

<sup>5</sup> The aspectual interpretation of the children's verbs was determined based on (a) adverbial cues, e.g. *now*, *always*, etc, (b) surrounding discourse, (c) parental response/repair, (d) non-linguistic context. Indeterminate cases were not included in the counts. The sentences below illustrate the various interpretations of the bare form.

- |       |  |                                  |
|-------|--|----------------------------------|
| (i)   | Mother: What's she doing with the tiger now?               |                                  |
|       | Child: Play # <u>play</u> ball with him                    | Ongoing (Nina file 44)           |
| (ii)  | Child: The walrus <u>bite</u> ?                            |                                  |
|       | Mother: No, the walrus doesn't bite.                       | Property/habitual (Nina file 39) |
| (iii) | Child: Somebody <u>draw</u> here.                          |                                  |
|       | Mother: Yes# mommy did when mommy was a little girl #honey | Past (Naomi file 77)             |

and eventive verbs

	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%)

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. Most importantly, however, 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. *Eve want that*), counter 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 were bare.

Table 6. Proportion of finite (-s, -ed forms) and non-finite (bare) punctual verbs<sup>6</sup>

	<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%

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 was also not supported by our data.

Table 7. Proportion of finite (-s, -ed forms) and bare non-punctual verbs<sup>7</sup><sup>6</sup> 36/42 (86%) of the finite punctuals were -ed forms.<sup>7</sup> 23/37 (62%) of the finite non-punctuals were -ed forms

	<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%

Gavruseva notes that in Dasha's data the past tense morpheme is initially restricted to punctual verbs (the first 4 files), as shown in table 2. 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.<sup>8</sup> 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.

#### 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), referred to past eventualities, while 86% of the atelic bare verbs referred 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:  $\chi^2(1) = 14.3$ ,  $p < .01$ .

Table 8. Temporal reference and (a)telicity of eventive bare verbs

<sup>8</sup> 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.

(Nina, Naomi, Sarah)<sup>9</sup>

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

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;  $\chi^2(1) = 40.2$   $p < .01$ .

Table 9. Temporal reference and (a)telicity of all bare verbs  
(Nina, Naomi, Sarah)<sup>10</sup>

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

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 correlated with the temporal interpretation:

Table 10. Temporal Interpretation of Russian Root Infinitives<sup>11</sup>

Interpretation	Root Infinitives		Finite Verbs	
	Perfective	Imperfective	Perfective	Imperfective
Past	94.6%	5.4%	68.2%	31.8%
Present	1.7%	98.3%	0%	100%
Modal <sup>12</sup>	53%	47%	58.2%	41.8%

Table 10 shows that 94.6% of the root infinitives with a past interpretation were perfective infinitives while only 5.4% of the past RIs were imperfective infinitives. In other words, the overwhelming majority of RIs with a past interpretation were in the perfective form. The distribution of temporal interpretations for the RIs contrasts strongly with that of the finite verbs. For the finite verbs, both perfective and imperfective forms could have a past interpretation. At

<sup>9</sup>  $\chi^2(1) = 14.3$ ,  $p < .01$ . There were 10 predicates whose telicity could not be reliably determined.

<sup>10</sup>  $\chi^2(1) = 40.2$   $p < .01$  There were 15 stative verbs whose temporal meaning was indeterminate.

<sup>11</sup> From Brun, et al. Table 2.

<sup>12</sup> The “modal” category represents future and intentional interpretations.

the same time, the present-interpretation of finite verbs was only associated with verbs in the imperfective form. For the past interpretation, 68.2% of the finite verbs were built from the perfective stem while 31.8% were built from the imperfective stem. Note also that the past interpretation of imperfective verbs is quite robust for finite verbs (31.8%), but is basically non-existent for the past imperfective infinitival verb (5.4%). For the present interpretation, the pattern is quite different, with 100% of the verbs being built from the imperfective stem. Brun et al. note that for the modal meaning, there is no strong tendency in either direction (i.e. both perfectives and imperfectives occur in roughly equal proportions). In a nutshell, perfective RIs typically had a past meaning while imperfectives RIs denoted ongoing eventualities. What our results suggest is that the effects of inherent aspect are felt even in the absence of any overt tense/aspect marking. 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 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).<sup>13</sup>

- (6) *Present*
- |                    |                 |
|--------------------|-----------------|
| a. Wo xiangxin ni  | Atelic/stative  |
| I believe you      |                 |
| ‘I believe you’    |                 |
| b. Ni da lanqiu ma | Atelic/activity |

<sup>13</sup> 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 8.

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 presentation we have explored the role of aspect in determining finiteness and temporal interpretation in early grammar. The result 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 time 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.

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