

## THE ACQUISITION OF MOTION VERBS AND PARTICLES IN JAPANESE\*

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### 1 Introduction

Verbs play a central role in the interpretation of sentences (Fisher 1996, Grimshaw 1990, Jackendoff 1990, Pinker 1989, Rappaport and Levin 1988). Verb meanings do not simply denote events but represent the speaker's thought and perspective on events. Verbs also establish the fundamental syntactic aspects of a language (Pye, Loeb, Redmond & Zobel 1995, Pye, Loeb & Pao 1995). Verbs display their own peculiar structural requirements, which may differ cross-linguistically. For example, *John ran to the station* is grammatical in English. However, the corresponding Japanese sentence *John-wa eki-e hashitta* sounds unnatural. In order for the sentence to be acceptable, the verb *hashiru* 'run' must take a different particle *made* 'as far as' from *e* 'to'. The compatibility of motion verbs and particles in Japanese is closely related to the conflation class distinction of motion verbs.

Then, how do Japanese children acquire these motion verbs and particles? Japanese children generally acquire case particles early and without much apparent difficulty (Clancy 1985). The basic grammatical particles and case particles such as *wa* (topic), *ga* (nominative), *o* (accusative), *e* (goal), *kara* (source) and *ni* (locative/dative) emerge between approximately 1,8 – 2,6 years of age. However, when the particles are used with motion verbs, they must obey various verb-particle compatibility constraints. In order to choose correct particles for each motion verb, children would have to know the narrowly conflated class distinction of motion verbs.

Pinker (1989) claims that the acquisition of argument structure is semantically conditioned. In solving the problem of how children acquire different types of verb alternations in English, he claims that children must pay close attention to verb meanings and differentiate narrow conflation classes of verbs. Pinker proposes that children are not conservative but productive learners and that they make use of two lexical rules: broad-range lexical rules and narrow-range lexical rules.<sup>1</sup> The broad-range lexical rules are simple operations on semantic structure and apply to broad conflation classes of verbs, while the narrow-range lexical rules pick out narrow conflation classes of verbs and create a complete specification for a new form. Accordingly, the broad-range lexical rules are used as form-predicting constraints, and the narrow-range lexical rules delineate the alternation in the adult language. In the following sections, I will examine how Japanese children acquire particles associated with the conflation class distinction of motion verbs to test these claims.

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<sup>1</sup> Pinker proposes that children must possess innate linking rules, conflation class definitions (broad and narrow), broad-range lexical rules, narrow-range lexical rules and verbs' semantic structures to acquire correct argument structures.

## 2 Japanese Motion Verbs

### 2.1 Constraint on Goal Expressions

In Japanese there is a verb-particle compatibility constraint on goal expressions (Koike 1997)

- (1) a John-wa okujoo-e agatta  
John-TOP roof-to went up  
'John went up to the roof'
- b ?John-wa eki-e hashitta  
John-TOP station-to ran  
'John ran to the station'
- c \*John-wa Mary-no heya-e odotta  
John-TOP Mary-GEN room-to danced  
'John danced to Mary's room'

The verb *agaru* 'go up' is compatible with the particle *e* 'to'. However, the combination of the verb *hashiru* 'run' and the particle *e* 'to' sounds unnatural. Moreover, the verb *odoru* 'dance' cannot take the particle *e* 'to', no one accepts this combination.

On the other hand, these verbs show different compatibility requirements with the particle *e mukatte* 'toward' as in (2).

- (2) a \*John-wa okujoo-e mukatte agatta  
John-TOP roof-toward went up  
'John went up toward the roof'
- b John-wa eki-e mukatte hashitta  
John-TOP station-toward ran  
'John ran toward the station'
- c \*John-wa Mary-no heya-e mukatte odotta  
John-TOP Mary-GEN room-toward danced  
'John danced toward Mary's room'

The verb *hashiru* 'run' can take *e mukatte* 'toward' in natural expressions. However, neither *agaru* 'go up' nor *odoru* 'dance' are acceptable with *e mukatte* 'toward'.

Moreover, the particle *made* 'as far as' is compatible with both *agaru* 'go up' and *hashiru* 'run' but not with *odoru* 'dance'.

- (3) a John-wa okujoo-made agatta  
John-TOP roof-as far as went up  
'John went up as far as the roof'
- b John-wa eki-made hashitta  
John-TOP station-as far as ran

- 'John ran as far as the station '
- c \*John-wa                      Mary-no                      heya-made                      odotta  
 John-TOP                      Mary-GEN                      room-as far as                      danced  
 'John danced as far as Mary's room '

These problems, however, can be solved by identifying the lexicalization types of the Japanese motion verbs (Talmy 1985) Thus, I divide Japanese motion verbs into the following three types

(4) Three types of motion verbs in Japanese

- Path conflation compatible with goal expressions  
 e.g. *agaru* 'go up', *oriru* 'go down', *hairu* 'go in', *modoru* 'go back', etc
- Manner conflation with implicit Path results in unnaturalness with goal expressions  
 e.g. *hashiru* 'run', *aruku* 'walk', *oyogu* 'swim', *korogaru* 'roll', etc
- Manner conflation without implicit Path not compatible with any path expressions  
 e.g. *odoru* 'dance', *haneru* 'jump', *hazumu* 'bounce', etc

It should be noted that the verbs *haneru* 'jump' and *hazumu* 'bounce' have, in a sense, an implicit vertical Path However, it is different from an externally traversed Path which the verbs such as *hashiru* 'run' and *aruku* 'walk' have Thus, *haneru* 'jump' and *hazumu* 'bounce' are classified as the same category as *odoru* 'dance' Moreover, there is a difference between these verbs and the verb *odoru* 'dance', too As shown in (5), the verb-particle compatibility varies depending on whether the motion is iterative or not If the motion of jumping and bouncing is just a single movement, the sentence sounds better although it still entails unnaturalness

- (5) a \**Kaeru-wa*                      *kusamura-e*                      *haneta*  
 frog-TOP                      grass-to                      jumped  
 'A frog jumped to the grass ' (iterative motion)
- b ?*Kaeru-wa*                      *hasu no ha-e*                      *haneta*  
 frog-TOP                      lotus leaf-to                      jumped  
 'A frog jumped to the lotus leaf ' (single motion)

In addition, the particles play an important role in determining compatibility with the verbs The particle *e* 'to' is bounded, while the particle *e mukatte* 'toward' is unbounded However, the particle *made* 'as far as' is not only bounded but also implies the whole process for attaining a goal<sup>2</sup>

<sup>2</sup> This characteristic is shown in the following durational adverbial tests As shown in (c and d), taking *hashiru* 'run', the sentence can be either bounded or unbounded

- a     John-wa                      okujoo-made                      30-pun-de                      *agatta*  
 John-TOP                      roof-as far as                      30-minutes-in                      went up  
 'John went up as far as the roof in 30 minutes '
- b     \*John-wa                      okujoo-made                      30-pun-kan                      *agatta*  
 John-TOP                      roof-as far as                      30-minutes-for                      went up  
 'John went up as far as the roof for 30 minutes '

Accordingly, both verbs of Path conflation and verbs of Manner conflation with implicit Path are compatible with the particle *made* ‘as far as’

2.2 The *-te iru* construction

The distinction between Path conflation and Manner conflation is reflected in the interpretation of the *-te iru* construction as well. The aspectual verbal suffix *-te iru* expresses either a progressive or a perfective reading depending on the meaning of verbs (Kindaichi 1950, Muehleisen & Imai 1997 among others). As shown in (6), in a neutral context verbs of Path conflation in the *-te iru* construction are interpreted as either perfective or progressive, while verbs of Manner conflation in this construction are interpreted as progressive only.

- (6) a John-wa agat-te iru  
 John-TOP has gone up/is going up  
 ‘John has gone up’  
 ‘John is going up’
- b John-wa hashit-te iru  
 John-TOP is running  
 ‘John is running’
- c John-wa odot-te iru  
 John-TOP is dancing  
 ‘John is dancing’

3 Method

In this study, 8 Japanese-speaking children and 8 Japanese adults were tested on their verb-particle compatibility judgment tasks. The children ranged in age between 3;11 and 6;4. All of them were living in the United States. Their family language was Japanese and most of them lived in Japan in their early years (from 9 months to 2 years 5 months old). 8 adults were undergraduate and graduate students at University of Kansas.

The motion verbs used in the judgment tasks were *oriru* ‘go down’ (Path conflation), *hashiru* ‘run’ (Manner conflation with implicit Path), *odoru* ‘dance’ (Manner conflation without implicit Path), *haneru* ‘jump’ (Manner conflation without implicit Path) and *hazum* ‘bounce’ (Manner conflation without implicit Path). For each verb two pictures were created: one depicted an unbounded motion event, another depicted a bounded motion event. For *haneru* ‘jump’ and *hazum* ‘bounce’, the difference

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c	John-wa	eki-made	30-pun-de	<i>hashitta</i>
	John-TOP	station-as far as	30-minutes-in	ran
		‘John ran as far as the station in 30 minutes’		
d	John-wa	eki-made	30-pun-kan	<i>hashitta</i>
	John-TOP	station-as far as	30-minutes-for	ran
		‘John ran as far as the station for 30 minutes’		

in compatibility between single and iterative motion was also tested. Each picture was shown to the subjects and they first described the picture. Then, they were asked to judge whether the sentence expressing the picture was acceptable or not<sup>3</sup>. Each verb's compatibility with the particles *e* 'to', *made* 'as far as' and *e mukatte* 'toward' was tested in different tense/aspect constructions.

#### 4 Results and Discussions

The results from the verb-particle compatibility judgment tasks appear in Table 1 (group data) and Table 2 (individual data). The data show that the children initially overgeneralized the particle *e* 'to' to the verbs of Manner conflation and they gradually learned the Path versus Manner distinction between 5 and 6 years of age, although there were large individual differences in acquisition rates. Also, children distinguished Path (e.g., *oriru* 'go down') from Manner without implicit Path (e.g., *odoru* 'dance') more easily than Manner with implicit Path (e.g., *hashiru* 'run'). This suggests that children pass through the learning of a further narrowly conflated class distinction after acquiring the Path versus Manner distinction. The data from Child 5 clearly suggests such an acquisition order.

Table 1 Percentage of 'acceptable' responses in verb-particle compatibility

%	-ta (past)				-te iru (progressive/perfective)					
	e		made		e (progressive)		e (perfective)		e mukatte	
	children	adults	children	adults	children	adults	children	adults	children	adults
oriru 'go down' Path	10	88 (13)	88	10 (0)	75	25 (63)	88	38 (25)	88	10 (0)
hashiru 'run' Manner with Path	75	13 (5)	10	10 (0)	75	38 (63)	-	-	10	10 (0)
odoru 'dance' Manner	63	0 (0)	75	13 (38)	63	0 (0)	-	-	88	25 (25)
haneru 'jump' Manner (I)	75	0 (25)	88	38 (63)	63	13 (5)	-	-	75	0 (88)
haneru 'jump' Manner (S)	88	75 (25)	10	75 (25)	63	25 (63)	-	-	88	10 (0)
hazumu 'bounce' Manner (I)	63	0 (25)	75	38 (38)	63	0 (25)	-	-	88	75 (0)
hazumu 'bounce' Manner (S)	88	5 (25)	10	75 (13)	75	25 (25)	-	-	10	88 (13)

I = iterative motion, S = single motion, (%) = 'questionable' responses

In addition, it is shown that the children, like the adults, were sensitive to the iterative versus single motion distinction in the verbs *haneru* 'jump' and *hazumu* 'bounce'. Differences in tense/aspect

<sup>3</sup> To adult subjects, three judgment choices (acceptable, unacceptable and questionable) were given

also affected judgment of verb-particle compatibility Verbs with progressive form become more compatible with goal expressions, which is shown in both children and adult data

Table 2a orrru 'go down'

	C1	C2	C3	C4	C5	C6	C7	C8	A1	A2	A3	A4	A5	A6	A7	A8
<i>-ta</i> (past)																
e	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	?
made	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<i>-te iru</i> (prog)																
e (prog)	Y	Y	Y	Y	Y	N	Y	N	Y	?	Y	?	?	N	?	?
(perf)	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	?	N	N	?	N
e mukatte	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

C = child, A = adult, C1(3,11), C2(4,10), C3(5,0), C4(5,4), C5(5,4), C6(5,4), C7(6,3), C8(6,4)

Y = acceptable, N = unacceptable, ? = questionable

Table 2b hashuru 'run'

	C1	C2	C3	C4	C5	C6	C7	C8	A1	A2	A3	A4	A5	A6	A7	A8
<i>-ta</i> (past)																
e	Y	Y	Y	Y	Y	N	Y	N	?	?	?	Y	N	?	N	N
made	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<i>-te iru</i> (prog)																
e	Y	Y	Y	Y	Y	N	Y	N	?	?	Y	Y	?	Y	?	?
e mukatte	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 2c odoru 'dance'

	C1	C2	C3	C4	C5	C6	C7	C8	A1	A2	A3	A4	A5	A6	A7	A8
<i>-ta</i> (past)																
e	Y	Y	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N
made	Y	N	Y	Y	N	Y	Y	Y	?	Y	?	?	N	N	N	N
<i>-te iru</i> (prog)																
e	Y	Y	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N
e mukatte	Y	Y	Y	Y	N	Y	Y	Y	?	Y	Y	N	N	N	?	N

Table 2d haneru 'jump' (iterative motion)

	C1	C2	C3	C4	C5	C6	C7	C8	A1	A2	A3	A4	A5	A6	A7	A8
<i>-ta</i> (past)																
e	Y	Y	Y	Y	N	Y	Y	N	N	?	N	?	N	N	N	N
made	Y	Y	Y	Y	N	Y	Y	Y	?	Y	?	?	?	Y	Y	?
<i>-te iru</i> (prog)																
e	Y	Y	Y	Y	N	N	Y	N	N	?	Y	?	?	N	N	?
e mukatte	Y	Y	Y	Y	N	N	Y	Y	?	Y	Y	Y	Y	Y	Y	Y

Table 2e haneru 'jump' (single motion)

	C1	C2	C3	C4	C5	C6	C7	C8	A1	A2	A3	A4	A5	A6	A7	A8
-ta (past)																
e	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	?	Y	Y	?
made	Y	Y	Y	Y	Y	Y	Y	Y	Y	?	Y	Y	?	Y	Y	Y
-te iru(prog)																
e	Y	N	Y	Y	Y	N	Y	N	?	?	Y	?	?	N	Y	?
e mukatte	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 2f hazumu 'bounce' (iterated motion)

	C1	C2	C3	C4	C5	C6	C7	C8	A1	A2	A3	A4	A5	A6	A7	A8
-ta (past)																
e	Y	N	Y	Y	N	Y	Y	N	N	?	?	N	N	N	N	N
made	Y	Y	Y	Y	N	Y	Y	N	?	Y	Y	Y	N	N	?	?
-te iru(prog)																
e	Y	N	Y	Y	N	Y	Y	N	N	?	?	N	N	N	N	N
e mukatte	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y

Table 2g hazumu 'bounce' (single motion)

	C1	C2	C3	C4	C5	C6	C7	C8	A1	A2	A3	A4	A5	A6	A7	A8
-ta (past)																
e	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	?	?	N
made	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	?	Y
-te iru(prog)																
e	Y	Y	Y	Y	Y	N	Y	N	?	Y	Y	?	N	N	N	N
e mukatte	Y	Y	Y	Y	Y	Y	Y	Y	Y	?	Y	Y	Y	Y	Y	Y

The overall data indicate that both adults and children respected semantics. Also, the children's productivity was reflected in their overgeneralization. Both of these observations support Pinker's claim. However, as I mentioned above, Pinker (1989) proposes a productive mechanism of language acquisition. Children make use of broad-range lexical rules as form-predicting constraints, while the narrow-range lexical rules delineate the alternation in the adult language. Thus, Pinker claims that children's overgeneralization errors are due to either incorrect lexicosemantic structure for particular verbs or the use of a broad-range rule to generate the sentence directly.

Slobin (1985) sees Basic Child Grammar as specifying two temporal perspectives 'result' versus 'process', and anchors the initial acquisition of morphology signaling the result perspective to real world situations. Thus, Slobin hypothesizes that children will use resultative morphemes before process morphemes.

Thus, both Pinker and Slobin suggest that children make use of universal regularities. However, I would suggest more importance on the role of conceptual organization. As observed in the above data,

the children's responses clearly reflected the adults' responses even though they were still progressing toward the adult state. Also, one important finding in the present study is that only the semantic information conveyed by a picture may facilitate the children's choice of particles associated with motion events, even though they have not acquired the verb yet. Some children substituted a similar verb or used an onomatopoeic word for the verb. Even so, the results were consistent with those of other motion verbs belonging to the same conflation class.

Accordingly, I suggest that children do not learn the conflation class of each verb individually, rather they seem to develop concepts associated with the conflation class distinction before acquiring some motion verbs. Thus, I will propose the following learning procedure. Children initially acquire the conflation classes of the most frequent and initially acquired verbs through positive evidence,<sup>4</sup> and they gradually develop concepts associated with the conflation class distinction of motion verbs. However, once children establish such concepts of narrowly defined conflation classes, they may apply a new verb to various constraints in the sentence structure associated with its conflation class.

Moreover, I argue that particles as well as verbs play a role in the acquisition of argument structure. As observed above, the combination of a verb and a particle or even inflectional endings forms a new constraint on argument structure. Thus, children have to choose the correct verb-particle combination based on the preexisting concepts of both verbs and particles.

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<sup>4</sup> The verb *iku* 'go' is one of the most frequent and early acquired verbs. Also, Japanese has predominant verbs of Path conflation. These facts may influence the acquisition process and order of motion verbs.



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