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Transfer and Learnability in Second Language Argument Structure: Motion Verbs with Locational/Directional PPs in L2 English and Japanese

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Abstract

This thesis investigates how the outcomes of the acquisition of second language (L2) argument structure will vary depending on the nature of the learner's first language (L1). The focus is on motion verbs appearing with a prepositional/postpositional phrase that expresses the final endpoint of the motion (goal PP). In English, manner-of-motion verbs (e.g., walk) and directed motion verbs (e.g., go) can appear with a goal PP as in John walked (went) to school. In contrast, Japanese allows only directed motion verbs to occur with a goal PP. Thus, Japanese motion verbs with goal PPs form a subset of their English counterparts. I propose an analysis of these crosslinguistic differences in terms of different incorporation patterns in lexical-syntax (Hale & Keyser, 1993). L1 transfer and learnability considerations (White, 1991b), then, lead me to hypothesize that Japanese-speaking learners of English will be able to acquire the L2 representation on the basis of positive evidence, but that English-speaking learners of Japanese will have difficulty acquiring the L2 representation due to the lack of positive data motivating the restructuring of the L1 representation to the L2. A series of experiments tested these hypotheses using grammaticality judgment and picture-matching tasks. Results in general supported this prediction, suggesting that whether the L1 constitutes a subset of the L2 or vice versa indeed affects the outcomes of L2 argument structure. The results indicate full involvement of L1 and UG in L2 acquisition, thus supporting the Full-Transfer/Full-Access model of L2 acquisition (Schwartz & Sprouse, 1994).

and previous musical experiences affected their musical behaviors with their babies; (3) Most mothers held the belief that there is appropriate music for babies to listen to although there was no consensus as to what is appropriate music. Such beliefs reflect a conflict between maternal beliefs regarding infants' music cognition and the actual music-related perceptual and cognitive abilities of infants. Attempting to attenuate this conflict, suggestions for music educators, parents and researchers were proposed.

Résumé

Cette thèse examine la façon dont l'acquisition de la structure argumentale de la langue seconde (L2) varie selon la nature de la langue maternelle (L1) de l'apprenant. Elle traite des verbes de déplacement apparaissant avec un syntagme pré- ou post-positionnel qui exprime le point final du mouvement (SP but). En anglais, les verbes de manière de déplacement (ex : walk) et les verbes de direction (ex : go) peuvent apparaître avec un SP but, comme dans John walked (went) to school. Par contre, en japonais seuls les verbes de direction s'accompagnent d'un tel syntagme. Par conséquent, les verbes de déplacement japonais apparaissant avec un SP but forment un sous-ensemble de leurs homologues anglais. Je propose une analyse de ces différences interlinguistiques en termes de différences de modèles d'incorporation en syntaxe lexicale (Hale & Keyser, 1993). Des considérations sur le transfert et l'apprenabilité (White, 1991b) me poussent à poser l'hypothèse que les apprenants de l'anglais de langue maternelle japonaise seront capables d'acquérir la représentation de la L2 sur la base de la langue à laquelle ils sont exposés, mais que les apprenants du japonais de langue maternelle anglaise éprouveront des difficultés à acquérir la représentation de la L2 parce que la langue à laquelle ils sont exposés ne contient aucune donnée pouvant motiver la restructuration de la représentation de la L1 vers la L2. Ces hypothèses ont été testées à travers plusieurs tâches de jugements de grammaticalité et de sélection d'images. En général, les résultats confirment les prédictions, ce qui suggère que le fait que la L1 et la L2 sont en relation de sous-ensemble ou vice-versa affecte l'acquisition de la structure argumentale de la L2. Les résultats indiquent que la GU et la L1 sont véritablement impliqués dans l'acquisition de la L2, ce qui appuie l'approche du Transfert total et de l'Accès total (Schwartz & Sprouse, 1994).

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Chapter 1

Transfer and Learnability in L2 Argument Structure

1.0 Introduction

This thesis investigates how the outcomes of the acquisition of second language (L2) argument structure will vary depending on the nature of the learner's first language (L1). Specifically, I focus on the acquisition of motion verbs with locational/directional prepositional/postpositional phrases (PPs) by Japanese-speaking learners of English and English-speaking learners of Japanese. English and Japanese differ regarding these target properties in such a way that allows us to fruitfully investigate issues concerning transfer and learnability in L2 argument structure. The remainder of this chapter introduces key concepts, assumptions, issues and findings in L2 argument structure so as to provide a background for this research, followed by the rationale for this thesis.

1.1 A generative approach to L1 acquisition

Generative grammarians argue that the linguistic competence of native speakers is so abstract and subtle that it cannot be attained solely on the basis of input; therefore, children must be born with some pre-existing knowledge of language, known as Universal Grammar (UG). UG is motivated by a gap between what children end up knowing and what they hear as input. For example, consider (1):

(1) a. Who do you know that Mary saw?

b. *Who do you know the fact that Mary saw?

c. Emily knew the actress$_i$ would blame herself$_i$.

d. *Emily$_i$ knew the actress would blame herself$_i$.

e. John often watches TV.

f. *John watches often TV.

English native speakers have intuitions about which sentences in (1) are grammatical and ungrammatical (as indicated by "*"). In both (1a) and (1b), the wh-phrase who is

moved from the object position of the verb see in the embedded clause, yet only (1a) is grammatical. As (1c) and (1d) show, the reflexive pronoun herself can refer to (or be "bound" by) an antecedent within the same clause (the actress), but not one outside it (Emily) (the subscript "i" indicates coreference). (1e) and (1f) show that the adverb often can appear preverbally after the subject, but not postverbally before the object.

How does the child discover such facts? One possibility is that the child produces errors like (1b,d,f) and subsequently gets corrected by others. However, it is unlikely that children produce such complex sentences (particularly [1b] and [1d]) in the first place. Even if they do, it is unlikely that they get corrections, as negative evidence (i.e., information about what forms are impossible) is not reliably available to them (Brown & Hanlon, 1970; Marcus, 1993; Pinker, 1989, pp. 9-16); that is, L1 acquisition is exclusively driven by positive evidence, or information about what forms are possible (Pinker, 1984). Another possibility is that the child notes the absence of certain forms in the input and considers them ungrammatical (i.e., Chomsky's [1981]"indirect negative evidence"). However, it is not true that children consider ungrammatical all the sentences that they have never heard; on the contrary, they, just like adults, constantly produce and recognize sentences that they have never heard. Therefore, without specifying the circumstances under which children equate absence with ungrammaticality, the indirect negative evidence idea is simply too vague to be a solution (Pinker, 1989; White, 1989b). Thus, it seems impossible for the child to learn facts like (1) from the input alone, which is called the learnability problem, or the logical problem, of language acquisition. It must be, then, something the child is born with that makes it possible, and UG is proposed as a solution to the learnability problem.

More specifically, UG is assumed to consist of principles and parameters, which severely constrain the form of possible human languages. Guided by UG, children construct a series of developing grammars, finally arriving at the steady state grammar of their L1 on the basis of the input (positive data), as schematized in Figure 1.1 (White, 2000, p. 132).

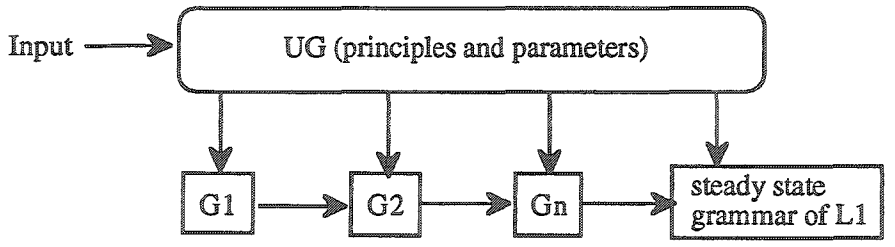


Figure 1.1. L1 acquisition

1.2 A generative approach to L2 acquisition

This thesis adopts a generative approach to L2 acquisition, an approach which employs generative grammar, the principles-and-parameters framework in particular (Chomsky, 1981, 1986a, 1986b, 1995), as a probe into the linguistic competence of the L2 learner (White, 1989b).

Researchers in second language acquisition (SLA) started to investigate L2 acquisition within the principles-and-parameters framework in the mid-nineteen eighties (Flynn & O'Neil, 1988; White, 1985).[1] Assuming the generative view of L1 acquisition, researchers have attempted to reveal the nature of L2 competence and development within this framework.

One of the most controversial issues in UG-based SLA research has been the accessibility of UG in L2 acquisition (see White, 1989b, 1996, 2000). The debate is still ongoing with the current focus on the initial state of the L2 grammar. In particular, White (2000) identifies several positions in terms of the extent to which UG is accessible at the onset of L2 acquisition ("full" or "partial" access) and the extent to which the L1 grammar is transferred to the initial L2 grammar ("full," "partial," or "no" transfer). Each position makes different claims on not only the L2 initial state, but also stages of L2 development and the final L2 state. In this subsection, I introduce three positions that are relevant to this thesis: "No Transfer/Full Access," "Full Transfer/Partial Access," and "Full Transfer/Full Access."[2]

The first position, "No Transfer/Full Access," claims that UG is fully available throughout the L2 acquisition process, interacting with the L2 input, with no effects of the L1 grammar (e.g., Epstein et al., 1996). On this view, UG constitutes the L2 initial state, developing interlanguage grammars (ILGs) (cf. Selinker, 1972) will necessarily be constrained by UG, and the L2 final state should be the L2 grammar.[3] In other words, this position equates L2 acquisition with L1 acquisition with no involvement of the L1 in the L2 acquisition process, as schematized in Figure 1.2 (White, 2000, p. 135).

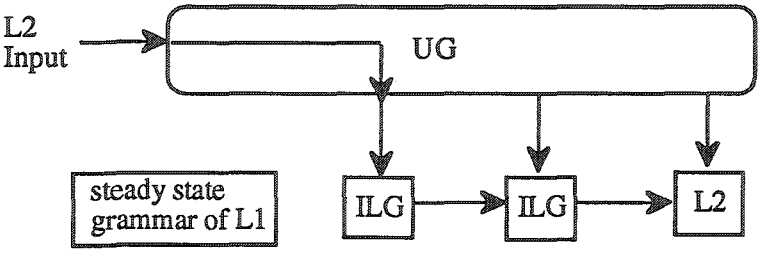


Figure 1.2. No Transfer/Full Access

Thus, No Transfer/Full Access predicts that L2 learners should be able to acquire all UG-related properties including ones not represented in the L1, and that there should be no differences related to learners' L1s in the course of L2 development.

The second position, "Full Transfer/Partial Access," claims that the L1 grammar initially fully transfers to the L2, serving as the basis for analyzing the L2 input, and that only the part of UG instantiated in the L1 grammar is available for L2 acquisition (e.g., Bley-Vroman, 1990). In this view, the L1 grammar constitutes the L2 initial state, and the L2 final state could not be the L2 grammar because UG properties not represented in the L1 are unacquirable. The resulting interlanguage grammars may exhibit properties that are not subject to UG constraints ("wild grammars") because UG is only partially available. This position is schematized in Figure 1.3 (White, 2000, p. 134).

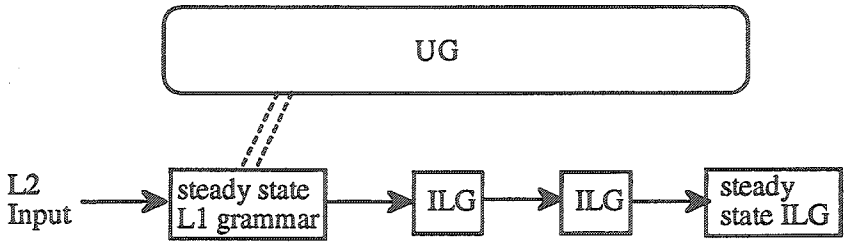


Figure 1.3. Full Transfer/Partial Access

Thus, Full Transfer/Partial Access predicts that there will be L1 effects on interlanguage grammars at all stages, and that full attainment of native-like L2 competence should be impossible.

The third position, "Full Transfer/Full Access," claims that the L1 grammar initially fully transfers to the L2, imposing analyses on the L2 input, and that UG is fully available in L2 acquisition (e.g., Schwartz & Sprouse, 1994, 1997). In this view, as in Full Transfer/Partial Access, the L1 grammar constitutes the L2 initial state, and, as in No Transfer/Full Access, interlanguage grammars will be constrained by UG at all stages. The L2 final state could in principle be the L2 grammar due to the availability of UG, but this is not inevitable. Depending on how the properties in question are represented in the L1 and L2, the L2 input may or may not motivate restructuring in the interlanguage grammar. For example, if the target L2 grammar allows a subset of the properties allowed in the L1, all the L2 data will be consistent with the L1 grammar and thus may not motivate necessary change in the interlanguage grammar. This position is schematized in Figure 1.4 (White, 2000, p. 136).

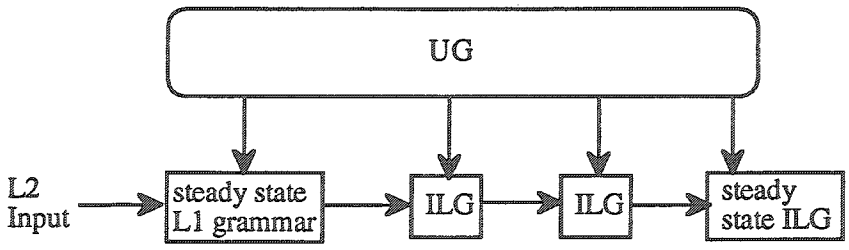


Figure 1.4. Full Transfer/Full Access

Thus, with the L1 grammar acting as a filter, Full Transfer/Full Access predicts that developmental paths of interlanguage grammars will necessarily be different depending on learners' L1s, and that UG-related properties that are represented differently in the L1 and L2 may or may not be built into the interlanguage grammar depending on the learnability situation involved.

Table 1.1 summarizes each position's claims on the L2 initial state, L2 grammar development, and the L2 final state (adapted from White, 2000, p. 148).

Table 1.1. Claims on UG access

	NT/FA	*FT/PA*	*FT/FA*
Initial state	UG	L1	L1
Grammar development	L2 UG properties No wild grammars	No L2 UG properties Wild grammars possible	L2 UG properties No wild grammars
Final state	L2	L2 impossible	L2 possible but not inevitable

1.3 The acquisition of L1 argument structure

Argument structures specify the number and the types of participants, or arguments, involved in the event/state denoted by a predicate. For example, an English verb kill expresses an event involving two arguments, the killer (John) and the victim (Sam), as in (2a), whereas the verb give expresses an event involving three arguments, the giver (Mary), the gift (a book), and the receiver (Beth), as in (2b).

(2) a. John killed Sam.

b. Mary gave a book to Beth.

Traditionally, arguments are identified in terms of what participant roles or "theta roles" (Chomsky, 1981) are assigned to them by the predicate. For example, in (2), John and Mary are assigned the theta role "agent," or the doer of the action, Sam "patient," or the undergoer of the action, a book "theme," or the thing moved by the action, and Beth "goal," or the point toward which the action is directed.

Furthermore, the same verb root may take different argument structures, as in (3).

(3) Mary gave Beth a book.

As the contrast between (2b) and (3) shows, the English verb give appears in two alternating subcategorization frames: In (2b) the goal argument Beth, which is realized as PP headed by to, follows the theme argument a book, which is realized as NP, whereas in (3) the order of the two arguments is reversed and the goal argument is now realized as NP.

Thus, argument structures of a predicate may specify the theta roles and the syntactic categories of its arguments, as in (4).[4]

(4) kill: NP ___ NP
agent patient
$give_1$: NP ___ NP to-PP
agent theme goal
$give_2$: NP ___ NP NP
agent goal theme

(4) illustrates the traditional view of argument structure as a list of lexical information associated with each predicate (Chomsky, 1981, 1982). According to Chomsky (1982, p. 8), argument structure contains idiosyncratic properties of the lexicon that are "underdetermined by general principles of UG" and thus must be learned from the input.

However, the traditional view of argument structure has been challenged on the grounds of learnability (Pinker, 1989) and linguistic representation (Hale & Keyser, 1993). In the following two subsections, I introduce a learnability problem of L1 argument structure, followed by analyses of argument structures as UG-constrained properties, both pointing to the involvement of UG in the acquisition of argument structure.

1.3.1 A learnability problem of L1 argument structure

As shown above, there is a learnability problem of the acquisition of such syntactic properties as wh-movement and binding, motivating the involvement of UG in that domain. How about the acquisition of argument structure? If a traditional view of argument structure is correct, there should be no learnability problem, as argument structures will simply be learned from the input on a predicate-by-predicate basis. However, there are a number of argument structure-related phenomena which seem to pose learnability problems (Baker, 1979; Pinker, 1989). Particularly problematic will be the acquisition of argument structure alternations, in which the same verb appears in two alternating syntactic frames (e.g., John gave a book to Mary <-> John gave Mary a book). Such alternations are constrained in such a way that only a subset of verbs with similar meanings allow alternation, as in (5).

(5) a. John told something to Mary.
b. John told Mary something.
c. John said something to Mary.
d. *John said Mary something.
e. John loaded the hay onto the truck.
f. John loaded the truck with the hay.
g. *John filled water into the glass.
h. John filled the glass with water.

As mentioned above, in English some dative verbs (verbs expressing a transfer of a theme to a recipient) such as give and tell appear in two alternating forms, one with a theme NP followed by a goal PP ([5a]) (a prepositional dative) and another with a goal NP followed by a theme NP ([5b]) (a double-object dative). But other dative verbs such as say appear in the prepositional dative only, not in the double-object dative, as in (5c) and (5d). Further, English allows some locative verbs (verbs expressing a transfer of a theme into/onto a goal) such as load to appear in two alternating forms, one with the theme NP followed by a goal PP ([5e]) (a theme-object locative) and another with a goal NP followed by a theme PP headed by with as in (5f) (a goal-

object locative). But other locative verbs such as fill appear in the goal-object locative, but not in the theme-object locative, as in (5h) and (5g).

How does the child learn these facts? It is not the case that children are strictly conservative, allowing alternation only when they hear particular verbs appear in two argument structures. In fact, children are shown to be creative in this domain as well, extending the alternation to verbs that have never been observed to alternate, which sometimes results in overgeneralizations such as (5d) and (5g) (Gropen et al., 1991; Gropen et al., 1989; Pinker, 1989). Such overgeneralizations are particularly problematic as no positive data will indicate their ungrammaticality to the child. This suggests that input is insufficient for the mastery of L1 argument structure; in other words, there is a learnability problem of argument structure acquisition. If so, then it must be the case that children are equipped with UG-type constraints that eventually allow them to acquire the argument structure of their L1, as proposed by Landau and Gleitman (1985), Pinker (1989) and Grimshaw (1994), among others.

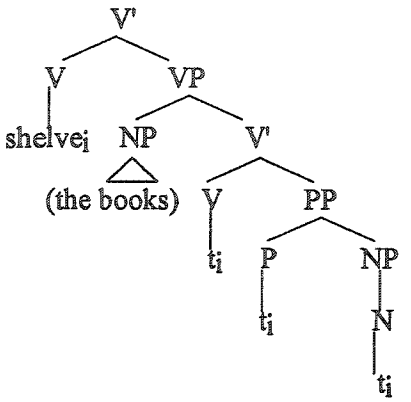
1.3.2 A syntactic approach to argument structure

Recently, there have been a number of analyses of argument structure properties within the principles-and-parameters framework (e.g., Baker, 1997; Hale & Keyser, 1993; Levin & Rappaport Hovav, 1995), suggesting that argument structure is constrained by general syntactic principles deriving from UG. In this subsection, to illustrate how argument structure is constrained by UG, I introduce Hale and Keyser's (e.g., 1993) syntactic approach to argument structure. I focus on Hale and Keyser's approach because the analysis of motion verbs with locational/directional PPs in English and Japanese presented in Chapter 2 is based on their framework, providing the theoretical basis for the L2 study reported later in this thesis.

Unlike the traditional view, Hale and Keyser (1993, 1997) proposed that argument structures are lexical properties that are constrained by general syntactic principles, such as X' theory and the Head Movement Constraint (Travis, 1984). Thus, Hale and Keyser refer to the level of argument structure as "l(exical)-syntax," in

contrast to "s(ential)-syntax" (Hale & Keyser, 1997), syntax in the normal sense of the term. To illustrate, consider Hale and Keyser's (1993) analysis of the formation of the denominal verb shelve in (6) (modified from Hale & Keyser, 1993, p. 57, [7]):

(6)



Assuming the Larsonian VP-shell structure (Larson, 1988), Hale and Keyser propose that shelf is generated as the head of the NP in the complement of P and then is moved into the higher V through P and the lower V, as in (6). The l-syntactic structure (6) is constrained by general syntactic principles in the following ways. First, it conforms to X' theory as it comprises specifiers, complements, and the three-level projections, lexical (X), intermediate (X'), and phrasal (XP). Second, each step of the movement of the N shelf conforms to the Head Movement Constraint (HMC), which states that a head may only move into the head that properly governs it (Travis 1984).[5] Argument structure's conformity to the HMC is further corroborated by the fact that there are no denominal verbs that select a direct object and a stranded P, as in shelve in (7) (Hale & Keyser, 1993, p. 61).

(7) *He shelved the books on.

(cf. He put the books on the shelf. He shelved the books.)

The hypothetical verb shelve in (7) would be formed by moving the N in (6) directly into the lower V, in violation of the HMC, and then into the higher V. Such verbs are unattested in English, supporting the claim that argument structure is constrained by the HMC.

Furthermore, Hale and Keyser (1993, 1997) argue that argument structure is constrained by the principle of Full Interpretation (Chomsky, 1986b), by which they

mean that "no uninterpreted, or 'superfluous,' projections may appear in a well-formed argument structure" (Hale & Keyser, 1997, p. 33). Consequently, primitive semantic notions in argument structure, such as "cause," "change of state," and "theme," are not stipulated but derive from the structure in which lexical categories and their projections are related in a "fully interpreted" manner. Thus, in (6), the syntactic relation between the upper V and the lower V corresponds to the semantic relation "cause" because the event associated with the upper V implicates the event associated with the latter V; the syntactic relation between the lower V and the P corresponds to the semantic relation "change" because the event associated with the V implicates the "interrelation" associated with the P; and the specifier of the lower VP the books corresponds to the semantic notion "theme" as it is the subject of the "change" predicate.

In sum, according to Hale and Keyser, argument structure is not just lexical--as the traditional view assumes--but also syntactic, in that it is constrained by UG principles such as X' theory, the HMC, and Full Interpretation.

1.4 Transfer and learnability in L2 argument structure

If UG is involved in the L1 acquisition of argument structure, then data from argument structure acquisition is relevant to the UG debate in L2 acquisition (Juffs, 1996a, 1996b). In particular, if L2 learners are shown to succeed in acquiring subtle argument structure properties underdetermined by the input (e.g., dative and locative alternations), then it suggests involvement of UG in L2 acquisition. On the other hand, L2 learners' failure to acquire such properties might indicate a diminished role of UG in L2 acquisition. However, although not entirely incorrect, this is too simplistic a view on the issue without regard to one of the most important factors in L2 acquisition--L1 transfer. Indeed, success is predicted, albeit for different reasons, under any of the three positions (No Transfer/Full Access, Full Transfer/Partial Access, Full Transfer/Full Access) if the target L2 properties are also found in the L1. Likewise, failure is predicted under Full Transfer/Partial Access (but not under No

Transfer/Full Access) and may be consistent with Full Transfer/Full Access if the target properties are realized differently in the L1 and L2 in such a way that the L2 input would not motivate restructuring in the interlanguage grammar. This suggests that it is crucial to consider how the L1 compares to the L2 with respect to the target argument structure properties in order to evaluate different positions on UG access in L2 acquisition.

In this section, I discuss how different ways of overlapping between the L1 and L2 will lead to different predictions on the outcomes of interlanguage argument structure based on White (1991b), followed by a review of previous L2 argument structure studies relevant to the issue of transfer and learnability in L2 argument structure.

1.4.1 L1 versus L2 argument structure and L2 outcomes

Building on earlier work by Adjémian (1983) and Andersen (1983), White (1991b) proposed that L1 argument structure properties are likely to be built into the interlanguage grammar when the L2 input partially matches L1 argument structure; noting the partial match, the L2 learner may be misled into thinking that the match is complete, thereby making transfer errors. In particular, White (1991b) discusses three possible situations in which the L2 input partially fits the L1 grammar, thus inducing L1 transfer. The first situation is one where part of the L2 argument structure coincides with part of the L1 argument structure, as illustrated in Figure 1.5.

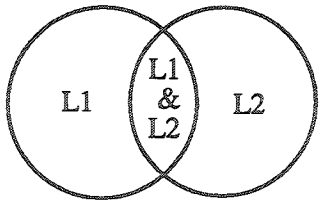


Figure 1.5. Partial overlap between L1 and L2

For example, consider English and French data in (8) and (9) from Adjémian (1983).

(8) English:

a. The ice broke.

b. John broke the ice.

c. The roast cooked.

d. The chef cooked the roast.

(9) French:

a. *La glace brisera.

b. La glace se brisera.

c. Jean brisera la glace.

d. Le rôti cuira.

e. *Le rôti se cuira.

f. Le chef cuira le rôti.

In English, verbs like break and cook alternate between the intransitive and transitive forms (so-called causative alternation) without any morphological reflexes ([8]), whereas in French, some verbs like cuire "cook" behave like their English counterparts but others like briser "break" appear with the pronominal se "oneself" in their intransitive forms ([9]). Thus, English and French verbs do not completely match in their causative alternation patterns. White suggested that in such cases, a partial fit might initially trigger L1 transfer, resulting in subcategorization errors, such as (9a) from speakers of L1 English and L2 French. Indeed, Adjémian (1983) showed that such errors were made by English-speaking learners of French. White further suggested that later on transfer errors should in principle be eradicated because correct forms like (9b) were available in the input, thus allowing the learner to discover that the overlap between L1 and L2 was only partial.

White discusses two more situations where there is a partial fit between L2 and L1 argument structure in such a way that one is contained within the other, and it is these that I focus on in this thesis. These situations are particularly interesting

because, although initial L1 transfer is likely in both cases, what happens at later stages will be different depending on whether the L1 contains the L2 or vice versa.

One is the situation where the L2 input partially matches the L1 argument structure in such a way that the former forms a superset of the latter, as in Figure 1.6.

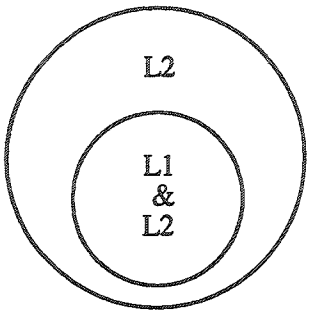


Figure 1.6. Subset L1-superset L2

In this situation, a partial fit between the L1 and L2 may initially mislead L2 learners into assuming that the fit is complete. If this happens, the resulting interlanguage grammar becomes too conservative, allowing only a subset of L2 argument structures, namely, those also found in the L1 (i.e., undergeneralization). As White suggests, however, later on L2 learners will be able to acquire argument structure properties not in the L1 from the input, which should contain positive evidence for them.

For example, consider dative structures in English and French in (10) and (11):

(10) English:

a. John gave the book to Mary.

b. John gave Mary the book.

(11) French:

a. Jean a donné le livre à Marie.

"John gave the book to Mary."

b. *Jean a donné Marie le livre.

"John gave Mary the book."

English allows both the prepositional and double-object datives ([10]), whereas French allows only the former ([11]). Thus, French speakers' acquisition of English

datives corresponds to the situation in Figure 1.6. The prediction is, then, that French-speaking learners of English will initially allow only the prepositional dative like (10a) due to L1 transfer, but will later come to allow the double-object dative like (10b) on the basis of positive data.

The other is the situation where the L2 data exemplify a subset of L1 argument structure, as illustrated in Figure 1.7.

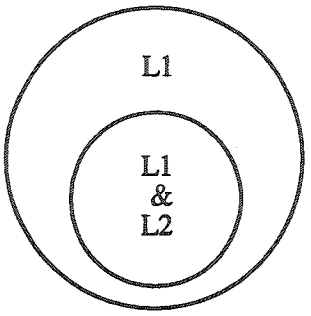


Figure 1.7. Superset L1-subset L2

In this situation, too, a partial fit between the L1 and L2 would initially mislead L2 learners into transferring L1 argument structures into their interlanguage, thereby allowing a superset of L2 argument structure (i.e., overgeneralization). As White suggests, unlike the case of undergeneralization, such overgeneralization will be difficult to overcome, because all subsequent positive data will be consistent with the L1-based interlanguage grammar, with no indication of the fact that the L2 grammar actually allows only a subset of L1 argument structures. This raises a possibility, as White points out, that L2 learners will never recover from overgeneralization without receiving negative evidence.

An example of this situation is English speakers' acquisition of French dative structures (see [10] and [11]). The prediction is that initially English speakers will allow both the prepositional and double-object datives in L2 French and continue to do so, despite the fact that the double-object dative is ungrammatical in French.

In L1 acquisition, it is proposed that children never make such problematic overgeneralizations because they follow a learning principle, called the "Subset

Principle," which instructs them to hypothesize the most restrictive language consistent with the positive evidence encountered (Berwick, 1985). Wexler and Manzini (1987) proposed that the Subset Principle is operative in the setting of certain UG parameters (e.g., the Governing Category Parameter) whose different values generate languages meeting the "Subset Condition," that is, they yield languages in subset-superset relations. In SLA, there is substantive work which investigated whether the Subset Principle is still available in L2 acquisition by checking whether L2 learners adopt the parametric value which generates the subset (or superset) language (e.g., Hirakawa, 1990; White, 1989a; see White, 1989b, for a summary). However, there have recently been a number of criticisms to argue that there is no Subset Principle because there is positive evidence that guarantees success without it or that there is no Subset Condition in the first place (Berent, 1994, Hermon, 1992, MacLaughlin, 1995). The Subset Principle itself, however, is not relevant to this thesis for the following reasons. First, the Subset Principle, if it exists at all, probably does not operate in the acquisition of argument structure because, as mentioned above, children are known to make overgeneralizations in this domain (e.g., Pinker, 1989) and thus not to follow the principle. Second, as will be seen in Chapter 2, this work is not couched in terms of a UG parameter whose different values generate languages satisfying the Subset Condition, toward which most of the criticisms of the Subset Principle are directed. Therefore, I do not discuss the Subset Principle for the rest of this thesis.

1.4.2 Argument structure in SLA

In this subsection, I review previous L2 argument structure studies that investigated the two situations illustrated in Figures 1.6 and 1.7 (see Juffs, 2000, for an overview of L2 argument structure studies). In so doing, I attempt to test the following hypotheses based on White's (1991b) proposal:

1. Where the L2 input constitutes a superset of L1 argument structure,
   (a) L2 learners will initially make L1-based undergeneralization; but
   (b) they will later on acquire argument structure properties not represented in the L1.
2. Where the L2 input constitutes a subset of L1 argument structure,
   (a) L2 learners will initially make L1-based overgeneralization; and
   (b) they will later on have difficulty recovering from it.

Both Hypotheses 1a and 2a assume that a partial fit between L1 and L2 will initially trigger L1 transfer. Hypothesis 1b stems from the assumption that the L2 input will contain positive evidence for target properties, which should motivate the interlanguage grammar to restructure. Hypothesis 2b is based on the assumption that once overgeneralization takes place, the L2 input would contain no positive data motivating the interlanguage grammar to restructure.

In the following, I review L2 argument structure studies investigating the situation where the L2 forms a superset of the L1, at least on the surface, followed by those investigating the reverse situation, covering data from datives, psych verbs, unaccusatives, causatives, locatives, passives, and motion verbs with goal PPs.

1.4.2.1 Subset L1 and superset L2

(a) Datives in L1 French and L2 English

Mazurkewich (1984) and Le Compagnon (1984) investigated French speakers' acquisition of English dative structures. Since these studies were not concerned with the subset-superset issue, the following is my interpretation of the results.

As shown above ([10] vs. [11]), English allows both prepositional and double-object datives, whereas French allows only the former.

Mazurkewich (1984) looked at French-speaking learners of English at beginning, intermediate, and advanced levels. Using a grammaticality judgment task, she found that French speakers increasingly accepted double-object datives, which are

ungrammatical in the L1, as they became more proficient in English, thereby supporting Hypothesis 1.

Le Compagnon (1984) replicated the Mazurkewich study with four French adults at a lower-intermediate level. Her data (Le Compagnon, 1984, p. 66) indicate that their acceptance of double-object datives was generally weak, which suggests undergeneralization expected under Hypothesis 1a.

(b) Psych verbs in L1 Chinese/Japanese/Malagasy and L2 English

Juffs (1996a, 1996b) investigated Chinese-speakers' acquisition of psych(ological) verbs in English. As Juffs shows, in English, such psych verbs as disappoint and interest can be lexical causatives ([12a]), or appear in a periphrastic causative ([12b]), whereas in Chinese, psych verbs appear only in a periphrastic causative ([13b]), not in a lexical causative ([13a]).[6]

(12) English:

a. John disappointed Mary.

b. John made Mary disappointed.

(13) Chinese:

a. *Zhang San shiwang le Li Si.
Zhang San disappoint ASP Li Si
"Zhang San disappointed Li Si."

b. Zhang San shi Li Si shiwang.
Zhang San make Li Si disappoint
"Zhang San make Li Si disappointed."

Thus, Chinese allows only a subset of the realizations of English psych verbs.

Juffs (1996a, 1996b) looked at low-, intermediate-, high-, and advanced-level Chinese adults learning English in China using grammaticality judgment and production tasks. He found that, while somewhat conservative at low and intermediate levels, Chinese speakers increasingly allowed lexical causatives as their proficiency improved, thereby supporting Hypothesis 1.

White et al. (1999) investigated the acquisition of English psych verbs by learners with different L1s. Although the study was not concerned with the subset-superset issue, their data from Japanese and Malagasy speakers are relevant and thus are presented below, along with my interpretation of them.

As White et al. (1999) show, Japanese is similar to Chinese in not allowing lexical causatives with psych verbs ([14a]); the causative meaning is expressed periphrastically with the suffix -(s)ase ([14b]).

(14) Japanese:

a. *Taroo-wa Hanako-o situboosi-ta.
Taroo-TOP Hanako-ACC disappoint-PST
"Taro disappointed Hanako."

b. Taroo-wa Hanako-o situboos-ase-ta.
Taro-TOP Hanako-ACC disappoint-CAUS-PST
"Taro made Hanako disappointed."

White et al. (1999, p. 178) show that Malagasy is also like Japanese in expressing the causative meaning periphrastically with the morpheme maha-, as in (15).

(15) Malagasy:

Mahalina an-dRabe ny boky
CAUS-interested ACC-Rabe the book
"The book interests Rabe."

Thus, like Chinese and Japanese, Malagasy allow only a subset of the English causative patterns involving psych verbs.

In one experiment, White et al. (1999) looked at intermediate level Japanese- and Malagasy-speaking learners of English using a sentence-completion task. The results indicated that both Japanese and Malagasy speakers were highly accurate in completing lexical causative sentences, which is consistent with Hypothesis 1b. In another experiment, Japanese speakers and low- and high-intermediate level Malagasy speakers completed a picture-matching task. The results indicated that Malagasy speakers generally performed accurately on lexical causatives and showed

improvement as their proficiency increased, thereby supporting Hypothesis 1. Japanese speakers performed almost at a chance level on lexical causatives, thus showing undergeneralization expected under Hypothesis 1a.

(c) Unaccusatives in L1 French and L2 Italian

Sorace (1993) investigated French speakers' acquisition of syntactic reflexes of unaccusative verbs (verbs taking the sole argument of theme) in Italian. Although the study was not concerned with the subset-superset issue, it provides relevant data on optional auxiliary change in the structure [raising V + unaccusative V], as exemplified in (16) (Sorace, 1993, p. 26).

(16) Mario è/ha dovuto andare a casa.
Mario is/has must go home
"Mario had to go home."

(16) shows that in Italian when a raising verb (dovere "must," potere "can") is followed by an unaccusative verb (andare "go," venire "come"), the auxiliary is optionally changed from avere "have" to essere "be" in the present perfect. In contrast, in French unaccusative verbs trigger no such change and thus raising verbs invariantly take avoir "have" in the same context. Therefore, under [raising V + unaccusative V], French allows a subset of auxiliaries that Italian allows. Sorace (1993) found that French-speaking near-native speakers of Italian accepted the avere version of sentences in (16), but not the essere version.

Notice that the result runs counter to Hypothesis 1b. The French speakers, despite their near-native proficiency in Italian, seemed to have been stuck in the L1 pattern only allowing the avere version and thus apparently ignoring positive evidence for the essere version in the input. However, A. Sorace (personal communication, October 21, 2000) suggested that there is evidence of erosion of essere by avere in Italian (especially in northern Italian varieties), and that French speakers may have been exposed to Italian spoken by other French speakers, all of which point to a predominance of avere in the input. If so, then, it is possible that the French speakers

had not been exposed to sufficient positive evidence for the essere version. This suggests that for Hypothesis 1b to hold, positive evidence must indeed be sufficiently available to the L2 learner; otherwise, undergeneralization may persist until advanced stages.

(d) Causatives in L1 Spanish/Turkish and L2 English

Montrul (2001) investigated the acquisition of English causatives involving change-of-state verbs (break, open) and manner-of-motion verbs (march, walk) by Spanish and Turkish speakers. Both English and Spanish allow lexical causatives with the former ([17a], [18a]), but only English allows lexical causatives with the latter ([17b] vs. [18b]) when there is a directional PP (to) (Montrul, 2001, pp. 173-174).

(17) English:

a. John broke the mirror.

b. The captain marched the solders to the tents.

(18) Spanish:

a. Juan rompió el espejo.

b. *El capitán marchó a los soldados hasta el campamento.

Thus, Spanish lexical causatives form a subset of English lexical causatives.

Participants were intermediate level Spanish speakers and low intermediate level Turkish speakers. According to Montrul (2001, p. 181), Turkish is like Spanish in disallowing lexical causatives with manner-of-motion verbs, as in (19):

(19) Turkish:

*Kaptan asker-ler-e kekel-e yürü-dü.

captain soldier-PLURAL-ACC monument-DAT walk-PST

"The captain marched the solders to the monument."

Montrul found that neither Spanish nor Turkish groups accepted lexical causatives with manner-of-motion verbs, thus showing undergeneralization, as expected under Hypothesis 1a.

This interpretation may sound ad hoc given that neither Turkish nor Spanish learners were beginners. However, there are reasons to doubt that these learners had received sufficient positive evidence for the target property. Lexical causatives with manner-of-motion verbs are quite idiomatic in English, with only a restricted set of manner-of-motion verbs allowing the construction. For example, Levin (1993, pp. 31, 105) listed only 12 manner-of-motion verbs that can be lexical causatives, which is in stark contrast with 124 manner-of-motion verbs she listed that appear as intransitives (e.g., The soldiers marched to the tents). Furthermore, Montrul's (2001, pp. 190-191, 205) data indicate that even English native speakers did not rate such lexical causatives very high, with a fairly large variation within the group and among individual items, thereby corroborating the marked status of this construction. Thus, it is likely, as Montrul (2001, p. 201) herself suggested, that these Spanish and Turkish learners had not received enough positive evidence for this peculiar property, and hence their prolonged undergeneralization in this domain.

To summarize, previous L2 argument structure studies suggest that where the L2 input exemplifies a superset of the L1, the interlanguage grammar initially displays L1-based undergeneralization, but later becomes target-like, if positive evidence is sufficiently available.

1.4.2.2 Superset L1 and subset L2

I now turn to L2 argument studies investigating the opposite situation, testing Hypothesis 2.

(a) Datives in L1 English and L2 French

White (1987) investigated English speakers' acquisition of the dative structure in French (see [10] and [11]). In one study, intermediate-level English-speaking adults learning French were shown to accept double-object sentences, which are ungrammatical in French, thus supporting Hypothesis 2a. In another study, White looked at three groups of English-speaking children with varying amounts of exposure

to French in immersion programs in Canada. She found that all three groups accepted double-object datives more than a control group of French native speakers. This suggests English speakers' persistent overgeneralization of the double-object form to L2 French because some of the English children were highly advanced with years of exposure to French, thereby supporting Hypothesis 2. These findings were confirmed by White (1991b), who tested the same type of English-speaking children in French immersion programs.

Ayoun (1996) investigated the acquisition of French datives by English-speaking university students at three proficiency levels. She found that all three groups rated double-object sentences significantly higher than a control group of French native speakers, again supporting Hypothesis 2.

(b) Locatives in L1 Chinese and L2 English

As Juffs (1996b, pp. 180-181) shows, in English some locative verbs (cover, decorate), called "container" locatives, realize the goal argument as direct object (goal-object locatives), not the theme argument (theme-object locatives) ([20]), whereas the Chinese equivalents of container verbs allow both argument structures, with a preference for the latter ([21]):

(20) English:

a. John covered the bed with a blanket.

b. *John covered the blanket onto the bed.

(21) Chinese:

a. ?Zhang San yong tanzi gai le chuang.
Zhang San use blanket cover ASP bed
"Zhang San covered the bed with a blanket."

b. Zhang San wang chuang shang gai le tanzi.
Zhang San to bed on cover ASP blanket
"*Zhang San covered the blanket onto the bed."

Thus, with respect to container verbs, English allows only a subset of the Chinese argument structure patterns.

Juffs (1996a, 1996b) investigated the acquisition of English locatives by Chinese speakers at four proficiency levels using grammaticality judgment and production tasks. The results indicate that Chinese learners of English initially allowed theme-object locatives with container verbs (ungrammatical in English), which persisted until advanced stages, thereby supporting Hypothesis 2.

(c) Causatives in L1 English and L2 Spanish

Montrul (2001) investigated the acquisition of Spanish lexical causatives by intermediate-level English speakers (see [17] and [18]). She found that English-speaking learners of Spanish accepted (though not strongly) lexical causatives with manner-of-motion verbs, which are ungrammatical in Spanish, thereby supporting Hypothesis 2a.[7] Acceptance was somewhat weak presumably because of the marked status of lexical causatives with manner-of-motion verbs in their L1 (see above), which might have indicated to some that this construction was not transferable to the L2 (i.e., Kellerman's [1983] notion of "psycholinguistic markedness").

(d) Passives in L1 English and L2 Japanese

As Izumi and Lakshmanan (1998) show, in English, passives necessarily involve a transitive verb whose D-structure object is moved to the subject position in S-structure for Case reasons ([22a]); thus, intransitive verbs do not allow passivization ([22b]), nor do transitive verbs if the object is not moved to the subject position ([22c]).

(22) English:

a. John was beaten by Mary.

b. *John was cried by Mary.

c. *John was stolen his wallet by Mary.

In contrast, Japanese allows not only English-type passives ([23a]), but also passives involving intransitive verbs ([23b]) and transitive verbs with the object staying in situ ([23c]).

(23) Japanese:

a. John-ga Mary-ni nagu-rare-ta.
John-NOM Mary-by beat-PASS-PST
"John was beaten by Mary."

b. John-ga Mary-ni nak-are-ta.
John-NOM Mary-by cry-PASS-PST
"John was adversely affected by Mary's crying."

c. John-ga Mary-ni saifu-o nusum-are-ta.
John-NOM Mary-by wallet-ACC steal-PASS-PST
"John was adversely affected by Mary's stealing his wallet."

Passives involving the movement of the object ([22a], [23a]) are called "direct passives," whereas passives that do not are called "indirect passives" ([23b], [23c]). English allows only direct passives, whereas Japanese allow both direct and indirect passives.[8]

Izumi and Lakshmanan (1998) investigated the acquisition of English passives by Japanese speakers at three proficiency levels, who completed translation, production, and grammaticality judgment tasks. The results indicated that Japanese learners of English at all proficiency levels allowed the indirect passive, which is ungrammatical in English, thereby supporting Hypothesis 2.[9]

(e) Motion verbs with goal PPs in L1 English and L2 French

Harley (1989) investigated the spatial uses of French prepositions by English speakers. Although not couched in subset-superset terms, the study is directly relevant to this thesis as it provides data on the L2 acquisition of motion verbs with goal PPs--the target properties in this study--in a situation where the L1 forms a superset of the L2, one of the two situations this thesis focuses on.

English allows both manner-of-motion verbs (e.g., walk) and directed motion verbs (e.g., go) to appear with PPs that express the endpoint of motion, or goal PPs ([24]), whereas French allows only directed motion verbs to appear with goal PPs ([25]) (Tsujimura, 1994, p. 340, [9]):

(24) English:

a. I walked to the park.

b. I went to the park.

(25) French:

a. *J'ai marché au parc.
I have walked to park
"I walked to the park."

b. Je suis allée au parc.
I am gone to park
"I went to the park."

Thus, motion verbs that appear with goal PPs in French constitute a subset of those in English.

Harley (1989) looked at 22 English-speaking Grade 6 students undergoing early total immersion in a French immersion program in Ottawa. They received all instruction in French from kindergarten to Grade 3, after which they had increasingly been exposed to English classes. They were asked to write a story about the rescue of a kitten from the top of a tree. Harley found that the English children produced a number of sentences containing manner-of-motion verbs with goal PPs (e.g., *Le chat a couru à la maison "The cat ran to the house"), which are ungrammatical in French. Strikingly, these overgeneralizations were made by children who had had years of exposure to French, thereby supporting Hypothesis 2.

To summarize, previous L2 argument structure studies suggest that where the L2 input exemplifies a subset of the L1 argument structures, the interlanguage grammar displays L1-based overgeneralization (if the L1-specific properties are in no way marked), and that such overgeneralization persists until advanced stages.

1.5 Summary and rationale

This chapter has provided the background against which this research is conducted. It has been shown that there is a learnability problem of L1 acquisition: the input underdetermines the linguistic knowledge attained by the native speaker. As a solution to it, it is proposed that the child is born with UG, which imposes severe constraints on the possible form that human languages can take. The acquisition of argument structure also poses a learnability problem and argument structure itself is shown to be constrained by general syntactic principles; thus UG must be involved in the L1 acquisition of argument structure as well. If so, data from L2 argument structure is relevant to an ongoing debate on the accessibility of UG in SLA. It is predicted that where L2 argument structure partially fits L1 argument structure, L1 transfer will take place, causing undergeneralization or overgeneralization in the interlanguage grammar, depending on whether the L1 constitutes a subset or superset of the L2. It is further predicted that the L2 input will later motivate the interlanguage grammar to conform to the target L2 in the case of undergeneralization, but not so in the case of overgeneralization. These predictions have generally been borne out in previous studies on L2 argument structure.

Given this background, this thesis further tests the above predictions in a new domain--motion verbs with locational/directional PPs in L2 English and Japanese. This work makes a contribution to SLA in several ways. First, it increases our knowledge of L2 argument structure as it is the first in-depth investigation of motion verbs with locational/directional PPs in L2 acquisition. So far, these argument structure properties have hardly been explored in SLA except for Harley (1989). However, her study was limited in two ways. First, it was exploratory in nature, not especially designed to elicit these properties. Her findings are tentative and need to be confirmed with experimental data. Second, Harley only looked at a situation where the L1 (English) was a superset of the L2 (French). However, data from the opposite situation (L1 French-L2 English) is needed to show more conclusively that whether

the L1 is a subset or a superset of the L2 indeed affects the outcomes of L2 argument structure.

Secondly, this study is bi-directional, thus allowing us to investigate two situations predicting different outcomes of L2 argument structure. In particular, the target properties are selected in such a way that in one situation, the L1 (Japanese) is a subset of the L2 (English) and in the other, the L1 (English) is a superset of the L2 (Japanese). The latter situation is predicted to be problematic, but the former is not. Thus, the bi-directional investigation allows us to see if the different ways of overlapping between the L1 and L2 indeed affect L2 outcomes.

Thirdly, this thesis provides data relevant to UG access in L2 acquisition because the target properties are shown to derive from UG.

Finally, this study includes L2 Japanese, thus providing much needed data on L2 argument structure from a non-Indo-European language. The bulk of SLA research has been on the acquisition of Indo-European languages (English, German, Spanish, etc.), and research on L2 argument structure has been no exception. For example, notice that in all of the L2 argument studies reviewed in 1.4.2, the L2 was Indo-European. Clearly, this situation is unfortunate since SLA is concerned with second languages in general. This work is a step forward in filling in the gap in SLA.

The remainder of this thesis is organized as follows. Chapter 2 provides an syntactic analysis of motion verbs with locational/directional PPs in English and Japanese. Chapters 3 and 4 present a series of experiments testing predictions for the acquisition of different aspects of motion verbs with locational/directional PPs in L2 English and Japanese. Chapter 5 discusses the results and concludes this thesis.

Notes

[1] Following Ellis (1994, p. 6), I use the term SLA to refer to the general field of second language acquisition and the term L2 acquisition to refer to the acquisition of a second language.

[2] White (2000) also identifies "Partial Transfer/Full Access" and "Partial Transfer/Partial Access." However, they are mostly claims on the transferability and availability of functional categories (as opposed to lexical categories) in the L2 initial state, and thus are not relevant to this thesis, which focuses on lexical categories (V and P in particular).

[3] This is, of course, if L2 development has gone all the way; it is always possible that L2 learners stop learning before their interlanguage reaches a steady state by giving up on learning, moving to a place where the L2 is no longer in use, etc.

[4] There have been a number of representations of argument structure proposed (see Grimshaw, 1990). However, the precise formalisms are not important here.

[5] As Baker (1988) shows, the HMC itself derives from the Empty Category Principle (Chomsky, 1981).

[6] Abbreviations used in the examples throughout this thesis are: ACC = accusative Case-marker, ASP = aspectual marker, CAUS = causative-marker, cl. = classifier, DAT = dative Case-marker, GEN = genitive Case-marker, GER = gerund, NOM = nominative Case-marker, PASS = passive-marker, PST = past tense-marker, TOP = topic-marker.

[7] Montrul's (2001, p. 206) Table B3 reads English speakers' mean rating of lexical causatives with manner-of-motion verbs was -0.39; however, this must be an error as her Figures 12 and 13 (pp. 193, 195) indicate the rating is around 0.39, and Montrul (2001, p. 194) states that "the English learners accepted both verbs [sic] classes as grammatical."

[8] Izumi and Lakshmanan (1998, p. 72) refrained from postulating the subset-superset relation. However, I see no reason why a set of passive sentences allowed in English are, at least on the surface, not a subset of passive sentences allowed in Japanese.

[9] Izumi and Lakshmanan (1998) also investigated whether provision of negative evidence would allow the Japanese speakers to retreat from overgeneralization of the indirect passive to L2 English, which is not relevant here.

Chapter 2

Motion Verbs with Locational/Directional PPs in English and Japanese

2.0 Introduction

In this chapter, an analysis of motion verbs with locational/directional PPs in English and Japanese is provided. This analysis provides the theoretical basis for the L2 studies reported in Chapters 3 and 4.[1]

According to Talmy's (1985) typology of "lexicalization patterns" for a motion event, English is the type of language that conflates "motion" and "manner" in the verb root, whereas Japanese is the type of language that conflates "motion" and "path" in the verb root. This chapter provides an explanation for why there is such a difference between English and Japanese within the framework of Hale and Keyser's syntactic approach to argument structure (e.g., Hale & Keyser, 1993). It extends Hale and Keyser's approach to motion verbs with locational/directional Ps in English and Japanese and shows that given a "Lexical Relational Structure" of a motion event, the difference between English and Japanese derives from the fact that the former has a variety of directional Ps, whose Lexical Relational Structure representation includes both Path P and Place P, whereas the latter has a variety of directed motion verbs with Path P incorporated. Significantly, it is shown that Talmy's lexicalization patterns are constrained by general syntactic principles.

The rest of this chapter is organized as follows. Section 2.1 presents Talmy's (1985) typology for the expression of a motion event as well as its problems. Section 2.2 reviews previous work by Tsujimura (1994) and Kizu (1996a, 1996b), as they provide clues for solving problems in Talmy. Section 2.3 introduces Hale and Keyser's approach to argument structure. The following three sections, 2.4, 2.5 and 2.6, extend Hale and Keyser's approach to locational Ps, directional Ps, and motion verbs in English and Japanese. Section 2.7 discusses how the proposed analysis can

explain the difference between Japanese and English. Section 2.8 summarizes and concludes this chapter.

2.1 Talmy's lexicalization patterns for a motion event

Talmy (1985) proposed a well-known typology of "lexicalization patterns" for a "motion event". Lexicalization refers to how certain semantic elements (e.g., "motion" and "path") are mapped onto surface forms (e.g., "verb" and "preposition"). A motion event consists of four main semantic elements, (a) "figure" (i.e., an object moving with respect to another object), (b) "ground" (i.e., an object with respect to which the figure moves), (c) "motion" (i.e., the process of moving per se), and "path" (the course followed by the figure with respect to the ground).[2] In addition, a motion event can have another semantic element, "manner"/"cause" of motion, a distinct event that is subordinate to and thus "supports" (Talmy, 1991) the motion event.[3] Thus, for example, in the English sentence, The dog ran into the house, the "dog" (figure) "moves" (motion) "into" (path) the "house" (ground) by "running" (manner).

Talmy's (1985) typology of lexicalization patterns states that languages fall into three types on the basis of what combination of semantic elements for a motion event is mapped onto the verb root, that is, of what semantic elements are "conflated" into the verb root--"conflation" being a process whereby semantic elements are combined and expressed in a single form.[4] The first type of language (e.g., Indo-European [except Romance], Chinese) conflates motion and manner in the verb root; the second type of language (e.g., Romance, Semitic, Japanese) conflates motion and path in the verb root;[5] and the third type of language (e.g., Astugewi [most northern Hokan]) conflates motion and figure in the verb root. In the following, I focus on the first and the second type of language, the third type being outside the scope of this thesis.

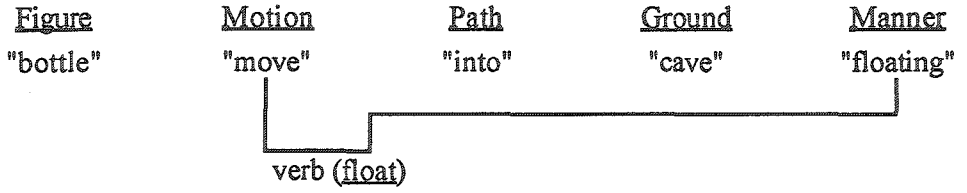
English is an example of the first type of language, as it characteristically allows sentences such as (1):[6]

(1) a. The bottle floated into the cave.

b. John ran/walked into the house.

In (1a), motion "move" and manner "floating" are conflated into the verb root "float," whereas figure "bottle," path "into" and ground "cave" are expressed separately. The situation is the same in (1b). (2) illustrates the English-type conflation of motion and manner in the verb root:

(2) Conflation of motion and manner in the motion verb in English (adapted from Talmy, 1985, p. 62)



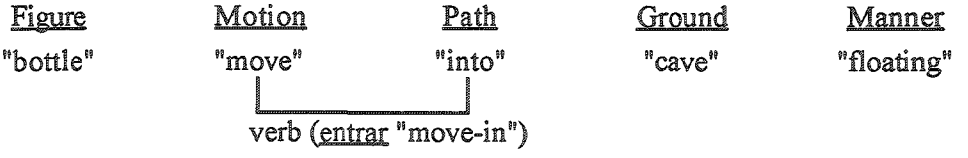
Spanish is an example of the second type, as it typically allows sentences such as (3), Spanish equivalents of English sentences in (1).

(3) a. La botella entró a la cueva flotando.
the bottle moved-in to the cave floating
"The bottle floated into the cave."

b. Juan entró a la casa corriendo/caminando.
Juan moved-in to the house running/walking
"Juan ran/walked into the house."

In (3a), motion "move" and path "in" are conflated in the verb root "entrar," whereas figure "botella" and ground "cueva" are expressed separately, and so is manner "flotando" as a gerundive. The situation is the same in (3b). (4) illustrates the Spanish-type conflation of motion and path in the verb root:[7]

(4) Conflation of motion and path in the motion verb in Spanish (adapted from Talmy, 1985, p. 69)



Japanese is a Spanish-type language, since the equivalents of the English examples (1) in Japanese are much like the Spanish examples (3), as in (5).

(5) a. Bin-ga tadayot-te dookutu-ni haitta.
bottle-NOM float-GER cave-to moved-in
"The bottle floated into the cave."

b. John-ga hasit-te/arui-te ie-ni haitta.
John-NOM run-GER/walk-GER house-to moved-in
"John ran/walked into the house."

In (5), motion "move" and path "in" are conflated in the verb root "hairu," whereas figure "bin/John" and ground "dookutu/ie" are expressed separately, and so is manner "tadayot-te/hasit-te/arui-te" as a gerund (Jorden, 1987).

Interesting as it is, Talmy's lexicalization approach is problematic in two ways--one empirically and the other conceptually--and thus is insufficient by itself as an explanation. Empirically, occurring with a P with the meaning "up to" or "as far as," the second type of language (e.g., Spanish, Japanese) exhibits the lexicalization pattern of the first type of language (e.g., English), as in (6):

(6) Spanish:[8]

a. Juan corrió/caminó hasta el túnel.
Juan ran/walked up-to the tunnel
"Juan ran/walked up to the tunnel."

Japanese:[9]

b. John-ga gakkoo-made hasitta/aruita.
John-NOM school-up-to ran/walked
"John ran/walked up to school."

In both (6a) and (6b), motion "move" and manner "running/walking" are conflated in the verb root "run/walk," whereas figure "John," path "up to," and ground "tunnel/school" are all expressed separately. In other words, contrary to Talmy's typology, Spanish and Japanese behave like an English-type language in (6).[10]

The conceptual problem with Talmy's typology is that it is descriptive in nature, thus raising the crucial question: Why are the lexicalization patterns constrained as they are? In other words, what deeper properties of language can explain why there

are two (or three) types of languages with particular conflation patterns? For example, there seem to be no languages that exhibit the conflation of motion and ground in the verb root, which is a mysterious gap in Talmy's typology, as Talmy (1985, pp. 74-76) admits.

In short, Talmy's typology has some counterexamples and itself requires an explanation.[11]

2.2 Previous work and remaining questions

In this section, I review work by Tsujimura (1994) and Kizu (1996a, 1996b), as they are relevant to my proposal. This is followed by the presentation of three remaining questions, which I attempt to answer in this chapter.

2.2.1 Tsujimura's analysis of made as a predicate

Tsujimura (1994) is the first attempt to explain why Japanese, a language with a Romance-type lexicalization pattern, exceptionally allows the conflation of motion and manner in the verb root when a manner-of-motion verb occurs with a PP headed by made "up to, as far as," as in (6b). She focused on the contrast between sentences like (7a) and sentences like (7b):[12]

(7) a. ?*John-ga gakkoo-ni/e hasitta/aruita.
John-NOM school-to/to ran/walked
"John ran/walked to school."

b. John-ga gakkoo-made hasitta/aruita.
John-NOM school-up-to walked/ran
"John ran/walked up to school."

As in (7a), Japanese does not allow a manner-of-motion verb to occur with a PP headed by ni "to" or e "to". In other words, sentence (7a), the literal translation of the English sentence John ran/walked to school in Japanese, is impossible. This is consistent with Tsujimura's (1994) claim that Japanese patterns with French, rather than English, in not allowing the conflation of motion and manner.[13] However, a made

phrase is exceptional in that it can occur with a manner-of-motion verb as in (7b). Tsujimura suggested that the contrast between made on the one hand and ni or e on the other is due to the fact that only the former has predicative function and thus can serve as a resultative secondary predicate.

Tsujimura (1994) provided two pieces of evidence for her analysis. First, she predicted that if made phrases are resultative secondary predicates, the addition of made to a manner-of-motion verb will cause unaccusative mismatches, that is, that manner-of-motion verbs, unergatives otherwise, will become unaccusatives when they occur with made phrases. This is due to the restriction that a resultative, being a predicate, must be predicated of a direct object NP (Levin & Rappaport Hovav, 1995, p. 51), which will require the surface subject in a sentence like (7b) be base-generated in the direct object position before moving to the subject position in S-structure. This predication is supported by the numeral quantifier (NQ) test, a diagnostic for unaccusativity in Japanese (Miyagawa, 1989), as in (8):[14]

(8) a. ?*Kodomo-ga [$_{VP}$ inu-to awatete san-nin hasitta/aruita].
child-NOM dog-with hurriedly three-cl. ran/walked
"Three children ran/walked hurriedly with a dog."

b. Kodomo$_i$-ga [$_{VP}$ inu-to awatete t_i san-nin kooen-made hasitta/aruita].
child-NOM dog-with hurriedly three-cl. park-up to ran/walked
"Three children ran/walked hurriedly to the park with a dog."

According to Miyagawa (1989), a NQ must be in a mutual c-command relation with its antecedent. Sentence (8a) is ungrammatical because the subject NP kodomo "child," being base-generated outside VP, is not in a mutual c-command relation with the NQ san-nin "three-cl." By contrast, sentence (8b) is grammatical because the subject NP kodomo "child" is base-generated in the direct object position as required by the predicative force of made; it subsequently moves to the subject position in S-structure for Case reasons, leaving a trace in the object position, which is in turn in a mutual c-command relation with the NQ san-nin "three-cl." Thus, the NQ test

indicates that (8a) is unergative, whereas (8b) is unaccusative, supporting Tsujimura's resultative analysis of a made phrase.

Secondly, Tsujimura (1994) argued that a semantic difference between made and ni or e supports the resultative analysis of made phrases. Citing Jorden (1987), Tsujimura (1994, p. 345) states that

> ni indicates that the motion denoted by the verb moves to or into or onto a location while made implies the motion moves to and including a location but not beyond. Thus, the most salient semantic difference between ni (and e) on the one hand, and made on the other is that *made marks the endpoint of the motion more clearly that ni and e* [italics added]. The postpositions ni and e do denote a loosely-defined "goal," but their semantic content does not seem to set the endpoint explicitly enough to qualify to be a resultative secondary predicate.

Thus, for Tsujimura, made, but not ni/e, marks the endpoint of the path clearly enough to be a resultative secondary predicate.

Tsujimura's resultative predicate analysis of made is plausible; however, her explanation of what makes made "up to," but not ni "to" or e "to," a predicate is unsatisfactory. Her claim that made marks the endpoint of the path more clearly than ni or e is a strange one given the fact that whether an event has a specific endpoint or not (i.e., telic or atelic) is a binary concept. That is, one can only say an event is telic or atelic, but it does not make sense to say one is more telic than the other.[15] Thus, another explanation should be sought as to what singles out made as a predicate.

However, the important implication of Tsujimura's work is that lexicalization differences may derive from different properties of Ps, namely, whether a P is a predicate or not, as the contrast between ni or e and made in (7) indicates. Despite this important implication, Tsujimura (1994) simply follows Talmy in assuming that Japanese has a Romance-type lexicalization pattern.

In sum, Tsujimura's predicative analysis of made deserves serious attention, although her claim about what makes it a predicate is problematic. Further, her claim

that different lexicalization patterns observed within Japanese is due to different properties of Ps may provide a clue to deriving Talmy's typology.

2.2.2 Kizu's syntactic approach to unaccusative mismatches

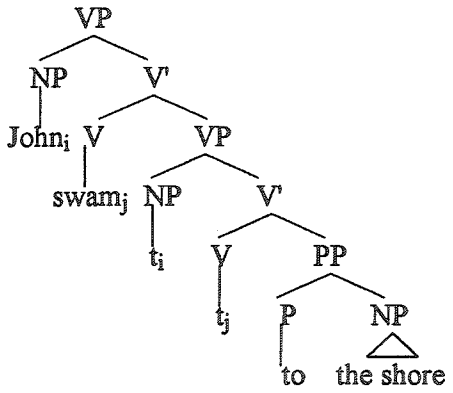
Kizu (1996a, 1996b) provided an explanation for unaccusative mismatches, that is, that manner-of-motion verbs, unergatives otherwise, become unaccusatives when occurring with "goal phrases" headed by Ps, such as Japanese made "up to," as in (8), and English to and into, as in (9):[16]

(9) a. John swam to the shore.

b. The children ran into the room.

Kizu (1996a, 1996b) argued that unaccusative mismatches are caused by the special properties of goal PPs; namely, assuming the Larsonian "VP-shell" structure (Larson, 1988), she proposes that goal Ps such as English to and Japanese made require an external theme argument, or a "subject" be generated in the Spec(ifier) of the lower VP, as in (10) (modified from Kizu 1996a, p. 195, [6]):

(10) John swam to the shore.



In (10) the verb swim is generated in the lower V taking the PP headed by to as its complement, and the NP John, the "subject" of the goal P to, in the Spec of the lower VP. The verb swim and the NP John subsequently move to the higher V and the Spec of the higher V, respectively, for theta-theoretic reasons.[17] Thus, the structure (10) effectively accounts for why the addition of a goal PP to a manner-of-motion verb

causes unaccusative mismatches: A goal P requires an external argument to appear in the Spec of the lower VP, which is the object position in the Larsonian structure.

In a way, Kizu's analysis formalizes Tsujimura's claim that a made phrase is a predicate, which forces its "subject" to occur in the direct object position, causing unaccusative mismatches. Thus, Kizu's work substantiates Tsujimura's claim by showing that given the assumption that goal Ps are predicates, unaccusative mismatches derive from general syntactic principles.

However, for present purposes, Kizu's (1996a, 1996b) work is unsatisfactory in two ways. First, she has no account of why Japanese made "up to, as far as" can occur with manner-of-motion verbs, while ni "to" or e "to" cannot (see [7]), when both seem to be goal Ps in her terms. If goal Ps are special in requiring a "subject" to appear in [Spec, lower VP], there should not be any such contrast between made and ni/e. This again raises the question of what makes made a predicate but not ni/e. Secondly, Kizu's work was not concerned with the typological difference between English and Japanese, as illustrated in (1) and (5).

In sum, Kizu (1996a, 1996b) is significant in formalizing Tsujimura's claim that unaccusative mismatches are caused by the predicative nature of goal Ps. However, her work does not explore the question of what makes a goal P a predicate or what causes the typological difference between English and Japanese.

2.2.3 Summary and remaining questions

In this section, I reviewed work by Tsujimura (1994) and Kizu (1996a, 1996b), which seems promising as it suggests that the English-type conflation derives from the predicative nature of goal Ps. However, neither account provided a satisfactory explanation of what makes a P predicative--leaving the predicate vs. non-predicate distinction a stipulation--or what causes the lexicalization difference between English and Japanese (Talmy, 1985).

Thus, I contend that previous work has not been able to answer the three questions in (11):

(11) a. What is the difference between predicative goal Ps such as Japanese made and non-predicative goal Ps such as Japanese ni?

b. Why does English characteristically allow conflation of motion and manner in the verb root, as in (1)?

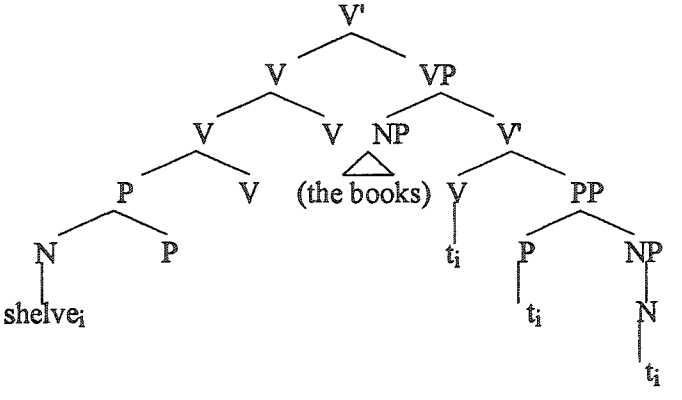
c. Why does Japanese characteristically allow conflation of motion and path in the verb root, as in (5)?

For the rest of this chapter, I attempt to answer these questions within the framework of Hale and Keyser's (e.g., 1993) syntactic approach to argument structure.

2.3 Hale and Keyser's approach to argument structure

As already introduced in Chapter 1, Hale and Keyser (H & K, 1992, 1993, 1997) proposed that argument structure is syntactic in nature. They proposed that a denominal verb like shelve is formed via incorporation, as in (12) (modified from Hale & Keyser, 1993, p. 58, [8]):

(12) The formation of the denominal verb shelve (the books)



As explained in Chapter 1, (12) is in conformity with general syntactic principles such as X' theory, the Head Movement Constraint (HMC) (Travis, 1984), and Full Interpretation (Chomsky, 1986b). H and K call the level at which argument structure is derived "l(exical)-syntax" (cf. "s[ential]-syntax") and l-syntactic representations like (12) Lexical Relational Structures (LRSs).

Furthermore, what Talmy (1985) calls "conflation" of semantic elements in the verb root is recast in the H and K framework as "incorporation" of heads into V (H &

K, 1992, 1993) in the sense of Baker (1988). As for the verb shelve in (12), for example, in the Talmy framework, one may say that ground, path, and cause are conflated in the verb root, whereas for H and K, the N shelf is incorporated into the higher V through the P and the lower V. Following Baker (1988), in each step of incorporation, the head is moved and adjoined to the head that properly governs it, as shown in (12).[18]

H and K's claim that argument structure representations are constrained by general syntactic principles deserves serious attention, as their approach has a potential to solve the conceptual problem in Talmy (1985) and lead to an explanatory account of argument structure couched in UG terms. However, as H and K (1993, p. 94) admit, the scope of their analysis is still narrow, largely restricted to a few argument structure properties in English. Thus, more argument structure properties of not only English but also other languages would need to be examined in the H and K framework.

In the following three sections (sections 2.4, 2.5 & 2.6), I extend the H and K approach to locational Ps, directional Ps, and motion verbs in English and Japanese. In so doing, I propose that PP in an LRS representation like (12) must be expanded to include three Ps and one N. As I show later, this analysis enables us to derive the difference between English and Japanese from different incorporation patterns of the heads, as well as to provide a structural account of the difference between predicative and non-predicative Ps. Thus, this expanded LRS is a prerequisite for answering the three questions in (11).

2.4 Locational Ps in Japanese and English

In this section, the structure and inventory of locational Ps in Japanese and English are presented, which is a prerequisite for the presentation of those of directional Ps in the next section. The main thrust of this section is to argue that English locational Ps which are realized as single lexical items (in, on, etc.) are in fact realizations of "relational Place N" incorporated into "Place P" in l-syntax. This is

supported by the fact that their Japanese counterparts are realized as periphrastic Ps overtly containing relational Place N and Place P, suggesting that unlike in English, there is no l-syntactic incorporation of these two heads in Japanese.

2.4.1 Japanese locational Ps

Japanese locational Ps corresponding to English in, on, under, etc. are expressed periphrastically, as in (13).

(13) a. hako-no naka-ni/de
box-GEN inside-at/at
"at box's inside = at the inside of (=in) the box"

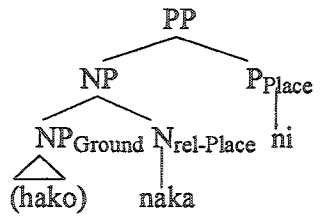
b. tukue-no ue-ni/de
desk-GEN surface-at/at
"at desk's surface = at the surface of (=on) the desk"

c. isu-no sita-ni/de
chair-GEN underneath-at/at
"at chair's underneath = at the underneath of (=under) the chair"

In (13), Ground NP (box, desk, chair) is followed by the genitive Case-marker no "of," which is in turn followed by a locational noun "inside, surface, underneath." I call these nouns relational Place Ns (rel-Place Ns) because they denote the location of the figure with respect to the ground.[19] The whole PP is headed by ni or de, which is a P corresponding to at in English. I call these Ps Place Ps because they simply mark the location of the figure.[20]

I propose that Japanese periphrastic locational Ps in (13) have the LRS (14):

(14) LRS of the Japanese locational P (e.g., [hako-no] naka-ni "in [the box]")



(14) illustrates the LRS representation of (hako-no) naka-ni "in [the box]," where ni "at" is generated in Place P, and naka "inside" is generated in rel-Place N and selects Ground NP. Ground NP is a complement of rel-Place N because rel-Place N needs a Ground NP to be semantically complete. I assume that no attached to Ground NP hako is a realization of inherent genitive Case assigned to it by rel-Place N naka in s-syntax, just like English of is a realization of inherent genitive Case assigned to the NP the city by the N destruction in destruction of the city (Chomsky, 1986b).[21]

Further, the presence of rel-Place N in (14) is optional, as there are cases where Place P ni or de directly selects a Ground NP with no intervening rel-Place N, as in (15):

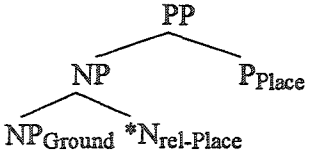
(15) a. Kare-wa ie-ni iru.
he-TOP home-at be
"He is at home."

b. Kodomotati-wa kooen-de asonda.
children-TOP park-at played
"The children played in the park."

The optionality of rel-Place N is reasonable, since it supplies additional information as to the location of the figure with respect to the ground, which may not be necessary.

Thus, I propose (16) as the LRS of a locational P:

(16) LRS of a locational P[22]



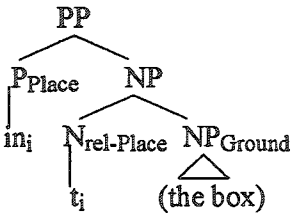
Note. $*N_{rel\text{-}Place}$ may optionally be missing.

In (16), the presence of rel-Place N is made optional to accommodate examples like (15).

2.4.2 English locational Ps

English has a number of lexicalized locational Ps, such as in, on, and under, which are expressed periphrastically in Japanese as in (13). Given the LRS of a locational P (16), I propose that these English Ps are realizations of rel-Place N incorporated into Place P in l-syntax, as in (17):

(17) LRS of English locational Ps with rel-Place N incorporated (e.g., in)



(17) illustrates the LRS representation of in (the box), where in is generated in rel-Place N and incorporated into Place P. Further, I assume English at, as in at (the door) and at the foot (of the mountain), is a realization of Place P in (16), in parallel to Japanese ni "at" or de "at" in (15).

Thus, given the LRS of a locational P (16), the difference between English and Japanese is that English incorporates rel-Place N into Place P, but Japanese does not.

2.5 The structure and inventory of directional Ps in English and Japanese

Given the LRS of a locational P (16), we are ready to discuss the LRS of directional Ps in English and Japanese. This is because the LRS of directional Ps is obtained by putting either one or two Ps on top of the LRS of the locational P. I call the first P above Place P Path P, on top of which there may be the second P called relational Path P. I divide directional Ps into "simple" and "complex" ones. The difference between them is that the LRS representation of the complex directional Ps includes relational Path P, whereas that of the simple directional Ps does not. In this section, I first present the structure and inventory of simple directional Ps in English and Japanese. Then after providing cross-linguistic evidence for the presence of rel-Path P, I present the structure and inventory of complex directional Ps in English.

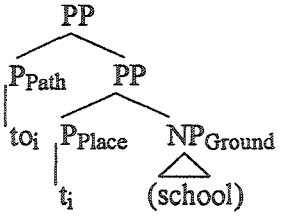
There is a major difference between English and Japanese in this area: English has a variety of directional Ps, whereas Japanese has only one such P.

2.5.1 English simple directional Ps

English has a variety of directional P such as to and under. English to is a prime example of a simple directional P. To implies both path and the endpoint of the path. So in John went to school, John went in the direction of school and as a result was at school. This would be the intuition behind Snyder's (1995b, p. 465) proposal that to is a realization of a directional P "to," a "null telic morpheme," and a locational P "at" combined by syntactic incorporation. Snyder proposed the null telic morpheme to ensure that the endpoint of the path marked by "at" is indeed interpreted as such.

I follow Snyder (1995b) in decomposing to into a directional P and a locational P, calling the former P Path P, because it denotes path, and the latter Place P, because it denotes place corresponding to Place P in the LRS of the locational P (16). However, I dispense with his null telic morpheme because the telic interpretation of to would plausibly derive from the l-syntactic relation between Path P and Place P in (18), in the spirit of H and K (1993). That is, I assume that Place P is interpreted as the endpoint of a path because of Path P selecting, or "implicating" (H & K, 1993), Place P. Thus, I propose (18) as the LRS representation of to.

(18) LRS of English to



(18) illustrates the LRS representation of to (school), where to is generated in Place P and incorporated into Path P.

There is another type of simple directional Ps in English, such as under and over, which are morphologically identical to their locational counterparts, as in (19).[23]

(19) a. Sam walked/ran under the bridge.

b. The plane flew over the city.

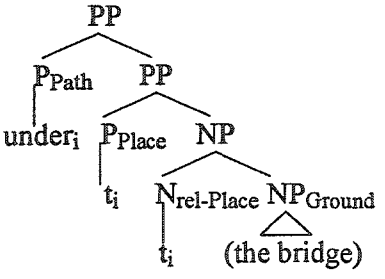
c. The mouse crawled on the table.

d. Sue jumped in the water.

All the examples in (19) are ambiguous between the intended directional reading and a locational reading (e.g., Carter, 1988; Jackendoff, 1983, 1990; Levin & Rapoport, 1988). For example, (19a) is ambiguous between the locational reading (where under is the location of walking/running) and the directional reading (where under is the goal of walking/running).[24]

I suggest that these Ps in the directional reading are simple directional Ps with rel-Place N incorporated into Path P through Place P in l-syntax, as in (20).

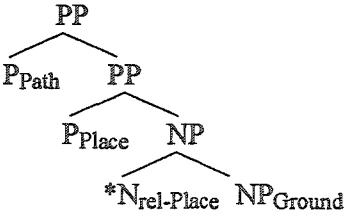
(20) LRS of English under



(20) illustrates the LRS representation of under (the bridge) in (19a), where under is generated in rel-Place N and incorporated into Path P through Place P.

Thus, I propose (21) as the LRS of a simple directional P.

(21) LRS of a simple directional P



Note. $*N_{rel\text{-}Place}$ may optionally be missing.

In (21), rel-Place N is made optional to cover the two types of simple directional Ps in (19) and (20).

2.5.2 Japanese simple directional Ps

Japanese does not have a simple directional P parallel to English to; however, Japanese instead has a simple directional P made "up to, as far as," for which English has no equivalent. The P ni "to" or e "to" appears to be a directional P equivalent to English to; however, I argue that it is in fact a locational P, a realization of Place P. Furthermore, Japanese does not have any simple directional Ps parallel to English under, over, etc.

The P made is a directional P in Japanese for which there is no equivalent in English. Made is often translated as "up to" or "as far as." However, the most intuitive, but wrong, English translation of made is "until," which can be used with time (e.g., until 5 p.m.), but not with places (e.g., *I went until school). Japanese made, on the other hand, can be used both with places (gakkoo-made "up to school") and time (gozi-made "until 5"). So a first approximation of the meaning of made is hypothetical--"until used with places."[25]

Japanese made "up to, as far as" is exemplified in (22):[26]

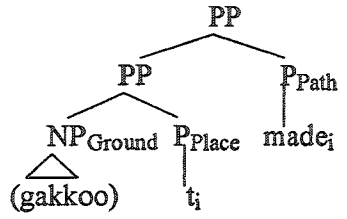
(22) a. John-ga gakkoo-made itta/kita.
John-NOM school-until went/came
"John went/came up to school."

b. John-ga gakkoo-made hasitta/aruita.
John-NOM school-until ran/walked
"John ran/walked up to school."

Like English to, Japanese made denotes the endpoint of a path with both directed motion verbs such as iku "go") and kuru "come" ([22a]) and manner-of-motion verbs such as hasiru "run" and aruku "walk" ([22b]). However, its meaning is not exactly the same as that of to. According to Ikegami (1981, p. 264), made implies the continuation of an action up to its endpoint. Therefore, sentences in (22) do not mean "John went/came/ran/walked to school"; rather, they mean "John's going/coming/running/walking continued up to/as far as school."

The subtle semantic difference aside, however, Japanese made and English to are comparable in that both imply a path and its endpoint. Thus, I assume that made shares the LRS representation (18) with to, that is, that the semantic difference between made and to is not relevant to l-syntax. I propose that made is a simple directional P with the LRS (23).

(23) LRS of a simple directional P made "up to, as far as"



(23) illustrates the LRS representation of (gakkoo) made "up to (school)," where made is generated in Place P and incorporated into Path P.

The P ni "to" or e "to" in sentences like (24) appear to be the Japanese equivalent of English to:

(24) John-ga school-ni/e itta/kita.
John-NOM school-to/to went/came
"John went/came to school."

(24) shows that ni "to" or e "to" occurs with a directed motion verb and marks the endpoint of a path, just like English to. However, I argue that both ni and e are locational Ps in the sense that they are realizations of Place P for the following three reasons. First, as seen in section 2.4.1, ni is clearly a locational P in one usage denoting a (static) location as in (25):[27]

(25) John-wa Tokyoo-ni iru/sunde-iru.
John-TOP Tokyo-at be/living-be
"John is/lives in Tokyo."

Second, unlike Japanese made "up to, "as far as" or English to, neither ni nor e can occur with a manner-of-motion verb, as in (7), repeated here as (26) with an additional English sentence (26c) with to.

(26) a. ?*John-ga gakkoo-ni/e hasitta/aruita.
John-NOM school-to ran/walked
"John ran/walked to school."

b. John-ga gakkoo-made hasitta/aruita.
John-NOM school-up to ran/walked
"John ran/walked up to school."

c. John ran/walked to school.

The contrast between (26a), on one hand, and (26b) and (26c), on the other, remains mysterious if we assume that ni and e are directional Ps like made and to. On the other hand, if we assume that ni and e are different from made and to in that they are realizations of Place P with no further l-syntactic incorporation into Path P, the contrast has a structural basis.

Third, this structural account is corroborated by my native speaker intuition that (26a) is unacceptable because there is nothing to provide a path to the motion "running/walking." That is, it seems that the manner-of-motion verb in and of itself lacks and thus needs a path to be interpreted as a directed motion, but that in (26a), neither ni or e is able to provide a path to "running/walking."[28]

Thus, I propose that, unlike Japanese made "up to, as far as" or English to, Japanese ni and e are locational Ps, not directional Ps.[29]

Furthermore, Japanese does not have any directional Ps like English under and over in (20). Such English Ps are translated as sita-ni/e "under" and ue-ni/e "on, over," where a rel-Place N (sita "underneath," ue "top") is selected by ni "at" or e "to". However, these Ps are locational, rather than directional, as they are headed by the locational P ni or e.

In sum, there is only one simple directional P made "up to, as far as" in Japanese. Japanese does not have any simple directional Ps equivalent to English to or under, since ni "at" or e "to" is a locational P, not a directional P.

2.5.3 Complex directional Ps in English: The presence of relational Path P

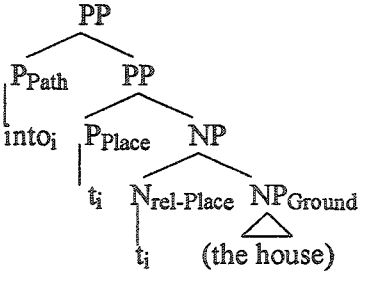
In addition to simple directional Ps such as to and under, English has other directional Ps like into and onto. In this section, I propose an LRS for these Ps. I call them "complex" directional Ps, since their LRS representation includes another P, called relational Path P, which selects Path PP given in the LRS of the simple directional P (21). Strikingly, unlike English, Japanese has no complex directional Ps.

2.5.3.1 Two analyses of complex directional Ps in English

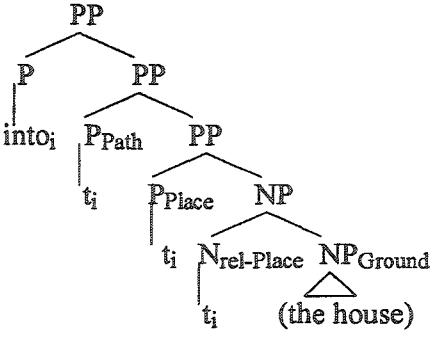
English directional Ps such as into and onto are analyzed as "to in" and "to on," respectively, by Jackendoff within the framework of his "conceptual structure" (Jackendoff 1983, p. 163, 1990, p. 45). Snyder analyzed onto as "to on," which is combined by syntactic incorporation (Snyder, 1995b, p. 462).[30] However, Talmy (1975, 1985) suggested that such English Ps are in fact "satellite prepositions," where a satellite (or a particle) and a preposition are conflated in the P. For example, Talmy (1975, p. 212), within the framework of generative semantics, proposed that the satellite "in" and the preposition "into" (further decomposed into "to in") are merged into the surface P into. Within the H and K framework, the Jackendoff-Snyder analysis will be translated into the LRS (27a), and the Talmy analysis into the LRS (27b):

(27) LRS of English complex directional Ps (e.g., into): Two possibilities

a. Modified from Jackendoff/Snyder



b. Modified from Talmy



(27) illustrates the LRS representation of into (the house). The LRS (27a) has the structure of a simple directional P in (21), where into is generated in rel-Place N

and incorporated into Path P through Place P. This makes use of the Jackendoff-Snyder analysis that into/onto is decomposed into "to in/to on," along with my and Talmy's (1975) assumption that in/on is decomposed into "at in/at on." By contrast, in (27b), there is another P selecting Path PP in (27a). Into is generated in rel-Place N and incorporated into the topmost P through Place P and Path P. This incorporates Talmy's analysis that into/onto is decomposed into "in to at in/on to at on."

The question is: Which is the correct LRS, (27a) or (27b)? In the next subsection, I provide some cross-linguistic evidence for (27b).

2.5.3.2 Cross-linguistic evidence for the presence of relational Path P

It is not easy to choose between the two possibilities (27a) and (27b) on the basis on English data alone. However, as I discuss below, data from other languages (Japanese, Spanish, Russian) suggest the need to postulate the additional P in (27b), thus providing indirect support for (27b) as the correct LRS for Ps such as into and onto.

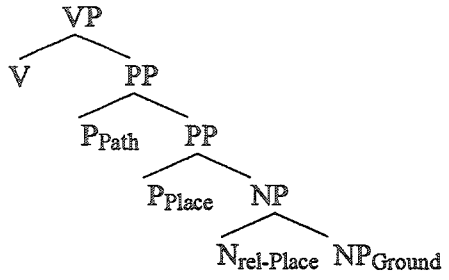
The behavior of the Japanese motion verb hairu "go-in, enter" suggests the presence of another P above Path P. Consider sentence (28) with hairu.[31]

(28) John-ga heya-ni haitta.
John-NOM room-at went-in
"John went into the room."

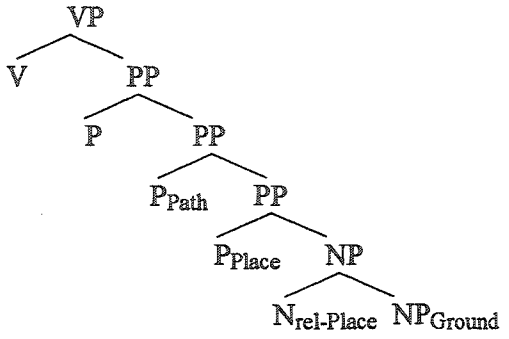
In (28), Place PP, heya-ni "room-at" occurs with the verb hairu "go-in," marking the endpoint of the path. Given the fact that the meaning of Japanese ni hairu corresponds to English go into, it is plausible to hypothesize that ni hairu and go into are two different s-syntactic manifestations of the same LRS. If so, given the LRS of into in (27), the LRS of go into and ni hairu will be either (29a) or (29b):

(29) LRS of go into and ni hairu "go into": Two possibilities

a. V selecting Path PP in (27a)



b. V selecting rel-Path PP in (27b)



In (29a), V selects Path PP in (27a), whereas in (29b), V selects the topmost PP in (27b). One could assume that in the case of English go into, the verb go is generated in V in both (29a) and (29b), and that into is formed as in (27a) in the case of (29a) and as in (27b) in the case of (29b). As for Japanese ni hairu "go into," the fact that hairu takes PP headed by the locational P ni "at" suggests that the verb is generated in Path P and incorporated into V, either directly if (29a) is correct or through another P if (29b) is correct, and that ni is generated in Place P. These possibilities are illustrated in (30):

(30) a. Go into and ni hairu "go into" based on LRS (29a)

V	P_{Path}	P_{Place}	$N_{rel-Place}$	N_{Ground}
go	*into*			*(room)*
hairu		*ni*		*(heya)*

b. Go into and ni hairu "go into" based on LRS (29b)

V	P	P_{Path}	P_{Place}	$N_{rel-Place}$	N_{Ground}
go	*into*				*(room)*
hairu			*ni*		*(heya)*

Which is the correct LRS for go into/ni hairu, (29a) or (29b)? There are reasons to believe that (29b) is the correct one. Notice that the Japanese verb hairu "go-in" has the semantic element "in" conflated in it. Assuming that the presence of "in" is a reflection of l-syntactic incorporation of some head into V, we can ask: Where does "in" come from? The LRS (29b) can answer this question easily by saying that "in" comes from the topmost P, which is incorporated into V, as in (30b).

In contrast, it is not clear how the LRS (29a) can answer this question. One possibility is that "in" comes from the incorporated Path P in (30a). However, the fact that a PP headed by the simple directional P made "up to" can occur with the verb hairu "go-in," as in (31), suggests that the head position associated with "in" is not Path P:

(31) John-ga dookutu-no oku-made haitta.
John-NOM cave-GEN inner part-until went-in
"John went in to the inner part of the cave."

Given the LRS of made "up to, as far as" in (23), where made occupies Path P, it cannot be the case that in (31) the "in" element of hairu "go-in" comes from Path P, as illustrated in (32) using the LRS (29a):

(32) LRS of made hairu based on (29a)

V	P_{Path}	P_{Place}	$N_{rel\text{-}Place}$	N_{Ground}
hairu	*made*		*oku*	*dookutu*

Rather, the grammaticality of (31) favors the LRS (29b) with another P, which, we can assume, is associated with "in" and incorporated into V, as in (33):

(33) LRS of made hairu based on (29b)

V	P	P_{Path}	P_{Place}	$N_{rel\text{-}Place}$	N_{Ground}
hairu		*made*			

Yet another possible source of "in" within the LRS (29a) is rel-Place N, since this head position, as shown above, is associated with "relational place" such as "inside." However, there are two pieces of evidence against this possibility. First, the fact that hairu "go-in" can occur with the rel-Place N naka "inside," as in (34), indicates that rel-Place N is not incorporated in V.

(34) John-ga heya-no naka-ni haitta.
John-NOM room-GEN inside-at went-in
"John went into/entered the room."

In (34), hairu "go-in" occurs with a PP which contains rel-Place N naka "inside," suggesting that there is no incorporation of rel-Place N into V. This fact is only

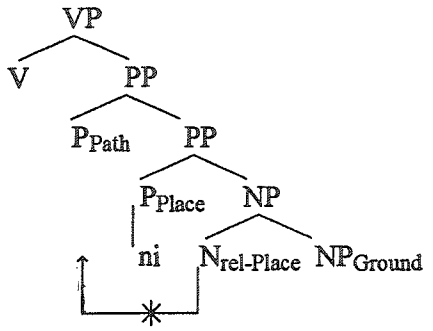
consistent with the LRS (29b), where "in" comes from the incorporated topmost P and naka is a realization of rel-Place N, as in (35):

(35) LRS of naka-ni hairu based on (29b)

V	P	P_{Path}	P_{Place}	$N_{rel\text{-}Place}$	N_{Ground}
hairu			*ni*	*naka*	*(heya)*

Second, in order for rel-Place N to incorporate into V, it must skip Place P, violating the HMC, as in (36):

(36) Impossible movement of rel-Place N



As in (36), since Place P is already filled with ni, the incorporation of rel-Place N into V necessarily involves skipping of Place P, violating the HMC. Thus, following H and K, this possibility is excluded on syntactic grounds.

Thus, these facts about the verb hairu "go-in, enter" suggest that (29b) is the correct LRS of English go into and Japanese ni hairu, providing support for the presence of the topmost P. Further, if (29b) is the correct LRS of go into, then it follows that the correct LRS of into is (27b), not (27a).

Further, the same argument for the LRS (29b) can be made based on the behavior of other Japanese motion verbs such as agaru "go-up." In parallel to hairu "go-in" in (28), (31), and (34), agaru "go-up" can occur with a locational P ni "at," a simple directional P made "up to," and a rel-Place N ue "surface," as in (37a-c):

(37) a. John-ga suteezi-ni agatta.
John-NOM stage-at went-up
"John went onto the stage."

b. John-ga go-kai-made agatta.
John-NOM five-floor-until went-up
"John went up to the fifth floor."

c. John-ga yane-no ue-ni agatta.
John-NOM roof-GEN surface-at went-up
"John went up on the roof."

(37) suggests that agaru "go-up" has a head associated with "up" incorporated in l-syntax ([37a]) which is neither Path P ([37b]) nor rel-Place N ([37c]). This indicates that the verb's LRS has another P as in (29b). Thus, the presence of the topmost P is supported by the behavior of the Japanese motion verb agaru "go-up" as well as hairu "go-in."

I call the topmost P in (27b) relational Path P (rel-Path P) because it further specifies the dimensionality or direction of the path relative to the ground. This notion is similar to one associated with English particles such as in, on, and up, which are realizations of rel-Path P, I assume.

The LRS (29b) with rel-Path P is also supported by data from Spanish. In Spanish, the verb subir "go-up" behaves in parallel to Japanese agaru "go-up" in (37); that is, subir occurs with a PP headed by a locational P a "at," a PP headed by a simple directional P hasta "up to," and an adverbial arriba "at-top," as in (38):

(38) a. Juan subió al árbol.[32]
Juan went-up at-the tree
"Juan climbed to the tree."

b. Juan subió hasta arriba del árbol.[33]
Juan went-up until top of-the tree
"Juan climbed up to the top of the tree."

c. Juan subió arriba del árbol.[34]
Juan went-up at-top of-the tree
"Juan climbed to the top of the tree."

(38) is parallel to (37), suggesting that just like Japanese agaru "go-up," Spanish subir "go-up" has the LRS (29b) with rel-Path P.

Finally, clear morphological evidence for the LRS (29b) comes from Russian, where both rel-Path P and rel-Place N are morphologically overt simultaneously.[35]

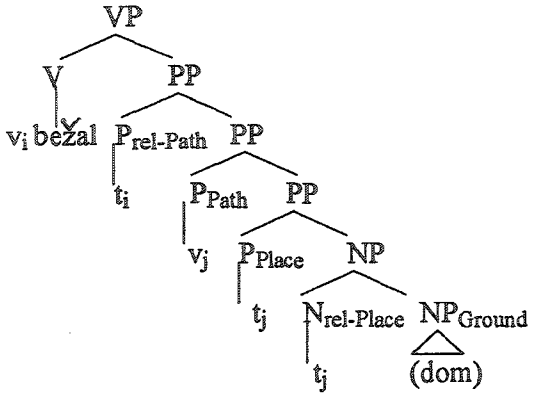
(39) a. On vbežal v dom.
he in-ran into the house (ACC)[36]
"He ran into the house."

b. On nastupil na zme'u
he on-stepped onto the snake (ACC)
"He stepped onto the snake."

c. Šarik podkatils'a pod krovat'.
the ball under-rolled under the bed (ACC)
"The ball rolled under the bed."

As in (39), in Russian, telic motion events are expressed in the form, prefix-V + P + Ground NP, where a manner-of-motion verb with a prefix is followed by a P, which selects a Ground NP. For example, in (39a), a manner-of-motion verb bežal "ran" with a prefix v "in" occurs with a P v "into," which selects a Ground NP dom "house." What is interesting about (39) is that each contains two morphologically identical elements, one as a prefix and the other as a P. The LRS (29b) can account for these data if we assume that the prefix and the P are manifestations of rel-Path P and rel-Place N, respectively. More specifically, one can assume that a prefix such as v "in" is generated in rel-Path P and incorporated into V,[37] and that a P such as v "in" is generated in rel-Place N and incorporated into Path P through Place P, as in (40).

(40) LRS of a Russian motion expression (e.g., vbežal v [dom] "in-ran into [the house]")



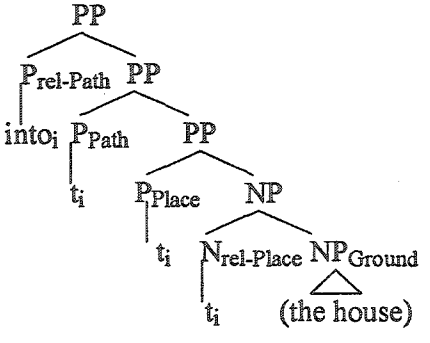
Thus, (39) provides clear morphological evidence for the LRS (29b), where both rel-Path P and rel-Place N are overtly present simultaneously.[38]

In sum, given the cross-linguistic evidence for the presence of rel-Path P, it is reasonable to choose (29b) over (29a) as the LRS of English go into and Japanese ni hairu "go into," which in turn leads to the choice of (27b) over (27a) as the correct LRS representation of English directional Ps such as into and onto.

2.5.3.3 Complex directional Ps in English but not in Japanese

To recapitulate, I have proposed that English directional Ps such as into and onto have the LRS representation (27b), repeated here as (41) with the topmost P labeled "rel-Path":

(41) LRS of a complex directional P (e.g., into)



(41) illustrates the LRS representation of into (the house), where into is generated in rel-Place N and incorporated into rel-Path P through Place P and Path P. I call Ps with

the LRS (41) complex directional Ps in contrast to simple directional Ps with the LRS (21), since only the former's LRS includes rel-Path P.

Finally, it is important to note that Japanese does not have any complex directional Ps like English into and onto. This does not mean, however, that Japanese does not have the LRS (41); Japanese instead has Path P and rel-Path P incorporated into V and realizes it as motion verbs such as hairu "go-in" and agaru "go-up," as in (35). In the next section, I provide a further discussion of motion verbs in English and Japanese regarding what heads are incorporated into V in l-syntax.

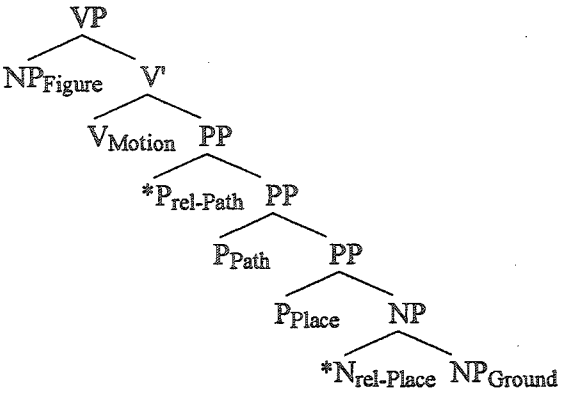
In sum, in this section I have proposed the LRS of a simple directional P (21), which includes Path P, and the LRS of a complex directional P (41), which includes rel-Path P as well as Path P, together with an inventory of directional Ps in English and Japanese. There is a sharp contrast between English and Japanese in this domain: English has a variety of directional Ps, both simple (to, under) and complex (into, onto), whereas made "up to, as far as" is the only directional P in Japanese.

2.6 Motion verbs in English and Japanese

Given the LRSs of locational Ps (16) and directional Ps (simple [21] and complex [41]), we are ready to present the structure and inventory of motion verbs in English and Japanese, which is the focus of this section. This is the final prerequisite for providing my answers to the three questions posed in (11).

I propose (42) as the LRS of a motion event.

(42) LRS of a motion event



Note. $*P_{rel\text{-}Path}$ and/or $N_{rel\text{-}Place}$ may optionally be missing.

(42) is the structure we get if we put on top of the LRS of a complex directional P (41) a VP (with a Spec) whose head selects rel-Path PP. Further, in (42) both rel-Path P and rel-Place N are made optional to accommodate cases where rel-Path P or rel-Place N is missing (e.g., to school in [18] and ni hairu "go into" in [30b]). The optionality of rel-Path P and rel-Place N is natural given the fact that they both supply additional information to the path and the place, respectively, which may not be necessary. In contrast, both Path P and Place P are obligatory in the representation of any directional P. The presence of the Spec of VP is forced, in the spirit of H and K, because the syntactic relation between V and its complement (which now consists of three Ps and one N at the maximum) corresponds to the semantic relation "change," which, to be fully interpreted, requires a "subject" NP of which it is predicated. The NP in the Spec is called Figure NP because this position is associated with Talmy's (1985) figure in a motion event. V in (42) is now called Motion V because this position is associated with Talmy's motion (the process of moving per se).

Note that (42) covers all the semantic elements of a motion event identified by Talmy (1985) except for manner (see [2]). I assume that manner is an optional element which is not structurally represented in the LRS of a motion event. This assumption is natural given the fact that manner is not a necessary element of a motion event. One could say either John went to school or John walked to school in describing the same event. Therefore, manner is only subordinate to the motion event

which the LRS (42) structurally represents. I further assume that, not being associated with a position in l-syntax, manner is an idiosyncratic property associated with a particular verb. I return to the status of manner later in the discussion section.

In this section, I classify motion verbs in English and Japanese--directed motion verbs such as go and manner-of-motion verbs such as walk--into three categories according to what head is incorporated into Motion V (via intervening heads, if any) within the LRS of a motion event (42). The three categories are (a) verbs with no incorporated head, (b) verbs with incorporated Path P, and (c) verbs with incorporated rel-Path P. It is shown that English characteristically allows motion verbs with no incorporated head to occur with a variety of directional Ps, whereas Japanese characteristically allows motion verbs with incorporated Path P (via rel-Path P) to occur with a locational P. I suggest that the difference between English and Japanese is that in English, Path P and Place P are combined by l-syntactic incorporation and realized as directional Ps, whereas in Japanese Path P is incorporated into Motion V (via rel-Path P) in l-syntax and realized as directed motion verbs.

2.6.1 Motion verbs with no incorporated head

2.6.1.1 English

English most characteristically allows both directed motion verbs (e.g., go, come) and manner-of-motion verbs (e.g., walk, run) to occur with a variety of directional Ps, as in (43).

(43) a. John went/came/walked/ran to school.

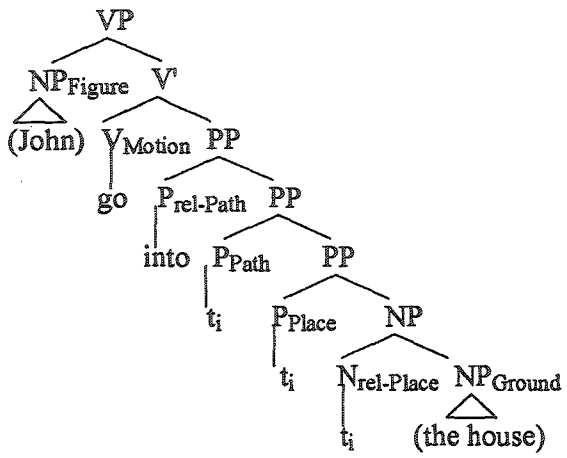
b. John went/came/walked/ran into the house.

c. John went/came/walked/ran onto the stage.

d. John went/came/walked/ran under the bridge.

(43) shows that English motion verbs occur with a variety of directional Ps, simple (to, under) and complex (into, into, onto), suggesting that these verbs are simply generated in Motion V, as in (44):

(44) LRS of motion verbs with no incorporated head (e.g., go)



(44) illustrates the LRS representation of go into in (43b), where go is generated in Motion V (and into is generated in rel-Place N and incorporated into rel-Path P by successive head movements). In the case of the simple directional Ps to and under in (43a) and (43d), the verb selects Path PP with no intervening rel-Path P.

2.6.1.2 Japanese

In Japanese, motion verbs as realizations of Motion V with no incorporated head are attested when directed motion verbs (e.g., iku "go," kuru "come") and manner-of-motion verbs (e.g., aruku "walk," hasiru "run") occur with the simple directional P made "up to, as far as," as in (45):

(45) John-ga gakkoo-made itta/kita/aruita/hasitta.
John-NOM school-until went/came/walked/ran
"John went/came up to school."

In (45), the verbs select a PP headed by the simple directional P made, suggesting that they do not have an incorporated Path P. Therefore, I suggest that similar to (43) in English, (45) has the LRS representation (44) (without rel-Path P or rel-Place N),

where the verb is generated in Motion V (and made is generated in Place P and incorporated into Path P).

Thus, Japanese also has English-type motion verbs with no incorporated head. However, it is important to note that motion verbs of this type are far more pervasive in English occurring with a variety of directional Ps than in Japanese, where they occur only with the directional P made "up to."

2.6.2 Motion verbs with incorporated Path P

2.6.2.1 Japanese

In Japanese, the most characteristic are directed motion verbs as realizations of Motion V with Path P incorporated (through rel-Path P, if any), which therefore select a Place P headed by the locational P ni "at" or e "to" as the endpoint of a path. Thus, Japanese directed motion verbs such as iku "go," kuru "come," and tuku "arrive" occur with a ni (or e) phrase, and so do motion verbs such as hairu "go-in," agaru "go-up/on," oriru "go-down," and moguru "go-under," as in (46):[39]

(46) a. John-ga gakkoo-ni itta/kita.
John-NOM school-at went/came
"John went/came to school."

b. John-ga gakkoo-ni tuita.
John-NOM school-at arrived
"John arrived at school."

c. John-ga ie(-no naka)-ni haitta.
John-NOM house(-GEN inside)-at went-in
"John went into the house."

d. John-ga suteezi(-no ue)-ni agatta.
John-NOM stage(-GEN surface)-at went-up
"John went onto the stage."

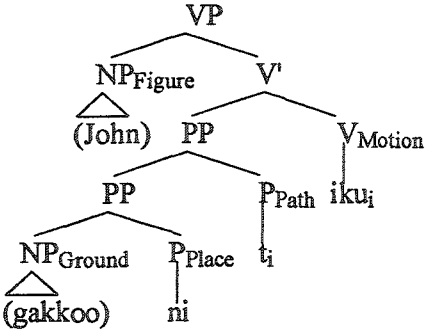
e. John-ga ki-no sita-ni orita.
John-NOM tree-GEN bottom-at went-down
"John climbed down the tree."

f. John-ga ti-ka-ni mogutta.
John-NOM ground-under-at went-under
"John went under the ground."

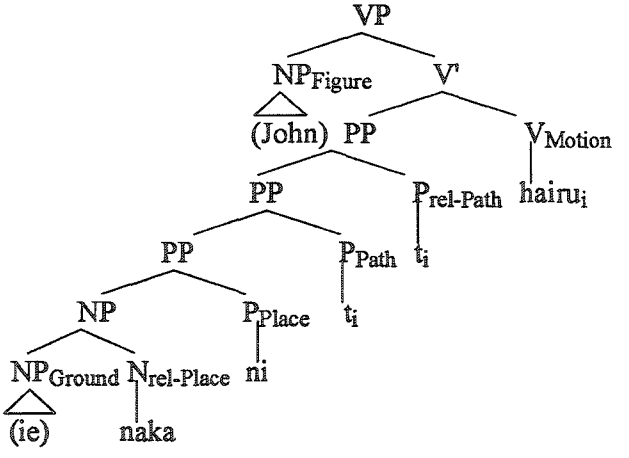
All verbs in (46) share the property that they have Path P incorporated in l-syntax, thus selecting a locational PP; however, the verbs in (46a, b) are different from those in (46c-f) in that the former do not have rel-Path P, but the latter do. Thus, I propose that the former have the LRS representation (47a), where Path P is directly incorporated into Motion V with no intervening rel-Path P, and that the latter have the LRS representation (47b), where Path P is incorporated into Motion V through rel-Path P:

(47) LRS of motion verbs with incorporated Path P (e.g., iku "go," hairu "go-in")

a. Verbs without rel-Path P (iku "go")



b. Verbs with rel-Path P (hairu "go-in")



(47a) illustrates the LRS representation of ni iku "go to" in (46a), where iku is generated in Path P and incorporated into Motion V (and ni is generated in Place P).[40]

(47b) illustrates the LRS representation of naka-ni hairu "go into" in (46c), where hairu is generated in Path P and incorporated into Motion V via rel-Path P (and ni "at" and naka "inside" are generated in Place P and rel-Place N, respectively).[41]

Thus, Japanese has a variety of directed motion verbs with Path P incorporated (via rel-Path P) in l-syntax.

2.6.2.2 English

In English, motion verbs as realizations of Path P incorporated into Motion V are virtually non-existent with the exception of arrive. As in (48), arrive selects a PP headed by the locational P at or in, but cannot occur with a PP headed by a directional P such as to and into.

(48) a. John arrived at the airport/in Montreal.

b. *John arrived to the airport/into Montreal.

We can account for these facts by assuming that arrive has the LRS representation (47a), where it is generated in Path P and incorporated into Motion V. Given (47a), we can explain why arrive cannot occur with a directional PP: Since Path P is already filled by the trace, there is no position left for a directional P to be generated.

Thus, Path P's incorporation into Motion V (via rel-Path P) in (47) is characteristic of Japanese, being the incorporation pattern for a variety of directed motion verbs such as iku "go," tuku "arrive," hairu "go-in," and agaru "go-up". This sharply contrasts with English, where arrive seems to be the only motion verb of this type. The exceptional status of arrive may well stem from the fact that it is borrowed from Romance, where this pattern is pervasive (Talmy, 1985).

2.6.3 Motion verbs with incorporated rel-Path P

2.6.3.1 Japanese

There are a number of directed motion verbs in Japanese which are realizations of V with rel-Path P incorporated, which are only attested with the simple directional P made "up to," "as far as." In fact, the verbs presented in (46c-f) as verbs with Path P incorporated via rel-Path P can also be used as verbs with rel-Path P incorporated, as in (49).

(49) a. John-ga dookutu-no oku-made haitta.
John-NOM cave-GEN inner-part-until went-in
"John went in to the inner part of the cave."

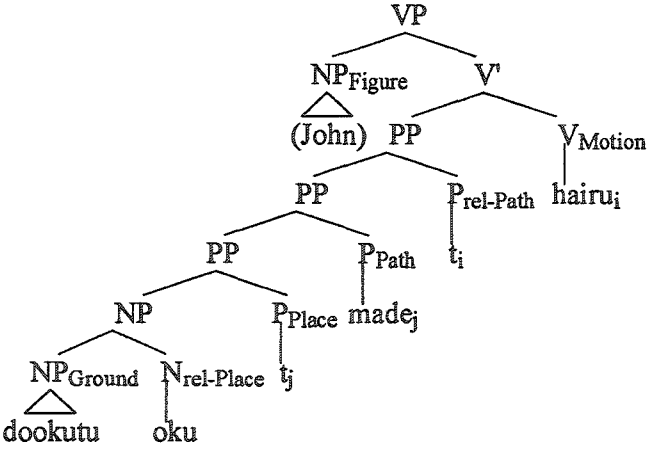
b. John-ga erebeetaa-de go-kai-made agatta.
John-NOM elevator-by five-floor-until went-up
"John went up to the fifth floor by elevator."

c. John-ga ki-no sita-made orita.
John-NOM tree-GEN bottom-until went-down
"John went down to the bottom of the tree."

d. John-ga kai-tei-made mogutta.
John-NOM sea-bottom-until went-under
"John went under to the bottom of the sea."

The verbs in (49) all occur with made, suggesting that they have rel-Path P, but not Path P, incorporated. Thus, I propose that verbs in (49) have the LRS representation (50):

(50) LRS of motion verbs with incorporated rel-Path P (e.g., hairu "go-in")



(50) illustrates the LRS representation of oku-made hairu "go-in to the inner-part" in (49a), where hairu "go-in" is generated in rel-Path P and incorporated into Motion V (and made is generated in Place P and incorporated into Path P and oku is generated in rel-Place N). Notice that the LRS representation (50) is different from that in (47b) in that the verb is generated in rel-Path P, not in Path P.[42]

Although there is a number of directed motion verbs of this type in Japanese, they appear only with the exceptional directional P made.

2.6.3.2 English

There are a few directed motion verbs in English which are realizations of Motion V with the rel-Path incorporated, but they are marginal being restricted to borrowings from Romance languages. Among verbs of this type are descend and ascend with a to phrase, as in (51).

(51) a. John descended to the ground.

b. John ascended to the roof.

Given the fact that the verbs in (51) specify a relational path "down, up" and my analysis of to as a simple directional P, it follows that these verbs have the LRS representation (50), where they are generated in rel-Path P and incorporated into Motion V.[43]

2.6.4 Summary

To summarize, Tables (52) and (53) present the incorporation patterns for the expression of a motion event characteristic of English and Japanese, respectively, based on the LRS of a motion event (42).

(52) Incorporation patterns for the expression of a motion event in English

<table>
<tr><th>N_{Figure}</th><th>V_{Motion}</th><th>$P_{rel\text{-}Path}$</th><th>P_{Path}</th><th>P_{Place}</th><th>$N_{rel\text{-}Place}$</th><th>N_{Ground}</th></tr>
<tr><td rowspan="3">John
etc.</td><td rowspan="3">go, come,
walk, run</td><td rowspan="2">Ø</td><td colspan="2">to</td><td>(inside)</td><td rowspan="3">house
etc.</td></tr>
<tr><td colspan="3">under, over</td></tr>
<tr><td colspan="5">into, onto</td></tr>
</table>

(53) Incorporation patterns for the expression of a motion event in Japanese

<table>
<tr><th>N_{Figure}</th><th>V_{Motion}</th><th>$P_{rel\text{-}Path}$</th><th>P_{Path}</th><th>P_{Place}</th><th>$N_{rel\text{-}Place}$</th><th>N_{Ground}</th></tr>
<tr><td rowspan="2">John
etc.</td><td colspan="3">iku, kuru ($P_{rel\text{-}Path}$=Ø)
"go, come"</td><td rowspan="2">ni, e
"at, to"</td><td rowspan="2">(naka, ue)
"inside, top"</td><td rowspan="2">ie
"house"
etc.</td></tr>
<tr><td colspan="3">hairu, agaru
"go-in, go-up"</td></tr>
</table>

(52) shows that English characteristically allows verbs with no incorporated head, both directed motion verbs (go, come) and manner-of-motion verbs (walk, run),

to occur with a variety of directional Ps, both simple (to, under) and complex (into, onto). In contrast, Japanese characteristically allows a variety of directed motion verbs with Path P incorporated, both directly (iku "go," kuru "come") and via rel-Path P (hairu "go-in," agaru "go-up") to occur with the locational P ni "at" or e "to." Thus, we can draw the generalization (54) about the difference between English and Japanese.

(54) In Japanese, Path P is incorporated into Motion V (via rel-Path P) in l-syntax and realized as directed motion verbs, whereas in English Path P and Place P are combined by l-syntax incorporation and realized as directional Ps.

In short, Japanese is rich in directed motion verbs, whereas English is rich in directional Ps.

2.7 Discussion

In the last three sections, I discussed the structure and inventory of locational Ps, directional Ps, and motion verbs in English and Japanese within the H and K framework with a view to answering the three questions in (11), repeated here as (55):

(55) a. What is the difference between predicative goal Ps such as Japanese made and non-predicative goal Ps such as Japanese ni?

b. Why does English characteristically allow conflation of motion and manner in the verb root, as in (1)?

c. Why does Japanese characteristically allow conflation of motion and path in the verb root, as in (5)?

Given the proposed LRSs of a locational P, a simple directional P, a complex directional P, and a motion event ([16], [21], [41] and [42], respectively), we are ready to provide answers to these questions. In this section, I give my answer to each of the three questions and discuss implications of my proposal.

2.7.1 Difference between predicative and non-predicative Ps

I proposed that Japanese made "up to, as far as" and English to are simple directional Ps ([21]) which are realizations of Place P incorporated into Path P, whereas Japanese ni "at" and e "to" are not directional Ps but locational Ps ([16]) which are realizations of Place P. There is, then, a structural difference between predicative and non-predicative Ps, as in (56), my answer to (55a).

(56) The LRS representation of predicative Ps includes both Place P and Path P, whereas that of non-predicative Ps includes Place P but not Path P.

(56) suggests that the distinction between predicative and non-predicative Ps need not be stipulated but derives from the LRS difference. This advances previous work by Tsujimura (1994) and Kizu (1996a, 1996b), which had no satisfactory answers to (55a).

2.7.1.1 Contrast between ni/e and made

Furthermore, combined with independently motivated assumptions within the H and K framework, (56) can naturally account for why directional Ps such as Japanese made can occur with manner-of-motion verbs, whereas locational Ps such as Japanese ni cannot, as in (7), presented here as (57) (with ni and made glossed as "at" and "until").

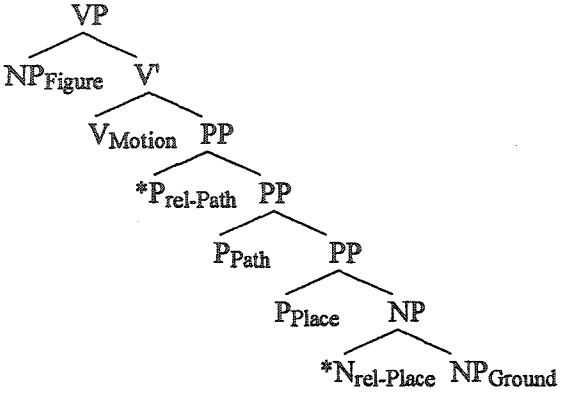
(57) a. ?*John-ga gakkoo-ni/e hasitta/aruita.
John-NOM school-at/to ran/walked
"John ran/walked to school."

b. John-ga gakkoo-made hasitta/aruita.
John-NOM school-until walked/ran
"John ran/walked up to school."

To show how this follows from (56), recall that H and K proposed that P is a predicate because it is associated with "interrelation," which requires two entities. Specifically, recasting H and K's proposal within the LRS of a motion event (42), repeated here as (58), since Motion V selects a PP which implies both path and place

as the endpoint of the path, the intermediate projection V' is associated with the notion "change" (of location). Thus, for the V' to be fully interpreted, Figure NP is required in the Spec of VP as a "subject" of a change predicate.

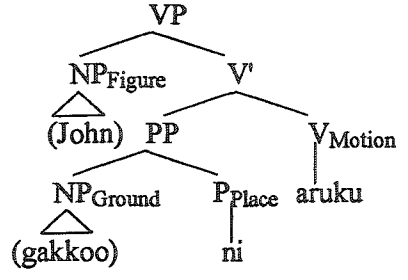
(58) LRS of a motion event



Note. $*P_{rel\text{-}Path}$ and/or $N_{rel\text{-}Place}$ may optionally be missing.

Suppose that a manner-of-motion verb aruku "walk" and a locational P ni "at" are generated in Motion V and Place P, respectively, as in (59).

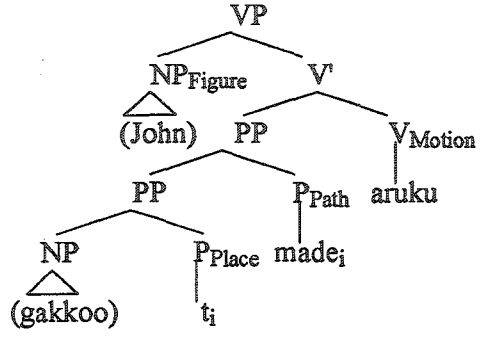
(59) * [Spec, VP] uninterpreted



Is (59) a well-formed LRS of "change"? I suggest not, because the V' is not a change predicate, which forces a subject to appear in [Spec, VP]. That is, for the V' to be a change predicate, P selected by V must imply "change." However, the locational P ni "at" does not imply "change" of location and hence the V' fails to become a change predicate. Consequently, (59) is ill-formed due to the presence of an unforced subject in the Spec, which is uninterpretable, violating Full Interpretation. This explains the ungrammaticality of (57a).[44]

By contrast, suppose that a manner-of-motion verb aruku "walk" is generated in Motion V and a directional P made "up to, as far as" is generated in Place P and incorporated into Path P, as in (60).

(60) √ [Spec, VP] interpreted



Is (60) a well-formed LRS of "change"? I suggest it is, because this time the V' is a change predicate by virtue of V selecting the directional P made, which implies both path and place (as the endpoint of the path) and hence a "change" of location. Accordingly, (60) is well-formed with a subject in the Spec, which is required by the predicative force of the V', to satisfy Full Interpretation. This explains the grammaticality of (57b).

Thus, the contrast between ni/e and made follows from (56) and (58). In this connection, recall that Japanese sentences like (57b) exhibit the English-type conflation, posing an empirical problem for Talmy's typology (see [6] and discussion therein). However, given the analysis of made as a directional P, the exceptional conflation pattern in (57b) is expected in the current framework.

2.7.1.2 Unaccusative mismatches

(56) can also explain why the presence of a directional P such as Japanese made "up to, as far as" causes unaccusative mismatches, as in (8), presented here as (61) (with made glossed as until):

(61) a. ?*Kodomo-ga [VP inu-to awatete san-nin hasitta/aruita].
child-NOM dog-with hurriedly three-cl. ran/walked
"Three children ran/walked hurriedly with a dog."

b. Kodomo$_i$-ga [$_{VP}$ inu-to awatete t_i san-nin kooen-made hasitta/aruita].

child-NOM dog-with hurriedly three-cl. park-until ran/walked

"Three children ran/walked hurriedly to the park with a dog."

To show how (61) follows from (56), let us assume that verbs appearing in the LRS (58) are unaccusatives, which is plausible since [Spec, VP] in (58) is the object position, in which an NP argument appears as the "subject" of the change predicate, or a "theme." Given this assumption, we can explain the unaccusative mismatches as follows: A manner-of-motion verb such as hasiru "run" can appear in the LRS (58) only when there is a directional P such as made "up to," which, by virtue of its having both Path P and Place P, renders the V' a change predicate and thus licenses the "theme" argument in its Spec. Without a directional P, a manner-of-motion verb cannot appear in the representation of unaccusatives in (58).

Thus, (56) not only provides a structural basis for the predicative vs. non-predicative distinction, but also accounts for (a) why directional Ps, but not locational Ps, can occur with manner-of-motion verbs, and (b) why manner-of-motion verbs become unaccusatives when appearing with a directional P.

2.7.1.3 Directional Ps are predicates

According to (56), complex directional Ps, such as English into and onto, are also predicates, because their LRS representation includes both Place P and Path P ([41]). This is supported by two facts. First, in parallel to simple directional Ps, complex directional Ps can occur with manner-of-motion verbs, as in (62):

(62) A tiny old lady walked into the house.

Second, again in parallel to simple directional Ps, complex directional Ps cause unaccusative mismatches for manner-of-motion verbs, as indicated by the fact that sentences like (62) allow locative inversion (see Note 16), as in (63).

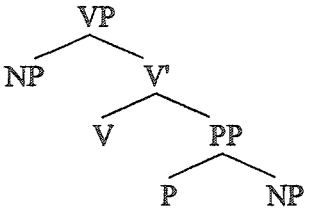
(63) Into the house walked a tiny old lady.

Thus, as expected by (56), both simple and complex directional Ps are predicates.

2.7.1.4 Difference between H and K's and my proposal

Finally, (56) suggests the need to expand the PP in H and K's LRS of "change" in (64).

(64) H and K's LRS of "change"



Since there is only one P in (64), it cannot represent the LRS difference between directional Ps and locational Ps. By contrast, with an expanded PP structure, (58) can represent the structural difference, as stated in (56). In other words, the important difference between H and K's and my proposal is that while H and K claim that all Ps are predicates, I argue that only certain Ps are, that is, Ps whose LRS representation includes both Path P and Place P. Only my proposal can structurally represent the difference between the two kinds of Ps.

In sum, the proposed LRS of a motion event can answer (55a) by saying that predicative Ps have both Path P and Place P in its LRS representation, whereas non-predicative Ps have only Place P in its LRS representation. It follows from this distinction that manner-of-motion verbs can appear in the "change" predicate (58) with a directional P, but not a locational P, that manner-of-motion verbs with directional Ps are unaccusatives, and that directional Ps, both simple and complex, are predicates.

2.7.2 Why English conflates motion and manner

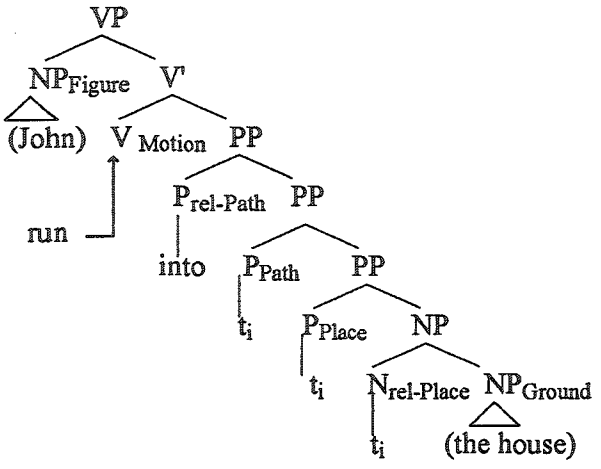
2.7.2.1 Conflation as insertion

Given the LRS of a motion event (58) and the fact that English has a variety of directional Ps as in (52), I provide (65) as my answer to (55b):

(65) English characteristically allows conflation of motion and manner in the verb root because it has a variety of directional Ps, which allow a manner-of-motion verb to be inserted into Motion V of the LRS of a motion event (58).

Importantly, (65) suggests that what Talmy (1985) calls conflation of motion and manner in the verb root characterizing sentences like John ran into the house is recast as insertion of a manner-of-motion verb into Motion V, as illustrated in (66).

(66) Insertion of a manner-of-motion verb (run) in Motion V



In (66), Place P and Path P are combined and realized as the directional P into, which licenses [Spec, VP] and frees up Motion V for the manner-of-motion verb run to be inserted in, without violating Full Interpretation.

This reconceptualization of Talmy's conflation of manner and motion in the verb root as insertion of a manner-of-motion verb in Motion V has two advantages. First, it derives the English-type conflation from the predicative force of directional Ps. Second, it explains why even a Japanese-type language allows the English-type conflation with a particular P such as Spanish hasta "up to, as far as" or Japanese made "up to, as far as," now analyzed as a directional P (see [6]).

2.7.2.2 The status of manner

All of the semantic elements of a motion event that Talmy (1985) identifies are represented in the LRS (58) except for manner. As mentioned, I assume that manner is an optional element subordinate to a motion event and that, as such, it is not

associated with any structural position in l-syntax. Rather, manner is an idiosyncratic property associated with each verb, which would be consistent with the fact that there are a variety of manner-of-motion verbs. For example, Levin (1993, p. 31, [405]) lists 124 English manner-of-motion verbs that appear with directional Ps. Manner is realized in the LRS of a motion event when a manner-of-motion verb is inserted into Motion V, as in (66). This option is available only when there is a directional P to license [Spec, VP]. This is why English-type languages predominantly use it but Japanese-type languages do not. Another option to realize manner is to add manner adverbials (e.g., participles, gerunds) in s-syntax, which is predominantly used by Japanese-type languages, as in (3) and (5).[45]

In sum, my proposal reconceptualizes Talmy's incorporation of manner and motion as insertion of a manner-of-motion verb into Motion V, thus deriving the English-type conflation from the predicative force of directional Ps, which in turn explains why, given a directional P, even Japanese-type languages allow the English-type conflation.

2.7.3 Why Japanese conflates motion and path

Given the LRS of a motion event (58) and the fact that Japanese has a variety of directed motion verbs with Path P incorporated (via rel-Path P) as in (53), I provide (67) as my answer to (55c):

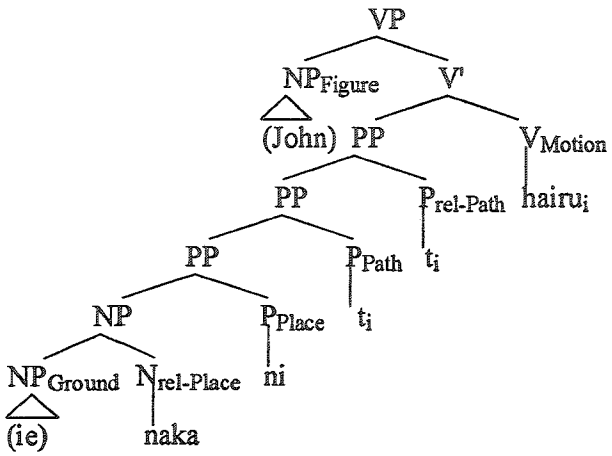
(67) Japanese characteristically allows conflation of motion and path in the verb root because it has a variety of directed motion verbs with Path P incorporated (via rel-Path P) in the LRS of a motion event (58).

Given (67), what Talmy (1985) calls conflation of motion and path in the verb root characterizing sentences like (68) is recast as incorporation of Path P into Motion V (via rel-Path P) in the LRS of a motion event (58), as in (69).

(68) a. John-ga hasit-te ie-no naka-ni/e haitta.
John-NOM run-GER house-GEN inside-at/to went-in
"John entered the house running."

b. John-ga arui-te gakkoo-ni/e itta.
John-NOM walk-GER school-at/to went
"John went to school walking."

(69) Incorporation of Path P into Motion V (via rel-Path P)



This reconceptualization of Talmy's conflation of path and motion in the verb root as incorporation of Path P into Motion V (via rel-Path P) allows us to explain why in Japanese-type languages directed motion verbs appears with locational Ps such as ni "at" and e "to." Since Path P is incorporated into Motion V, the presence of a locational P is sufficient to make the V' a change predicate and hence Figure NP in [Spec, VP] interpretable, satisfying Full Interpretation.

2.7.4 Why there is no conflation of motion and ground

The proposed framework has a further advantage of constraining conflation patterns for a motion event. The HMC can explain why there are no languages which conflate motion and ground in the verb root, a mysterious gap in Talmy's (1985) typology. This type of language would allow sentences like (70).

(70) a. *John housed into. (cf. John went into the house.)

b. *John staged onto. (cf. John went onto the stage.)

Within the LRS of a motion event (58), conflation of motion and ground corresponds to incorporation of Ground N into Motion V with the intervening heads intact, which clearly violates the HMC, as in (71):

(71) Incorporation of Ground N into Motion V (e.g., *house into)

N_{Figure}	V_{Motion}	$P_{rel\text{-}Path}$	P_{Path}	P_{Place}	$N_{rel\text{-}Place}$	N_{Ground}
(John)	*house*	*into*				*t*

(71) illustrates the incorporation of Ground N house into Motion V in (70a), which violates the HMC by skipping the four intervening heads. Thus, my approach can account for a gap in conflation patterns that Talmy (1985) cannot.

In sum, the current proposal provides reasonable answers to the three questions in (55) within a constrained framework, thereby contributing to solving the empirical and conceptual problems in Talmy (1985).

2.8 Summary and Conclusion

In this chapter, I provided a syntactic account of the difference between English and Japanese with respect to the lexicalization of a motion event within the framework of H and K's (e.g., 1993) approach to argument structure. I extended H and K's approach to locational Ps, directional Ps, and motion verbs in English and Japanese and proposed the LRS of a motion event (58). Given (58), the difference between English and Japanese is that the former has a variety of directional Ps such as into and under, whereas the latter has a variety of directed motion verbs such as hairu "go-in" and agaru "go-up." I have shown that the proposed framework can provide the following answers to the three questions in (55) that previous work left unanswered:

1. The distinction between predicative and non-predicative Ps has a structural basis: The LRS representation of predicative Ps includes both Place P and Path P, whereas that of non-predicative Ps includes only Place P.

2. English conflates motion and manner in the verb root because it has a variety of directional Ps, which allow a manner-of-motion verb to be inserted into Motion V.

3. Japanese conflates motion and path in the verb root because it has a variety of directed motion verbs with Path P incorporated (via rel-Path P) into Motion V.

Further, I have shown that from my proposal follow a number of facts: (a) Japanese-type languages do not generally allow conflation of manner and motion in the verb root; (b) Japanese-type languages exceptionally allow the English-type conflation given a directional P (e.g., made); (c) the presence of a directional P causes unaccusative mismatches for a manner-of-motion verb; (d) Japanese-type languages allow locational Ps to occur with directed motion verbs to express the endpoint of a path; and (e) there are no languages which conflate ground and motion in the verb root.

Significantly, this study suggests that Talmy's (1985) lexicalization patterns are constrained by general syntactic principles. Finally, if my proposal is on the right track, it provides further support for H and K's syntactic approach to argument structure.

Notes

[1] This chapter is based on Inagaki (2001b) with minor modifications and revisions.

[2] To be exact, Talmy (1985) included, as "Motion," not only "motion" (as described in the text), but also "location" with no movement involved, as exemplified by the English sentence The pencil lay on the table (Talmy 1985, p. 61). The inclusion of "location" in "Motion" further led Talmy to include in "Path," not only the "path" followed, but also the "site" occupied, by the figure with respect to the ground. I do not discuss Talmy's "location" partly because it is beyond the scope of this thesis, and partly because, as Talmy (1985, p. 62) admits, his typology seems to work better with "motion" and in some cases not to extend to "location."

[3] The difference between "manner" and "cause," according to Talmy (1985, pp. 139-140), is that "manner" refers to what the figure does, whereas "cause" refers to what the (implicit) agent or instrument does. Thus, for example, in the sentence, The pencil rolled off the table, the "rolling" is what the figure "pencil" does and hence the "manner," whereas in the sentence, The pencil blew off the table, the "blowing" is what an implicit agent, say, the "wind," does and hence the "cause." I do not discuss "cause" in this thesis.

[4] Note that Talmy's typology is based on what the verb root in a given language expresses "in its most characteristic expression of Motion" (Talmy, 1985, p. 62); therefore, presumably, it allows for some exceptions. By "characteristic," Talmy means the following:

> (i) It is colloquial in style, rather than literary, stilted, etc. (ii) It is frequent in occurrence in speech, rather than only occasional. (iii) It is pervasive, rather than limited, that is, a wide range of semantic notions are expressed in this type (Talmy 1985, p. 62 [emphasis in the original]).

[5] In fact, Talmy (1985) did not state what type of language Japanese is; it is in Talmy (1991, p. 486) that Japanese is included among the second type of language.

[6] Sentences (1a) and (3a) are adapted from Talmy (1985, p. 69). Talmy (1985) also discusses motion in the reverse direction, as in The bottle floated out of the cave. This type of motion is beyond the scope of this thesis.

[7] More recently, Talmy (1991) proposed a two-category typology for a motion event, this time on the basis of whether path is expressed in the verb root or not. Those languages which express path in the verb root are called "verb-framed" languages, whereas those which do not are called "satellite-framed" languages. The latter are called "satellite-framed" because these languages express path in the "satellite," which Talmy (1991, p. 486) defines as "the grammatical category of any constituent other than a nominal complement that is in a sister relation to the verb root" (e.g., English verb particles). According to this typology, English is a satellite-framed language with path expressed in the satellite (e.g., in[to] in [1]), whereas Spanish is a verb-framed language with path expressed in the verb (e.g., entrar in [3]).

[8] Aske (1989) first pointed out that Spanish allows sentences like (6a), exhibiting the English-type conflation.

[9] Ikegami (1981) first pointed out that Japanese allows sentences like (6b) with the P made. See also Yoneyama (1986).

[10] One might argue that examples like (6) do not affect Talmy's typology because they are limited to certain Ps and hence not "characteristic" (Talmy 1985, p. 62). However, sentences like (6) are colloquial and frequent occurring with a number of manner-of-motion verbs in both Spanish (Ask, 1989, p. 3) and Japanese. Moreover, this move leaves the question of why the exceptional behavior is limited to Ps with a similar meaning "up to, as far as" cross-linguistically.

[11] There are at least three other proposals concerning the cross-linguistic differences in the expression of a motion event that Talmy identifies; namely, Levin and Rapoport's (1988) "lexical subordination," Jackendoff's (1990) "GO-Adjunct Rule," and Snyder's (1995b) "null telic morpheme." However, they all, one way or another,

stipulate what is special about the English-type language in allowing sentences like (1) and thus suffer from the same empirical and conceptual problems as Talmy's work.

12 The grammaticality of sentences like (7) is somewhat controversial among Japanese linguists: They are given "?" by Ikegami (1981, p. 263) and "*" by Takezawa (1993, p. 59) and Tsujimura (1994, p. 341). My judgment as a native speaker of Japanese is that they are pretty bad but not completely unacceptable, so I gave "?*" to (7a). What is not controversial, however, is that there is a clear contrast between ni/e and made; that is, sentences like (7b) sound much better than sentences like (7a).

13 As mentioned in Chapter 1, like Japanese, French does not allow the translation equivalent of the English sentence I walked to the park, as in (i) (Tsujimura, 1994, p. 340, [9b]):

(i) *J'ai marché au parc.
I have walked to park
"I walked to the park."

14 Sentences in (8) are adapted from Tsujimura (1994, pp. 345-346, [14a], [14b]).

15 I am indebted to Lisa Travis for pointing this out to me.

16 The unaccusative status of English sentences like (9a) is indirectly supported by the fact that their counterparts in other languages are classified as unaccusatives by such unaccusative diagnostics as auxiliary selection in Italian and Dutch and ne-cliticization in Italian; see Kizu (1996a, p. 194) and references therein. The unaccusative status of English sentences like (9b) is supported by the fact that fronting of the goal PP in (9b) results in a grammatical sentence, as in (i).

(i) Into the room ran the children. (Levin & Rappaport, 1989, p. 326, [24b])

Assuming that locative inversion (i.e., fronting of PP) is an unaccusative diagnostic in English, the grammaticality of (i) indicates that (9b) is an unaccusative; see Kizu (1996b, p. 2) and references therein.

17 One may wonder if the NP John receives two theta roles, "theme" from the goal P to and "agent" from the verb swim in violation of the Theta Criterion (Chomsky,

1981). However, Kizu (1996a, 1996b) proposes that the agent role is "demoted" to an adjunct theta role, which is invisible to the standard Theta Criterion; see Kizu (1996a, pp. 200-201, 1996b, pp. 25-28) for details.

[18] From now on, I will not show the adjoined structure of the incorporated heads for the sake of simplicity, although I assume that such a structure exists. Therefore, in a structure like (12), I will simply put shelve$_i$ under the first V head, without showing the rest of the adjoined structure.

[19] The term "place" is borrowed from Jackendoff (1983, 1990).

[20] The Ps ni and de are distributionally different in that the former marks a location where a static event takes place, whereas the latter marks a location where a dynamic event takes place (Jorden, 1987), as in (i).

(i) a. John-wa Tokyoo-ni/*de iru/sunde-iru.
John-TOP Tokyo-at/at be/living-be
"John is/lives in Tokyo."

b. John-wa kooen-*ni/de hasitta/aruita.
John-TOP park-at/at ran/walked
"He ran/walked in the park."

In (ia), the verb denotes a static event "be/live" and thus only ni is acceptable; in (ib), the verb denotes a dynamic event "run/walk" and thus only de is acceptable.

[21] There are a number of languages with the Japanese-type periphrastic locational Ps (e.g., Mandarin, Tibetan; see Starosta, 1985).

[22] (16) is proposed as universal except for the head position, which is either final (as in Japanese) or initial (as in English). In this thesis, when I present a structure as a generalization, the head position is intended to be either initial or final, as in (16). I simply assume Japanese is head-final and English is head-initial, leaving the question of how to derive the crosslinguistic variation open.

[23] (19b) is adapted from Jackendoff (1990, p. 72, [4d]); (19d) is from Levin and Rapoport (1988, p. 281, [16a]).

[24] Under the locational reading, P in (19) has the LRS of the locational P in (17). However, such locational PPs are not arguments of manner-of-motion verbs (e.g., walk, run), but adjuncts, whereas directional PPs are. Evidence for it is provided in (i), where the intended readings of under and in are directional and locational, respectively.

(i) a. John walked under the bridge in the park.

b. ?*John walked in the park under the bridge.

The contrast between (ia) and (ib) indicates that the directional PP is a sister of the V walk, whereas the locational PP is a sister of the V' walk under the bridge, as in (ii).

(ii) [IP John [VP [V' walked [PP under the bridge]] in the park]].

[25] However, Lisa Travis (personal communication) suggested that even in English there are contexts in which until can be used with places, as in (i):

(i) a. She talked until Toronto when on a bus.

b. She pushed the baby carriage until Guy Street and then I pushed it.

[26] For ~~the~~ rest of this paper, I gloss made as the most intuitive until but translate it as the grammatical up to or as far as.

[27] E, however, can only occur with directed motion verbs as in (24), not with stative verbs; so the replacement of ni in (25) with e results in significantly less acceptability, as in (i):

(i) ?*John-wa Tokyoo-e iru/sunde-iru.
John-TOP Tokyo-to be/living-be
"John is/lives in Tokyo."

I have no explanation for this except for saying that it is an idiosyncrasy associated with e. I regard e as a locational P, since e is parallel to ni in other respects, as shown shortly.

[28] Given the analysis of ni as a locational P, one may wonder if (26) with ni is acceptable in a locational reading. This is not the case, however, because

"running/walking" is a dynamic event, which requires the dynamic locational P de (see Note 20), as in (i).

(i) John-ga gakkoo-*ni/de hasitta/aruita.
John-NOM school-at/at ran/walked
"He ran/walked at school."

29 Therefore, I gloss ni as "at" not "to" for the rest of this paper. However, I continue to gloss e as "to" due to its above-mentioned peculiarity that it cannot go with stative verbs.

30 Again, to be exact, Snyder analyzed onto as "to" + "null telic morpheme" + "on" combined in syntax. For reasons given above, I dispense with his null telic morpheme.

31 In sentence (28), not only Place P ni "at" but also Place P e "to" can occur with the verb. I only show ni for simplicity. The point here is that the Japanese verb hairu selects a Place PP, whether the head is ni or e.

32 I analyze Spanish a as a locational P corresponding to Japanese ni "at" for the following two reasons. First, a has a usage as a locational P, as in (i).

(i) Estábamos sentados a la mesa.
were sitting at the table
"We were sitting at the table."

Secondly, a can mark the endpoint of a path with a directed motion verb such as ir "go" and venir "come," but, according to Aske (1989, p. 14), not with a manner-of-motion verb such as correr "run" and caminar "walk," as in (ii):

(ii) Juan fue/vino/?*corrió/?*caminó a la biblioteca
Juan went/came/ran/waked to the library.
"Juan went/came/ran/walked to the library."

Notice that the behavior of the Spanish P a in (i) and (ii) is parallel to that of the Japanese Place P ni in (25), (24), and (26a). However, contrary to Aske's (1989) judgment, some of my Spanish informants accepted the sentence (ii) with correr "run" and caminar "walk." If they are right, then there may be two a's in Spanish, one a

locational P a "at" as in (i), and the other a simple directional P a "to" as in (ii). Whether a is locational or directional does not affect my argument here, however, because if a is a directional P, it is parallel to Spanish hasta "up to," the behavior of which also suggests the presence of rel-Path P as in (36b).

33 I assume that hasta "up to" is the Spanish equivalent for Japanese made "up to" on semantic grounds. The equivalence between Spanish hasta and Japanese made is even more striking given the fact that the former, just like the latter, can be used with time, meaning "until" as in (i):

(i) Esperé hasta las tres.
waited until the three
"I waited until three."

34 I assume that arriba is a realization of rel-Place N incorporated into Place P in l-syntax. This assumption is reasonable, since Aske (1989, pp. 4-5) suggests that Spanish adverbials like arriba "at-top" and (a)dentro "at-inside" denote locations with stative verbs, as in (ia), but that they denote goals with directed motion verbs, as in (ib) (Aske 1989, p. 5, [18a], [18b]):

(i) a. Están (a)dentro (de la casa).
"They are inside (the house)."
b. Fueron/entraron adentro (de la casa).
"They went inside (the house)."

Notice that the behavior of these Spanish adverbials is parallel to that of PPs headed by the Japanese locational P ni "at" in (25) and (24).

35 (39a,b) are adopted from Talmy (1975, p. 214, [50a,b]) and (39c) from Talmy (1975, p. 215, [50f]), all with minor modifications and my emphasis.

36 (ACC) indicates that the noun is in the form of accusative Case.

37 I leave open the question whether the incorporation of the prefix occurs in l-syntax or s-syntax, which does not affect my argument here.

[38] According to Talmy (1975), German also behaves like Russian in this respect, exhibiting sentences like (i) (adapted from Talmy 1975, p. 212 [emphasis mine]):

(i) Er ging in-s Haus hinein.
he walked in-the house (ACC) in
"He walked into the house."

[39] Again, in (46) and other examples below, I only show ni "at" as the head of the locational PP. However, that this is only for simplicity and that whenever a ni phrase can occur with a motion verb, so can an e "to" phrase.

[40] Note that the LRS representation of iku in (47a) is different from that in (44) (with the P made "up to"); I assume that there are two different LRS representations for iku "go" and kuru "come," one with and the other without an incorporated Path P. In contrast, tuku "arrive" cannot occur with made "up to," as in (i):

(i) *John-ga gakkoo-made tuita.
John-NOM school-until arrived
"John arrived up to school."

(i) suggests that tuku, unlike iku and kuru, has only (47a) as its LRS representation.

[41] Other directed motion verbs of the (47b) type will be modoru "go-back," kaeru "go-back," and wataru "go-across" in (i).

(i) a. John-ga ie-ni modotta/kaetta.
John-NOM house-at went-back/went-back
"John went back to the house."

b. John-ga kawa-no mukoo-gawa-ni watatta.
John-NOM river-GEN other-side-at went-across
"John crossed to the other side of the river."

[42] Other directed motion verbs of the (50) type will be modoru "go-back," kaeru "go-back," and wataru "go-across" in (i).

(i) a. Guntai-ga kok-kyoo-made modotta.
army-NOM country-border-until went-back
"The army went back to the border."

b. Eki-made densya-de kaette, soko-kara aruita.
station-until train-by going-back there-from walked
"I went back to the station by train and walked from there."

c. John-ga kawa-no mukoo-gawa-made watatta.
John-NOM river-GEN other-side-until went-across
"John crossed to the other side of the river."

[43] Other English verbs of this type will be return and cross with to, as in (i).

(i) a. John returned to the house.

b. John crossed to the other side.

English enter may be the only motion verb in English which has rel-Place N incorporated all the way through Place P, Path P, and rel-Path P. This is consistent with the fact that enter selects Ground NP as a direct object, as in (i):

(i) John entered the house.

(ii) illustrates a possible incorporation pattern of enter.

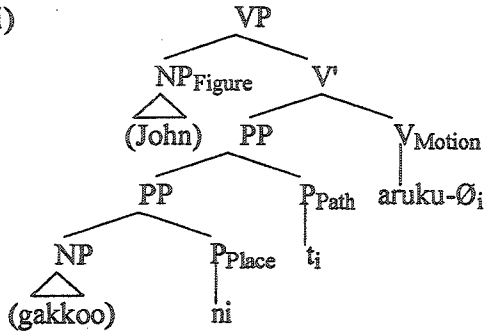
(ii) English enter--motion verb with incorporated rel-Place N

N_{Figure}	V_{Motion}	$P_{rel\text{-}Path}$	P_{Path}	P_{Place}	$N_{rel\text{-}Place}$	N_{Ground}
(John)	*enter*					*(house)*

Japanese does not seem to have any motion verb with this incorporation pattern comparable to English enter.

[44] Lisa Travis (personal communication, January 2001) asked why, instead of (59), Japanese does not allow a manner-of-motion verb to be inserted in Motion V and then a zero Path P "Ø" to be incorporated into Motion V, as in (i):

(i)



There is nothing linguistically wrong with (i). In fact, a similar pattern is attested in Russian. As we saw in (39) and (40), in Russian, rel-Path P incorporates into a manner-of-motion verb in Motion V and is realized as a prefix (e.g., v-bezal "in-ran"). The difference between Japanese and Russian is that while Russian has overt path morphemes for the incorporated head, Japanese does not. Therefore, I speculate that Japanese disallows a representation like (i) due to the lack of overt morphology for Path P.

[45] There seems yet another way of realizing manner, that is, to attach a manner affix to a directed motion verb, as seen in Nez Perce, a polysynthetic language of North America (Talmy, 1985, pp. 110-111). If so, manner is an idiosyncratic property of a verbal morpheme (i.e., a verb root or a verbal affix).

Chapter 3

Motion Verbs with Goal PPs in L2 English and Japanese

3.0 Introduction

This chapter presents experiments investigating the acquisition of motion verbs with goal PPs (e.g., John walked to school) in L2 English and Japanese. As reviewed in Chapter 1, Harley (1989) provided some preliminary data from French-speaking learners of English indicating persistent L1 influence in this domain; however, there has been no L2 experiment investigating these argument structure properties bi-directionally in the context of L2 English and Japanese. The experiments test predictions that are made based on the analysis of motion verbs with goal PPs in English and Japanese proposed in Chapter 2 as well as on previous findings in L2 argument structure studies. This investigation is bi-directional, looking at both Japanese-speaking learners of English as a second language (ESL) and English-speaking learners of Japanese as a second language (JSL). Grammaticality judgment tasks with pictures were developed by the researcher to test L2 learners' knowledge of the target properties.

The rest of this chapter is organized as follows. Section 3.1 recapitulates the analysis of motion verbs with goal PPs in English and Japanese proposed in Chapter 2. Section 3.2 presents research questions and formulates hypotheses for the acquisition of the target properties in L2 English and Japanese. Sections 3.3, 3.4, and 3.5 present experiments testing the hypotheses using grammaticality judgment tasks.

3.1 The contrast between English and Japanese

The analysis given in Chapter 2 indicates that there is a contrast between English and Japanese with respect to what kinds of motion verbs can take PPs expressing the endpoint of motion, or goal PPs. English allows both manner-of-motion verbs such as walk and run and directed motion verbs such as go and come to occur with goal PPs, as in (1).

(1) a. John walked to school.

b. John ran into the house.

c. John went to school walking.

d. John went/came into the house running.

Manner is expressed as a finite manner-of-motion verb in (1a) and (1b) and periphrastically as a participle in (1c) and (1d).

In contrast, Japanese does not allow manner-of-motion verbs with goal PPs, as in (2a) and (2b), only allowing directed motion verbs to occur with goal PPs, as in (2c) and (2d). Japanese expresses manner as a gerund, or the "te-form," in which the verbal suffix -te is attached to the verb, as in (2c) and (2d).

(2) a. ?*John-ga gakkoo-ni aruita.
John-NOM school-at walked
"John walked to school."

b. ?*John-ga ie-no naka-ni hasitta.
John-NOM house-GEN inside-at ran
"John ran into the house."

c. John-ga arui-te gakkoo-ni itta.
John-NOM walk-GER school-at went
"John went to school walking."

d. John-ga hasit-te ie-no naka-ni itta/haitta.
John-NOM run-GER house-GEN inside-at went/entered
"John went into/entered the house running."

Thus, English allows a broader range of motion verbs to occur with a goal PP than Japanese. In other words, regarding these argument structure properties, there is a superset-subset relation between English and Japanese. This is illustrated in Figure 3.1.[1]

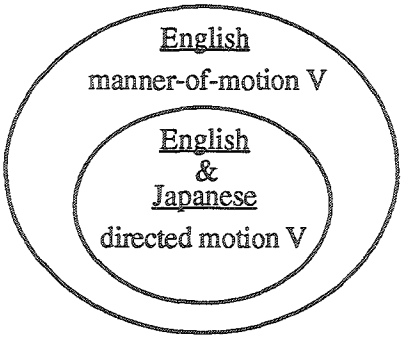
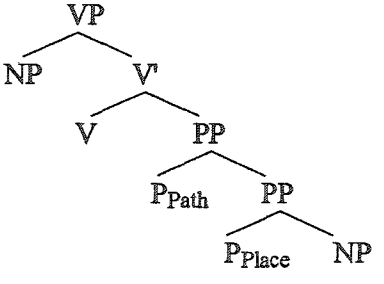


Figure 3.1. Motion verbs with goal PPs in English and Japanese

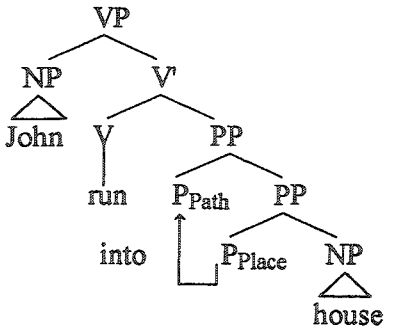
Figure 3.1 illustrates that manner-of-motion verbs (walk, run) as well as directed motion verbs (go, come) can take goal PPs (to, into) in English, whereas Japanese allows only the latter to take goal PPs ([1] vs. [2]).

The contrast between English and Japanese derives from different incorporation patterns in l-syntax. Within the LRS of a motion event (3), English incorporates Place P into Path P and realizes it as a directional P such as to, into, and onto, as in (4), whereas Japanese incorporates Path P into V and realizes it as a directed motion verb such as iku "go," hairu "go-in, enter," and agaru "go-up," as in (5).

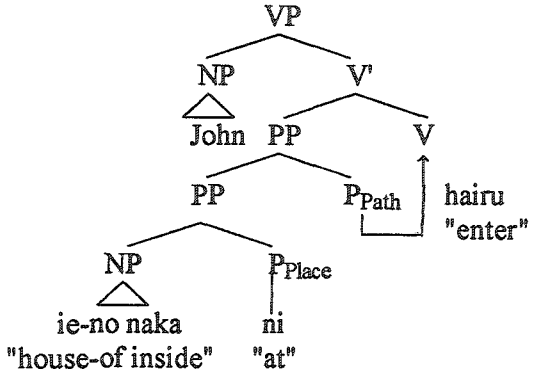
(3) LRS of a motion event[2]



(4) Incorporation of Place P into Path P in English (cf. [1b])

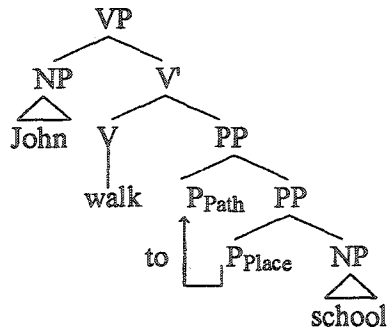


(5) Incorporation of Path P into V in Japanese (cf. [2d])

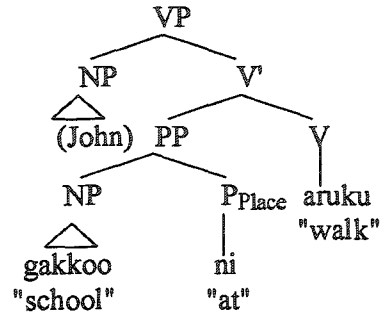


This analysis accounts for why English, but not Japanese, allows manner-of-motion verbs to appear with goal PPs, as in (1) and (2). Including both Path P and Place P, directional Ps such as English to and into are predicates, thus licensing [Spec, VP] in (3), satisfying Full Interpretation, as in (6). On the other hand, including only Place P, locational Ps such as Japanese ni "at" are not predicates, thus failing to license [Spec, VP] in (3), violating Full Interpretation, as in (7).

(6) √ [Spec, VP] licensed (cf. [1a])



(7) * [Spec, VP] unlicensed (cf. [2a])



Thus, English allows manner-of-motion verbs with goal PPs due to the predicative force of directional Ps, whereas Japanese does not, due to the lack of directional Ps.

3.2 Research questions and hypotheses

The present study investigates how the outcomes of L2 argument structure vary depending on the nature of learners' L1, that is, whether L1 argument structure is a superset of the L2 or vice versa. It attempts to answer this question by investigating both English learners' acquisition of Japanese motion verbs with goal PPs and Japanese learners' acquisition of English motion verbs with goal PPs.

Based on the contrast between English and Japanese ([1] vs. [2]), illustrated in Figure 3.1, the following two hypotheses are formulated:

1. Japanese speakers will not have difficulty recognizing that manner-of-motion verbs with goal PPs are grammatical in English (John walked to school).

2. English speakers will have difficulty recognizing that manner-of-motion verbs with goal PPs are ungrammatical in Japanese (?*John-ga gakkoo-ni aruita).

In both cases, a partial fit between the L1 and the L2 may trigger L1 transfer, resulting in undergeneralization in ESL and overgeneralization in JSL. Subsequently, however, Japanese-speaking learners of English will receive positive evidence like (1a) and (1b), so they can restructure their interlanguage grammar to the L2 representation (4) so as to allow manner-of-motion verbs with goal PPs (Hypothesis 1). In contrast, English speakers will receive no positive evidence to show that forms like (2a) and (2b) are not possible in Japanese, so they will be stuck in the L1 representation (4) and continue to allow manner-of-motion verbs with goal PP (Hypothesis 2).

Hypothesis 1 assumes that positive evidence for the target property is robustly available to the L2 learner of English, which is highly likely. As Talmy (1985) suggests, manner-of-motion verbs with goal PPs are the most common way of expressing a motion event in English. Further, high frequency of this construction is supported by Levin (1993, p. 105): She lists 124 English manner-of-motion verbs that appear with directional PPs such as to and into. Hypothesis 2 is based on two assumptions. First, again manner-of-motion verbs with goal PPs are in no way marked in English and thus are transferable to an L2 (cf. Kellerman, 1983). The second assumption is that English-speaking learners of Japanese do not receive negative evidence for the ill-formedness of sentences like (2a) and (2b) either in the classroom or from their interlocutors, which seems reasonable. I checked Tsukuba Language Group (1994a, 1994b, 1995) and Miura and McGloin (1994), textbooks used by instructed participants in the present study (Study 3), and found no mention of it. I also asked several Japanese instructors of the instructed participants, all of whom said they had never taught the ungrammaticality of such forms. Further, the ungrammaticality of sentences like (2a) and (2b) is so subtle that it is unlikely that learners of Japanese would be corrected by their interlocutors in producing such sentences (see Note 12 in Chapter 2).

In the following, three experimental studies involving grammaticality judgment tasks with pictures are reported, testing Hypotheses 1 and 2.

3.3 Study 1

Study 1 was bidirectional, involving two sub-studies: one on Japanese learners' acquisition of English (the ESL study) and the other on English learners' acquisition of Japanese (the JSL study).[3]

3.3.1 Participants

Biographical information on the participants in the ESL and JSL studies is provided in Tables 3.1 and 3.2.

Table 3.1. Biographical data summary of participants in the ESL study

	Japanese (n=42)	English (n=22)
Age		
Range	18–22	25–54
M	18.98	43.45
SD	0.92	7.94
Onset age for L2 learning		
Range	12–13	--
M	12.48	--
SD	0.51	--

Table 3.2. Biographical data summary of participants in the JSL study

	English (n=21)	Japanese (n=43)
Age		
Range	25–54	18–22
M	43.14	18.95
SD	8.00	0.92
Onset age for L2 learning		
Range	9–44	--
M	26.14	--
SD	6.30	--
Age on arrival in Japan		
Range	17–44	--
M	27.43	--
SD	5.17	--
Length of stay in Japan		
Range	3–28	--
M	11.67	--
SD	6.97	--

Each participant completed both English and Japanese versions of the questionnaire. The Japanese group in the ESL study (n=42) served as a control in the JSL study (n=43), except for one who was eliminated from the ESL study due to his response bias toward accepting everything. Likewise, the English group in the JSL study (n=21) served as a control group in the ESL study (n=22), except for one who only did the English version of the questionnaire.[4]

The ESL study compared a group of Japanese-speaking learners of English to a group of English controls. The learner group consisted of 42 first-year university students at Osaka Prefecture University who were majoring in engineering. They began learning English in junior high school or a "cram school" in Japan and had

studied English formally since then. None of them had stayed in an English-speaking country for longer than a month. Thus, their level of English could be considered intermediate. The control group of 22 native speakers of English was comprised mostly of university teachers in Japan who had arrived as adults and had lived in Japan for a number of years (at least 3 years). Thus, they could be considered advanced learners of Japanese.

Notice that the learner groups in each study were not quite comparable in that the Japanese-speaking participants' proficiency level in English was lower than the English-speaking participants' proficiency level in Japanese. This is not a weakness--rather, it provides a tougher test for the hypotheses. That is, to support Hypothesis 1 the less proficient Japanese learners must correctly accept manner-of-motion verbs with goal PPs in English; to support Hypothesis 2 the more proficient English learners must wrongly accept manner-of-motion verbs with goal PPs in Japanese.

3.3.2 Materials

A written grammaticality judgment task with pictures was used in both studies. (See Appendixes A and B for complete samples of the questionnaire.) Japanese was written in both standard Japanese script (a mixture of kanji [characters of Chinese origin] and kana [the Japanese syllabary]) and romaji (a phonetic writing system using the Roman alphabet), in case participants were not familiar with the former. Kanji characters were accompanied by furigana (a transliteration of kanji into kana) in order to ensure that participants had no difficulties comprehending the orthographic form of the sentences.

In each picture, there was a "figure" (an object that moves) and the "ground" (an object with respect to which the figure moves) (Talmy, 1985). For example, in Picture 3 in Appendix A, Sam is the figure and house is the ground. Both figure and ground were labeled in order to ensure that participants were familiar with the vocabulary. There was also an arrow in each picture, which participants were told was being used to indicate the direction and endpoint of the motion depicted in the

picture. For example, Picture 3 in Appendix A depicts a situation in which Sam walks toward the house and ends up being inside the house. Participants were asked to judge to what degree each sentence sounded natural as a description of the situation depicted in the picture. Thus, the provision of pictures ensured that participants judged the grammaticality of the sentences under directional readings. Judgments were given on a five-point Likert scale (Busch 1993; Turner 1993) ranging from -2 (completely unnatural) through 0 (not sure) to +2 (completely natural). As mentioned earlier, each participant completed both the English and the Japanese versions of the questionnaire. About half of the participants did the English version first and the Japanese version second and the rest did them in the reverse order, to control for possible ordering effects.

There were eleven target items in the English version, consisting of five manner-of-motion verbs, two directed motion verbs, and six goal Ps, as shown in (11a). There were also eleven target items in the Japanese version, consisting of five manner-of-motion verbs, three directed motion verbs, and six goal Ps, as shown in (11b):[5]

(11) a. English

Manner-of-motion verbs: walk, run, swim, crawl, fly

Directed motion verbs: go, enter

Prepositions: to, into, onto, under, over, behind

b. Japanese

Manner-of-motion verbs: aruku "walk," hasiru "run," oyogu "swim," hau "crawl," tobu "fly"

Directed motion verbs: iku "go," hairu "enter," agaru "go-up"

Postpositions: ni "at," naka-ni "in-at," ue-ni "on-at," sita-ni "under-at," ue-ni "over-at," usiro-ni "behind-at"

The eleven target items were presented in two random orders, with about half of the participants taking one version and half the other.

There were four target sentence types in the English version and three in the Japanese version, as shown in Tables 3.3 and 3.4.

Table 3.3. Sentence types used in the ESL Study

Sentence type	Examples
manner V + PP	John walked into the house.
directed V + PP + -ing	John [went into/entered] the house walking.
directed V + PP + by -ing	John [went into/entered] the house by walking.
manner V and directed V + PP	John walked and [went into/entered] the house.

Table 3.4. Sentence types used in the JSL Study

Sentence type	Examples
PP + manner V	?*John-wa ie-no naka-ni aruita. John-TOP house-of inside-at walked "John walked into the house."
PP + -te + directed V	John-wa ie(-no naka)-ni arui-te [itta/haitta]. John-TOP house(-of inside)-at walk-GER went/entered "John [went into/entered] the house (by) walking."
-te + PP + directed V	John-wa arui-te ie(-no naka)-ni [itta/haitta]. John-TOP walk-GER house(-of inside)-at went/entered "John [went into/entered] the house (by) walking." or "John walked and [went into/entered] the house."

Japanese [PP + MANNER V] is equivalent to English [MANNER V + PP]; Japanese [PP + -TE + DIRECTED V] translates into English in two ways, as [DIRECTED V + PP + -ING] and [DIRECTED V + PP + BY -ING]; the Japanese te-form can also occur before PP in the pattern [-TE + PP + DIRECTED V], which translates into English as not only [DIRECTED V + PP + (BY) -ING] but also [MANNER V AND DIRECTED V + PP].[6] Each test item had one or two tokens of each sentence type along with a distracter,[7] for a total of five to eight sentences in the English version and four to eight in the Japanese version. These sentences were also randomly ordered within each test item.

3.3.3 Analyses

A two-way repeated measures ANOVA was conducted on the ESL study data. The design included one between-subject factor (language), which had 2 levels (Japanese and English), and one within-subject factor (sentence type), which had four levels corresponding to the four English sentence types in Table 3.3. Similarly, a two-way repeated measures ANOVA was conducted on the JSL study data. The design included one between-subject factor (language) with 2 levels (English and Japanese) and one within-subject factor (sentence type) with three levels corresponding to the three Japanese sentence types in Table 3.4.

3.3.4 Results

3.3.4.1 ESL study

Table 3.5 presents the mean ratings of English sentences on the part of Japanese and English speakers. (Standard deviations are included in parenthesis.) The results are also represented in graph form in Figure 3.2.

Table 3.5. Mean ratings of English sentences by Japanese and English speakers

	Sentence type			
Group	manner V + PP	directed V + PP + -ing	directed V + PP + by -ing	manner V and directed V + PP
Japanese	1.24 (0.54)	-0.22 (1.18)	1.13 (0.78)	0.97 (1.01)
English	1.92 (0.16)	0.36 (0.55)	-0.51 (0.99)	0.40 (1.10)

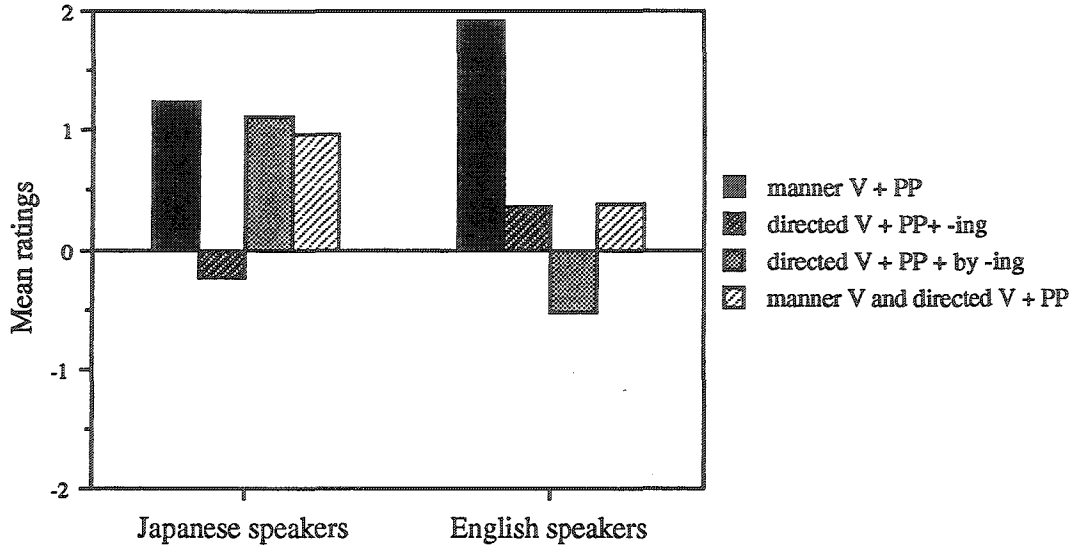


Figure 3.2. Mean ratings of English sentences by English and Japanese speakers

Figure 3.2 suggests that Japanese-speaking learners of English, even at an intermediate level, accepted [MANNER V + PP] (e.g., John walked to school), as expected under Hypothesis 1, although their ratings were not as high as those of the English speaker controls (1.24 vs. 1.92). There was a significant interaction between sentence type and language, $F(3, 186) = 24.48$, $p = .001$, indicating that the effect of sentence type varied depending on the language. In particular, Japanese speakers rated all sentence types equally high, with the notable exception of [DIRECTED V + PP + -ING] (e.g., John went to school walking). In contrast, English speakers rated [MANNER V + PP] significantly higher than the other three sentence types, and [DIRECTED V + PP + BY -ING] significantly lower than the other three sentence types, with no significant difference between the ratings of the other two. This is confirmed by the results of planned comparisons given in Table 3.6.

Table 3.6. Results of planned comparisons

	Japanese		English	
Sentence types	F	p	F	p
manner V + PP versus directed V + PP + -ing	56.74*	.0001	48.66*	.0001
manner V + PP versus directed V + PP + by -ing	0.36	.55	118.96*	.0001
manner V + PP versus manner V and directed V + PP	1.94	.17	46.63*	.0001
directed V + PP + -ing versus directed V + PP + by -ing	48.09*	.0001	15.45*	.0002
directed V + PP + -ing versus manner V and directed V + PP	37.70*	.0001	0.02	.88
directed V + PP + by -ing versus manner V and directed V + PP	0.63	.43	16.64*	.0001

Note. Japanese df = 1, 41; English df = 1, 21.

*$p < .05$.

In summary, Japanese speakers accepted all sentence types but [DIRECTED V + PP +-ING]. English speakers accepted [MANNER V + PP] but did not like the other sentence types, especially [DIRECTED V + PP + BY -ING].

3.3.4.2 JSL study

Table 3.7 presents the mean ratings of Japanese sentences on the part of English and Japanese speakers. (Standard deviations are included in parenthesis.) The results are also represented in graph form in Figure 3.3.

Table 3.7. Mean ratings of Japanese sentences by English and Japanese speakers

	Sentence type		
Group	PP + manner V	PP + -te + directed V	-te + PP + directed V
English	0.78 (1.00)	1.32 (0.57)	0.68 (0.97)
Japanese	–0.80 (0.82)	1.47 (0.51)	1.47 (0.51)

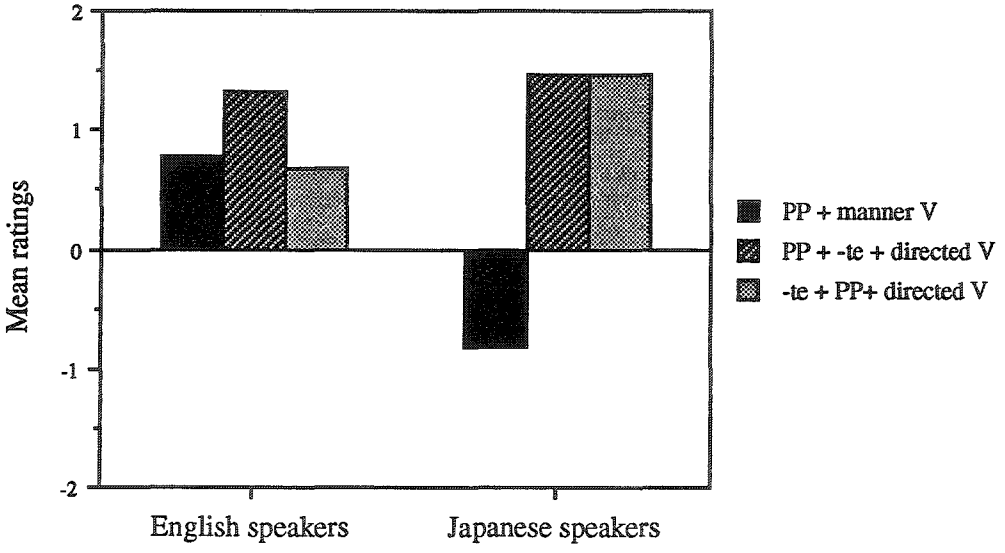


Figure 3.3. Mean ratings of Japanese sentences by English and Japanese speakers

The results suggest that English-speaking learners of Japanese, even at an advanced level, accepted [PP + MANNER V] (e.g., ?*John-wa gakkoo-ni aruita "John walked to school"), as expected under Hypothesis 2, which is in sharp contrast to Japanese speakers' low rating of it (0.78 vs. -0.80). There was a significant interaction between sentence type and language, $F(2, 124) = 50.00$, $p = .001$, indicating that the effect of sentence type varied depending on the language. In particular, English speakers accepted all three sentence types, among which [PP + -TE

+ DIRECTED V] (e.g., John-wa gakkoo-ni aruite itta "John went to school [by] walking") was rated the highest, with no significant difference between the other two. In contrast, Japanese speakers rated [PP + MANNER V] significantly lower than the other two sentence types, which were rated equally high. This is confirmed by the results of planned comparisons given in Table 3.8.

Table 3.8. Results of planned comparisons

	English		Japanese	
Sentence types	F	p	F	p
PP + manner V versus PP + -te + directed V	4.05	.051	409.47*	.0001
PP + manner V versus -te + PP + directed V	0.14	.71	409.50*	.0001
PP + -te + directed V versus -te + PP + directed V	5.70*	.022	0	.99

Note. English df = 1, 20; Japanese df = 1, 42.

*p < .05.

In summary, English speakers accepted all sentence types including [PP + MANNER V], favoring [PP + -TE + DIRECTED V] most. In contrast, Japanese speakers rejected [PP + manner V] and accepted the others.

3.3.5 Discussion

3.3.5.1 ESL study

Japanese learners at an intermediate level accepted manner-of-motion verbs with goal PPs in English such as John walked to school, thereby supporting Hypothesis 1. This suggests that Japanese speakers can learn such forms--which are not allowed in their L1--because they are available in the target language input. They can use

positive evidence for this new construction and acquire the L2 representation (4). Although Japanese speakers did not accept them as strongly as English natives, they may come to accept them like natives at later stages with further exposure to this sentence type.

There is an additional finding that is not central to the discussion but needs to be addressed. The English speaker controls did not like [DIRECTED V + PP + -ING] (e.g., John went to school walking), [MANNER V AND DIRECTED V + PP] (e.g., John walked and went to school), or especially [DIRECTED V + PP + BY -ING] (e.g., John went to school by walking). Contrarily, the Japanese speakers accepted the latter two but not the former. I argued earlier that English allows both [MANNER V + PP] (e.g., John walked to school) and [DIRECTED V + PP + (BY) -ING] (e.g., John went to school [by] walking). However, the results show that English speakers prefer the former to the latter. This is probably because, as Talmy (1985, p. 62) points out, English-type languages express manner in the verb root "in its most characteristic expression of Motion," where characteristic means colloquial, frequent, and pervasive. Remember that in the present study, participants were asked to judge how natural each sentence sounded. It is not surprising, then, that English speakers found [MANNER V + PP] more natural than [DIRECTED V + PP + (BY) -ING], where manner is expressed as a participle, not a main verb. As for why English speakers rated [DIRECTED V + PP + -ING] higher than [DIRECTED V + PP + BY -ING], I speculate that since by expresses a means of motion, as in John went to Tokyo by car (train, bus) it may not be appropriate for expressing a manner of motion such as walking, running, and swimming. A manner-of-motion is perhaps more appropriately expressed as the bare participle V-ing.[8]

English speakers probably rated [MANNER V AND DIRECTED V + PP] (e.g., John walked and went to school) low because the form is used to express two events and thus did not match the picture, which depicted a single event. As an illustration, compare (12) and (13), both of which are from Picture 3 in Appendix A.

(12) Sam walked into the house.

(13) Sam walked and went into the house.

Example (12) expresses a single event, Sam's walking into the house, which matches the picture, whereas (13) expresses two events, Sam's walking and Sam's going into the house, which does not match the picture. Put differently, (13) would have been more appropriate than (12) if the picture depicted a situation where Sam walked around the house for a few minutes and then went into the house. This would then account for English speakers' low rating of [MANNER V AND DIRECTED V + PP].

Turning to the Japanese speakers, if they accept [DIRECTED V + PP + BY -ING] (e.g., John went to school by walking) and [MANNER V AND DIRECTED V + PP] (e.g., John walked and went to school) in English due to L1 influence, they should also accept [DIRECTED V + PP + -ING] (e.g., John went to school walking) because all three are thought to be English equivalents of Japanese-type forms. However, the Japanese speakers accepted the first two forms but not the last one. Why is this? One possibility is that Japanese learners did not draw a parallel between [DIRECTED V + PP + -ING] in English and either [PP + -TE + DIRECTED V] or [-TE + PP + DIRECTED V] in Japanese. Instead, they might have drawn a parallel between [DIRECTED V + PP + BY -ING] in English and [PP + -TE + DIRECTED V] (e.g., John-wa gakkoo-ni aruite itta "John went to school [by] walking") or [-TE + PP + DIRECTED V] (e.g., John-wa aruite gakkoo-ni itta "John went to school [by] walking" or "John walked and went to school") in Japanese, with by corresponding to -te. Furthermore, they might have drawn a parallel between [MANNER V AND DIRECTED V + PP] in English and [-TE + PP + DIRECTED V] in Japanese, with and corresponding to -te. This would explain why L1 influence manifested itself in the acceptance of [DIRECTED V + PP + BY -ING] and [MANNER V AND DIRECTED V + PP], but not [DIRECTED V + PP + -ING].[9] If this is the case, Japanese learners would have to learn [DIRECTED V + PP + -ING] solely from the input, which may be difficult given the marginality of this form in English, as reflected in English speakers' low rating of it.

Incidentally, English speakers' preference of [MANNER V + PP] (e.g., John walked to school) over the other sentence types seems to cause a problem for

Japanese learners of English, who accepted [DIRECTED V + PP + BY -ING] and [MANNER V AND DIRECTED V + PP] as well as [MANNER V + PP]. In other words, they accepted both English-type and Japanese-type sentences. Again, this is probably due to the L1 along with the lack of clear positive evidence. Starting with the L1, Japanese learners will subsequently receive many instances of [MANNER V + PP] and perhaps a few instances of the Japanese-type forms. This would allow them to learn [MANNER V + PP] but might be too subtle for them to learn that English prefers it to Japanese-type forms.

To summarize, intermediate level Japanese-speaking learners of English did not have difficulty recognizing the grammaticality of manner-of-motion verbs with goal PPs presumably due to the availability of positive evidence, supporting Hypothesis 1. They had not yet learned that what they recognized as English equivalents of Japanese-type forms ([DIRECTED V + PP + BY -ING] and [MANNER V AND DIRECTED V + PP]), were marginal in English, due to the lack of clear positive evidence.

3.3.5.2 JSL study

English-speaking learners of Japanese at an advanced level accepted manner-of-motion verbs with goal PPs such as *John-wa gakkoo-ni aruita "John walked to school" even though they are ungrammatical, thereby supporting Hypothesis 2. This suggests that English learners of Japanese, after years of exposure, had not learned that such forms are ungrammatical in Japanese, because no positive evidence would inform them of their ungrammaticality. Without relevant evidence, they would get stuck in the L1 representation in (4), failing to acquire the L2 representation in (5).

There is another finding that is not central to the discussion but needs to be addressed. English speakers accepted both [PP + -TE + DIRECTED V] (e.g., John-wa gakkoo-ni aruite itta "John went to school [by] walking") and [-TE + PP + DIRECTED V] (e.g., John-wa aruite gakkoo-ni itta "John went to school [by] walking" or "John walked and went to school") but preferred the former to the latter, whereas Japanese speakers accepted these two forms equally. English speakers' acceptance of the two

forms is expected because they could learn them from the input. But why did they prefer one to the other? This may be due to the fact that only [TE + PP + DIRECTED V] could correspond to [MANNER V AND DIRECTED V + PP] in English. Compare (14) to (15):

(14) John-ga gakkoo-ni arui-te itta.
John-NOM school-at walk-GER went
"John went to school (by) walking."

(15) John-ga arui-te gakkoo-ni itta.
John-NOM walk-GER school-at went
"John went to school (by) walking." or "John walked and went to school."

The sentence in (14) is an example of [PP + -TE + DIRECTED V], corresponding to [DIRECTED V + PP + (BY) -ING] in English, whereas (15) is an example of [TE + PP + DIRECTED V], corresponding to either [DIRECTED V + PP + (BY) -ING] or [MANNER V AND DIRECTED V + PP] in English. In English, [DIRECTED V + PP + (BY) -ING] expresses a single event, as does [MANNER V + PP] (e.g., John walked to school); [MANNER V AND DIRECTED V + PP], however, expresses two events (see [12] and [13] and discussion thereof). This means that, in Japanese, both (14) and (15) could mean John went to school (by) walking or John walked to school (one event), whereas only the latter could mean John walked (around the house for a few minutes) and went to school (two events). Thus, the fact that only [-TE + PP + DIRECTED V] could express two events in Japanese may have led some English speakers to draw a parallel between this and [MANNER V AND DIRECTED V + PP] in English. If so, they must have disfavored [-TE + PP + DIRECTED V] due to its mismatch with the pictures, just as they disfavored [MANNER V AND DIRECTED V + PP] for the same reason in English.

To summarize, advanced-level English speakers had difficulty recognizing that manner-of-motion verbs with goal PPs were ungrammatical in Japanese, supporting Hypothesis 2. They had not yet learned that [-TE + PP + DIRECTED V] was as

natural as [PP + -TE + DIRECTED V] expressing a single motion event due to their association of the former with [MANNER V AND DIRECTED V + PP] in English.

In general, the results suggest that L2 acquisition of argument structure will not be difficult when the L2 (English) is a superset of the L1 (Japanese), and that it is difficult when the L2 (Japanese) is a subset of the L1 (English), thereby confirming White's (1991b) predictions in a new domain.

3.4 Study 2

This study was a follow-up of the ESL study in Study 1, investigating more advanced-level Japanese-speakers' acquisition of English to see if there were any developmental effects. Its purpose was not only to further test Hypothesis 1 but also to investigate learnability issues arising from unexpected findings in the ESL part of Study 1, which are recapitulated below.

Among the test items in Study 1 were tokens of four sentence types in (16).

(16) a. manner V + PP: John walked to school.
b. directed V + PP + -ing: John went to school walking.
c. directed V + PP + by -ing: John went to school by walking.
d. manner V and directed V + PP: John walked and went to school.

(16a) is the form not allowed in Japanese, and forms in (16b-d) are three possible literal translations of the Japanese patterns in (2c) and (2d) containing a gerund or the te-form. The te-form has a variety of meanings including manner, means, and temporal sequence (Tamori, 1976-77). If the te-form is taken to express manner, then (16b) may be its English equivalent; (16c) and (16d) may be its English equivalents if the te-form is taken to express means and temporal sequence, respectively. In Study 1, English native speakers rated (16b-d) significantly lower than (16a), and (16c) significantly lower than (16b) and (16d), suggesting that (16b), (16d), and especially (16c) are fairly unnatural in English. On the other hand, intermediate-level Japanese-speaking learners of English rated (16a), (16c), and (16d) equally high, but (16b) lower than the rest. I suggested that Japanese learners accepted (16c) and (16d) because

they drew a parallel between these forms and the L1 patterns ([2c,d]), with English by and and corresponding to Japanese -te. I further speculated that Japanese learners rated (16b) low because they did not associate it with any Japanese pattern and thus had to learn the form solely from the input, which must have contained few relevant instances, given its marginality.

Interestingly, these findings raise a new learnability problem to those Japanese learners who assume (16c) and (16d) are natural in English. That is, it will presumably be difficult for them to recognize that (16c) and (16d) are unnatural in English, due to lack of clear positive evidence for the unnaturalness. What these Japanese learners subsequently receive will be few instances of (16b-d) along with many instances of (16a). However, this type of probabilistic evidence may be too subtle for them to recognize the marginality of (16c) and (16d) when they start with the assumption that these two forms are as natural as their Japanese equivalents.

Study 2 investigates these learnability issues by looking at advanced Japanese-speaking learners of English and comparing them to the intermediate Japanese learners and English native speakers in Study 1. The present study tested the following three hypotheses as well as Hypothesis 1:

3. Advanced Japanese learners will have difficulty recognizing that [DIRECTED V + PP + BY -ING] (John went to school by walking) is unnatural in English.

4. Advanced Japanese learners will have difficulty recognizing that [MANNER V AND DIRECTED V + PP] (John walked and went to school) is unnatural in English.

5. Advanced Japanese learners will rate [DIRECTED V + PP + -ING] (John went to school walking) low.

Hypotheses 3 and 4 are based on the assumption that once Japanese learners of English assume that [DIRECTED V + PP + BY -ING] and [MANNER V AND DIRECTED V + PP] are natural due to L1 influence, no positive evidence will clearly tell them that they are in fact unnatural in English. Hypothesis 5 comes from the assumed lack of L1 influence on [DIRECTED V + PP + -ING] and its marginality in English. In the following, results of an experiment are reported, testing these hypotheses.

3.4.1 Participants

27 advanced Japanese-speaking learners of English participated in this study. Their biodata are presented in Table 3.9, which also contains the biodata of intermediate-level Japanese learners and English controls in Study 1 for comparison.

Table 3.9. Biographical data summary of participants in Study 2 and Study 1

	Int. Japanese (n=42)	Adv. Japanese (n=27)	English (n=22)
Age			
Range	18–22	25-44	25–54
M	18.98	35.70	43.45
SD	0.92	5.58	7.94
Onset age for L2 learning			
Range	12–13	10-13	--
M	12.48	12.19	--
SD	0.51	0.68	--
Age on arrival			
Range	--	17-40	--
M	--	26.78	--
SD	--	5.70	--
Length of stay			
Range	--	2-12	--
M	--	5.69	--
SD	--	3.07	--

The advanced Japanese speakers had studied at university in an English-speaking country at least for two years. They started to learn English at junior high school or a cram school in Japan and went to an English-speaking country as adults. Among them were 14 graduate students who were studying in an English-speaking country, 12 university teachers in Japan, and one management consultant.[10] Thus, these Japanese

learners were certainly more advanced than the Japanese participants in Study 1, none of whom had stayed in an English-speaking country more than a month.

The participants completed the English version of the grammaticality judgment task used in Study 1 (Appendix A). See section 3.3.2 for details.

3.4.2 Results

Table 3.10 presents the means and standard deviations of the ratings of test sentences by advanced Japanese learners as well as by intermediate Japanese learners and English native speakers in Study 1 for comparison. (Standard deviations are included in parenthesis.) The results are also represented in graph form in Figure 3.4 along with those of the participants in Study 1.

Table 3.10. Mean ratings of English sentences by intermediate and advanced Japanese learners and English speakers

	Sentence type			
Group	manner V + PP	directed V + PP + -ing	directed V + PP + by -ing	manner V and directed V + PP
Int. Japanese	1.24 (0.54)	-0.22 (1.18)	1.13 (0.78)	0.97 (1.01)
Adv. Japanese	1.63 (0.29)	0.24 (1.61)	0.87 (0.93)	1.19 (0.75)
English	1.92 (0.16)	0.36 (0.55)	-0.51 (0.99)	0.40 (1.10)

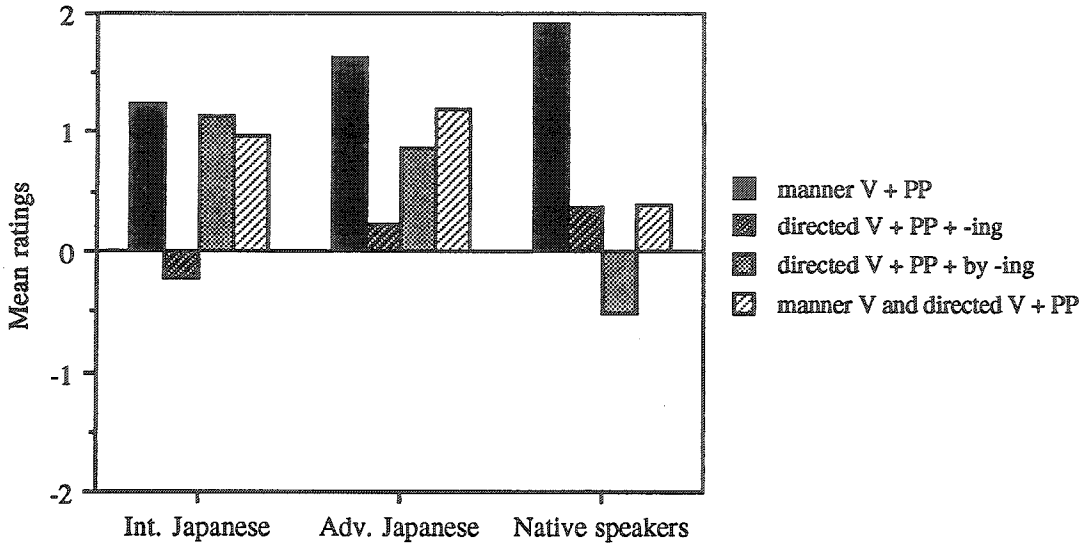


Figure 3.4. Mean ratings by intermediate and advanced Japanese learners and native speakers

Figure 3.4 indicates that the advanced Japanese group followed much the same pattern as the intermediate Japanese group in accepting [MANNER V + PP] (John walked to school), [DIRECTED V + PP + BY -ING] (John went to school by walking), [MANNER V AND DIRECTED V + PP] (John walked and went to school) but not [DIRECTED V + PP + -ING] (John went to school walking). This is confirmed by a two-way repeated measures ANOVA including proficiency (intermediate/advanced) and sentence type (manner V + PP/directed V + PP + -ing/directed V + PP + by -ing/manner V and directed V + PP) as independent variables. It showed no significant interaction between proficiency and sentence type, $F(3, 201) = 2.06$, $p = .11$. The only difference, if any, between the advanced and the intermediate Japanese groups was that the former rated [MANNER V + PP] higher than the latter (1.63 vs. 1.24). This is confirmed by the results of planned comparisons of the ratings of each sentence type by the advanced Japanese group as compared to those by the intermediate Japanese and native speaker groups in Study 1, as in Table 3.11.

Table 3.11. Results of planned comparisons

	Int. Japanese		Adv. Japanese		English	
Sentence types	F	p	F	p	F	p
manner V + PP versus directed V + PP + -ing	56.74*	.0001	29.42*	.0001	48.66*	.0001
manner V + PP versus directed V + PP + by -ing	0.36	.55	8.87*	.0039	118.96*	.0001
manner V + PP versus manner V and directed V + PP	1.94	.17	2.99	.088	46.63*	.0001
directed V + PP + -ing versus directed V + PP + by -ing	48.09*	.0001	5.98*	.017	15.45*	.0002
directed V + PP + -ing versus manner V and directed V + PP	37.70*	.0001	13.66*	.0004	0.02	.88
directed V + PP + by -ing versus manner V and directed V + PP	0.63	.43	1.56	.21	16.64*	.0001

Note. Int. Japanese df = 1, 41; Adv. Japanese df = 1, 26; English df = 1, 21.

*p < .05.

Table 3.11 shows that advanced Japanese learners rated different types of sentences in the same way as intermediate Japanese learners except that they rated [MANNER V + PP] significantly higher than [DIRECTED V + PP + BY -ING], and that the difference

between their ratings of [MANNER V + PP] and [MANNER V AND DIRECTED V + PP] approached significance.

To summarize, similar to the intermediate Japanese group, the advanced Japanese group accepted all sentence types but [DIRECTED V + PP + -ING].

3.4.3 Discussion

Hypothesis 1 was supported. Advanced Japanese learners accepted [MANNER V + PP] (John walked to school), replicating the finding in Study 1. In addition, the advanced Japanese group rated [MANNER V + PP] higher than the intermediate Japanese group in Study 1. This is presumably because Japanese learners' acceptance of this form becomes stronger as they progress from intermediate to advanced levels due to further exposure to the relevant positive data. The intermediate learners' weaker acceptance of [MANNER V + PP] may be relics of initial conservative stages where Japanese learners do not accept this new construction due to L1 influence.

Hypotheses 3 and 4 are supported. Advanced Japanese learners were similar to intermediate Japanese learners in accepting [DIRECTED V + PP + BY -ING] (John went to school by walking) and [MANNER V AND DIRECTED V + PP] (John walked and went to school) to a greater extent than English native speakers. This suggests that having earlier made the assumption that [DIRECTED V + PP + BY -ING] and [MANNER V AND DIRECTED V + PP] were natural as L2 equivalents of their L1 form, advanced Japanese learners failed to recognize that they were in fact unnatural in English, due to the lack of clear positive evidence indicating the unnaturalness. Especially problematic seems to be [DIRECTED V + PP + BY -ING] since it is particularly unnatural in English as suggested by native speakers' low rating of it (–0.51).

Hypothesis 5 was supported. Similar to intermediate Japanese learners, advanced Japanese learners rated [DIRECTED V + PP + -ING] (John went to school walking) the lowest. This further confirms my speculation that Japanese-speaking learners of English would be unsure about the acceptability of this form because, not associating it with their L1 form, they have to learn it solely from the input, which

would contain few tokens of it given its marginality in English (as reflected in native speakers' low rating of it).

To summarize, advanced Japanese learners of English did not have difficulty recognizing the grammaticality of [MANNER V + PP] due to the availability of positive evidence. They had difficulty recognizing that what they regarded as the English equivalents of the Japanese pattern ([DIRECTED V + PP + BY -ING] and [MANNER V AND DIRECTED V + PP]) were unnatural in English, due to the lack of clear positive evidence. They were uncertain about the status of [DIRECTED V + PP + -ING] because neither the input nor the L1 provided a basis for its acceptability.

In general, the stronger acceptance of English manner-of-motion verbs with goal PPs by the advanced Japanese learners provide further support for the claim that L2 acquisition of argument structure is not difficult when the L2 is a superset of the L1, due to the availability of positive evidence. Furthermore, the present study suggests that learnability considerations can be extended to situations where L2 equivalents of L1 patterns are somewhat unnatural, but not necessarily ungrammatical, by showing how the lack of positive evidence could have led advanced Japanese learners to persist in [DIRECTED V + PP + BY -ING] and [MANNER V AND DIRECTED V + PP].

3.5 Study 3

Study 3 was a replication of Study 1 with some methodological refinements. In Studies 1 and 2, the proficiency levels (intermediate, advanced) of the participants were determined by their background information (how long they had studied the L2 or stayed in the L2 environment). This is admittedly a rather gross measure of proficiency, thereby raising the possibility that each group did not entirely consist of learners at the same proficiency level, with any within-group variation concealed. To rule out this possibility and look at developmental trends more precisely, Study 3 included proficiency measures which independently gauged the learner's proficiency level.

3.5.1 Participants

This investigation was again bi-directional involving two sub-studies: one on Japanese learners' acquisition of English (the ESL study) and the other on English learners' acquisition of Japanese (the JSL study). After filling in a profile form, each participant was given a proficiency test and both English and Japanese versions of grammaticality judgment (GJ) and picture-matching tasks. (The results of the latter task are reported in Chapter 4.) The order in which Japanese and English participants completed each component of the testing is given in (17):

(17) Japanese speakers:

1. English picture-matching task
2. English GJ task
3. English language proficiency test
4. Japanese GJ task
5. Japanese picture-matching task

English speakers:

1. Japanese GJ task
2. Japanese picture-matching task
3. Japanese language proficiency test
4. English picture-matching task
5. English GJ task

Parts in the L1 followed parts in the L2 so as not to encourage L1 transfer. English participants were recruited in class and tested individually and paid 10 U.S. dollars for their participation. Japanese participants were tested in class and given a partial credit for their participation. There was no time limit. It took both English and Japanese participants 40 to 60 minutes to complete the whole session.

Since each participant completed both English and Japanese versions of the experimental tasks, Japanese participants in the ESL study served as a control group in the JSL study and English participants in the JSL served as a control group in the ESL study.

The ESL study compared a group of Japanese-speaking learners of English to a group of English controls. The learner group consisted of 42 first-year university students at Osaka Prefecture University who were majoring in engineering. They began learning English in junior high school or a cram school in Japan and had studied English formally since then. None of them had stayed in an English-speaking country for longer than three weeks. Thus, their level of English could be considered intermediate, comparable to that of the Japanese participants in Study 1.

They were all administered a shortened version of two sections (grammar and vocabulary) of the Michigan test (see Appendix C). The original test had 30 problems in each of the grammar and vocabulary sections. I shortened each section by one third by erasing every third item, with 20 items remaining for each section. Their test scores ranged from 19 (48%) to 38 (95%) ($\underline{M}$ = 27.79 [69%], $\underline{SD}$ = 4.42). The criterion of the Michigan test classifies the scores of 48% to 74% as intermediate and scores 75% or above as advanced. Following this criterion, 32 of the participants fell into the intermediate range, scoring between 19 (48%) and 29 (73%), and 15 of them the advanced level, scoring between 30 (75%) and 38 (95%). However, I refer to the two groups as low intermediate and high intermediate because their scores probably overestimated their proficiency. Those participants had been taught English in Japan largely through a grammar-translation method and had just passed a university entrance exam with a heavy emphasis on grammar and vocabulary. Clearly, grammar and vocabulary were their strongest points. The difference between the scores of the two groups was significant, $\underline{t}(45) = 9.14$, $\underline{p} = .001$. There was also a control group of 48 native speakers of English who were undergraduate or graduate students at the University of Hawaii. Biographical information on the Japanese and English participants is provided in Table 3.12.

Table 3.12. Biographical data summary of participants in the ESL study

	Low int. Japanese (n=32)	High int. Japanese (n=15)	English (n=48)
Age			
Range	18–21	18-20	18–40
M	19.16	19.07	22.90
SD	0.72	0.70	5.98
Onset age for L2 learning			
Range	10–13	12-13	--
M	12.25	12.53	--
SD	0.62	0.52	--

The JSL study compared a group of English-speakers to a group of Japanese controls. The learner group was the same as the control group of 48 English-speakers in the ESL study. They were enrolled in Japanese 202, 301 or 302, a fourth-, fifth- or sixth-semester course in Japanese as a foreign language at the University of Hawaii, except for two who were in 400- and 600-level Japanese courses. Most of them began learning Japanese at high school (n=27), university (n=10), middle school (n=4) or elementary school (n=4). The remaining three began learning Japanese at a Japanese language school, at the Defense Language Institute, and in Japan. 32 of them had not stayed in Japan for longer than a month. Among those who had, half had stayed in Japan for a year or longer up to the maximum of six years. Thus, their level of Japanese varied from intermediate to advanced.

They were all administered a proficiency test based on the Japanese Language Proficiency Test, Level 3. According to the Guide to the 1999 Japanese Language Proficiency Test (compiled by the Association of International Education, Japan), the Japanese Language Proficiency Test is administered annually both in Japan and abroad "to evaluate and certify the proficiency in Japanese of non-native speakers." The test has four levels, Levels 1 - 4. Level 3 "is normally reached after studying Japanese for around 300 hours and after completion of an elementary course." English participants

had received around 300 hours of Japanese instruction at university when they finished their third semester (Japanese 201), so Level 3 may seem lower than their level. However, a few Japanese instructors informed me that since the Japanese Language Proficiency Test had been developed mostly with learners of Japanese in Japan in mind, its criteria might be too demanding for learners of Japanese abroad. Therefore, I decided to choose Level 3 for the proficiency testing. I randomly picked 20 vocabulary questions and 20 grammar questions from practice questions for Level 3 in Matsumoto et al. (1992) (see Appendix D).

Their test scores ranged from 9 (23%) to 38 (95%) (M = 19.13 [48%], SD = 7.16), indicating that the Level 3 test was not so easy for them. Since the proficiency level of the JSL participants was clearly more wide-ranging than that of their counterparts in the ESL study, I divided them into three levels (low intermediate, high intermediate, advanced). Since the test guide states "60% of the maximum score, or higher, was considered a passing score for 1998," those who scored 24 (60%) or more were called advanced (n=12). There was no standardized criterion available to classify the rest. I decided to consider those who scored between 9 (23%) and 16 (40%) low intermediate (n=17) and those who scored between 18 (45%) and 23 (58%) high intermediate (n=19). A one-way ANOVA showed a significant effect of proficiency for the test scores, $F(2, 45) = 137.30$, $p = .0001$, and Scheffé tests showed significant differences among the three groups ($p < .01$). There was also a control group of 47 native speakers of Japanese, who constituted the learner group in the ESL study. Biographical information on the English and Japanese participants is provided in Table 3.13.

Table 3.13. Biographical data summary of participants in the JSL study

	Low int. English (n=17)	High int. English (n=19)	Advanced English (n=12)	Japanese (n=47)
Age				
Range	19-34	18-44	18-36	18-21
M	22.35	22.58	24.17	19.07
SD	4.46	7.08	6.26	0.70
Onset age for L2 learning				
Range	11-32	8-34	12-32	--
M	16.94	15.89	17.33	--
SD	6.20	6.17	6.21	--
Length of stay in Japan (month)				
Range	0-0.5	0-42	0-72	--
M	0.081	5.28	14.08	--
SD	0.16	11.46	22.26	--

3.5.2 Materials

A written grammaticality judgment task with pictures was used in both the ESL and JSL studies. (See Appendixes E and F for complete samples of the questionnaire.) It was a slight modification of the grammaticality judgment task used in Study 1. Japanese was written in standard Japanese script, a mixture of kanji (characters of Chinese origin) and kana (the Japanese syllabary).[11] Kanji characters were accompanied by furigana (a transliteration of kanji into kana) in order to ensure that participants had no difficulties comprehending the orthographic form of the sentences.

In each picture there were a figure (an object that moves) and a ground (an object with respect to which the figure moves), which were labeled in English or Japanese in order to ensure that participants were familiar with the vocabulary. Participants were

told that all pictures showed situations that took place in the past and thus that all the sentences were in the past tense. There was also an arrow with a "blob" in each picture, which participants were told indicated that an action took place and was completed, with the arrow indicating the direction of the movement and the blob the endpoint of the movement. Participants were asked to judge to what degree each sentence sounded natural as a description of the situation depicted in the picture. Judgments were given on a 4-point Likert scale ranging from 1 (completely unnatural) to 4 (completely natural) with a separate option NS (not sure) on the side.

There were 10 target items in the English version, consisting of five manner-of-motion verbs, one directed motion verb, and five goal Ps, as shown in (18a). There were also 10 target items in the Japanese version, consisting of five manner-of-motion verbs, three directed motion verbs, and six goal Ps, as shown in (18b):[12]

(18) a. English

Manner-of-motion verbs: walk, run, swim, crawl, fly

Directed motion verbs: go

Prepositions: to, into, onto, under, behind

b. Japanese

Manner-of-motion verbs: aruku "walk," hasiru "run," oyogu "swim," hau "crawl," tobu "fly"

Directed motion verbs: iku "go," hairu "enter," agaru "go-up"

Postpositions: ni "at," naka-ni "in-at," ue-ni "on-at," sita-ni "under-at," usiro-ni "behind-at," ura-ni "behind-at"

The ten target items were presented in two random orders, with about half of the participants taking one version and half the other.

There were four target sentence types in the English version and three in the Japanese version, as shown in Tables 3.12 and 3.13.

Table 3.14. Sentence types used in the ESL Study

Sentence type	Examples
manner V + PP	John walked to school.
directed V + PP + -ing	John went to school walking.
directed V + PP + by -ing	John went to school by walking.
manner V and directed V + PP	John walked and went to school.

Table 3.15. Sentence types used in the JSL Study

Sentence type	Examples
PP + manner V	?*John-wa gakkoo-ni aruita. John-TOP school-at walked "John walked to school."
PP + -te + directed V	John-wa gakkoo-ni arui-te itta. John-TOP school-at walk-GER went "John went to school (by) walking."
-te + PP + directed V	John-wa arui-te gakkoo-ni itta. John-TOP walk-GER school-at went "John went to school (by) walking." or "John walked and went to school."

As before, Japanese [PP + MANNER V] is equivalent to English [MANNER V + PP]; Japanese [PP + -TE + DIRECTED V] translates into English in two ways, as [DIRECTED V + PP + -ING] and [DIRECTED V + PP + BY -ING]; the Japanese gerund (te-form) can also occur before PP in the pattern [-TE + PP + DIRECTED V], which translates into English as not only [DIRECTED V + PP + (BY) –ING] but also [MANNER V AND DIRECTED V + PP]. Each test item had one token of each sentence type along with a distracter,[13] for a total of five sentences in the English version and four in the Japanese version. These sentences were also randomly ordered within each test item.

3.5.3 Analyses

A two-way repeated measures ANOVA was conducted on the ESL study data. The design included one between-subject factor (proficiency), which had 3 levels (low intermediate/high intermediate/native), and one within-subject factor (sentence type), which had four levels corresponding to the four English sentence types in Table 3.14. Similarly, a two-way repeated measures ANOVA was conducted on the JSL study data. The design included one between-subject factor (proficiency) with 4 levels (low intermediate/high intermediate/advanced/native) and one within-subject factor (sentence type) with three levels corresponding to the three Japanese sentence types in Table 3.15.

3.5.4 Results

3.5.4.1 ESL study

Participants rarely chose NS (not sure), which accounted for 0.76% of all the responses given by English speakers and 3% of all the responses given by Japanese speakers. Therefore, the responses of NS were excluded from subsequent analyses.

Table 3.16 presents the mean ratings of English sentences on the part of low- and high-intermediate Japanese speakers along with English controls. (Standard deviations are included in parenthesis.) The results are also represented in graph form in Figure 3.6.

Table 3.16. Mean ratings of English sentences by Japanese and English speakers

	Sentence type			
Group	manner V + PP	directed V + PP + -ing	directed V + PP + by -ing	manner V and directed V + PP
low int.	3.20 (0.42)	2.03 (0.57)	3.28 (0.48)	3.00 (0.62)
high int.	2.97 (0.33)	2.29 (1.02)	3.27 (0.45)	3.01 (0.68)
English	3.96 (0.10)	2.41 (0.70)	2.60 (0.75)	2.86 (0.68)

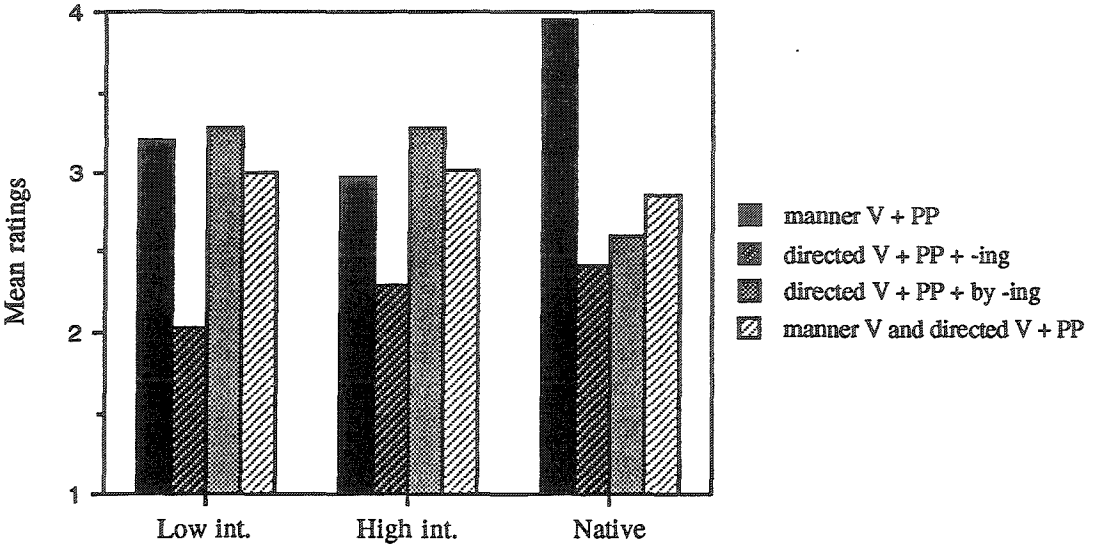


Figure 3.5. Mean ratings of Japanese sentences by English and Japanese speakers

Figure 3.5 suggests that both low- and high-intermediate Japanese learners of English accepted [MANNER V + PP] (e.g., John walked to school), as expected under Hypothesis 1, although, as in Studies 1 and 2, the learners' ratings were not as high as those of the English speaker controls (3.20 and 2.97 vs. 3.96). However, unlike Study 2, this study did not show proficiency-related increase in the acceptance of this type by Japanese speakers. There was a significant interaction between sentence type and proficiency, $F(6, 273) = 16.91$, $p = .001$, indicating that the effect of sentence type varied depending on the proficiency level. This interaction seems to have been due to the difference between the low- and high-intermediate Japanese speakers, on one hand, and the English speakers, on the other, as the two Japanese groups were similar in accepting all sentence types except [DIRECTED V + PP + -ING] (e.g., John went to school walking), a pattern also observed in Studies 1 and 2. Indeed, there was no significant interaction between sentence type and proficiency within Japanese speakers, $F(3, 132) = 1.25$, $p = .30$. In contrast to Japanese speakers, English speakers rated [MANNER V + PP] higher than the other three sentence types, as in

Study 1. These findings were confirmed by the results of planned comparisons given in Table 3.17.

Table 3.17. Results of planned comparisons

	Low int. Japanese		High int. Japanese		English	
Sentence types	F	p	F	p	F	p
manner V + PP versus directed V + PP + -ing	76.59*	.0001	7.20*	.01	224.24*	.0001
manner V + PP versus directed V + PP + by -ing	0.32	.58	1.42	0.24	172.16*	.0001
manner V + PP versus manner V and directed V + PP	2.38	.13	0.035	.85	113.19*	.0001
directed V + PP + -ing versus directed V + PP + by -ing	86.75*	.0001	15.03*	.0004	3.44	.066
directed V + PP + -ing versus manner V and directed V + PP	51.96*	.0001	8.23*	.0064	18.80*	.0001
directed V + PP + by -ing versus manner V and directed V + PP	4.43*	.038	1.01	.32	6.16*	.014

Note. Low int. Japanese df = 1, 31; High int. Japanese df = 1, 14; English df = 1, 47.
*p < .05.

Both low- and high-intermediate Japanese speakers rated [DIRECTED V + PP + -ING] significantly lower than the other sentence types, which were rated equally high except that the lower group rated [DIRECTED V + PP + BY -ING] (e.g., John went to school by walking) significantly higher than [MANNER V AND DIRECTED V + PP] (e.g., John walked and went to school). English speakers rated [MANNER V + PP] significantly higher than the other three sentence types, among which [MANNER V AND DIRECTED V + PP] was rated higher than [DIRECTED V + PP + BY -ING] and [DIRECTED V + PP + -ING], whose ratings did not differ from each other.[14]

In summary, low- and high-intermediate Japanese groups were alike in accepting all sentence types but [DIRECTED V + PP + -ING]. English speakers accepted [MANNER V + PP] but did not like the other sentence types, especially [DIRECTED V + PP + BY -ING] and [DIRECTED V + PP + -ING].

3.5.4.2 JSL study

Participants rarely chose NS (not sure), which accounted for 0.61% of all the responses given by Japanese speakers and 3.27% of all the responses given by English speakers. Therefore, the responses of NS were excluded from subsequent analyses.

Table 3.18 presents the mean ratings of Japanese sentences on the part of low intermediate, high intermediate, and advanced English speakers along with Japanese controls. (Standard deviations are included in parenthesis.) The results are also represented in graph form in Figure 3.6.

Table 3.18. Mean ratings of Japanese sentences by English and Japanese speakers

	Sentence type		
Group	PP + manner V	PP + -te + directed V	-te + PP + directed V
Low int.	3.34 (0.53)	3.00 (0.52)	2.22 (0.61)
High int.	3.25 (0.52)	3.39 (0.36)	2.06 (0.67)
Advanced	2.87 (0.96)	3.63 (0.51)	3.17 (0.76)
Japanese	2.36 (0.80)	3.90 (0.15)	3.89 (0.14)

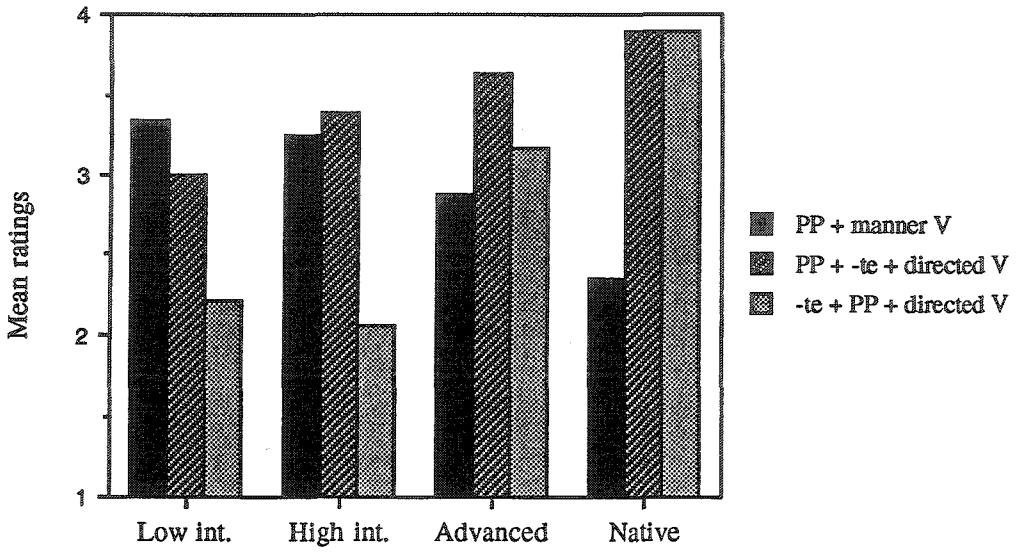


Figure 3.6. Mean ratings of Japanese sentences by English and Japanese speakers

There was a significant interaction between sentence type and proficiency, F(3, 182) = 44.79, p = .0001, indicating that the effect of sentence type varied depending on the proficiency level. In particular, low- and high-intermediate English speakers rated [PP + MANNER V] (e.g., ?*John-wa gakkoo-ni aruita "John walked to school") and [PP + -TE + DIRECTED V] (e.g., John-wa gakkoo-ni aruite itta "John went to school [by] walking") equally high and significantly higher than [-TE + PP + DIRECTED V] (e.g., John-wa aruite gakkoo-ni itta "John went to school [by] walking" or "John walked and went to school"), while advanced English speakers rated [PP + -TE + DIRECTED V] significantly higher than [PP + MANNER V], whose rating did not differ from that of [-TE + PP + DIRECTED V]. In contrast, Japanese speakers rated [PP + MANNER V] significantly lower than the other two sentence types, which were rated equally high. This is confirmed by the results of planned comparisons given in Table 3.19.

Table 3.19. Results of planned comparisons

	Low int.		High int.		Advanced		Japanese	
Sentence types	F	p	F	p	F	p	F	p
PP + manner V versus PP + -te + directed V	3.4	.07	0.6	.4	5.4*	.03	292.0*	.0001
PP + manner V versus -te + PP + directed V	38.2*	.0001	45.1*	.0001	0.8	.4	288.0*	.0001
PP + -te + directed V versus -te + PP + directed V	18.7*	.0001	56.3*	.0001	2.0	.2	0.01	.9

Note. Low int. df = 1, 16; High int. df = 1, 18; Advanced df = 1, 11; Japanese df = 1, 46.

*p < .05.

As in Study 1, English-speaking learners of Japanese in general accepted [PP + MANNER V] more than Japanese speakers, thus supporting Hypothesis 2. However, it also appears that English speakers' acceptance of this type declined with the increase of proficiency. This receives some support from the result of a one-way ANOVA showing that within [PP + MANNER V] there was a significant effect of proficiency, $F(3, 91) = 11.15$, $p = .0001$. Scheffé tests revealed that there were no significant differences among the three learner groups, but that the Japanese control group significantly differed from low- and high-intermediate English groups ($p < .05$), but not from the advanced group. (Less robust post hoc tests, Fisher's PLSD and the Newman-Keuls test, however, revealed a significant difference between the Japanese and the advanced groups [$p < .05$].) These results indicates that English speakers continued to overgeneralize manner-of-motion verbs with goal PPs to L2 Japanese as

their proficiency increased, but that the extent of overgeneralization somewhat diminished at advanced stages, a finding not expected under Hypothesis 2.

There was also a significant effect of proficiency for the ratings of [PP + -TE + DIRECTED V], $F(3, 91) = 31.99$, $p = .0001$, indicating that the acceptance of this type increased as the proficiency levels improved. Scheffé tests revealed significant differences between all pairs of proficiency groups except for between the high intermediate and advanced groups and between the advanced and Japanese control groups. (The Fisher's PLSD indicated a non-significance only between the high intermediate and advanced groups, and Newman-Keuls tests found all pairs significantly different.) The ratings of [-TE + PP + DIRECTED V] rose at the advanced level, as confirmed by a significant effect of proficiency for its ratings, $F(3, 91) = 89.86$, $p = .0001$, and Scheffé tests revealed significant differences between all pairs except for between the low- and high-intermediate groups (and so did Fisher's LSD and Newman-Keuls tests).

In summary, English speakers in general accepted [PP + MANNER V]. Low- and high-intermediate English speakers preferred [PP + MANNER V] and [PP + -TE + DIRECTED V] to [-TE + PP + DIRECTED V], while advanced English speakers preferred [PP + -TE + DIRECTED V] to [PP + MANNER V] with [-TE + PP + DIRECTED V] falling in between. In contrast, Japanese speakers strongly preferred [PP + -TE + DIRECTED V] and [-TE + PP + DIRECTED V] to [PP + manner V].

3.5.5 Discussion

3.5.5.1 ESL study

Japanese-speaking learners of English at low- and high-intermediate levels accepted [MANNER V + PP] (e.g., John walked to school), thereby further supporting Hypothesis 1. This suggests that Japanese speakers can learn such forms--which are not allowed in their L1--because they are available in the target language input. They can arrive at the L2 representation in (4) on the basis of positive data.

However, Japanese speakers' acceptance of [MANNER V + PP] did not increase as their proficiency improved from low- to high-intermediate. This contradicts the finding in Study 2 indicating that advanced Japanese learners accepted the construction more than intermediate Japanese learners, which, I argued, was due to more exposure to positive evidence. I suggest that the discrepancy was due to differences in their proficiency levels. The proficiency difference between the intermediate and the advanced learners in Study 2 was large as the former were college students in Japan with virtually no experience of staying in an English-speaking country, whereas the latter had studied in an English-speaking country for at least two years after completing formal education in Japan. In contrast, although divided into two proficiency levels, Japanese participants in this study were all college students who had learned English only in Japan and thus would all have been classified as intermediate if they had participated in Study 2. Therefore, the proficiency difference between the low- and the high-intermediate groups in this study was probably too small to show a developmental effect.

Furthermore, Japanese speakers, irrespective of their proficiency levels, assumed that [DIRECTED V + PP + BY -ING] (e.g., John went to school by walking) and [MANNER V AND DIRECTED V + PP] (e.g., John walked and went to school) were as acceptable as [MANNER V + PP], thus providing additional support for Hypotheses 3 and 4 in Study 2. This suggests that Japanese speakers initially assume that these forms are natural in English due to L1 influence and continue to do so due to the lack of clear positive evidence indicating otherwise. In addition, Japanese speakers' low ratings of [DIRECTED V + PP + -ING] (e.g., John went to school walking) further confirms Hypothesis 5 in Study 2. These findings further support the claim that Japanese speakers regard [DIRECTED V + PP + BY -ING] and [MANNER V AND DIRECTED V + PP], but not [DIRECTED V + PP + -ING], as English equivalents of the Japanese-type forms associating Japanese -te with English by and and.

To summarize, intermediate Japanese-speaking learners of English did not have difficulty recognizing the grammaticality of [MANNER V + PP], due to the availability

of positive evidence. Neither low- nor high-intermediate Japanese learners had learned that what they recognized as English equivalents of Japanese-type forms ([DIRECTED V + PP + BY -ING] and [MANNER V AND DIRECTED V + PP]) were marginal, due to the lack of clear positive evidence.

3.5.5.2 JSL Study

English-speaking learners of Japanese at different proficiency levels were not significantly different from each other in accepting [PP + MANNER V] (e.g., ?*John-wa gakkoo-ni aruita "John walked to school"), which are ungrammatical in Japanese, thereby supporting Hypothesis 2. This suggests that such L1-based overgeneralizations persist until advanced stages because no positive evidence would indicate their ungrammaticality. Without relevant evidence, English-speaking learners of Japanese would get stuck in the L1 representation in (4), failing to restructure it to the L2 representation in (5). While Study 1 found such overgeneralizations were made by a single group of advanced-level English speakers, this study found they were made by English speakers at three different proficiency levels, thereby corroborating the previous finding. However, there was also some indication that the advanced English group accepted this form less strongly than the other English groups, thereby approximating the control group. I will return to this below.

Turning to the other sentence types, as in Study 1, low- and high-intermediate English speakers preferred [PP + -TE + DIRECTED V] (e.g., John-wa gakkoo-ni aruite itta "John went to school [by] walking") to [-TE + PP + DIRECTED V] (e.g., John-wa aruite gakkoo-ni itta "John went to school [by] walking" or "John walked and went to school"), whereas Japanese speakers rated these two forms equally high. As I explained above, English speakers' preference of the former over the latter may be due to the L1. That is, they may have associated [-TE + PP + DIRECTED V] with the L1 form [MANNER V AND DIRECTED V + PP], which is used to describe a sequence of two events, not a single event, and thus did not match the pictures used in these experiments (see 3.3.5.2 above for details). On the other hand, the advanced English

group had come to accept these two forms equally, presumably due to their increasing exposure to instances of [-TE + PP + DIRECTED V] as descriptions of single motion events.

In passing, the advanced English group in Study 1 behaved more like the low- and high-intermediate groups in this study in disfavoring [-TE + PP + DIRECTED V] most. This might have been due to the lack of an independent proficiency measure in Study 1. It is possible that some of the English participants in Study 1 were still at intermediate levels even after having stayed in Japan for three years or more.

Back to the question of why English speakers' acceptance of [PP + manner V] somewhat decreased at the advanced level, it is interesting to note that the decrease coincided with the increase in their acceptance of [-TE + PP + DIRECTED V]. It is not difficult to imagine situations where, faced with single motion events, English-speaking learners of Japanese expect to hear [PP + manner V] (?*John-wa gakkoo-ni aruita "John walked to school"), but are taken aback when instead hearing [PP + -TE + DIRECTED V] (John-wa gakkoo-ni aruite itta "John went to school [by] walking") or, in particular, [-TE + PP + DIRECTED V] (John-wa aruite gakkoo-ni itta "John went to school [by] walking" or "John walked and went to school"). If English-speaking learners of Japanese encounter such situations repeatedly, they may be able to recognize the impossibility of [PP + MANNER V] in Japanese and arrive at the L2 representation (5). In other words, they may be able to use "indirect negative evidence" (Chomsky, 1981) noticing the absence of [PP + MANNER V] in the input to counteract overgeneralizations. It should be noted, however, that this type of evidence must be difficult to use, since even the advanced-level English speakers did not in general differ from the learners at lower proficiency levels in accepting [PP + MANNER V].

To summarize, English-speaking learners of Japanese at different proficiency levels generally accepted [PP + manner V], supporting Hypotheses 2. However, their acceptance of this type somewhat weakened at an advanced level, raising the possibility that some English learners may be able to notice the absence of this form

to retreat from overgeneralizations. Intermediate English learners preferred [PP + -TE + DIRECTED V] to [-TE + PP + DIRECTED V] due to L1 influence, but advanced English learners had come to accept the latter as well due to more exposure to it.

In general, the results of Study 3 are in line with the findings in Study 1, thus providing further support for the claim that L2 acquisition of argument structure is not difficult when the L2 is a superset of the L1, due to the availability of positive evidence, and that it is difficult when the L2 is a subset of the L1, due to the lack of positive evidence. In the latter case, however, there might be a role for indirect negative evidence to play in allowing the learner to recover from L1-based overgeneralizations.

Furthermore, the ESL study confirmed the findings in Study 2, indicating that the same learnability considerations can account for persistent L1 influence in situations where the L2 equivalents of L1 patterns are unnatural, but not necessarily ungrammatical.

Notes

[1] The superset-subset characterization of English and Japanese motion verbs with goal PPs is not so clear given the fact that, as detailed in Chapter 2, Japanese does allow manner-of-motion verbs to appear with a special goal P made "up to, as far as," as in (i).

(i) John-wa eki-made aruita/hasitta.
John-TOP station-until walked/ran
"John walked [up to/as far as] the station."

However, the superset-subset relation holds if the focus is on the structural realization of a simple motion event where something moves to somewhere (in some manner). This is because Japanese made is not semantically equivalent to English to as it denotes the continuation of the action up to its endpoint (Ikegami, 1981). Therefore, an exact meaning of (i) is "John continued to walk/ran up to/as far as the station," not "John walked/ran to the station." To express the latter in Japanese, one needs to use the directed motion verb iku "go" along with a ni phrase, as in (ii).

(ii) John-wa arui/hasit-te eki-ni itta.
John-TOP walk/run-GER station-at went
"John went to school walking/running."

This is the situation observed in the contrast between (1) and (2) as illustrated in Figure 3.1.

[2] The LRS (3) is simplified from the LRS given in Chapter 2 ([42]) in two ways. First, Path P is not decomposed into rel-Path P and Path P, and Place P is not decomposed into rel-Place N and Place P. Second, the semantic labels (Figure, Motion, Ground) were omitted except for Path and Place. These simplifications are immaterial to the present study, so I use the simplified version for the rest of this thesis for convenience' sake.

[3] Study 1 was first reported in Inagaki (2001a).

[4] Ideally, controls should be chosen from monolingual speakers to rule out the possibility that their knowledge of the L2 might affect their performance in the L1, although my impression was that it did not do so in this study.

[5] In fact, there was one more target item in each version of the questionnaire, an item containing the verb tobu "fly" and the P ni "to." However, this item was eliminated from the analysis because Japanese native speakers unexpectedly accepted the Japanese sentence with ni tobu "fly to." I have no explanation for this, though clearly there is no point in including ni tobu and fly to in this study because there is no English-Japanese contrast.

[6] Yu (1996) found that Japanese-speaking learners of English commonly produced [MANNER V AND DIRECTED V + PP].

[7] The distracter was a sentence containing a manner-of-motion verb with a locative PP and the adverbial 5-fun-kan "for 5 minutes," which was unacceptable because it did not match the directional context given by the picture (see Appendixes A and B).

[8] English speakers would have rated tokens like (i) much higher, given a contrast between two manners of motion.

(i) He went to school by walking through the park rather than (by) riding along the street.

Another contributing factor to the improvement may be that by riding in (i) is associated with a means (by bicycle), which may, in turn, force by walking to be interpreted as a means (on foot) by contrast.

[9] It is not quite clear to me why Japanese speakers associated -te with by and and, but not with -ing in [DIRECTED V + PP + -ING]. One possible explanation would be that when transfer takes place, the resulting interlanguage prefers free morphemes (by, and) over bound morphemes (-ing) (cf. Andersen 1983).

[10] All but four of them also reported their TOEFL scores, which ranged from 510 to 652 (M=591.65, SD=39.56). However, the TOEFL scores should be treated with caution because all of them were at least two years old (M=8.70, SD=4.37) and the

participants had studied at an English-speaking university at least for two years after they took the TOEFL. Thus, if anything, the scores would underestimate their proficiency.

[11] No romaji (a phonetic writing system using the Roman alphabet) was provided for Japanese sentences in this study because all participants had been instructed in and thus were familiar with kana.

[12] In fact, there were two more target items in each version of the questionnaire, an item containing the verb tobu "jump" and the P naka-ni "into" and an item containing the verb tobu "jump" and the P ue-ni "onto" (Pictures 1 and 10 in Appendixes E and F). However, these items were eliminated from the analysis because Japanese native speakers unexpectedly accepted the Japanese sentences with naka-ni tobu "jump into" and ue-ni tobu "jump onto." I have no explanation for this, although, clearly, there is no point in including these items because there is no English-Japanese contrast.

[13] The distracter for the English version was a sentence containing a manner-of-motion verb with a locative PP and the adverbial for a while. The distractor for the Japanese version was a sentence containing a manner-of-motion verb with a PP headed by the locational P de "at." Both were unacceptable because they did not match the directional context given by the picture (see Appendixes E and F).

[14] In Study 1, English speakers rated [DIRECTED V + PP + BY -ING] the lowest, with no significant difference between [MANNER V AND DIRECTED V + PP] and [DIRECTED V + PP + -ING]. I have no explanation for the difference.

Chapter 4
Motion Verbs with Locational/Directional PPs in L2 English and Japanese

4.0 Introduction

This chapter presents experiments investigating the acquisition of motion verbs with locational/directional PPs in L2 English and Japanese. As discussed in Chapter 2, English manner-of-motion verbs with PPs such as under and behind (e.g., John swam under the bridge) are ambiguous between locational and directional readings, where their Japanese counterparts can only be interpreted as locational. There has not yet been any study investigating the L2 acquisition of these properties. The experiments described here test predictions that derive from the analysis of the English-Japanese contrast proposed in Chapter 2, along with White's (1991b) proposal concerning the learnability of L2 argument structure. This investigation is bi-directional, looking at both Japanese speakers' acquisition of English and English speakers' acquisition of Japanese. A picture-matching task was developed to test L2 learners' knowledge of these properties.

This chapter is organized as follows. Section 4.1 recapitulates the analysis of motion verbs with locational/directional PPs in English and Japanese proposed in Chapter 2. Section 4.2 presents research questions and formulates hypotheses for the acquisition of the target properties in L2 Japanese and English. Section 4.3 presents experiments testing the hypotheses. Section 4.4 summarizes and discusses the results of the experiments.

4.1 The contrast between English and Japanese

As detailed in Chapter 2 and summarized in section 3.1, English allows both manner-of-motion verbs (walk, run) and directed motion verbs (go, come) to appear with goal PPs, as in (1), whereas Japanese allows only directed motion verbs to appear with goal PPs, as in (2).

(1) a. John walked to school.

b. John ran into the house.

c. John went to school walking.

d. John went/came into the house running.

(2) a. ?*John-ga gakkoo-ni aruita.
John-NOM school-at walked
"John walked to school."

b. ?*John-ga ie-no naka-ni hasitta.
John-NOM house-GEN inside-at ran
"John ran into the house."

c. John-ga arui-te gakkoo-ni itta.
John-NOM walk-GER school-at went
"John went to school walking."

d. John-ga hasit-te ie-no naka-ni itta/haitta.
John-NOM run-GER house-GEN inside-at went/entered
"John went into/entered the house running."

Thus, English motion verbs that can take goal PPs form a superset of Japanese motion verbs, as illustrated in Figure 3.1, repeated here as Figure 4.1. The contrast, I argued, is due to different incorporation patterns in l-syntax (see section 3.1).

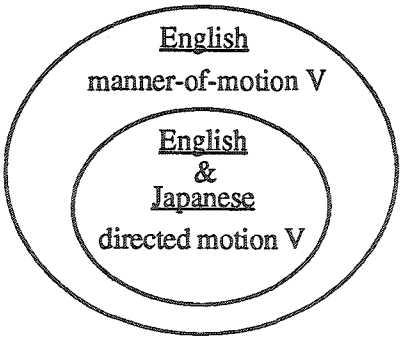


Figure 4.1. Motion verbs with goal PPs in English and Japanese

As explained in Chapter 2, this analysis can account for another contrast between English and Japanese, that is, that, in English, manner-of-motion verbs with PPs

involving such Ps as under, behind, and in are either locational or directional ([3]), whereas their Japanese counterparts (with the P de "at") can only be locational ([4]).

(3) a. John swam under the bridge. (directional/locational)

b. John ran behind the wall. (directional/locational)

c. John jumped in the water. (directional/locational)

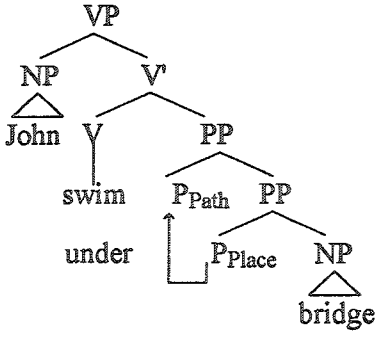
(4) a John-ga hasi-no sita-de oyoida. (locational only)
John-NOM bridge-GEN under-at swam
"John swam under the bridge."

b. John-ga kabe-no usiro-de hasitta. (locational only)
John-NOM wall-GEN back-at ran
"John ran behind the wall."

c. John-ga puuru-no naka-de tonda. (locational only)
John-NOM pool-GEN inside-at jumped
"John jumped in the pool."

For example, in (3a), under the bridge can be either the goal of John's swimming (directional) or the location of John's swimming (locational), whereas in (4a), hasi-no sita-de "under the bridge" can only be the location of John's swimming. The ambiguity in English is attributable to the two different l-syntactic representations of under, a realization of Place P (locational) and a realization of Place P incorporated into Path P (directional), as in (5).

(5) Incorporation of Place P into Path P in English (cf. [3a])[1]

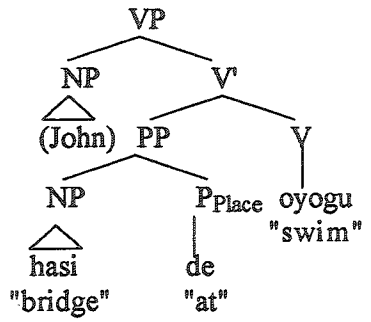


(5) is a well-formed LRS of a motion event as [Spec, VP] is licensed by the P under, a predicate by virtue of including both Place P and Path P, thereby satisfying Full

Interpretation. Some English Ps have a morphological reflex of the Path P "to" (to, into) and thus are unambiguously directional ([1]); however, other Ps do not (under, behind) and thus are ambiguous between locational and directional readings.

In contrast, Japanese does not have the incorporation of Place P into Path P and thus the Place P de "at," appearing with manner-of-motion verbs, cannot be directional, as in (6).

(6) *[Spec, VP] unlicensed (cf. [4a])



(6) is not a well-formed LRS of a motion event due to the violation of Full Interpretation: The P de "at," including only Place P, is not a predicate and thus cannot render [Spec, VP] interpretable.

Incidentally, the unavailability of a directional reading of Japanese manner-of-motion verbs with PPs holds true not only with the P de "at" but also with another Place P ni "at." As shown in (2a,b), a directional reading is not available with ni either. The difference between de and ni is that ni cannot express a location of a manner-of-motion verb either, because it can only denote a location for a static event (existing, living), not a dynamic event (swimming, running), for which de must be used (see Note 20 in Chapter 2).

Thus, English manner-of-motion verbs with PPs allow either a locational or a directional reading, whereas their Japanese counterparts (with de) allow only a locational reading. Focusing on the interpretation of manner-of-motion verbs with PPs, then, there is again a superset-subset relationship between English and Japanese, as illustrated in Figure 4.2.

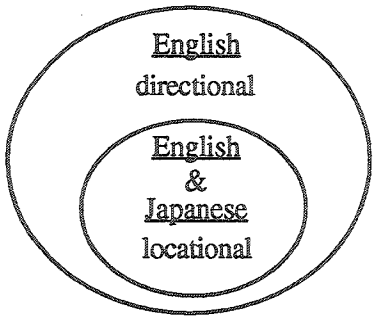


Figure 4.2. Possible readings of manner-of-motion verbs with PPs in English and Japanese

4.2 Research Questions and hypotheses

This study again addresses the general question of how the outcomes of L2 argument structure vary depending on whether L1 argument structure is a subset of the L2 or vice versa. It attempts to do so by investigating Japanese learners' acquisition of English manner-of-motion verbs with locational/directional PPs and English learners' acquisition of Japanese manner-of-motion verbs with locational PPs.

The proposed analysis of the target properties, along with learnability considerations (White, 1991b), leads us to two specific hypotheses for Japanese-speaking learners of English and English-speaking learners of Japanese. Based on the contrasts between (1) and (2) (Figure 4.1) and between (3) and (4) (Figure 4.2), the following two hypotheses are formulated:

1. Japanese speakers will not have difficulty recognizing the directional reading of English manner-of-motion verbs with locational/directional PPs (John swam under the bridge).

2. English speakers will have difficulty recognizing that Japanese manner-of-motion verbs with locational PPs (John-wa hasi-no sita-de oyoida) do not allow a directional reading.

Hypothesis 1 is based on the assumption that Japanese-speaking learners of English will receive positive evidence for the directional reading of English manner-of-motion

verbs with PPs involving under, behind, etc., which will allow them to arrive at the target representation (5). Hypothesis 2 assumes that locational sentences in the L2 input ([4]), being a subset of the L1, will trigger the transfer the L1 representation (5) to the L2, resulting in overgeneralization of the directional reading of manner-of-motion verbs with PPs to the L2. Once this happens, no subsequent positive data will indicate the impossibility of the directional reading in the L2.

In the following, two experimental studies involving picture-matching tasks are reported, testing Hypotheses 1 and 2.

4.3 Study 1

Study 1 tested Hypothesis 1 by looking at Japanese speakers' interpretation of English manner-of-motion verbs with locational/directional PPs.[2]

4.3.1 Participants

This study compared two language groups, whose biographical data are summarized in Table 4.1.

Table 4.1. Biographical data summary of participants

	Japanese (n=35)	English (n=23)
Age		
Range	18–20	26–55
M	18.51	40.30
SD	0.66	8.90
Onset age for learning English		
Range	10–13	--
M	12.11	--
SD	0.87	--

The Japanese group consisted of 35 freshmen at Osaka Prefecture University majoring in Social Welfare. They started to learn English at junior high school or a cram school in Japan and had studied English formally since then. None of them had stayed in an English-speaking country more than a month. Thus, their level of English could be considered as intermediate.[3] There was also a control group of 23 native speakers of English, most of whom were university teachers in Japan or graduate students in TESL at an American university.

4.3.2 Materials

A written picture-matching task was used. (See Appendix G for all the sentences included in the task and Appendix H for a complete sample of the questionnaire.) Each test item consisted of an English sentence containing a manner-of-motion verb with a PP which was ambiguous between locational and directional readings. The test sentence was followed by a pair of pictures, one of which showed a directional context and the other a locational context. In each picture were two objects--an object that moves, or a "figure," and an object with respect to which the figure moves, or the "ground" (Talmy, 1985). For example, in Item 9 in Appendix H, Mike was the figure and bridge was the ground. Both the figure and the ground were named in English to make sure that participants were familiar with the vocabulary. Participants were told that all pictures showed situations that took place in the past, and thus that all sentences would be in the past tense. One of the pictures had an arrow with a "blob" to provide a directional context. Participants were told that the arrow indicated the direction of the movement and the blob indicated the endpoint of the movement. Thus, the first picture in Item 9 depicts the situation where Mike swam toward the bridge and ended up being under the bridge. The other picture did not have an arrow with a blob, thus showing a situation where an action took place at some location. Below each sentence were three options, 1 only, 2 only, and either 1 or 2. Participants were asked to circle 1 only if the sentence matched the first picture only,

2 only if it matched the second picture only, and either 1 or 2 if it matched either the first or the second picture.

There were 12 target items consisting of six manner-of-motion verbs and six prepositions, as in (7).

(7) Manner-of-motion verbs: walk, run, swim, crawl, jump, fly

Prepositions: in, on, under, behind, inside, above

There were also eight distractors including both ambiguous and unambiguous sentences (see Appendix G). To control for possible ordering effects, the test items and distractors were randomly ordered. The two pictures within each item were also randomly ordered for the same purpose.

4.3.3 Results

Group results are presented first, followed by individual results.

4.3.3.1 Group results

Table 4.2 presents mean responses of locational only, directional only, and either locational or directional. (Standard deviations are included in parenthesis.)

Table 4.2. Mean responses by Japanese and English speakers in percentages

	Loc. only	Dir. only	Loc./Dir.
Japanese	70.24 (14.19)	8.09 (9.58)	21.67 (13.74)
English	18.54 (16.84)	14.49 (26.14)	66.97 (27.19)

The results are visually represented in Figure 4.3.

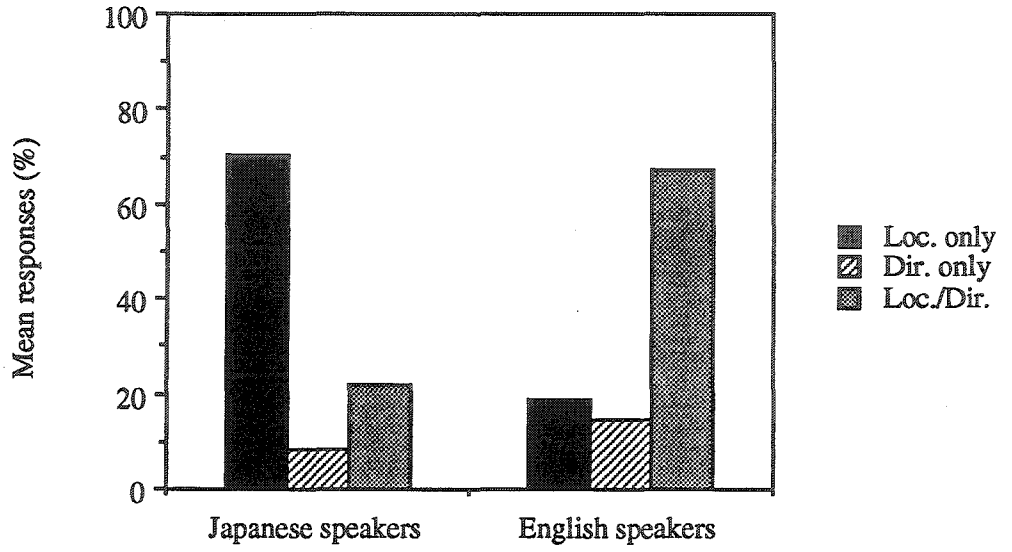


Figure 4.3. Mean responses by Japanese and English speakers in percentages

The results indicate that Japanese speakers chose locational only in most cases (70.24%), whereas English speakers chose either locational or directional in most cases (66.97%).[4] This is confirmed by *t*-tests, which showed that Japanese speakers chose locational only significantly more often than English speakers, $t(56)=12.60$, $p=0.001$, and that English speakers chose either locational or directional significantly more often than Japanese speakers, $t(56)=8.38$, $p=0.001$. Thus, the group results suggest that, unlike English speakers, Japanese speakers often failed to recognize the directional reading of English manner-of-motion verbs with locational/directional PPs, unexpected under Hypothesis 1.[5]

4.3.3.2 Individual results

I now turn to individual results to see if the group results indeed reflect how participants of each group performed individually. Table 4.3 presents the number of Japanese and English participants who answered either directional only or either locational or directional a certain number of times. Responses of these two options

are combined in Table 4.3 because the question here is whether or not the Japanese speakers recognized the directional reading of target sentences.

Table 4.3. Number of Japanese and English participants answering either directional only or either locational or directional

Frequency of either Dir. only or Loc./Dir. responses (k=12)	Japanese (n=35)	English (n=23)
0 - 3	18	0
4 - 6	17	2
7 - 9	0	8
10 - 12	0	13

Table 4.3 shows that, out of twelve test items, no Japanese speakers chose either directional only or either locational or directional--thus recognizing the directional reading--more than six times (50%). In contrast, all but two English speakers recognized the directional reading more than six times. Of these two English speakers, one recognized the directional reading six times and the other five times. In sum, unlike English speakers, Japanese speakers consistently failed to recognize the directional reading of English manner-of-motion verbs with locational/directional PPs, thereby running counter to the hypothesis.

4.3.4 Discussion

Unexpectedly, Hypothesis 1 was not supported. Both the group and individual results indicate that intermediate-level Japanese-speaking learners of English had difficulty recognizing the directional reading of English manner-of-motion verbs with locational/directional PPs (John swam under the bridge). This suggests that even though starting with an L1 allowing a subset of the L2 (Figures 4.1 and 4.2), Japanese speakers failed to notice positive evidence for the target properties and thus to incorporate them into their interlanguage grammar. Why is that? In the following, I attempt to provide an explanation.

In Chapter 3, I investigated Japanese speakers' acquisition of English manner-of-motion verbs with goal PPs. There, I looked at goal Ps in general, not distinguishing between Ps that were unambiguously directional (to, into) and Ps that were ambiguously locational or directional (under, behind). In fact, a majority of test items (seven out of 11 in Studies 1 and 2; six out of 10 in Study 3) contained unambiguous Ps (see Appendixes A and E). The results were as expected: Japanese-speaking learners of English, intermediate or advanced, recognized the grammaticality of English manner-of-motion verbs with goal PPs. The contrast between the previous finding and the present one suggests that it is important to distinguish which type of P is involved. That is, Japanese speakers seem to have difficulty only with English manner-of-motion verbs with goal PPs involving Ps that are ambiguous between locational and directional readings (John swam under the bridge). A possible explanation for the difficulty is illustrated in Figure 4.4.

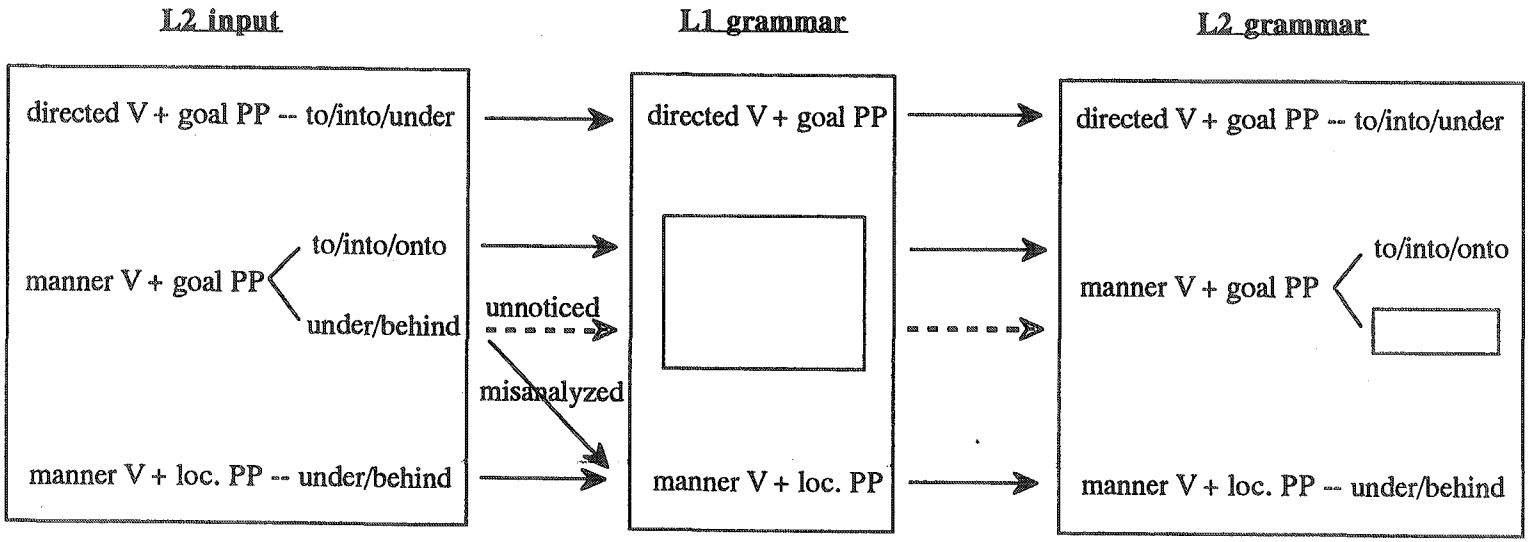


Figure 4.4. An illustration of the problem

The leftmost box shows what is available in the L2 input, the middle box the L1 grammar (Japanese), and the rightmost box the resultant L2 grammar. Available in the L2 input will be directed motion verbs with goal PPs (John went into the house), manner-of-motion verbs with goal PPs involving both unambiguous Ps (to, into, onto) and ambiguous Ps (under, behind), and manner-of-motion verbs with locational PPs (under, behind). Following full transfer positions (Bley-Vroman, 1990; Schwartz & Sprouse, 1994), I assume the L2 input is filtered through the L1 grammar, which allows directed motion verbs with goal PPs, manner-of-motion verbs with locational PPs, but not manner-of-motion verbs with goal PPs (hence the gap). Initially, the learners will notice the partial fit between the L1 and the L2 and incorporate directed motion verbs with goal PPs and manner-of-motion verbs with locational PPs into their L2 grammar. This will result in too conservative an L2 grammar generating only a subset of what English actually allows (Figures 4.1 and 4.2). Therefore, manner-of-motion verbs with goal PPs, or the L2 representation (5), must be acquired from the L2 input.

Now, it is important to distinguish between those involving unambiguous Ps (to, into, onto) and those involving ambiguous Ps (under, behind). As shown in Chapter 3, Japanese speakers seem not to have difficulty learning the former. There are two conceivable reasons for this. First, as mentioned in Chapter 3, in English, manner-of-motion verbs with goal PPs are frequent (Levin, 1993, p. 105; Talmy, 1985). Second, unambiguous goal Ps (to, into) have the clear morphological evidence "to" for Path P. Thus, the relevant positive evidence will be frequent and clear.

On the other hand, Japanese speakers' difficulty learning the latter type may be due to the following reasons. First, English manner-of-motion verbs with goal PPs involving ambiguous Ps (under, behind) may be infrequent in English compared to those involving unambiguous Ps (to, into).[6] If so, positive evidence for the former may not be robust enough for the learners to notice it (hence the dotted line in Figure 4.4).

Second, even if Japanese speakers do encounter English manner-of-motion verbs with goal PPs involving ambiguous Ps, they may misanalyze them as locational. There are two possible sources of misanalysis. First, there is no morphological difference between directional under, behind, etc. and their locational counterparts. Second, the directional context may not be clearly distinct from the locational context. For example, suppose beginning-level Japanese-speaking learners of English hear the sentence "John swam under the bridge" in the context where John went under the bridge in the manner of swimming. Their L1 would tell them that it is locational, which needs to be rejected for successful L2 acquisition. However, the locational reading might not be so incompatible with what the learners actually observe, at least not to the extent that they eventually reject it. After all, if John swam under the bridge (directional), he also swam under the bridge (locational) at the endpoint of the motion. Therefore, the misinterpretation may not be serious enough to cause a communication breakdown or incomprehension, which would otherwise force the learners to reconsider the locational reading. In any case, if this type of misanalysis occurs, then the relevant input will only be used as positive evidence for "manner V + loc. PP," not for "manner V + goal PP" involving ambiguous Ps (hence the diagonal arrow in Figure 4.4).

If all of this is the case, then the resultant L2 grammar will remain too restrictive to allow "manner V + goal PP" involving ambiguous Ps (under, behind), as indicated by the rightmost gap in Figure 4.4.

In sum, Japanese-speaking learners of English failed to recognize the directional reading of English manner-of-motion verbs with goal PPs involving ambiguous Ps (under, behind). I have suggested that this is because the relevant positive evidence might have been so infrequent and misleading, both morphologically and contextually, that they had not been able to overcome the L1 influence induced by the partial overlap between the L1 and the L2.

More generally, the results of Study 1 suggest that even when L2 argument structures constitute a superset of the L1, the presence of positive evidence may not

guarantee success in broadening the interlanguage grammar. That is, for relevant positive evidence to be actually "taken in" by the learners (cf. Corder, 1967), it has to be not only available but robustly available in the sense that it is frequent and clear (cf. Lightfoot, 1989). The frequency and clearness conditions would need to be met at the same time because positive evidence could be highly frequent but misleading or highly clear but infrequent, none of which might allow L2 learners to overcome the L1 influence and arrive at a grammar more appropriate for the L2. The present finding, then, adds a condition for the general hypothesis to hold true: When an L1 argument structure forms a subset of the L2, the availability of positive evidence will allow L2 learners to arrive at the target grammar on condition that the relevant positive evidence is robustly available.

4.4 Study 2

Study 2 also investigated the L2 acquisition of manner-of-motion verbs with locational/directional PPs, testing Hypotheses 1 and 2. This investigation was bi-directional involving two sub-studies: one on Japanese-speaking learners' acquisition of English (the ESL study) and the other on English-speaking learners' acquisition of Japanese (the JSL study). The ESL study was similar to Study 1 but included different proficiency-level groups established by an independent proficiency measure. The JSL study employed the same picture-matching procedure as the ESL study.

4.4.1 Participants

Participants in this study were the same as the participants in Study 3 reported in Chapter 3. Since detailed information about them was provided there, only a brief summary is provided here (see section 3.5.1 for details).

Both the ESL and the JSL studies compared two language groups, a learner group and a native-speaker control group. Since each participant completed both English and Japanese versions of the picture-matching tasks, Japanese-speaking learners in the

ESL study served as a control group in the JSL study and English-speaking learners in the JSL served as a control group in the ESL study.

The ESL study compared a group of Japanese-speaking learners of English to a group of English controls. The learner group consisted of 32 low-intermediate and 15 high-intermediate Japanese speakers, whose proficiency levels were determined by their scores on a shortened version of the Michigan test. Thus, this study was similar to Study 1 except that it included an independent measure of proficiency, so as to examine proficiency effects more precisely. There was also a control group of 48 native speakers of English. Biographical information on the Japanese and English participants is repeated here in Table 4.4.

Table 4.4. Biographical data summery of participants in the ESL study

	Low int. Japanese (n=32)	High int. Japanese (n=15)	English (n=48)
Age			
Range	18–21	18-20	18–40
M	19.16	19.07	22.90
SD	0.72	0.70	5.98
Onset age for L2 learning			
Range	10–13	12-13	--
M	12.25	12.53	--
SD	0.62	0.52	--

The JSL study compared a group of English speakers to a group of Japanese controls. The learner group consisted of 17 low-intermediate, 19 high-intermediate, and 12 advanced English speakers, whose proficiency levels were determined by their scores on a shorten version of the Japanese Language Proficiency Test, Level 3. There was also a control group of 47 native speakers of Japanese. Biographical information on the English and Japanese participants is repeated here in Tables 4.5.

Table 4.5. Biographical data summery of participants in the JSL study

	Low int. English (n=17)	High int. English (n=19)	Advanced English (n=12)	Japanese (n=47)
Age				
Range	19-34	18-44	18-36	18-21
M	22.35	22.58	24.17	19.07
SD	4.46	7.08	6.26	0.70
Onset age for L2 learning				
Range	11-32	8-34	12-32	--
M	16.94	15.89	17.33	--
SD	6.20	6.17	6.21	--
Length of stay in Japan (month)				
Range	0-0.5	0-42	0-72	--
M	0.081	5.28	14.08	--
SD	0.16	11.46	22.26	--

4.4.2 Materials

A written picture-matching task was used for the ESL study. (See Appendix I for all the sentences included in the task and Appendix J for a complete sample of the questionnaire.) This was the same type of task as was used in Study 2 (see section 4.3.2 for details). There were eight target items consisting of five manner-of-motion verbs and four prepositions, as in (8).

(8) Manner-of-motion verbs: walk, run, swim, crawl, jump

Prepositions: in, on, under, behind

There were also seven distractors including both ambiguous and unambiguous sentences (see Appendix I). To control for possible ordering effects, the test items and distractors were presented in two random orders, with about half of the

participants taking one version and half the other. The two pictures within each item were also randomly ordered for the same purpose.

A similar type of picture-matching task was developed for the JSL study. (See Appendix K for all the sentences included in the task and Appendix L for a complete sample of the questionnaire.) Japanese was written in standard Japanese script, a mixture of kanji (characters of Chinese origin) and kana (the Japanese syllabary). Kanji characters were accompanied by furigana (a transliteration of kanji into kana) in order to ensure that participants had no difficulties comprehending the orthographic form of the sentences. Each test item consisted of a Japanese sentence containing a manner-of-motion verb with a PP headed by the Place P de "at," which is unambiguously locational, unlike its English counterpart, which is either locational or directional ([3] vs. [4]). It was hypothesized that English speakers would overgeneralize the directional reading to L2 Japanese (Hypothesis 2).

The test sentence was followed by a pair of pictures, one of which showed a directional context with an arrow and a "blob" and the other a locational context. For example, in Item 1 in Appendix L, the test sentence Tom-wa hasi-no sita-de aruita "Tom walked under the bridge" is followed by directional and locational pictures. The figure Tom and the ground hasi "bridge" were labeled in Japanese in order to ensure that participants were familiar with the vocabulary. Participants were asked to decide whether the sentence matched the first picture (1 only), the second picture (2 only), or either the first or the second picture (either 1 or 2). Thus, the instructions and the procedure followed those of the English version as much as possible.

There were five target items consisting of five manner-of-motion verbs and five postpositions, as in (9).

(9) Manner-of-motion verbs: aruku "walk," hasiru "run," hau "crawl," tobu "jump," tobu "fly"

Postpositions: naka-de "in-at," ue-de "on-at," sita-de "under-at," ura-de "behind-at," ue-de "over-at"

There were also five distractors, consisting of three unambiguously directional sentences and two ambiguous sentences (see Appendix K). To control for possible ordering effects, the test items and distractors were presented in two random orders, with about half of the participants taking one version and half the other. The two pictures within each item were also randomly ordered for the same purpose.

4.4.3 Results

For each of the ESL and JSL studies, group results are presented first, followed by individual results.

4.4.3.1 ESL study

(a) Group results

Table 4.6 presents mean responses of locational only, directional only, and either locational or directional. (Standard deviations are included in parenthesis.)

Table 4.4. Mean responses of by Japanese and English speakers in percentages

	Loc. only	Dir. only	Loc./Dir.
Low intermediate	69.92 (21.73)	7.42 (12.24)	22.66 (21.17)
High intermediate	76.67 (19.97)	5.83 (9.29)	17.50 (18.18)
English	25.52 (23.34)	8.33 (16.58)	66.15 (26.16)

The results are visually represented in Figure 4.5.

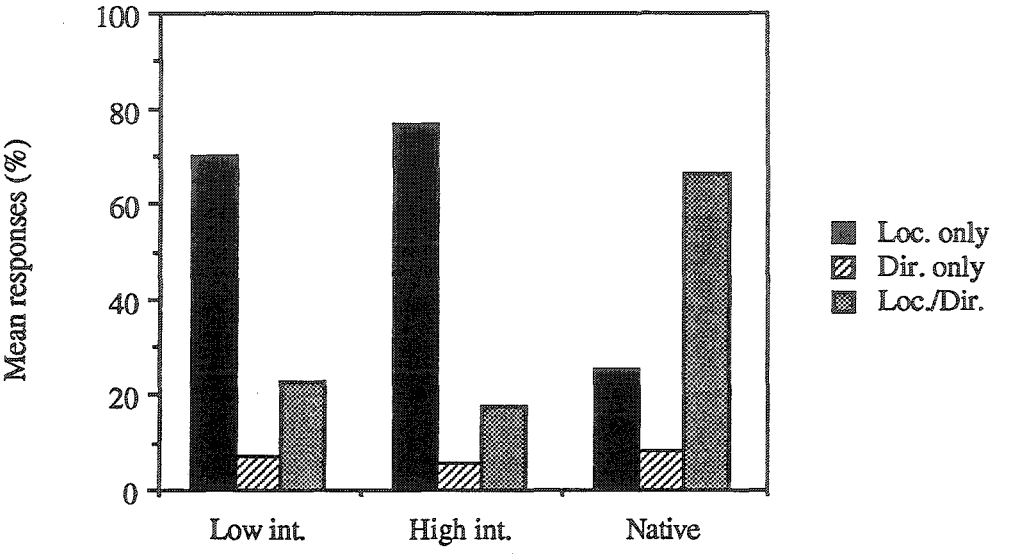


Figure 4.5. Mean responses by Japanese and English speakers in percentages

The results indicates that, just like in Study 1, Japanese speakers, both low- and high-intermediate, chose locational only in most cases (69.92% and 76.67%), whereas English speakers chose either locational or directional in most cases (66.15%). This is confirmed by a one-way ANOVA showing that within responses of locational only, there was a significant effect of proficiency levels, $F(2, 92)=52.11$, $p=.0001$. Scheffé tests revealed that both the low- and high-intermediate Japanese groups significantly differed from the English group ($p = .0001$), but that they did not differ from each other. Furthermore, another one-way ANOVA showed that within responses of either locational or directional, there was a significant effect of proficiency levels, $F(2, 92)=44.15$, $p=.0001$, with Scheffé tests revealing significant differences between the English group and both of the two Japanese groups, which did not differ from each other. Thus, the group results indicate that unlike English speakers, Japanese speakers, irrespective of their proficiency levels, often failed to recognize the directional reading of English manner-of-motion verbs with locational/directional PPs, unexpected under Hypothesis 1 but replicating Study 1.

(b) Individual results

I now turn to individual results to see if the group results indeed reflect how participants of each group performed individually. Table 4.7 presents the number of participants in each group who answered either directional only or either locational or directional a certain number of times. Again, responses of these two options are combined to check and see if the participants recognized the directional reading of target sentences.

Table 4.7. Number of Japanese and English participants answering either directional only or either locational or directional

Frequency of either Dir. only or Loc./Dir. responses (k=8)	Low intermediate (n=32)	High intermediate (n=15)	English (n=48)
0 - 3	24	14	5
4 - 6	8	1	22
7 or 8	0	0	21

Table 4.7 indicates that most Japanese speakers (24 [75%] of 32 low intermediates and 14 [93%] of 15 high intermediates) chose either directional only or either locational or directional--thus recognizing the directional reading--fewer than four times (50%), whereas only five (10%) of 48 English speakers fell into this range.[7] All the remaining Japanese speakers (eight of the low intermediates and one of the high intermediates) recognized the directional reading between four and six times (50%-75%), with none falling into the "7 or 8 times" (88% or more) range, whereas the remaining 90% of the English speakers were evenly divided into these two ranges. Thus, unlike most English speakers, most Japanese speakers, both low- and high-intermediate, did not consistently recognize the directional reading of English manner-of-motion verbs with locational/directional PPs, thereby running counter to Hypothesis 1 but replicating Study 1. However, unlike in Study 1, there were a few Japanese speakers who recognized the directional reading fairly consistently (four to six times), thus supporting Hypothesis 1.

4.4.3.2 JSL study

(a) Group results

Table 4.8 presents mean responses of locational only, directional only, and either locational or directional. (Standard deviations are included in parenthesis.)

Table 4.8. Mean responses by English and Japanese speakers in percentages

	Loc. only	Dir. only	Loc./Dir.
Low intermediate	54.12 (35.19)	23.53 (24.73)	22.35 (22.23)
High intermediate	65.26 (32.55)	15.79 (17.10)	18.95 (28.65)
Advanced	68.33 (39.51)	13.33 (19.70)	18.33 (30.10)
Japanese	92.77 (12.11)	2.55 (7.93)	4.68 (9.52)

The results are visually represented in Figure 4.6.

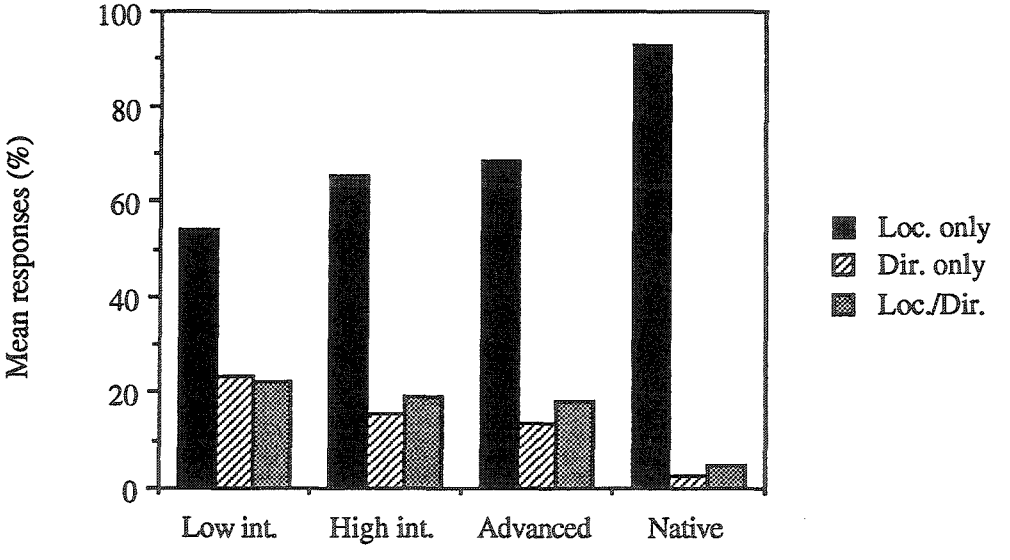


Figure 4.6. Mean responses by English and Japanese speakers in percentages

The results indicate that English speakers at all levels recognized that Japanese manner-of-motion verbs with PPs (John-wa hasi-no sita-de oyoida "John walked under the bridge") allowed only a locational reading in the majority of cases (low intermediate: 54.12%, high intermediate: 65.26%, advanced: 68.33%), although not to

the extent that native speakers did (92.77%). A one-way ANOVA shows that within responses of locational only, there was a significant effect of proficiency levels, $F(3, 91)=11.64$, $p=.0001$. Scheffé tests revealed that the control group was significantly different from all the learner groups ($p < .05$), which did not differ from each other. Figure 4.6 also indicates that English speakers at all levels chose either locational or directional or directional only--thus overgeneralizing the directional reading--only in the minority of cases. Within responses of either locational or directional, there was a significant effect of proficiency levels, $F(3, 91)=4.71$, $p=.0042$, with Scheffé tests revealing that the only significant difference existed between the low intermediate and the control groups ($p < .05$). Within responses of directional only, there was a significant effect of proficiency levels, $F(3, 91)=8.85$, $p=.0001$, with Scheffé tests revealing that the low- and high-intermediate groups were significantly different the control group, which did not differ from the advanced group. These results suggest that, contrary to Hypothesis 2, English speakers did not have difficulty recognizing that Japanese manner-of-motion verbs with PPs were unambiguously locational.

(b) Individual results

I now turn to individual results to see if the group results indeed reflect how participants of each group performed individually. Table 4.8 presents the number of participants in each group who answered either directional only or either locational or directional a certain number of times. Responses of these two options are combined to check the extent of overgeneralization of the directional reading to Japanese.

Table 4.8. Number of English and Japanese participants answering either directional only or either locational or directional

Frequency of either Dir. only or Loc./Dir. responses (k=5)	Low intermediate (n=17)	High intermediate (n=19)	Advanced (n=12)	Japanese (n=47)
0	3	5	6	33
1 or 2	8	8	2	14
3 or 4	3	5	2	0
5	3	1	2	0

Table 4.8 indicates that, similar to Japanese speakers, the majority of English speakers (11 [65%] of 17 low intermediates, 13 [68%] of 19 high intermediates, and eight [67%] of 12 advanced learners) did not choose directional only or either locational or directional more than two times (40%), suggesting that they had learned the impossibility of the directional reading in Japanese. However, the rest of the English participants overgeneralized the directional reading three times (60%) or more (while no native speakers did so). Thus, contrary to Hypothesis 2, most English speakers consistently rejected the directional reading of Japanese manner-of-motion verbs with PPs, but there were a handful of English speakers at each proficiency level who consistently allowed the directional reading, as expected under the hypothesis.

4.4.4 Discussion

4.4.4.1 ESL study

As in Study 1, Hypothesis 1 was not supported. Both the group and individual results in general indicated that both high- and low-intermediate Japanese-speaking learners of English had difficulty recognizing the directional reading of English manner-of-motion verbs with locational/directional PPs (John swam under the bridge). This suggests that even though starting with the L1 generating a subset of the L2 (Figures 4.1 and 4.2), Japanese speakers had failed to notice positive evidence for the target

property and thus to broaden their interlanguage grammar. In discussing similar results in Study 1, I provided a possible explanation for this failure (see Figure 4.4 and the discussion therein). In short, I argued that positive evidence for English manner-of-motion verbs with goal PPs involving ambiguous Ps (under, behind) might not be frequent or clear enough to be noticed by Japanese speakers. The findings in this study can be explained in the same way.

Furthermore, the present study has shown that high intermediate Japanese learners fared no better than their low intermediate counterparts, suggesting that this problem may persist until later stages.

Unlike in Study 1, however, the individual results revealed a handful of Japanese speakers who consistently recognized the directional reading of the target sentences. This may not be surprising given that, theoretically, learning should be possible due to the availability of positive evidence, as expected under Hypothesis 1. However, it is not clear to me what was special about these few successful learners that distinguished them from the majority of learners who failed in this domain.

In general, the results of the ESL study confirmed those of Study 1, thereby lending additional support for the claim that when L2 argument structures constitute a superset of the L1, the interlanguage grammar may remain too restrictive due to the L1, if positive evidence for the target properties is not robust enough.

4.4.4.2 JSL study

Hypothesis 2 predicted that because Japanese forms a subset of English in allowing only locational readings of manner-of-motion verbs with PPs (Figures 4.1 and 4.2), English speakers would have difficulty learning the impossibility of directional readings of these constructions in Japanese. However, the results were not as expected. Both group and individual results showed that, in general, English speakers recognized that Japanese manner-of-motion verbs with PPs (John-wa hasi-no sita-de oyoida "John swam under the bridge") did not allow a directional reading. Below, I provide a possible explanation.

Hypothesis 2 stemmed from the assumption that once English speakers overgeneralized the directional reading, or the LRS representation (5), to L2 Japanese, there would be no positive evidence to counteract the overgeneralization. However, this assumption may be wrong, as there seems to be positive evidence that could indirectly indicate to them the impossibility of the directional reading in Japanese. Initially, noting that Japanese sentences like (4), repeated here as (10), have a locational reading, English speakers may assume that, just like their English counterparts, they can also be directional, leading to overgeneralizations.

(10) a. John-wa hasi-no sita-de oyoida. (locational/*directional)
John-TOP bridge-GEN under-at swam
"John swam under the bridge."

b. John-wa kabe-no usiro-de hasitta. (locational/*directional)
John-TOP wall-GEN back-at ran
"John ran behind the wall."

c. John-wa puuru-no naka-de tonda. (locational/*directional)
John-TOP pool-GEN inside-at jumped
"John jumped in the pool."

Subsequently, however, they will encounter sentences like (11), where ni "at" appears with a directed motion verb (iku "go," hairu "enter") to mark the endpoint of motion:

(11) a. John-wa hasi-no sita-ni itta.
John-TOP bridge-GEN under-at went
"John went under the bridge."

b. John-wa kabe-no usiro-ni itta.
John-TOP wall-GEN back-at ran
"John went behind the wall."

c. John-wa puuru-no naka-ni haitta.
John-TOP pool-GEN inside-at entered
"John entered the pool."

As the contrast between (10) and (11) shows, Japanese uses two distinct Place Ps, de "at" and ni "at," for the locational and the directional contexts, respectively. Positive data like (11), then, would indicate to English-speaking learners of Japanese that in the directional context ni, not de, is used, thus allowing them to recognize that sentences like (10) could not have a directional reading. In other words, this is a situation where only a part of the L2 (i.e., manner-of-motion verbs with locational PPs) fits the L1, with neither language containing the other (i.e., the situation depicted in Figure 1.5 in Chapter 1). In such cases, learning should be possible on the basis of positive data (White, 1991b).

The above scenario assumes that English learners of Japanese indeed receive positive data like (10) and (11), which is reasonable. The usages of de and ni in (10) and (11) are highly basic in Japanese and taught early in the JSL classroom. For example, in Tsukuba Language Group (1995), the textbook used for the English participants in this study, ni is introduced in Lesson 2 as a "direction or goal particle" (p. 35) and de in the same lesson as a "particle of place of action" (p. 39). Since all the English participants had passed beginning levels, they must have been exposed to positive data like (10) and (11). It is, however, doubtful whether they had received explicit negative evidence indicating that sentences like (10) could not be directional, since the JSL textbook (as well as other JSL textbooks I checked) contained no such negative information concerning the usage of de.[8]

Incidentally, the indirect positive evidence scenario assumes that a uniqueness principle, originally proposed as a learnability principle in L1 acquisition (Pinker, 1984), also operates in L2 acquisition. A uniqueness principle states that faced with more than one alternative form performing the same function, children assume only one of them is correct (unless there is positive evidence indicating otherwise). In the present case, when those English learners of Japanese who allow a directional reading of sentences like (10) receive positive data like (11), they are faced with two alternative Ps, de and ni, with the same function of direction marking. A uniqueness principle, then, would force them to choose only one of them. They would choose ni

over de in this case, since there is positive evidence for the former, but not for the latter.

Thus, indirect positive evidence, together with a uniqueness principle, might have allowed English speakers to eventually reject the directional reading of Japanese manner-of-motion verbs with locational PPs, thereby recovering from overgeneralization.

It should be noted, however, that individual results also revealed a handful of English speakers who consistently overgeneralized the directional reading to Japanese. Furthermore, these learners were equally distributed among the three proficiency groups, indicating the persistence of overgeneralization on their part. It is not clear to me why these few learners continued to overgeneralize, thus apparently failing to draw on the indirect positive evidence along with a uniqueness principle.

In general, the results of the JSL study raise a possibility that even if an L2 argument structure forms a subset of the L1, the presence of indirect positive evidence might enable L2 learners to unlearn L1-based overgeneralizations.

In sum, the results of the ESL and the JSL studies reported in this chapter suggest the following:

1. When an L1 argument structure forms a subset of the L2, the availability of positive evidence will allow L2 learners to arrive at the L2 on condition that the relevant positive evidence is frequent and clear.

2. When L1 argument structures form a superset of the L2, L2 learners will have difficulty counteracting L1-based overgeneralization unless indirect positive evidence is available.

Notes

[1] As mentioned in Chapter 2 (Note 24), under the locational reading, a PP such as under the bridge in (3a) is not even an argument but an adjunct and, therefore, is not present at l-syntax (the level where argument structure is formed). In s-syntax, the directional PP is a complement of V, whereas the locational PP is a sister of V'.

[2] Study 1 was first reported in Inagaki (2002).

[3] Admittedly, the classification of this group as intermediate is somewhat arbitrary and thus should better be verified by an independent measure of proficiency. Study 2, to be reported below, includes such a proficiency measure.

[4] However, it is somewhat unexpected that English speakers failed to find the test sentences ambiguous 33.03% of the time. Their responses of locational only (18.54%) are particularly problematic since they indicate their failure to obtain the directional reading, the focus of this study. A possible explanation for this is that some native speakers were being puristic, insisting that for the directional contexts into and onto, rather than in and on, should be used. A few native speakers indeed told me so after the session. Moreover, data from individual items suggest that most of the English speakers' choices of locational only came from items containing in and on, with none coming from items containing under and behind, which do not have their directional counterparts as separate lexical items.

[5] However, the remaining cases (29.76%), where Japanese speakers chose directional only or either locational or directional, is expected under the hypothesis. Individual results below show that no Japanese participant chose either of the two options consistently.

[6] This possibility was suggested to me by K. Kanno and R. Bley-Vroman.

[7] These five English speakers are problematic since they unexpectedly failed to obtain the directional reading consistently. See Note 4.

[8] However, as L. White (personal communication, November, 2001) pointed out, the presentation of data like (10) and (11) in such proximity in the textbook (p. 39 vs. p.

36) would have served as negative evidence indicating that de and ni were mutually exclusive. If so, the English speakers' success could have been due to the negative evidence, not the indirect positive evidence.

Chapter 5
General Discussion

5.0 Introduction

In this final chapter, I summarize and discuss the main findings of the experiments presented in Chapters 3 and 4 in order to integrate them into a coherent whole. I, then, go on to discuss the implications of the results for the issue of access to UG in L2 acquisition. Finally, I discuss the contribution this thesis makes, followed by its limitations and suggestions for further research.

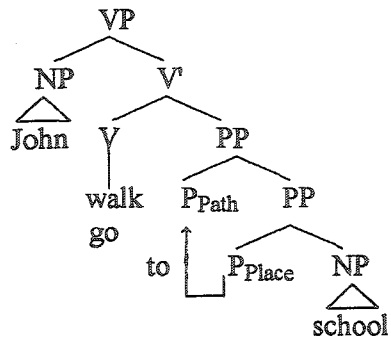
5.1 Summary and discussion

A series of experiments reported in Chapters 3 and 4 have tested the following two hypotheses (Hs) deriving from White's (1991b) proposal for the acquisition of L2 argument structure (Chapter 1) and an analysis of motion verbs with locational/directional PPs in English and Japanese (Chapter 2):

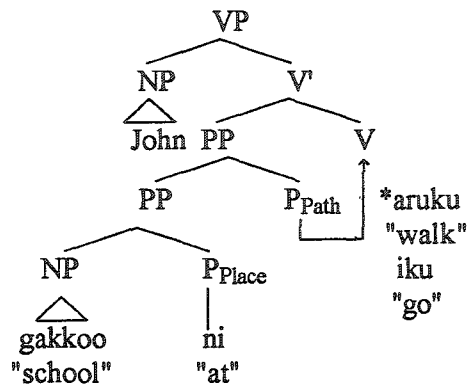
H1. Japanese speakers will not have difficulty acquiring the English representation in (1) because there are positive data motivating the change from the L1 representation in (2) to the L2. As a result, Japanese speakers will come to allow manner-of-motion verbs with goal PPs (e.g., John walked to school) in L2 English.

H2. English speakers will have difficulty acquiring the Japanese representation in (2) because there are no positive data motivating the change from the L1 representation in (1) to the L2. As a result, English speakers will continue to overgeneralize manner-of-motion verbs with goal PPs (e.g., ?*John-ga gakkoo-ni aruita "John walked to school") to L2 Japanese.

(1) The English LRS representation



(2) The Japanese LRS representation



The main findings (Fs) of the ESL experiments reported in Chapters 3 and 4 can be summarized as follows:

F1. Japanese-speaking learners of English accepted [MANNER V + PP] (e.g., John walked to school).

F2. Japanese-speaking learners of English continued to accept [DIRECTED V + PP + BY -ING] (e.g., John went to school by walking) and [MANNER V AND DIRECTED V + PP] (e.g., John walked and went to school), which are marginal in English.

F3. Japanese-speaking learners of English did not recognize the directional reading of manner-of-motion verbs with locational/directional PPs (e.g., John swam under the bridge).

F1 supports H1. I have argued that F2 was due to L1 influence: Once Japanese speakers regard [DIRECTED V + PP + BY -ING] and [MANNER V AND DIRECTED V + PP] as the English equivalents of Japanese-type forms, it would be difficult for them

to discover, on the basis of positive data, that these forms are unnatural in English. I attributed F3 to L1 influence in conjunction with lack of clear and frequent positive evidence.

This raises the question of whether F2 and F3 contradict F1. In other words, why was there continued L1 influence (F2 and F2) when the target L2 representation (1) seemed to have been acquired (F1)? However, there are reasons to believe that neither F2 nor F3 contradicts F1. Regarding F2, the English representation (1) allows not only manner-of-motion verbs (walk) but also directed motion verbs such (go) to appear with goal PPs. Therefore, Japanese speakers' acceptance of [DIRECTED V + PP + BY -ING] and [MANNER V AND DIRECTED V + PP] does not contradict the assumption that they had acquired the L2 representation (1). Presumably, they falsely regarded these English forms as natural due to L1 influence, even after the L2 representation had already been part of their interlanguage grammar.

As for F3, it should be pointed out that a grammar's failure to generate certain surface realizations of a particular underlying representation does not necessarily mean that the representation is lacking in the grammar (although if a grammar lacks a particular underlying representation, there should not be any surface realizations of it generated by the grammar). This is because it is possible that a grammar represents a particular abstract property without realizing all of the structural reflexes associated with it. Therefore, in the present case, it is conceivable that even though Japanese speakers had acquired the underlying representation in (1), they had not learned some of its structural realizations, particularly manner-of-motion verbs with goal PPs involving ambiguous PPs (e.g., under, behind), due to the lack of robust positive evidence.

Turning to the JSL experiments, their main findings can be summarized as follows:

F4. English-speaking learners of Japanese continued to accept [PP + MANNER V] (e.g., ?*John-ga gakkoo-ni aruita "John walked to school"), which is ungrammatical in Japanese.

F5. English-speaking learners of Japanese came to accept the Japanese-type constructions, [PP + -TE + DIRECTED V] (e.g., John-wa gakkoo-ni aruite itta "John went to school [by] walking") and [-TE + PP + DIRECTED V] (e.g., John-wa aruite gakkoo-ni itta "John went to school [by] walking" or "John walked and went to school").

F6. English-speaking learners of Japanese did not overgeneralize a directional reading to manner-of-motion verbs with locational PPs (e.g., John-wa hasi-no sita-de oyoida "John swam under the bridge").

F4 supports H2. I have suggested that F5 was due to the lack of positive evidence indicating the ungrammaticality of this form in the input, and that F6 was because there was indirect positive evidence indicating that the Japanese P de "at" could not allow a directional reading.

This raises a question of whether F5 contradicts F4; that is, does F5 not indicate that English speakers had acquired the L2 representation in (2), with F4 indicating that the same speakers had retained the English representation in (1)? However, the answer is no because, again, the English representation allows both directed motion verbs and manner-of-motion verbs to appear with goal PPs. In particular, starting with the L1 representation (1), English speakers would impose the representation on the Japanese forms ([PP + -TE + DIRECTED V], [-TE + PP + DIRECTED V]), with the Japanese P ni "at" misanalyzed as an equivalent for the English directional P to (cf. Harley, 1989, p. 9). If this happens, English-speaking learners of Japanese would allow the Japanese forms as well [PP + MANNER V]. Thus, English speakers' acceptance of the Japanese-type forms does not contradict the assumption that they had retained the L1 representation in their interlanguage grammar.

Another question arises regarding F4 and F6: Why did English speakers make overgeneralizations in one case (F4), but not in another (F6)? To answer this question, one needs to be reminded of the possible dissociation between an underlying representation and its surface realizations discussed above. In particular, F6 does not necessarily imply that English speakers had unlearned the L1 representation in (1).

That is, it is possible that on the basis of indirect positive evidence, they had come to disallow manner-of-motion verbs with PPs involving de "at" as a realization of the L1-based representation, as in (F6), while accepting manner-of-motion verbs with PPs involving ni "at" as a realization of the same representation, as in (F4).

To summarize, all the main findings of the ESL and JSL experiments reported in Chapters 3 and 4 are either supportive of or consistent with H1 or H2, suggesting that Japanese speakers had successfully acquired the English representation (1) on the basis of positive evidence, whereas English speakers had failed to acquire the Japanese representation (2) in the absence of positive data motivating the necessary change from the L1 to the L2 representation.

5.2 Implications for access to UG in L2 acquisition

Assuming that the target properties are constrained by UG (Chapter 2), the results of the present study are relevant to the access-to-UG issue in SLA. In this subsection, I discuss how the results fare with the three different positions discussed in Chapter 1 (see Figures 1.2, 1.3, 1.4 and Table 1.1).

What would each of the three positions predict for the L2 acquisition of motion verbs with locational/directional PPs by Japanese-speaking learners of English and English-speaking learners of Japanese? Assuming no role of the L1 and full access to UG for L2 acquisition, No Transfer/Full Access (e.g., Epstein et al., 1996) would predict no L1 effects at any stages of L2 acquisition and eventual success in both situations. Therefore, English speakers' persistence with the L1 representation in L2 Japanese runs counter to this position, although Japanese speakers' success in acquiring the L2 representation is consistent with it.

Assuming full transfer of the L1 and access to UG only via the L1 for L2 acquisition, Full Transfer/Partial Access (e.g., Bley-Vroman, 1990) would predict transfer of the L1 representation and eventual failure to acquire the L2 representation in both situations. The failure is predicted because each situation involves the acquisition of UG properties not represented in the L1, which would be impossible if

this position was correct. It is, then, consistent with this position that English-speaking learners of Japanese were stuck in the L1 representation; however, Japanese speakers' success in acquiring the L2 representation is unexpected under this position.

Assuming full transfer of the L1 and full access to UG for L2 acquisition, Full Transfer/Full Access (e.g., Schwartz & Sprouse, 1994) would predict initial L1 transfer in both situations, but its predictions for later stages would be different depending on the situation involved. In particular, it would predict eventual success in the case of L1 Japanese and L2 English, due to the availability of positive evidence motivating the restructuring of the L1 representation to the L2. In contrast, it might predict failure in L1 English and L2 Japanese, in which situation no positive data seem to motivate the necessary restructuring of the L1 representation to the L2. Thus, Full Transfer/Full Access can explain both Japanese speakers' success and English speakers' failure in acquiring the target L2 representations.

In sum, the results of the present study are the most consistent with Full Transfer/Full Access.

5.3 Contribution

This thesis makes an original contribution to theoretical linguistics. I have extended Hale and Keyser's (e.g., 1993) syntactic approach to argument structure to motion verbs with locational/directional PPs in English and Japanese and showed that the lexicalization differences between the two languages in this domain (Talmy, 1985) derive from different incorporation patterns in l-syntax. This has not only provided further support for Hale and Keyser's approach but also paved the way for investigating the acquisition of these argument structure properties within a generative framework.

This thesis also makes an original contribution to SLA. This has been the first in-depth experimental study of the L2 acquisition of motion verbs with locational/directional PP in English and Japanese, thereby increasing our knowledge of L2 argument structure. Particularly noteworthy was the fact that this study was bi-

directional, investigating the same target domain in both L1 Japanese-L2 English and L1 English-L2 Japanese. Given that the target properties are represented differently in English and Japanese, with English motion verbs with goal PPs forming a superset of their Japanese counterparts, the bi-directional investigation has allowed us to confirm two of White's (1991b) predictions for L2 argument structure in a new domain. That is, this study has shown that L2 acquisition is problematic where the L2 argument structure constitutes a subset of the L1 argument structure (L1 English, L2 Japanese), but that it is not problematic in the opposite situation (L1 Japanese, L2 English), thereby demonstrating that the different ways of overlapping between the L1 and L2 have indeed led to different outcomes in interlanguage argument structure.

Furthermore, this thesis has provided data relevant to the issue of UG access in SLA, showing that the Full-Transfer/Full-Access model of L2 acquisition (e.g., Schwartz & Sprouse, 1994) best explains the results.

Finally, this thesis has provided data from Japanese as an L2, which are valuable in light of the current predominance of Indo-European languages as L2s in SLA research.

5.4 Limitations and suggestions for further research

In this final section, I discuss the limitations of this thesis along with suggestions for further research.

First, it is expected under H1 that Japanese speakers will initially transfer the L1 representation to the L2, which would result in their disallowing English manner-of-motion verbs with goal PPs (e.g., John walked to school). However, there has been no clear evidence of the initial transfer in this study (Tables 3.5, 3.10, 3.16 and Figures 3.2, 3.4, 3.5), which may well have been due to the fact that all Japanese participants were intermediate- or advanced-level learners of English, who most likely had already passed the initial undergeneralization stage. Therefore, beginning-level Japanese learners need to be looked at to confirm the initial transfer.

Second, in the ESL grammaticality judgment studies (Chapter 3), I speculated that Japanese-speaking learners of English accepted [DIRECTED V + PP + BY -ING] (e.g., John went to school by walking) and [MANNER V AND DIRECTED V + PP] (e.g., John walked and went to school), but not [DIRECTED V + PP + -ING] (e.g., John went to school walking), because they took the former, but not the latter, as the English equivalents of the Japanese-type forms ([PP + -TE + DIRECTED V] and [-TE + PP + DIRECTED V]). This speculation needs to be confirmed, for example, by having Japanese speakers translate the English sentences into Japanese or vice versa.

Third, again in the ESL grammaticality judgment studies, I have argued that Japanese-speaking learners of English, even after acquiring the L2 representation, continued to be misled into thinking that [DIRECTED V + PP + BY -ING] and [MANNER V AND DIRECTED V + PP] were natural, due to L1 influence in conjunction with the lack of clear positive evidence indicating their marginality. It would be interesting, particularly from a pedagogical point of view, to see whether provision of negative evidence could help L2 learners recognize the unnaturalness of these forms.

Fourth, in the ESL picture-matching studies (Chapter 4), I suggested that Japanese-speaking learners of English failed to recognize the directional reading of manner-of-motion verbs with locational/directional PPs (e.g., John swam under the bridge) due to initial L1 transfer and subsequent lack of clear and frequent positive evidence. However, as R. Bley-Vroman points out (personal communication, September, 2000), the assumed infrequency of the target structure needs to be confirmed with real data using a corpus of some sort. Furthermore, if Japanese speakers' failure has to do with insufficient positive evidence, they should improve with more exposure; however, this prediction cannot be tested using the picture-matching data in this thesis as they come from only intermediate-level Japanese learners of English. Therefore, to test the prediction, one may include advanced-level Japanese speakers and see if they perform better. However, as L. White (personal communication, November, 2000) suggested, here, one would simply be making an assumption that advanced learners have had more of the relevant input, which needs

to be verified with some data, anyway. A better solution, then, would be to deliberately supply the learners with the relevant positive data and see if it has any effects (cf. Trahey & White, 1993).

Fifth, if English-speaking learners of Japanese fail to restructure the L1 representation to the L2 due to the lack of positive data motivating the restructuring, it would be interesting to see if providing the learners with negative evidence causes the necessary restructuring of their interlanguage grammar (cf. Izumi & Lakshmanan, 1998; White, 1991a). If it does, it indicates that L2 acquisition involves situations where negative evidence plays a more important role than in L1 acquisition (White, 1991a, 1991b).

More generally, there are other ways to further confirm the L1 effects argued for in this thesis. This study has investigated two situations where there are partial overlaps between the L1 and L2 argument structure; that is, one where the L1 (Japanese) is a subset of the L2 (English) and another where the L1 (English) is a superset of the L2 (Japanese). But, how about the situation where there is a total overlap between the L1 and L2 argument structure? The prediction would be that L2 learners will have no problem successfully transferring the L1 to the L2. In particular, L2 learners of English with English-type L1s, such as Germanic languages (cf. Talmy, 1985) and Modern Hebrew (cf. Levin & Rappaport Hovav, 1995, p. 183), will from early stages on accept manner-of-motion verbs with goal PPs (e.g., John walked to school), recognize the marginality of Japanese-type forms (e.g., John went to school by walking), and allow the directional reading of manner-of-motion verbs with locational/directional PPs (e.g., John swam under the bridge). On the other hand, L2 learners of Japanese with Japanese-type L1s, such as Romance languages (cf. Talmy, 1985) and Korean (cf. Choi & Bowerman, 1991; Kim, 1997), will from early stages on reject manner-of-motion verbs with goal PPs (e.g., ?*John-ga gakkoo-ni aruita "John walked to school"), allow the Japanese-type forms (e.g., John-wa gakkoo-ni aruite itta "John went to school [by] walking"), and disallow a directional reading of manner-of-motion verbs with locational PPs (John-wa hasi-no sita-de oyoida "John swam under

the bridge"). If these predictions are also borne out, L1 influence in this domain becomes conclusive, thereby allowing us to make a stronger case for the transfer-and-learnability scenario defended in this thesis.

Finally, although the linguistic analysis presented in Chapter 2 focused on motion verbs with locational/directional PPs in English and Japanese, it is possible that there are other differences between the two languages that derive from the different l-syntactic representations proposed. In other words, there may be a parameter, whose positive or negative setting has a cluster of syntactic consequences including motion verbs with locational/directional PPs. In fact, such a proposal has recently been made by Beck and Snyder (2001). They proposed that manner-of-motion verbs with goal PPs are among a family of constructions associated with the positive setting of Snyder's (1995a) "Compounding Parameter," along with productive root compounding (e.g., frog book), resultatives (e.g., beat the metal flat) and the verb-particle construction (e.g., pick the book up). If true, their proposal may open up some new explanations for the findings of the present study. For example, success on the part of Japanese-speaking learners of English may have been due to parameter resetting, triggered by positive data including not only manner-of-motion verbs with goal PPs but also other constructions associated with the parameter. In contrast, failure on the part of English-speaking learners of Japanese may have been due to the fact that to reset the parameter from the L1 to the L2 setting (assuming Japanese has the negative setting of the parameter), they would have had to notice the absence of these constructions (i.e., indirect negative evidence), which would be more difficult. In this connection, remember that in the second JSL grammaticality judgment study (section 3.5.5.2), there was a weak indication of the unlearning of manner-of-motion verbs with goal PPs by advanced English-speaking learners of Japanese. There, I suggested that some advanced English speakers might have noticed the absence of manner-of-motion verbs with goal PPs in Japanese and taken it as evidence that Japanese did not allow the construction. However, if Beck and Snyder (2001) are right, there were also other constructions the absence of which English speakers could

have used as indirect negative evidence to reset the parameter, thereby rendering their task of unlearning the L1 representation somewhat easier than I originally suggested. To explore these and other possibilities is beyond the scope of this thesis and thus left to further research.

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Appendix A ESL Grammaticality Judgment Task in Study 1

In this task, you will see a number of pictures each showing a situation. Each picture is followed by a set of sentences describing the situation. **I want you first to look at the picture carefully to understand the situation and then decide to what degree each sentence sounds natural or unnatural to you as a sentence describing the situation**. Circle only **one** of the five numbers following each sentence. Each number means the following:

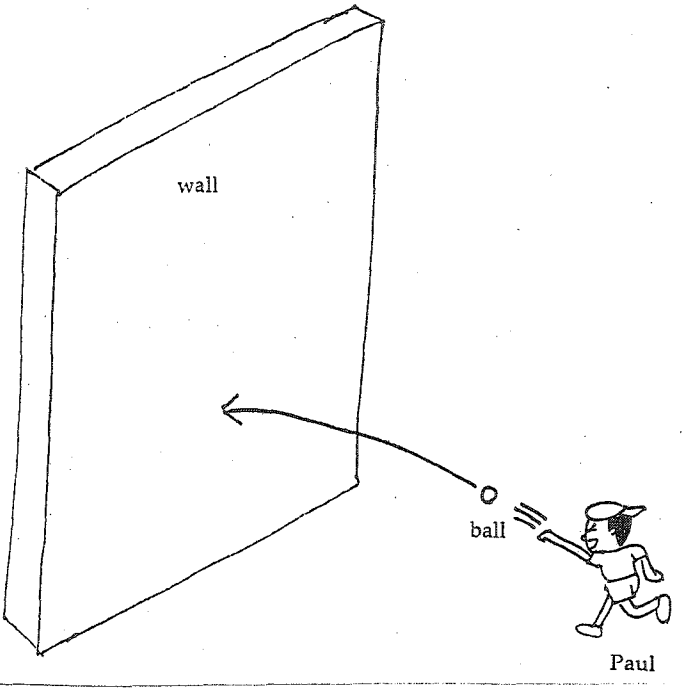
-2 = completely unnatural
-1 = fairly unnatural
0 = not sure
1 = fairly natural
2 = completely natural

There is an **arrow** in each picture. The arrow indicates **the direction and the endpoint of the motion** depicted by the picture.

There are no right or wrong answers. I want you to concentrate on **how you feel** about the sentences. **Don't go back and change your answers** because I am interested in your first impression.

There is an example on the next page. I want you to try it for practice.

(Example)

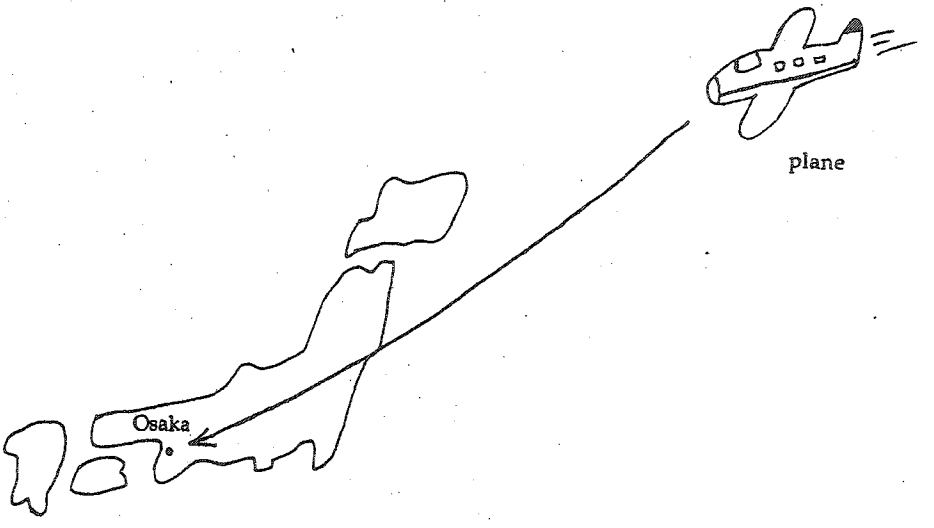


1.	Paul threw the ball to the wall.	-2	-1	0	1	2
2.	Paul threw the wall with the ball.	-2	-1	0	1	2

The picture in this example shows the situation where "Paul threw the ball toward the wall and the ball finally reached the wall." You may have felt that sentence 1 is completely natural as a sentence describing the situation and thus circled '2'. On the other hand, you may have felt that sentence 2 is completely unnatural as a sentence describing the situation and thus circled '-2'.

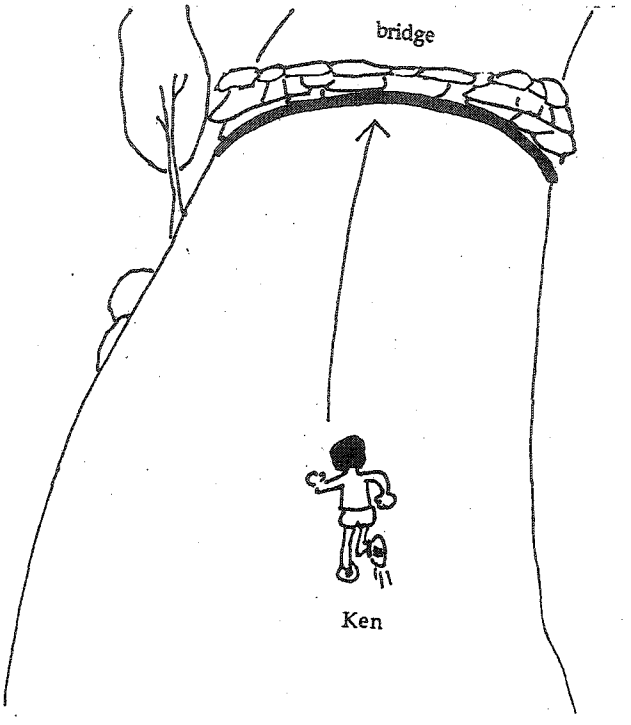
Now, you are ready to begin!

(Picture 1)



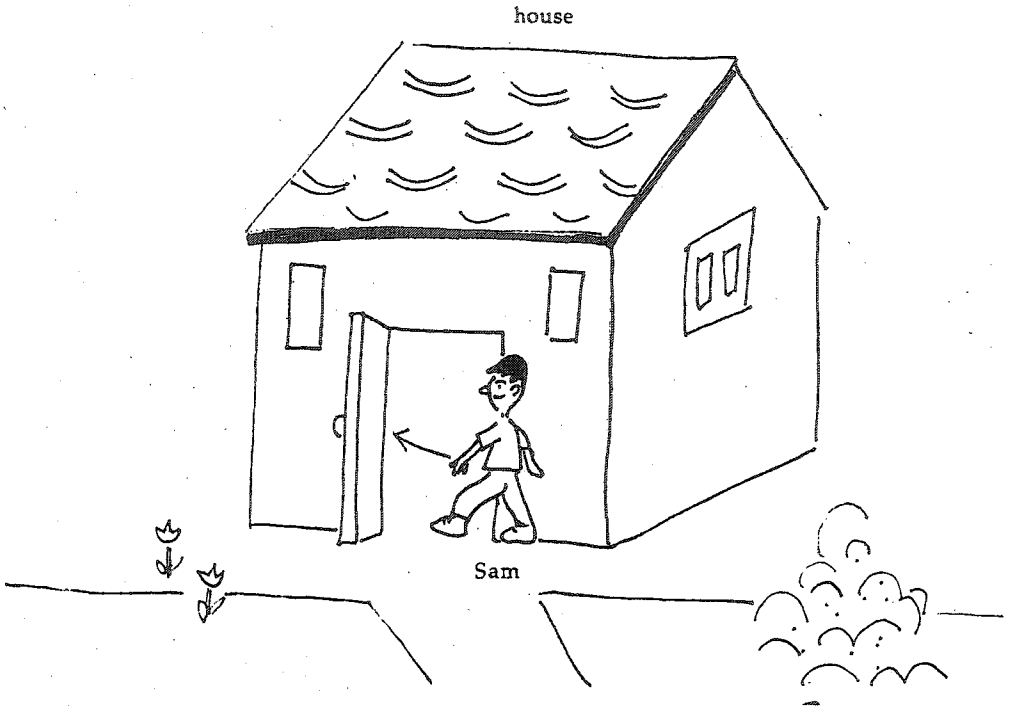
1.	The plane went to Osaka flying.	-2	-1	0	1	2
2.	The plane flew in Osaka for 5 minutes.	-2	-1	0	1	2
3.	The plane flew to Osaka.	-2	-1	0	1	2
4.	The plane went to Osaka by flying.	-2	-1	0	1	2
5.	The plane flew and went to Osaka.	-2	-1	0	1	2

(Picture 2)



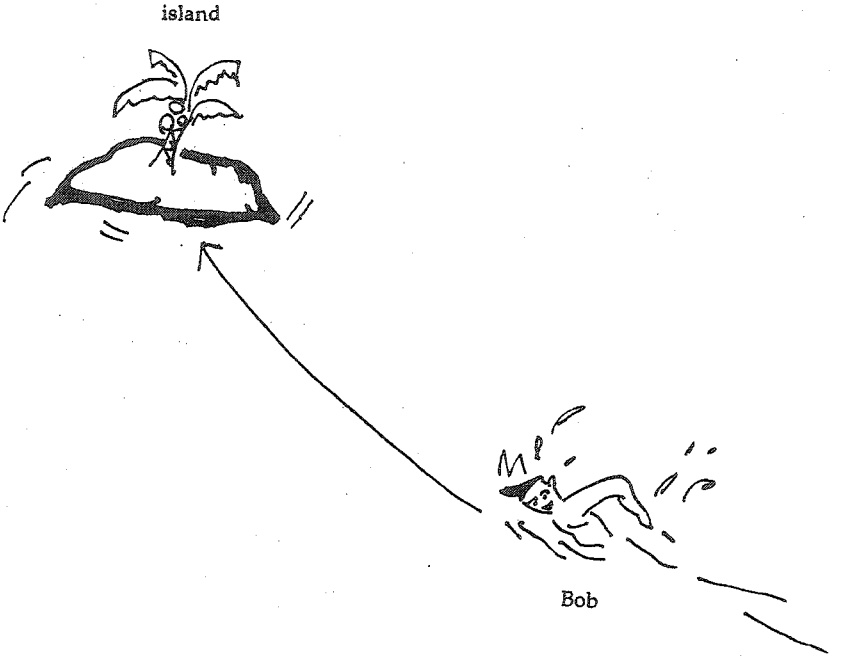
1.	Ken ran under the bridge for 5 minutes.	-2	-1	0	1	2
2.	Ken went under the bridge running.	-2	-1	0	1	2
3.	Ken ran under the bridge.	-2	-1	0	1	2
4.	Ken ran and went under the bridge.	-2	-1	0	1	2
5.	Ken went under the bridge by running.	-2	-1	0	1	2

(Picture 3)



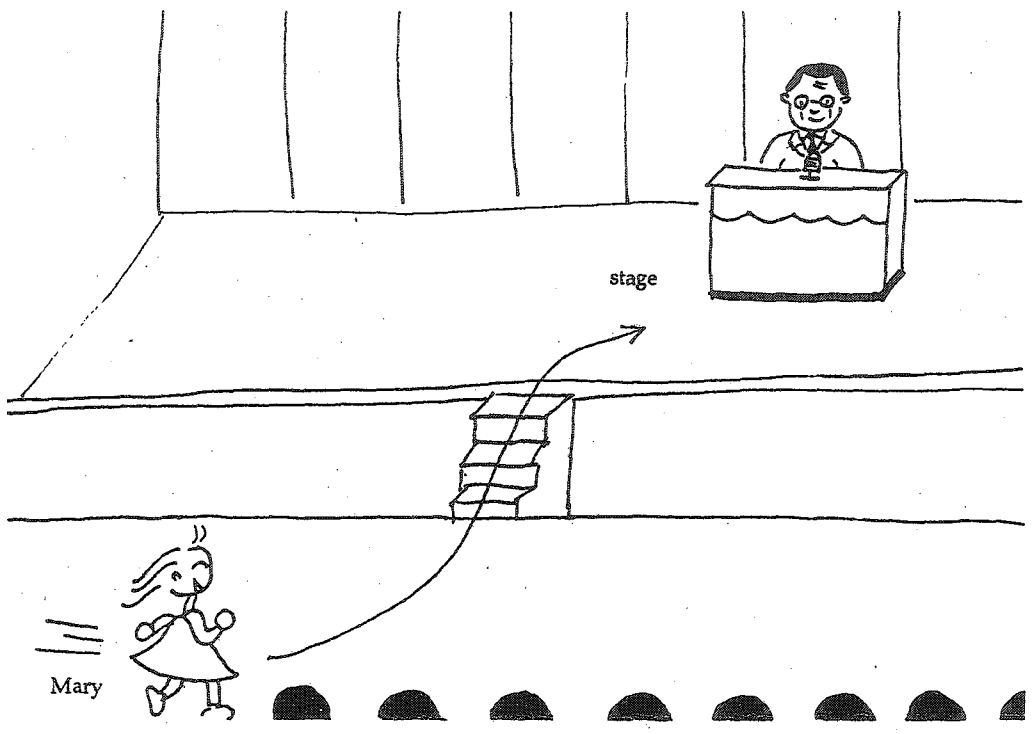
1.	Sam entered the house by walking.	-2	-1	0	1	2
2.	Sam walked and went into the house.	-2	-1	0	1	2
3.	Sam went into the house by walking.	-2	-1	0	1	2
4.	Sam went into the house walking.	-2	-1	0	1	2
5.	Sam walked in the house for 5 minutes.	-2	-1	0	1	2
6.	Sam entered the house walking.	-2	-1	0	1	2
7.	Sam walked and entered the house.	-2	-1	0	1	2
8.	Sam walked into the house.	-2	-1	0	1	2

(Picture 4)



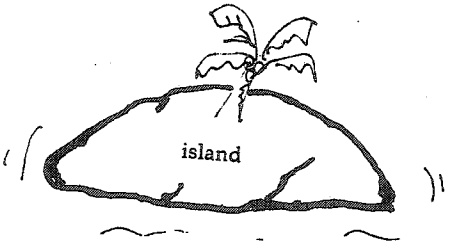
1.	Bob swam and went to the island.	-2	-1	0	1	2
2.	Bob went to the island swimming.	-2	-1	0	1	2
3.	Bob went to the island by swimming.	-2	-1	0	1	2
4.	Bob swam on the island for 5 minutes.	-2	-1	0	1	2
5.	Bob swam to the island.	-2	-1	0	1	2

(Picture 5)



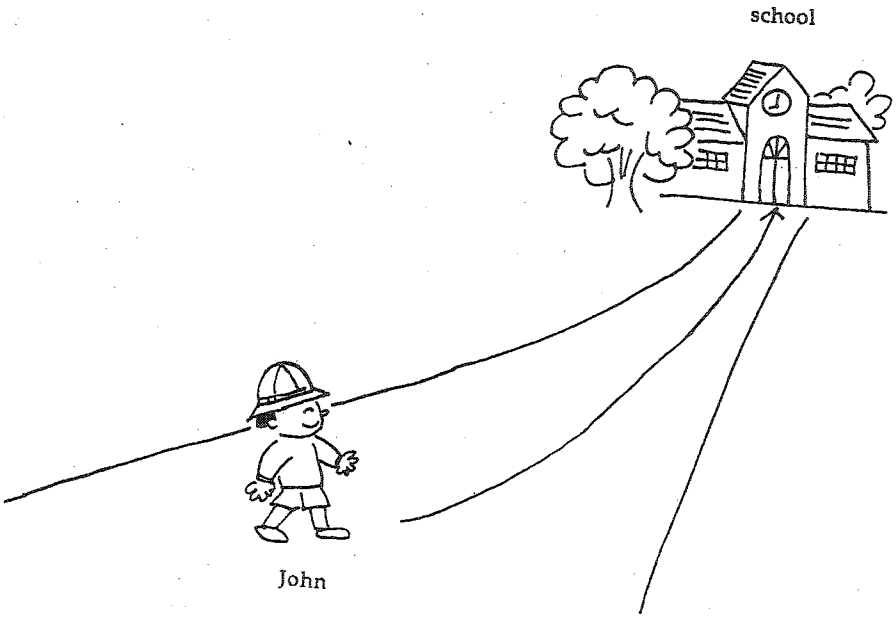
1.	Mary went onto the stage running.	-2	-1	0	1	2
2.	Mary went up onto the stage by running.	-2	-1	0	1	2
3.	Mary ran on the stage for 5 minutes.	-2	-1	0	1	2
4.	Mary went onto the stage by running.	-2	-1	0	1	2
5.	Mary ran and went up onto the stage.	-2	-1	0	1	2
6.	Mary went up onto the stage running.	-2	-1	0	1	2
7.	Mary ran and went onto the stage.	-2	-1	0	1	2
8.	Mary ran onto the stage.	-2	-1	0	1	2

(Picture 6)



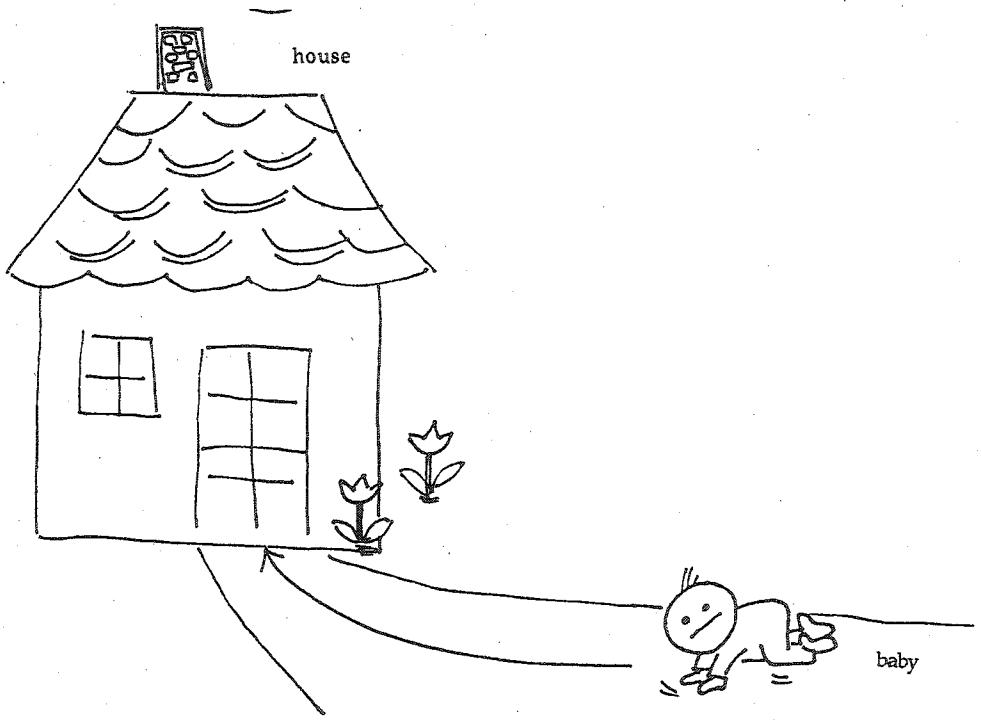
1.	The plane went over the island by flying.	-2	-1	0	1	2
2.	The plane flew and went over the island.	-2	-1	0	1	2
3.	The plane flew over the island for 5 minutes.	-2	-1	0	1	2
4.	The plane flew over the island.	-2	-1	0	1	2
5.	The plane went over the island flying.	-2	-1	0	1	2

(Picture 7)



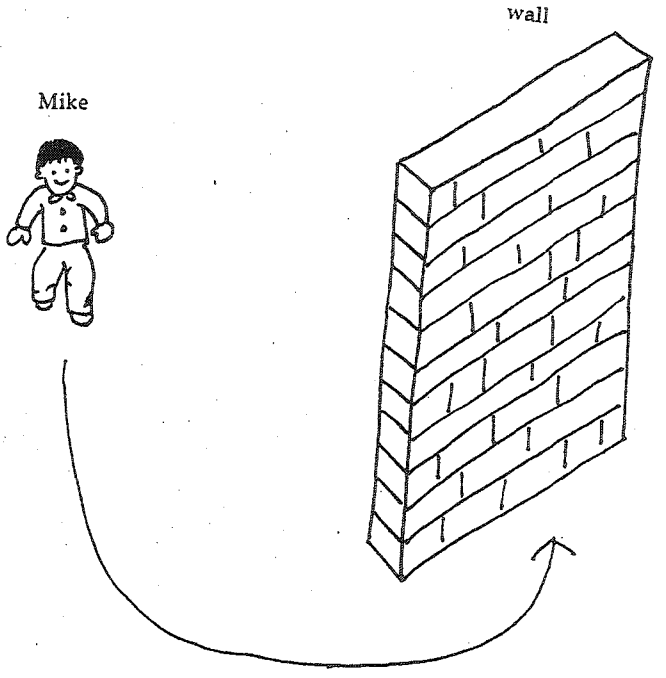
1.	John went to school by walking.	-2	-1	0	1	2
2.	John walked to school.	-2	-1	0	1	2
3.	John went to school on foot.	-2	-1	0	1	2
4.	John went to school walking.	-2	-1	0	1	2
5.	John walked and went to school.	-2	-1	0	1	2
6.	John walked at school for 5 minutes.	-2	-1	0	1	2

(Picture 8)



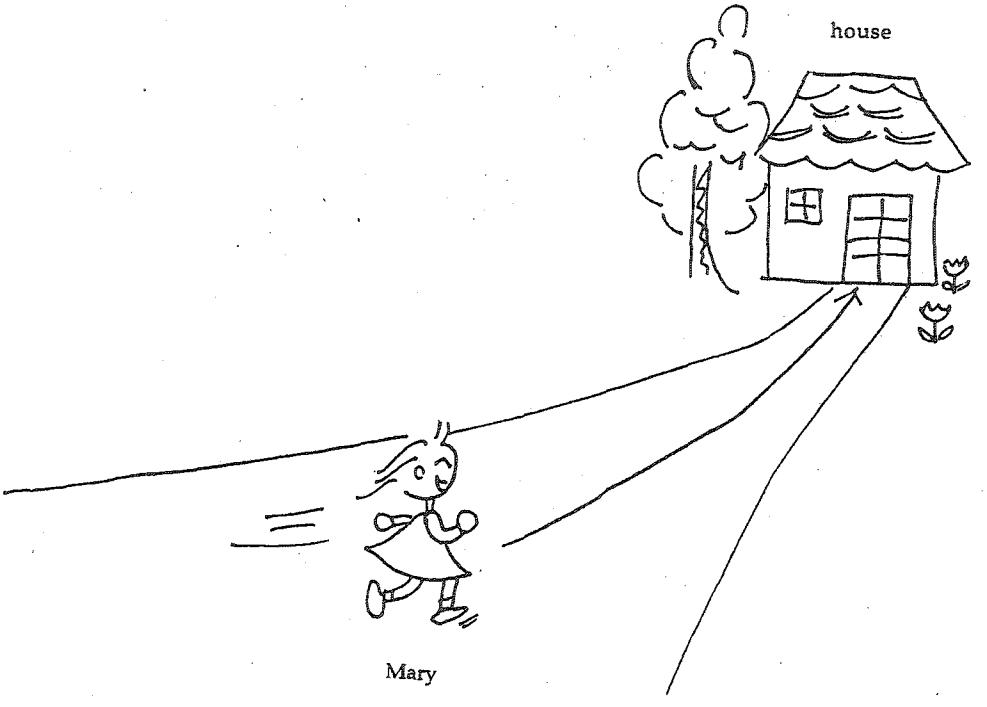
1.	The baby went to the house crawling.	-2	-1	0	1	2
2.	The baby crawled to the house.	-2	-1	0	1	2
3.	The baby crawled in the house for 5 minutes.	-2	-1	0	1	2
4.	The baby crawled and went to the house.	-2	-1	0	1	2
5.	The baby went to the house by crawling.	-2	-1	0	1	2

(Picture 9)



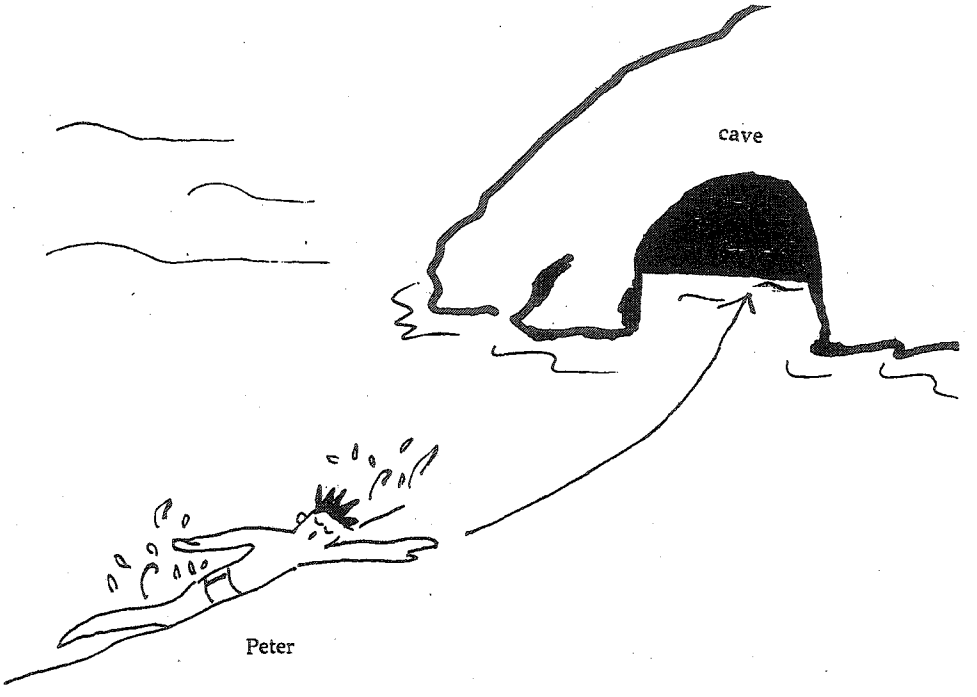
1.	Mike walked behind the wall.	-2	-1	0	1	2
2.	Mike walked behind the wall for 5 minutes.	-2	-1	0	1	2
3.	Mike went behind the wall walking.	-2	-1	0	1	2
4.	Mike walked and went behind the wall.	-2	-1	0	1	2
5.	Mike went behind the wall by walking.	-2	-1	0	1	2

(Picture 10)



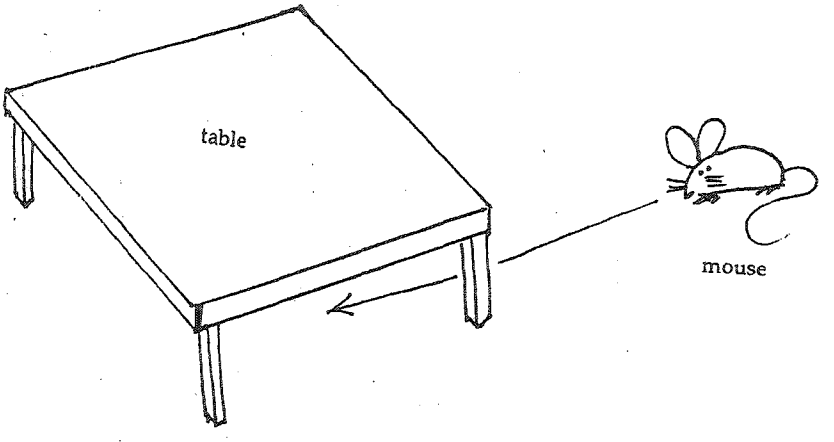
1.	Mary went to the house by running.	-2	-1	0	1	2
2.	Mary ran and went to the house.	-2	-1	0	1	2
3.	Mary went to the house running.	-2	-1	0	1	2
4.	Mary ran in the house for 5 minutes.	-2	-1	0	1	2
5.	Mary ran to the house.	-2	-1	0	1	2

(Picture 11)



1.	Peter swam and went into the cave.	-2	-1	0	1	2
2.	Peter entered the cave by swimming.	-2	-1	0	1	2
3.	Peter swam into the cave.	-2	-1	0	1	2
4.	Peter swam and entered the cave.	-2	-1	0	1	2
5.	Peter went into the cave swimming.	-2	-1	0	1	2
6.	Peter swam in the cave for 5 minutes.	-2	-1	0	1	2
7.	Peter entered the cave swimming.	-2	-1	0	1	2
8.	Peter went into the cave by swimming.	-2	-1	0	1	2

(Picture 12)



1.	The mouse crawled and went under the table.	-2	-1	0	1	2
2.	The mouse crawled under the table for 5 minutes.	-2	-1	0	1	2
3.	The mouse crawled under the table.	-2	-1	0	1	2
4.	The mouse went under the table by crawling.	-2	-1	0	1	2
5.	The mouse went under the table crawling.	-2	-1	0	1	2

Appendix B JSL Grammaticality Judgment Task in Study 1

In this task, you will see a number of pictures each showing a situation. Each picture is followed by a set of sentences describing the situation. **I want you first to look at the picture carefully to understand the situation and then decide to what degree each sentence sounds natural or unnatural to you as a sentence describing the situation**. Circle only **one** of the five numbers following each sentence. Each number means the following:

-2 = completely unnatural

-1 = fairly unnatural

0 = not sure

1 = fairly natural

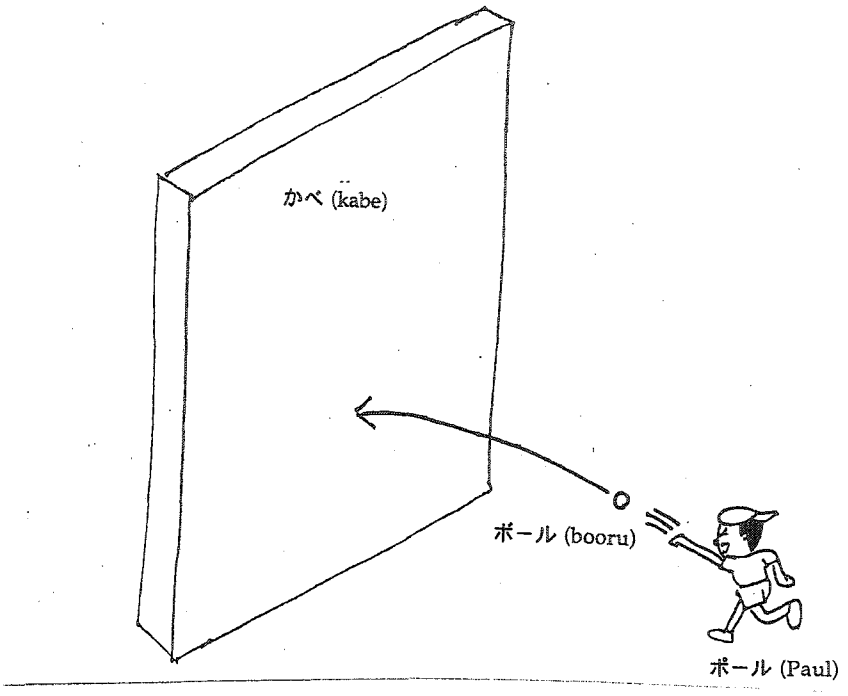
2 = completely natural

There is an **arrow** in each picture. The arrow indicates **the direction and the endpoint of the motion** depicted by the picture.

There are no right or wrong answers. I want you to concentrate on **how you feel** about the sentences. **Don't go back and change your answers** because I am interested in your first impression.

There is an example on the next page. I want you to try it for practice.

(Example)

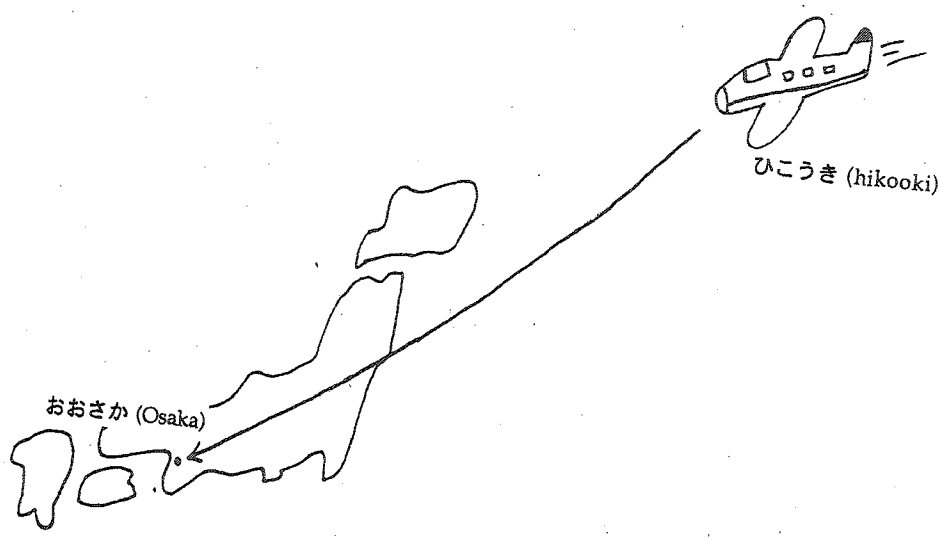


1.	ボールは壁(かべ)にボールを投(な)げた。 Paul-wa kabe-ni booru-o nageta.	-2	-1	0	1	2
2.	ボールはボールで壁(かべ)を投(な)げた。 Paul-wa booru-de kabe-o nageta.	-2	-1	0	1	2

The picture in this example shows the situation where "Paul threw the ball toward the wall and the ball finally reached the wall." You may have felt that sentence 1 is completely natural as a sentence describing the situation and thus circled '2'. On the other hand, you may have felt that sentence 2 is completely unnatural as a sentence describing the situation and thus circled '-2'.

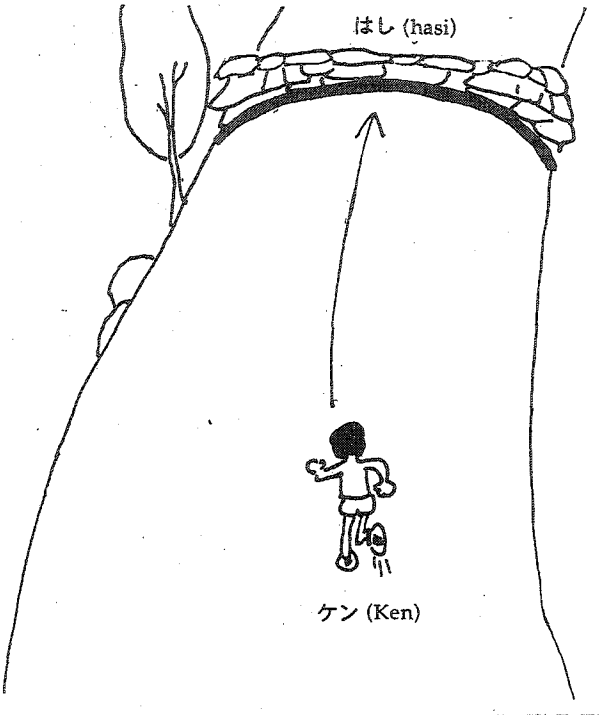
Now, you are ready to begin!

絵(え) 1
e



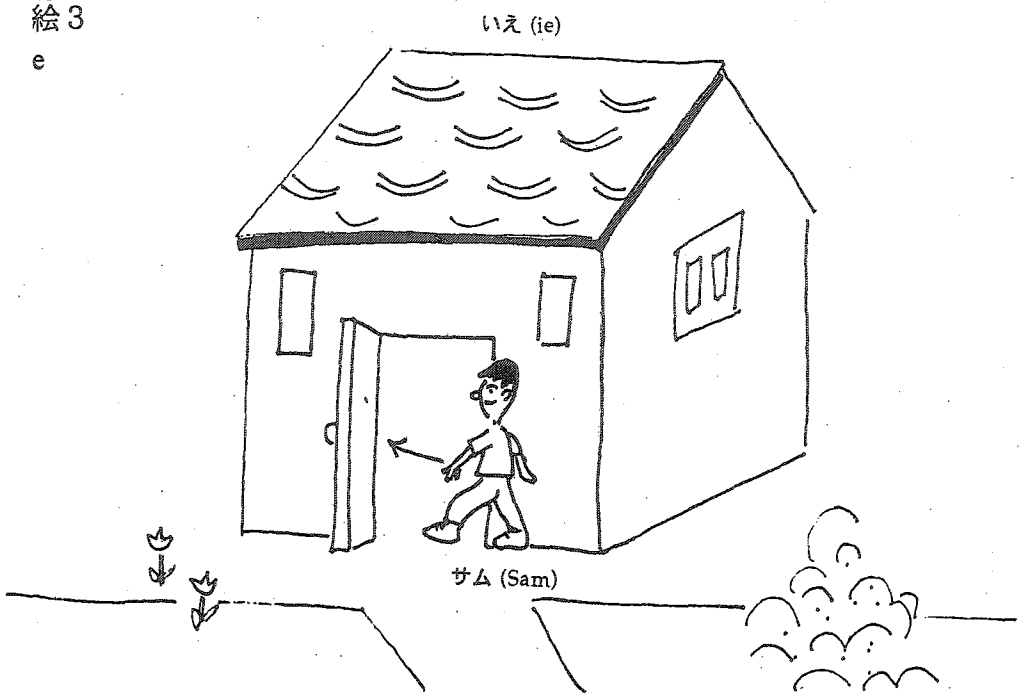
1.	飛行機(ひこうき)は大阪(おおさか)に飛(と)んで行(い)った。 Hikooki-wa Osaka-ni tonde itta.	-2	-1	0	1	2
2.	飛行機(ひこうき)は5分間大阪(ごふんかんおおさか)で飛(と)んだ。 Hikooki-wa 5-hun-kan Osaka-de tonda.	-2	-1	0	1	2
3.	飛行機(ひこうき)は大阪(おおさか)に飛(と)んだ。 Hikooki-wa Osaka-ni tonda.	-2	-1	0	1	2
4.	飛行機(ひこうき)は飛(と)んで大阪(おおさか)に行(い)った。 Hikooki-wa tonde Osaka-ni itta.	-2	-1	0	1	2

絵(え) 2
e



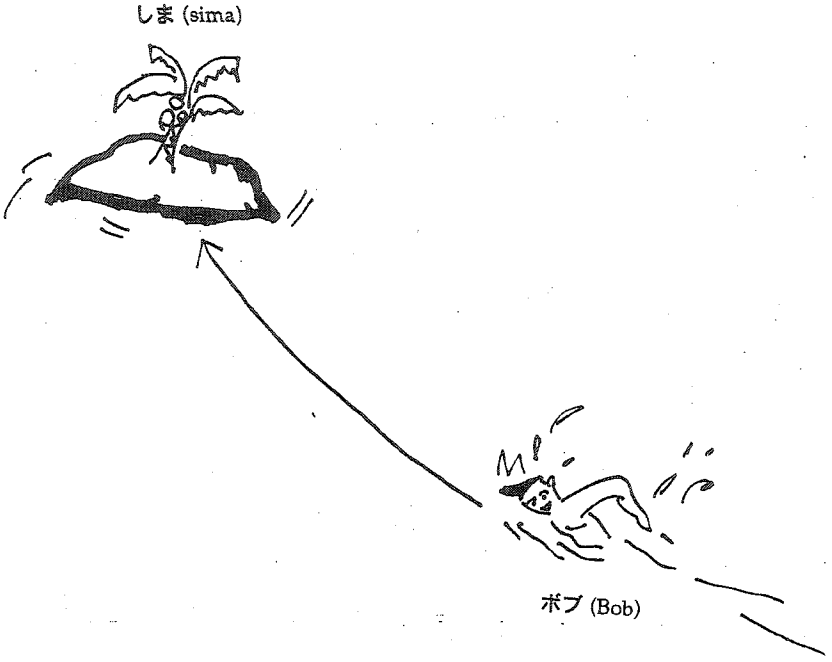
1.	ケンは5分間(ごふんかんはし)橋の下(した)で走(はし)った。 Ken-wa 5-hun-kan hasi-no sita-de hasitta.	-2	-1	0	1	2
2.	ケンは橋(はし)の下(した)に走(はし)って行(い)った。 Ken-wa hasi-no sita-ni hasitte itta.	-2	-1	0	1	2
3.	ケンは橋(はし)の下(した)に走(はし)った。 Ken-wa hasi-no sita-ni hasitta.	-2	-1	0	1	2
4.	ケンは走(はし)って橋(はし)の下(した)に行(い)った。 Ken-wa hasitte hasi-no sita-ni itta.	-2	-1	0	1	2

絵3
e



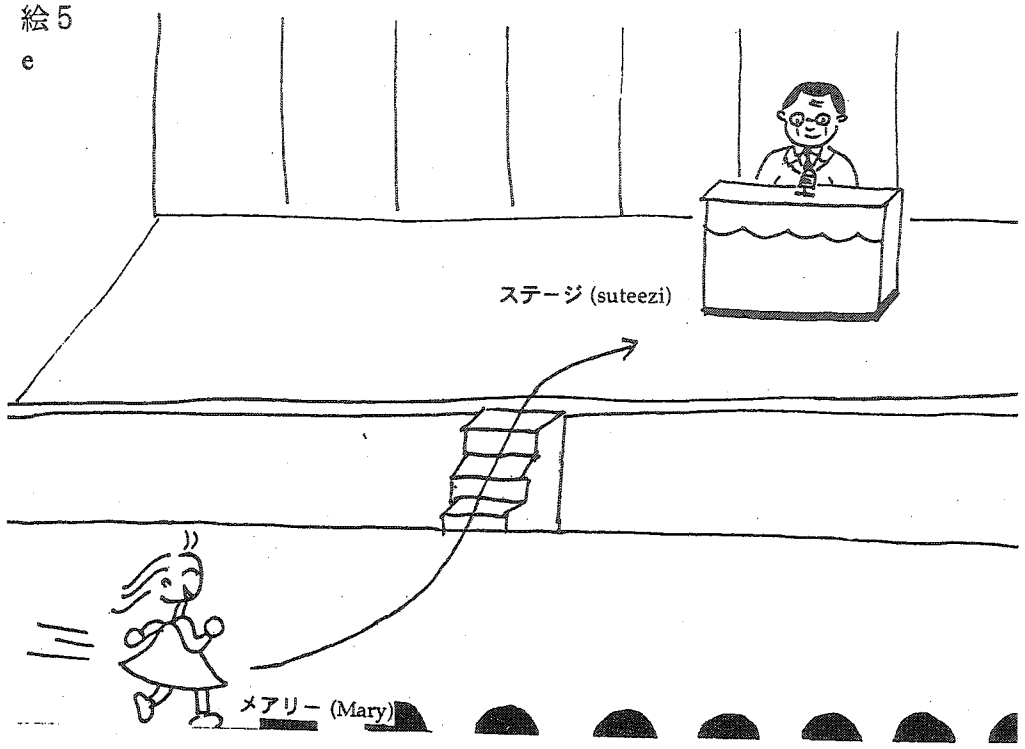
1.	サムは家に歩いて入った。 Sam-wa ie-ni aruite haitta.	-2	-1	0	1	2
2.	サムは歩いて家の中に行った。 Sam-wa aruite ie-no naka-ni itta.	-2	-1	0	1	2
3.	サムは歩いて家に入った。 Sam-wa aruite ie-ni haitta.	-2	-1	0	1	2
4.	サムは家の中に歩いて行った。 Sam-wa ie-no naka-ni aruite itta.	-2	-1	0	1	2
5.	サムは5分間家の中で歩いた。 Sam-wa 5-hun-kan ie-no naka-de aruita.	-2	-1	0	1	2
6.	サムは家の中に歩いて入った。 Sam-wa ie-no naka-ni aruite haitta.	-2	-1	0	1	2
7.	サムは歩いて家の中に入った。 Sam-wa aruite ie-no naka-ni haitta.	-2	-1	0	1	2
8.	サムは家の中に歩いた。 Sam-wa ie-no naka-ni aruita.	-2	-1	0	1	2

絵(え) 4
e



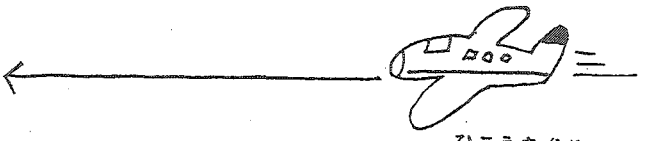
1.	ボブは泳(およ)いで島(しま)に行(い)った。 Bob-wa oyoide sima-ni itta.	-2	-1	0	1	2
2.	ボブは島(しま)に泳(およ)いで行(い)った。 Bob-wa sima-ni oyoide itta.	-2	-1	0	1	2
3.	ボブは島(しま)に泳(およ)いだ。 Bob-wa sima-ni oyoida.	-2	-1	0	1	2
4.	ボブは5分間島(ごふんかんしま)で泳(およ)いだ。 Bob-wa 5-hun-kan sima-de oyoida.	-2	-1	0	1	2

絵5
e

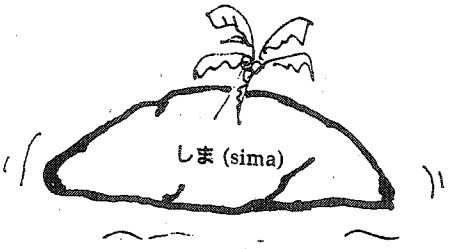


1.	メアリーはステージの上に走って行った。 Mary-wa suteezi-no ue-ni hasitte itta.	-2	-1	0	1	2
2.	メアリーはステージに走って上がった。 Mary-wa suteezi-ni hasitte agatta.	-2	-1	0	1	2
3.	メアリーは5分間ステージの上で走った。 Mary-wa 5-hun-kan suteezi-no ue-de hasitta.	-2	-1	0	1	2
4.	メアリーは走ってステージに上がった。 Mary-wa hasitte suteezi-ni agatta.	-2	-1	0	1	2
5.	メアリーは走ってステージの上に上がった。 Mary-wa hasitte suteezi-no ue-ni agatta.	-2	-1	0	1	2
6.	メアリーはステージの上に走って上がった。 Mary-wa suteezi-no ue-ni hasitte agatta.	-2	-1	0	1	2
7.	メアリーは走ってステージの上に行った。 Mary-wa hasitte suteezi-no ue-ni itta.	-2	-1	0	1	2
8.	メアリーはステージの上に走った。 Mary-wa suteezi-no ue-ni hasitta.	-2	-1	0	1	2

絵(え) 6
e

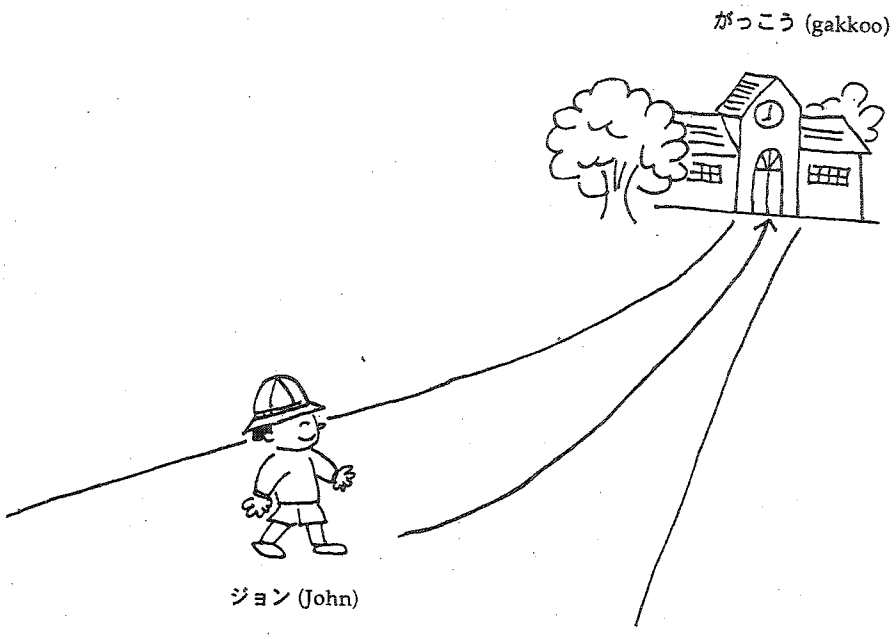


ひこうき (hikooki)



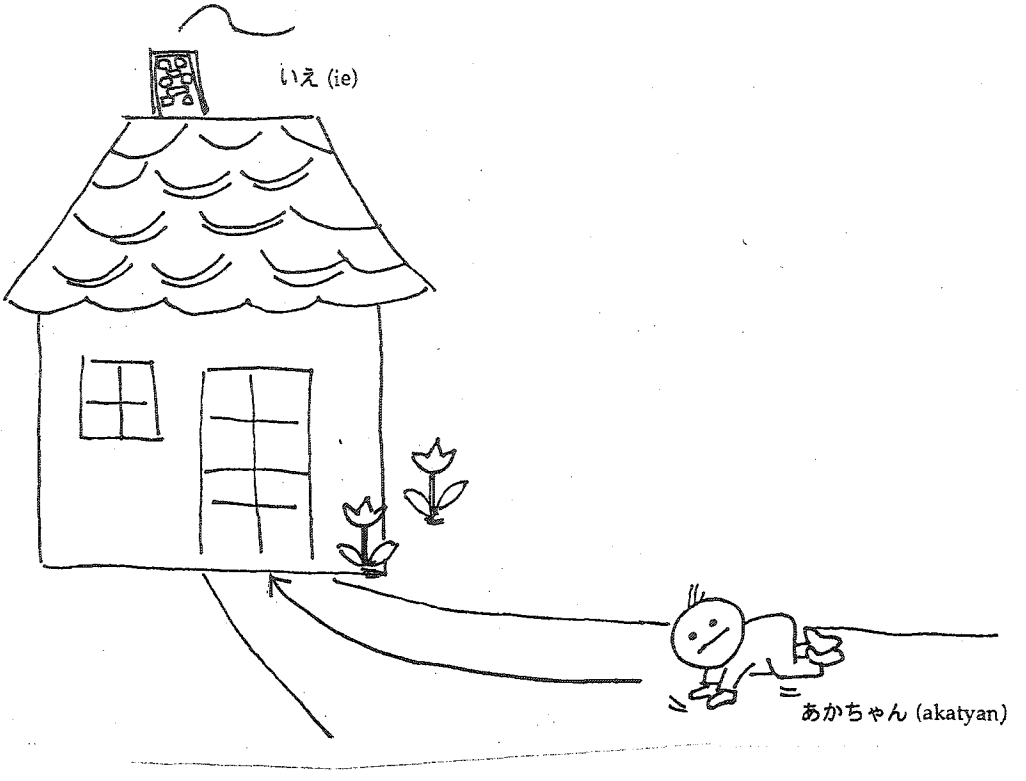
1.	飛行機(ひこうき)は飛んで島(しま)の上(うえ)に行(い)った。 Hikooki-wa tonde sima-no ue-ni itta.	-2	-1	0	1	2
2.	飛行機(ひこうき)は島(しま)の上(うえ)に飛(と)んだ。 Hikooki-wa sima-no ue-ni tonda.	-2	-1	0	1	2
3.	飛行機(ひこうき)は5分間(ごふんかん)島(しま)の上(うえ)で飛(と)んだ。 Hikooki-wa 5-hun-kan sima-no ue-de tonda.	-2	-1	0	1	2
4.	飛行機(ひこうき)は島(しま)の上(うえ)に飛(と)んで行(い)った。 Hikooki-wa sima-no ue-ni tonde itta.	-2	-1	0	1	2

絵(え) 7
e



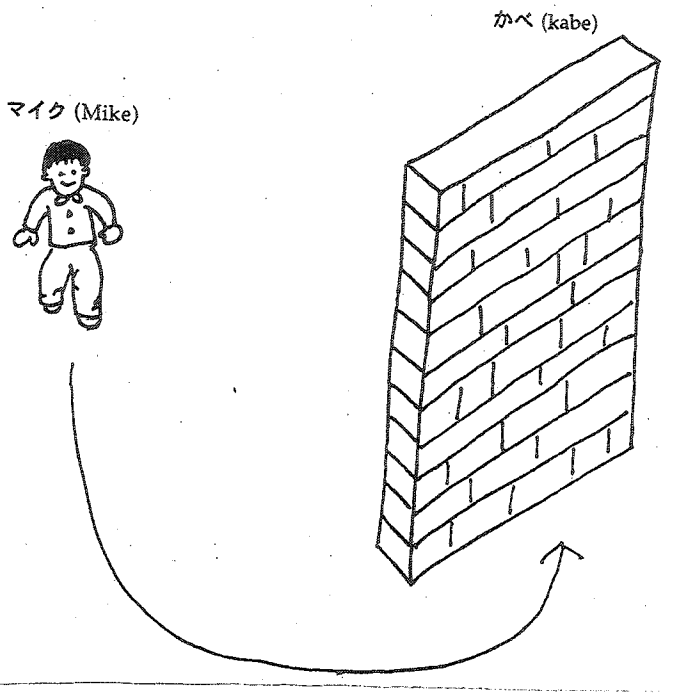
1.	ジョンは学校(がっこう)に歩(ある)いた。 John-wa gakkoo-ni aruita.	-2	-1	0	1	2
2.	ジョンは学校(がっこう)に歩(ある)いて行(い)った。 John-wa gakkoo-ni aruite itta.	-2	-1	0	1	2
3.	ジョンは歩(ある)いて学校(がっこう)に行(い)った。 John-wa aruite gakkoo-ni itta.	-2	-1	0	1	2
4.	ジョンは5分間学校(ごふんかんがっこう)で歩(ある)いた。 John-wa 5-hun-kan gakkoo-de aruita.	-2	-1	0	1	2

絵(え) 8
e



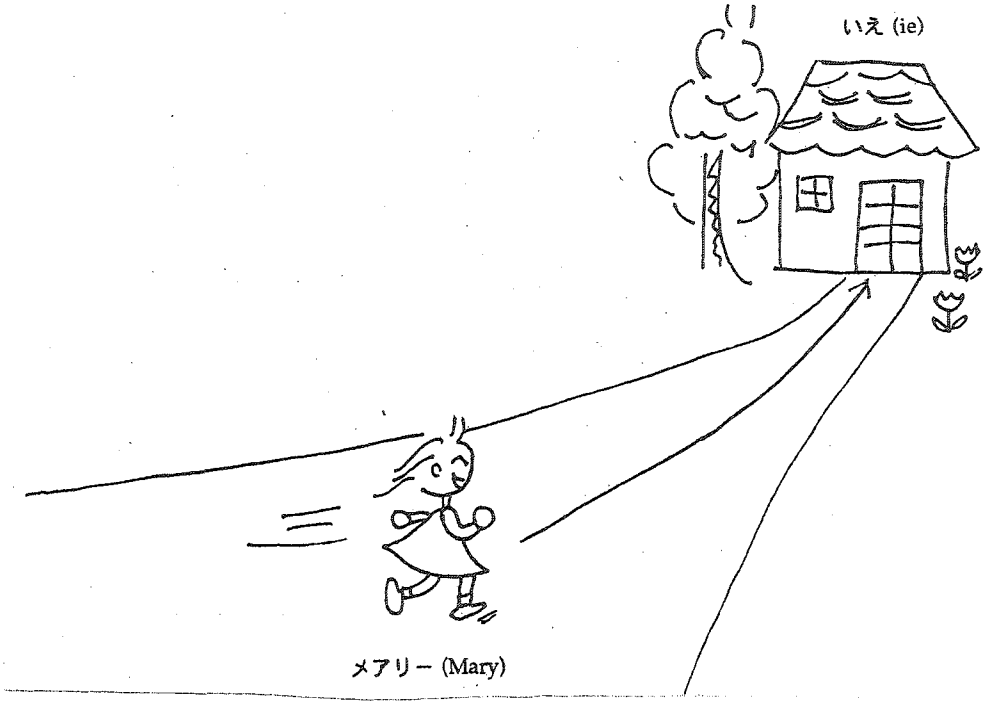
1.	赤(あか)ちゃんは家(いえ)にはって行(い)った。 Akatyan-wa ie-ni hatte itta.	-2	-1	0	1	2
2.	赤(あか)ちゃんは家(いえ)にはった。 Akatyan-wa ie-ni hatta.	-2	-1	0	1	2
3.	赤(あか)ちゃんは5分間家(ごふんかんいえ)ではった。 Akatyan-wa 5-hun-kan ie-de hatta.	-2	-1	0	1	2
4.	赤(あか)ちゃんははって家(いえ)に行(い)った。 Akatyan-wa hatte ie-ni itta.	-2	-1	0	1	2

絵(え) 9
e



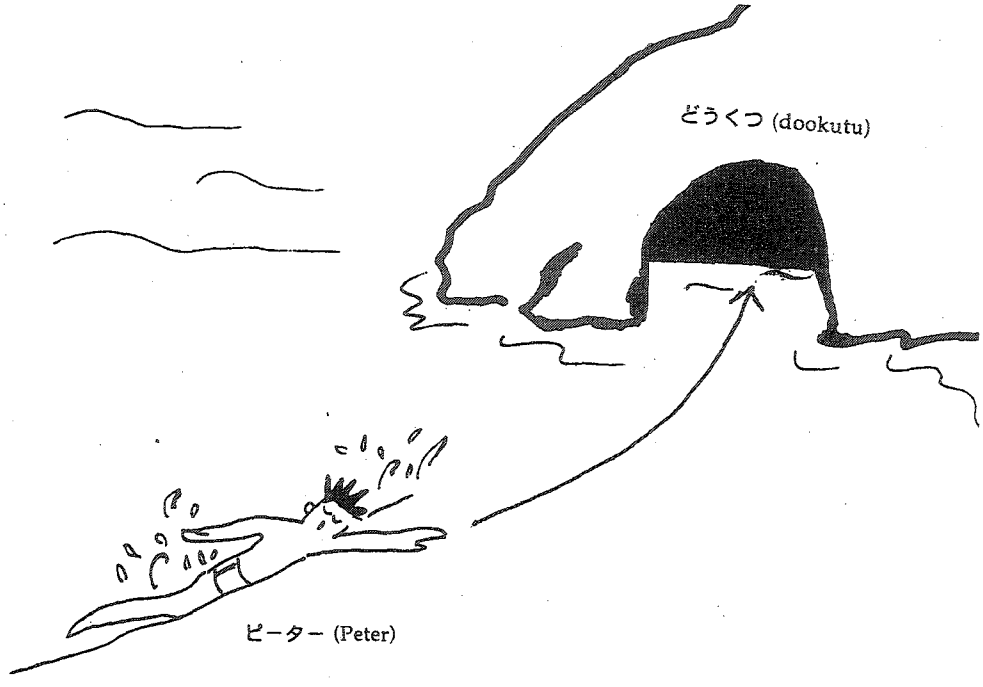
1.	マイクは壁(かべ)の後(うし)ろに歩(ある)いた。 Mike-wa kabe-no usiro-ni aruita.	-2	-1	0	1	2
2.	マイクは5分間壁(ごふんかんかべ)の後(うし)ろで歩(ある)いた。 Mike-wa 5-hun-kan kabe-no usiro-de aruita.	-2	-1	0	1	2
3.	マイクは壁(かべ)の後(うし)ろに歩(ある)いて行(い)った。 Mike-wa kabe-no usiro-ni aruite itta.	-2	-1	0	1	2
4.	マイクは歩(ある)いて壁(かべ)の後(うし)ろに行(い)った。 Mike-wa aruite kabe-no usiro-ni itta.	-2	-1	0	1	2

絵(え)１０
e



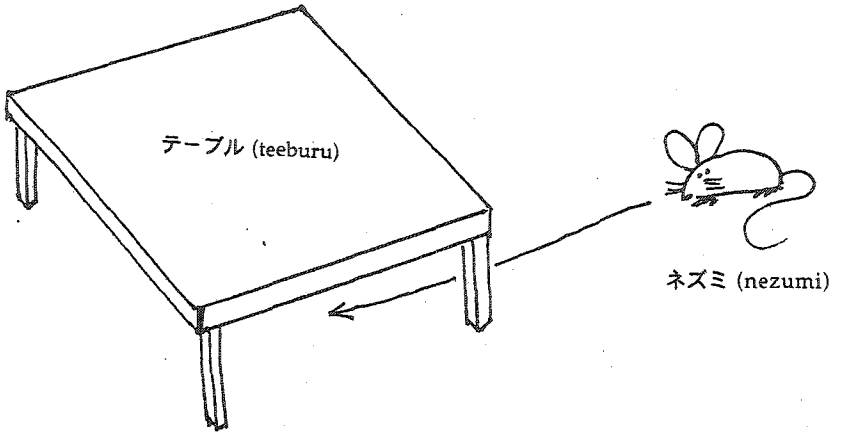
1.	メアリーは走(はし)って家(いえ)に行(い)った。 Mary-wa hasitte ie-ni itta.	-2	-1	0	1	2
2.	メアリーは家(いえ)に走(はし)って行(い)った。 Mary-wa ie-ni hasitte itta.	-2	-1	0	1	2
3.	メアリーは家(いえ)に走(はし)った。 Mary-wa ie-ni hasitta.	-2	-1	0	1	2
4.	メアリーは5分間家(ごふんかんいえ)で走(はし)った。 Mary-wa 5-hun-kan ie-de hasitta.	-2	-1	0	1	2

絵(え)１１
e



1.	ピーターは泳(およ)いで洞窟(どうくつ)の中(なか)に行(い)った。 Peter-wa oyoide dookutu-no naka-ni itta.	-2	-1	0	1	2
2.	ピーターは洞窟(どうくつ)に泳(およ)いで入(はい)った。 Peter-wa dookutu-ni oyoide haitta.	-2	-1	0	1	2
3.	ピーターは洞窟(どうくつ)の中(なか)に泳(およ)いだ。 Peter-wa dookutu-no naka-ni oyoida.	-2	-1	0	1	2
4.	ピーターは泳(およ)いで洞窟(どうくつ)の中(なか)に入(はい)った。 Peter-wa oyoide dookutu-no naka-ni haitta.	-2	-1	0	1	2
5.	ピーターは洞窟(どうくつ)の中(なか)に泳(およ)いで行(い)った。 Peter-wa dookutu-no naka-ni oyoide itta.	-2	-1	0	1	2
6.	ピーターは5分間洞窟(ごふんかんどうくつ)の中(なか)で泳(およ)いだ。 Peter-wa 5-hun-kan dookutu-no naka-de oyoida.	-2	-1	0	1	2
7.	ピーターは洞窟(どうくつ)の中(なか)に泳(およ)いで入(はい)った。 Peter-wa dookutu-no naka-ni oyoide haitta.	-2	-1	0	1	2
8.	ピーターは泳(およ)いで洞窟(どうくつ)に入(はい)った。 Peter-wa oyoide dookutu-ni haitta.	-2	-1	0	1	2

絵(え)12
e



1. ネズミははってテーブルの下(した)に行(い)った。 -2 -1 0 1 2
Nezumi-wa hatte teeburu-no sita-ni itta.

2. ネズミは5分間(ごふんかん)テーブルの下(した)ではった。 -2 -1 0 1 2
Nezumi-wa 5-hun-kan teeburu-no sita-de hatta.

3. ネズミはテーブルの下(した)にはった。 -2 -1 0 1 2
Nezumi-wa teeburu-no sita-ni hatta.

4. ネズミはテーブルの下(した)にはって行(い)った。 -2 -1 0 1 2
Nezumi-wa teeburu-no sita-ni hatte itta.

Appendix C　ESL Proficiency Test

習熟度テスト

このテストには二種類の問題があります。１番から２０番までは文法問題で、２１番から４０番は語彙問題です。

文法問題においては、未完成の短い対話が出てきます。対話に続く選択肢の中から最も適切なものを一つ選んで、対話を完成させて下さい。

Example I.　"What's your name?"
"____ name is John."
a. I
b. Me
c. My
d. Mine

正解は c. My です。**解答用紙**の"a"に丸をして下さい。（後で自己採点をしたい人は問題用紙にも丸をしておいて下さい。）他の文法問題も同様に解答して下さい。

語彙問題においては、一語欠けた部分のある文が出てきます。文に続く選択肢の中から最も適切なものを一つ選んで、文を完成させて下さい。

Example II.　I can't ____ you his name,
because I don't know it.
a. talk
b. say
c. speak
d. tell

正解は d. tell です。**解答用紙**の"d"に丸をして下さい。（後で自己採点をしたい人は問題用紙にも丸をしておいて下さい。）他の語彙問題も同様に解答して下さい。

では、始めて下さい！

1. "Why didn't Cecil play baseball yesterday?"
   "He ____ his room instead."

   a. must cleaned
   b. must clean
   c. has been cleaned
   d. had to clean

2. "Why do you want to meet Professor Orwell?"
   "Because he is ____ wrote the book about my grandfather."

   a. the one who
   b. the one whom
   c. the one
   d. him who

3. "Did you buy a shirt for Steve?"
   "No, because I don't know ____ he wears."

   a. what size
   b. the what size
   c. of what size
   d. what the size

4. "How did you spend your time in California?"
   "I ____ to enjoy walking for the sea."

   a. was used
   b. was using
   c. used
   d. got used

5. "Who was at the door?"
   "____ selling magazines."

   a. A one
   b. Anyone
   c. Whoever
   d. Someone

6. "Can I help you?"
   "Yes, I'd like ____ a favor."

   a. ask you
   b. to ask you
   c. ask to you
   d. to ask to you

7. "Are you going to go to the game?"
   "I don't know; I might not ____ this work in time to go."

   a. complete
   b. to complete
   c. completed
   d. will have completed

8. "Who was that man?"
   "He's a student ____ ."

   a. of mine
   b. of my
   c. of me
   d. to me

9. "Did Mary go to Japan on her vacation last year?"
   "No. She wanted to, but she ____ enough time."

   a. doesn't had
   b. didn't have
   c. hadn't had
   d. didn't has

10. "Were Abe and his family at home when their house burned down?"
    "No, they ____ away for a week when it happened."

    a. have been
    b. had been
    c. having been
    d. were being

11. "Art was unhappy because he wasn't invited to the party."
"If I ____ lost his phone number, I would have invited him?"

    a. hadn't
    b. haven't
    c. had
    d. have

12. "Do you often go to Bimbo's?"
"No, we ____ ever go there anymore."

    a. not
    b. enough
    c. almost
    d. hardly

13. "How do know what John said?"
"I heard ____ on the phone."

    a. him talking
    b. he is talking
    c. his talking
    d. him talked

14. "What is your job?"
"I'm a ____."

    a. typist
    b. typer
    c. typewrite
    d. typewriter

15. "Why does Ben want to join the army?"
"He believes that ____ his country is an honor."

    a. serve
    b. serves
    c. serving
    d. he serves

16. "Do you want coffee or tea?"
"I prefer tea ____ coffee."

    a. to
    b. than
    c. either
    d. rather

17. "My pencil is broken."
"Don't worry, I'll get you ____."

    a. one other
    b. some other
    c. other
    d. another

18. "How was your vacation in Europe?"
"Wonderful, but I would like to ____ more countries."

    a. have visited
    b. have been visiting
    c. be visited
    d. visiting

19. "When did you see Anthony?"
"As I ____ home last night."

    a. had gone
    b. had been going
    c. was going
    d. was gone

20. "What did you think of Roland's idea?"
"I found it very ____."

    a. surprise
    b. surprised
    c. surprising
    d. surprisingly

21. Many home were ____ in the Great Chicago Fire.

    a. killed
    b. departed
    c. destroyed
    d. thrown

22. I read a very interesting ____ in the newspaper yesterday.

    a. evidence
    b. appearance
    c. article
    d. substance

23. The professor has read Otter's articles but he is not ____ with the work of Sparks.

    a. smart
    b. knowing
    c. familiar
    d. friendly

24. On this recording, the London Symphony Orchestra was ____ by Toscanini.

    a. conducted
    b. displayed
    c. mastered
    d. produced

25. When spring comes, all the ice on the ground will ____.

    a. lose
    b. melt
    c. wet
    d. water

26. Coffee trees are found in South America, but they are not ____ to the United States.

    a. friendly
    b. native
    c. independent
    d. personal

27. There were no ____ to the accident.

    a. viewers
    b. members
    c. witnesses
    d. scenes

28. John graduated from medical school but can't decide what ____ of medicine to specialize in.

    a. branch
    b. district
    c. title
    d. chamber

29. Alex told his friends about the trip he was planning, but he didn't ____ it to his parents.

    a. reply
    b. mention
    c. notice
    d. recall

30. The winter in Greece is very ____.

    a. little
    b. tiny
    c. small
    d. short

31. The businessman owns a large automobile ____.

    a. production
    b. factory
    c. machinery
    d. convention

32. The lady wore a hat to ____ her face from the sun.

    a. disappear
    b. defend
    c. contain
    d. protect

33. You must have a ticket to be ____ to the movie theatre.

    a. located
    b. admitted
    c. attended
    d. entered

34. Do you have your father's ____ to use his car?

    a. allowance
    b. possession
    c. permission
    d. demand

35. The students came here to ____ their knowledge of engineering.

    a. increase
    b. grow
    c. suppose
    d. climb

36. He hoped to ____ time by taking an airplane instead of the train.

    a. produce
    b. attempt
    c. gain
    d. enlarge

37. The manager ____ the decision to hire Able instead of Parks.

    a. asked
    b. made
    c. chose
    d. said

38. It's dangerous to sail a small boat when the water is very ____.

    a. dusty
    b. proud
    c. rough
    d. huge

39. The ship crashed on the rocky ____ of Ireland.

    a. bottom
    b. route
    c. coast
    d. limit

40. She talk about herself so much that she ____ everyone.

    a. occupies
    b. appeals
    c. sleeps
    d. bores

Appendix D　JSL Proficiency Test

Instructions: In this test, you will see 40 sentences, each containing a blank, followed by 4 words. Decide which word best fills the blank. Mark your answers by circling your choice on the answer sheet.

Part I: Vocabulary

(1) わたしは　いもうとが ____ います。

1．ふたつ　　2．ふつか　　3．ふつう　　4．ふたり

(2) あついので　まどを ____ ください。

1．あけて　　2．かけて　　3．つけて　　4．むけて

(3) たかい　やまに　のぼると　くうきが ____ なります。

1．あつく　　2．うすく　　3．さむく　　4．おもく

(4) りょこうを　するために　おかねを ____ います。

1．たりて　　2．たして　　3．ためて　　4．たまって

(5) はやく　たなかさんに ____ を　かけて　ください。

1．おかね　　2．でんわ　　3．ふく　　4．めがね

(6) なにか　わたしに ____ ことが　あれば　いって　ください。

1．させる　　2．したい　　3．ほしい　　4．できる

(7) としょかんで　ほんを 3さつ ____ 。

1．かいました　2．かりました　3．かしました　4．かきました

(8) あなたの　ことは ____ わすれません。

1．ぜんぜん　　2．とても　　3．けっして　　4．ほとんど

(9) やすみの　ひは　なにも　しないで ____ するのが　いちばんです。

1．しっかり　　2．きちんと　　3．のんびり　　4．さっぱり

(10) つよい　かぜが ____ 、　きが　たおれたり　いえが　こわれたり　しました。

1．ひいて　　2．ふって　　3．ふんで　　4．ふいて

(11) えはがきを　だしたいんですが、いくらの ____ を　はれば
いいですか。

1．きっぷ　　2．きって　　3．ふうとう　　4．おかね

(12) たなかさんは　あの　あかい ____ を　している　ひとです。

1．セーター　　2．シャツ　　3．ネクタイ　　4．ブラウス

(13) この　へんは　ディスコや　レストランが　おおいので、よるも
____ です。

1．おおい　　2．にぎやか　　3．げんき　　4．へいき

(14) たなかさんは　かっていた　いぬが　しんだので、とても ____
そうです。

1．かなし　　2．くるし　　3．いた　　4．うるさ

(15) あそこは　くるまが　おおいので ____ です。

1．はやい　　2．あぶない　　3．いそがしい　　4．ただしい

(16) バスが　でるまで ____ じかんが　あります。

1．もう　　2．まだ　　3．ちょうど　　4．きょうに

(17) ____ しゅくだいが　おわりました。2じかんも　かかりました。

1．きっと　　2．すぐ　　3．もう　　4．やっと

(18) このバスは　えきを ____ か。

1．いきます　　2．きます　　3．とまります　　4．とおります

(19) あさは　ひどい　あめでしたが、ひるごろ ____ 。

1．やみました　2．やめました　3．おわりました　4．とまりました

(20) はい、おおきく　いきを ____ ください。

1．のんで　　2．すって　　3．たべて　　4．いれて

Part II: Grammar

(1) ふじさんが　どこに　ある ____ しって　いますか。

1．と　　2．を　　3．の　　4．か

(2) 毎日(まいにち)　雨(あめ) ____ ふって　います。

1．ばかり　　2．なら　　3．だけ　　4．しか

(3) 音楽(おんがく)を　聞(き)き ____ コーヒーを　のみました。

1．し　　2．ながら　　3．たり　　4．て

(4) さいふに　お金(かね)が　あと　千円(せんえん) ____ ありません。

1．だけ　　2．さえ　　3．しか　　4．ぐらい

(5) もっと　くわしい　じしょ ____ ほしいです。

1．が　　2．は　　3．で　　4．に

(6) 田中(たなか)さんは　山下(やました)さんの　いもうと ____結婚(けっこん)しました。

1．に　　2．を　　3．と　　4．が

(7) みかんは　やすくて　おいしい ____、えいようも　あります。

1．ので　　2．し　　3．と　　4．から

(8) さむかったので　ストーブを　つけた ____ ねて　しまいました。

1．など　　2．ばかり　　3．ほど　　4．まま

(9) おいしい　ケーキを　もらった ____、　はが　いたくて
たべられません。

1．ので　　2．のに　　3．だから　　4．でも

(10) これは　ヤンさんが ____ え　です。

1．かく　　2．かいた　　3．かいたの　　4．かきますの

(11) 日本語を ＿＿＿ のは むずかしいです。

1．話し　2．話す　3．話して　4．話した

(12) 小さくて よく 見えませんから、もう少し ＿＿＿ 書いて ください。

1．大きくて　2．大きく　3．大き　4．大きい

(13) いくら 電話を ＿＿＿ 、だれも 出ません。

1．したら　2．しても　3．すれば　4．するなら

(14) のめない おさけを ＿＿＿ 、つぎの日 わたしは たいへんでした。

1．のめて　2．のまれて　3．のませて　4．のまされて

(15) ヤンさんは 山下さんに 映画に ＿＿＿ ました。

1．さそい　2．さそわせて　3．さそわれ　4．さそって

(16) そらが くらく なって、今にも 雨が ＿＿＿ そうです。

1．ふり　2．ふる　3．ふれ　4．ふられ

(17) 電車に かさを わすれて きて ＿＿＿ 。

1．みました　2．おきました　3．しまいました　4．いきました

(18) ＿＿＿ 勉強しても しすぎる ことは ありません。

1．どんなに　2．どれかに　3．どちらに　4．どの

(19) この ジュースには さとうが はいって いません。 ＿＿＿ 、
あまり あまく ありません。

1．だから　2．そのうえ　3．しかし　4．でも

(20) リーさんは なんども 試験に おちました。 ＿＿＿ 、
あきらめませんでした。

1．それでも　2．そのうえ　3．これから　4．それとも

Appendix E ESL Grammaticality Judgment Task in Study 3

In this task, you will see a number of pictures each showing a situation. Each picture is followed by a set of English sentences. **Look at the picture carefully and then decide to what degree each sentence sounds natural or unnatural to you as a description of the situation.** Circle only **one** of the five choices following each sentence, as follows:

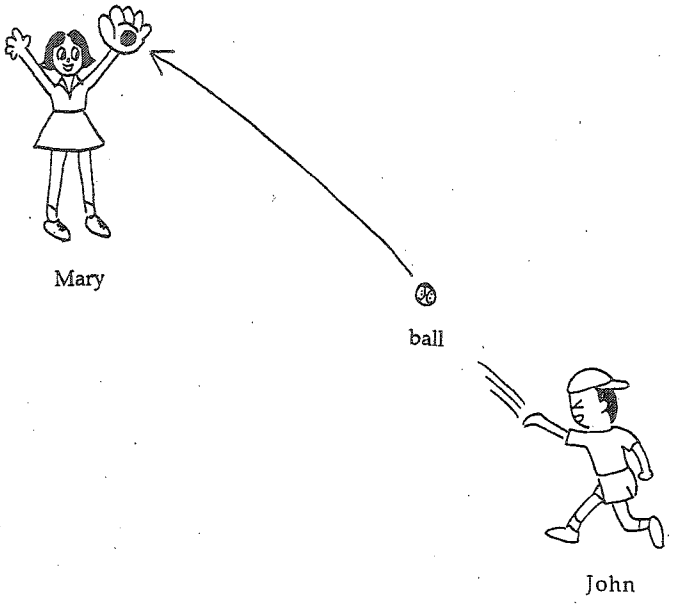
1	=	completely unnatural
2	=	fairly unnatural
3	=	fairly natural
4	=	completely natural
NS	=	not sure

There are no right or wrong answers. I want you to concentrate on **how you feel** about the sentences. **Don't go back and change your answers** because I am interested in your first impression.

All pictures show **situations that took place in the past.** Thus all the sentences will be in the past tense. Some pictures have **an arrow with a blob** (----> ●), indicating that an action took place and was completed. In other words, these pictures depict a situation where something moved somewhere. The arrow indicates the **direction** of the movement and the blob indicates the **endpoint** of the movement.

We will start with an example. Please try it for practice.

(Example)

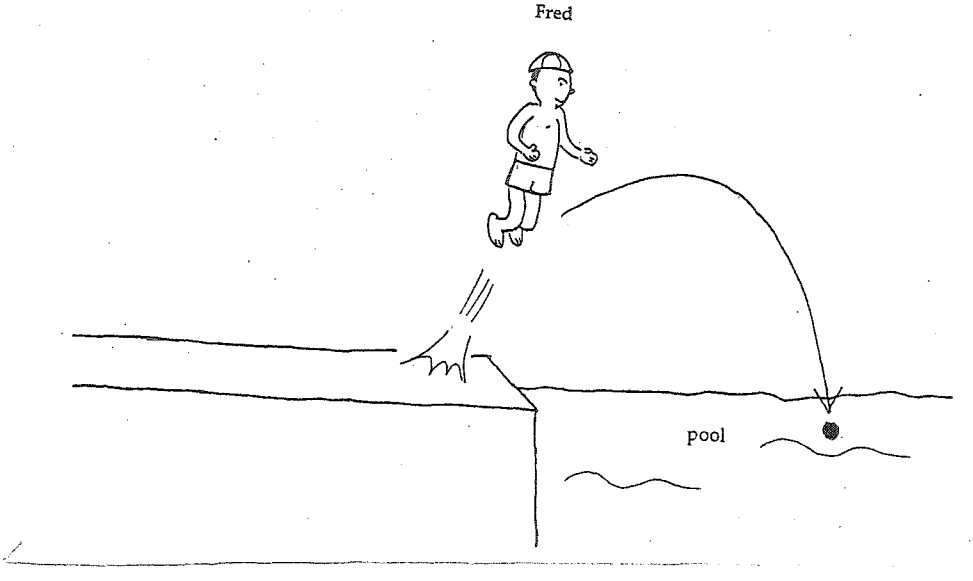


	unnatural			natural	
1. John threw Mary the ball.	1	2	3	4	NS
2. John threw to Mary the ball.	1	2	3	4	NS
3. John threw Mary with the ball.	1	2	3	4	NS
4. John threw the ball to Mary.	1	2	3	4	NS

The picture in this example shows that "John threw the ball toward Mary (----->) and the ball finally reached Mary (●)".

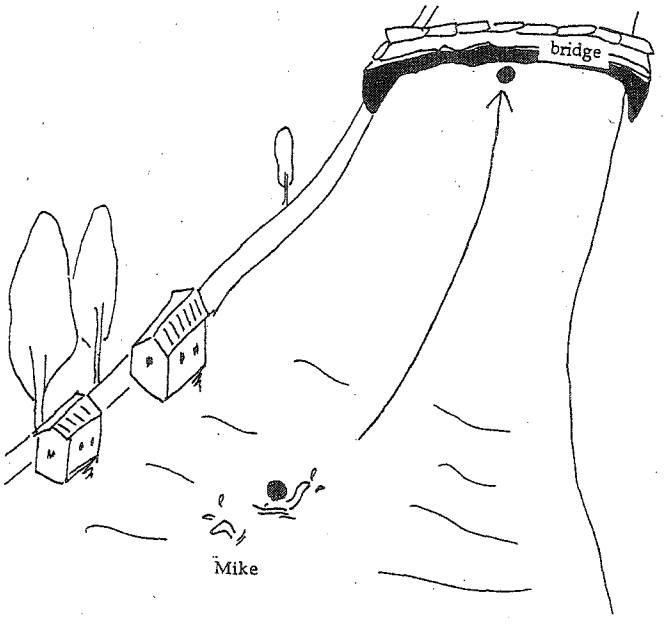
Now, please begin!

(Picture 1)



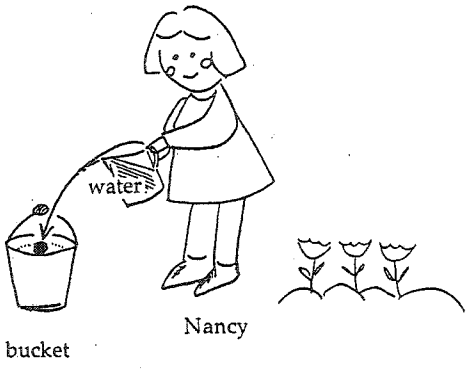
	unnatural			natural	
1. Fred went into the pool jumping.	1	2	3	4	NS
2. Fred jumped and went into the pool.	1	2	3	4	NS
3. Fred jumped in the pool for a while.	1	2	3	4	NS
4. Fred jumped into the pool.	1	2	3	4	NS
5. Fred went into the pool by jumping.	1	2	3	4	NS

(Picture 2)



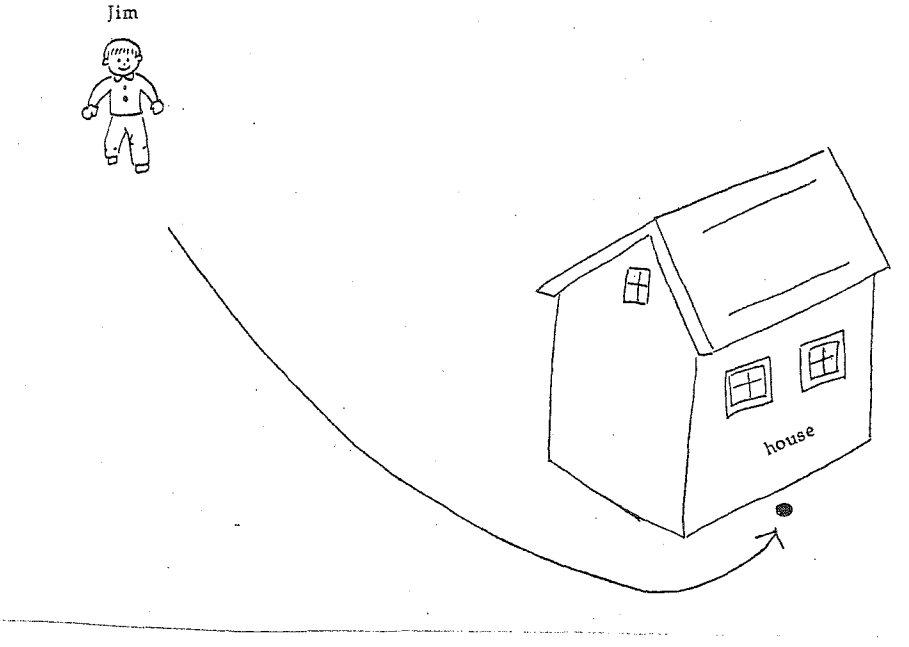
	unnatural			natural	
1. Mike swam and went under the bridge.	1	2	3	4	NS
2. Mike went under the bridge by swimming.	1	2	3	4	NS
3. Mike went under the bridge swimming.	1	2	3	4	NS
4. Mike swam under the bridge for a while.	1	2	3	4	NS
5. Mike swam under the bridge.	1	2	3	4	NS

(Picture 3)



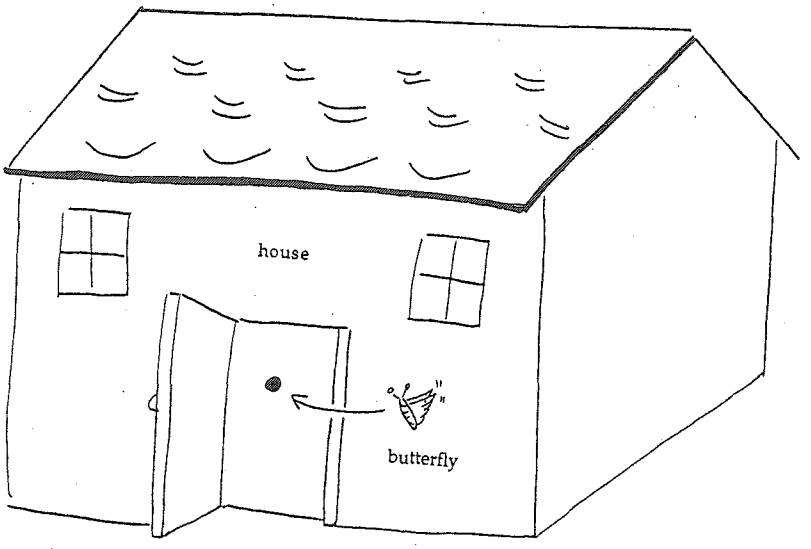
	unnatural			natural	
1. Nancy poured water into the bucket.	1	2	3	4	NS
2. Nancy poured the bucket water.	1	2	3	4	NS
3. Nancy poured into the bucket water.	1	2	3	4	NS
4. Nancy poured the bucket with water.	1	2	3	4	NS

(Picture 4)



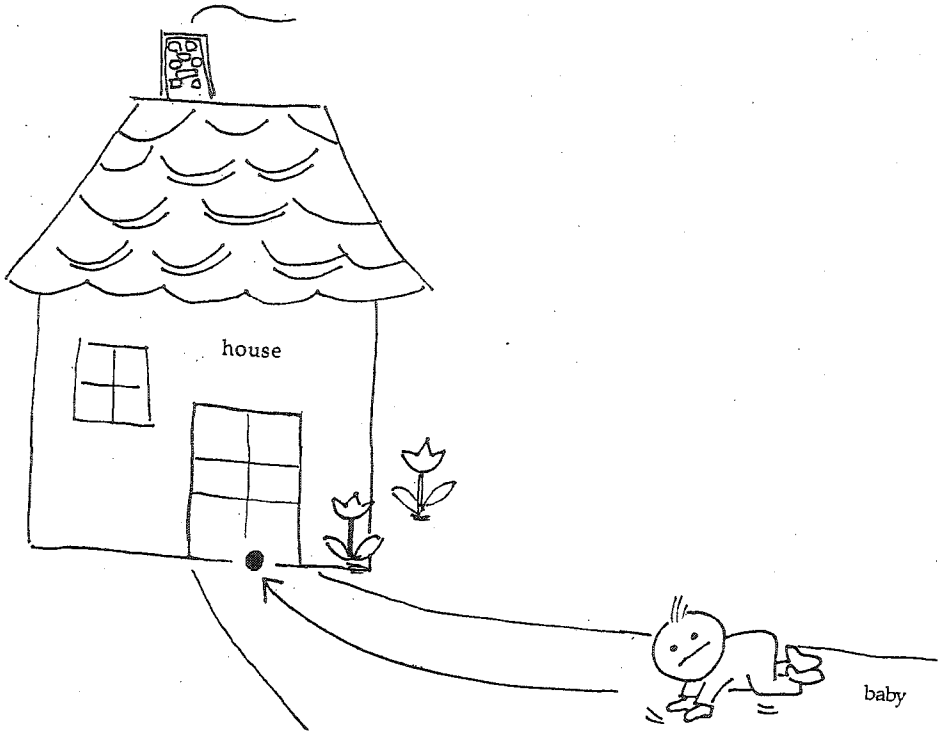
	unnatural			natural	
1. Jim walked and went behind the house.	1	2	3	4	NS
2. Jim walked behind the house.	1	2	3	4	NS
3. Jim went behind the house walking.	1	2	3	4	NS
4. Jim went behind the house by walking.	1	2	3	4	NS
5. Jim walked behind the house for a while.	1	2	3	4	NS

(Picture 5)



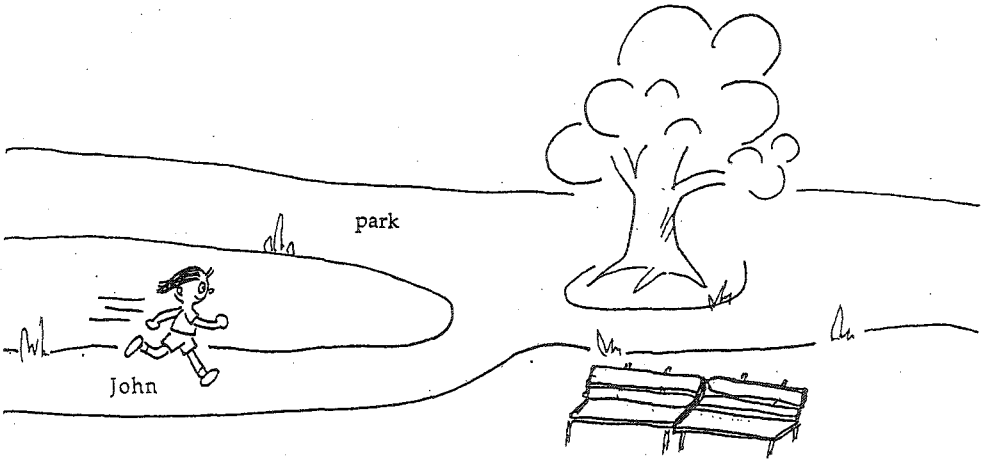
	unnatural			natural	
1. The butterfly flew into the house.	1	2	3	4	NS
2. The butterfly went into the house by flying.	1	2	3	4	NS
3. The butterfly flew and went into the house.	1	2	3	4	NS
4. The butterfly flew in the house for a while.	1	2	3	4	NS
5. The butterfly went into the house flying.	1	2	3	4	NS

(Picture 6)



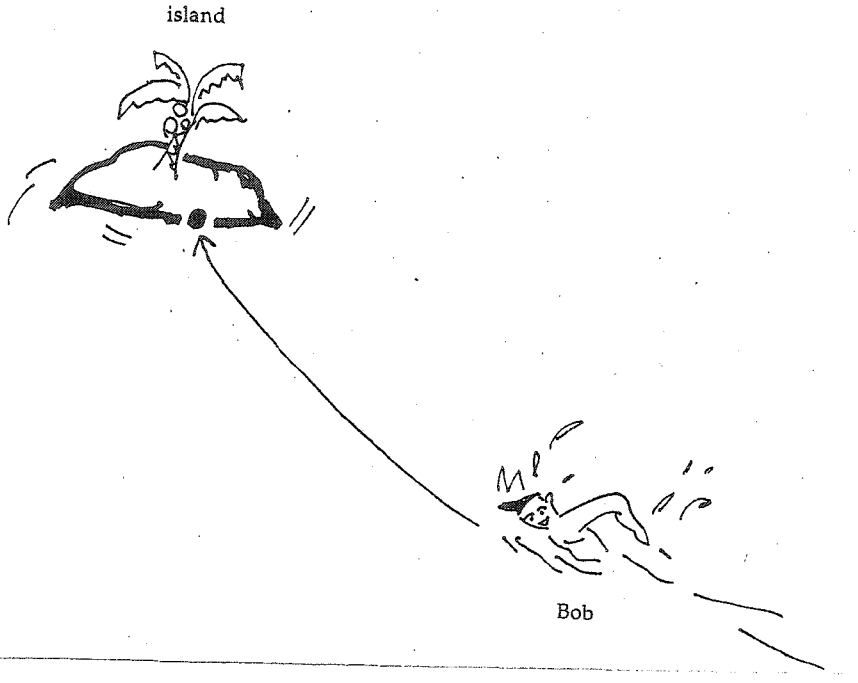
	unnatural			natural	
1. The baby went to the house crawling.	1	2	3	4	NS
2. The baby crawled and went to the house.	1	2	3	4	NS
3. The baby went to the house by crawling.	1	2	3	4	NS
4. The baby crawled at the house for a while.	1	2	3	4	NS
5. The baby crawled to the house.	1	2	3	4	NS

(Picture 7)



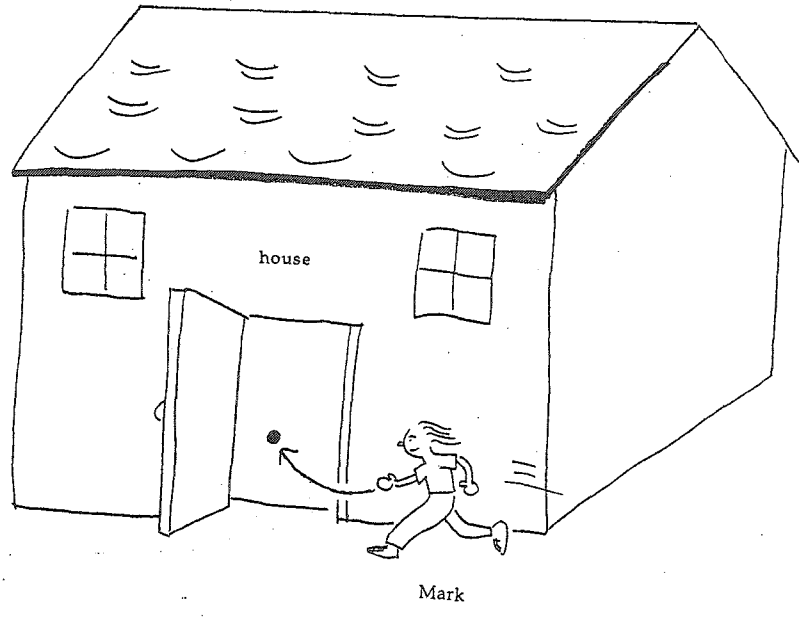
	unnatural			natural	
1. John ran the park.	1	2	3	4	NS
2. John ran in the park.	1	2	3	4	NS
3. John ran to the park.	1	2	3	4	NS
4. John ran from the park.	1	2	3	4	NS

(Picture 8)



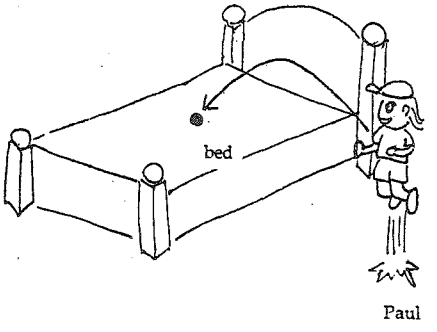
	unnatural			natural	
1. Bob swam at the island for a while.	1	2	3	4	NS
2. Bob went to the island swimming.	1	2	3	4	NS
3. Bob swam to the island.	1	2	3	4	NS
4. Bob swam and went to the island.	1	2	3	4	NS
5. Bob went to the island by swimming.	1	2	3	4	NS

(Picture 9)



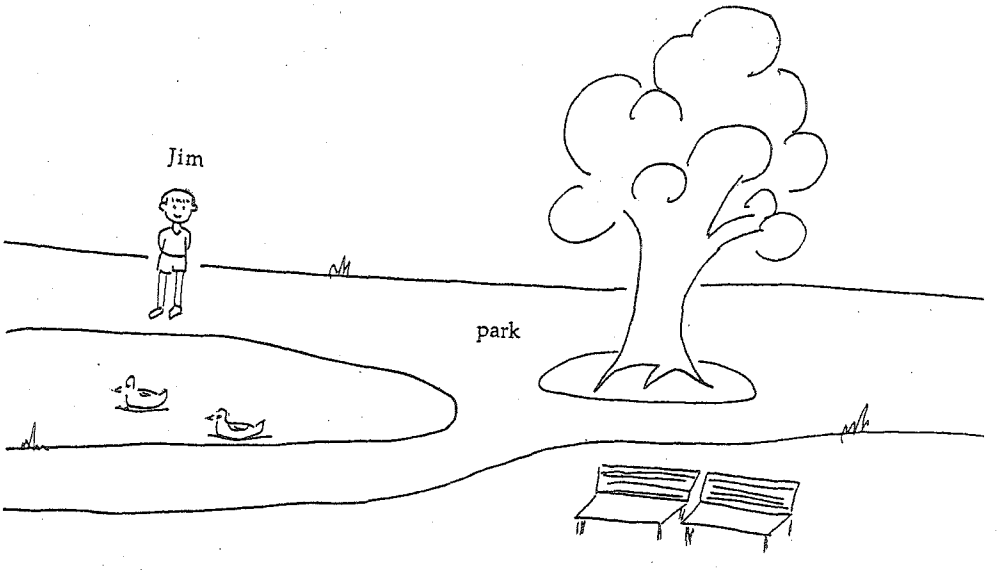
	unnatural			natural	
1. Mark ran into the house.	1	2	3	4	NS
2. Mark went into the house by running.	1	2	3	4	NS
3. Mark ran in the house for a while.	1	2	3	4	NS
4. Mark ran and went into the house.	1	2	3	4	NS
5. Mark went into the house running.	1	2	3	4	NS

(Picture 10)



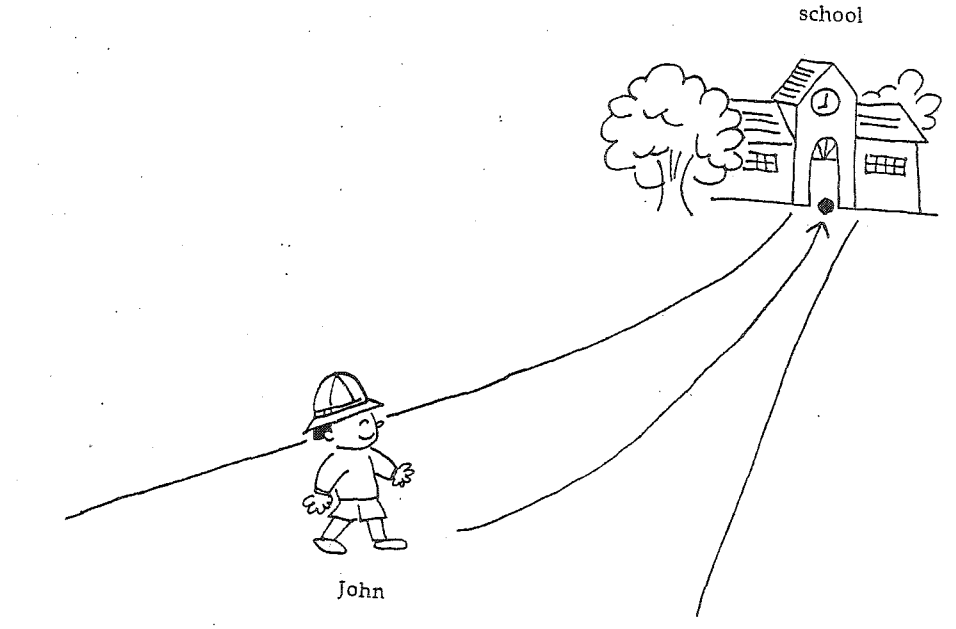
	unnatural			natural	
1. Paul went onto the bed jumping.	1	2	3	4	NS
2. Paul jumped onto the bed.	1	2	3	4	NS
3. Paul went onto the bed by jumping.	1	2	3	4	NS
4. Paul jumped on the bed for a while.	1	2	3	4	NS
5. Paul jumped and went onto the bed.	1	2	3	4	NS

(Picture 11)



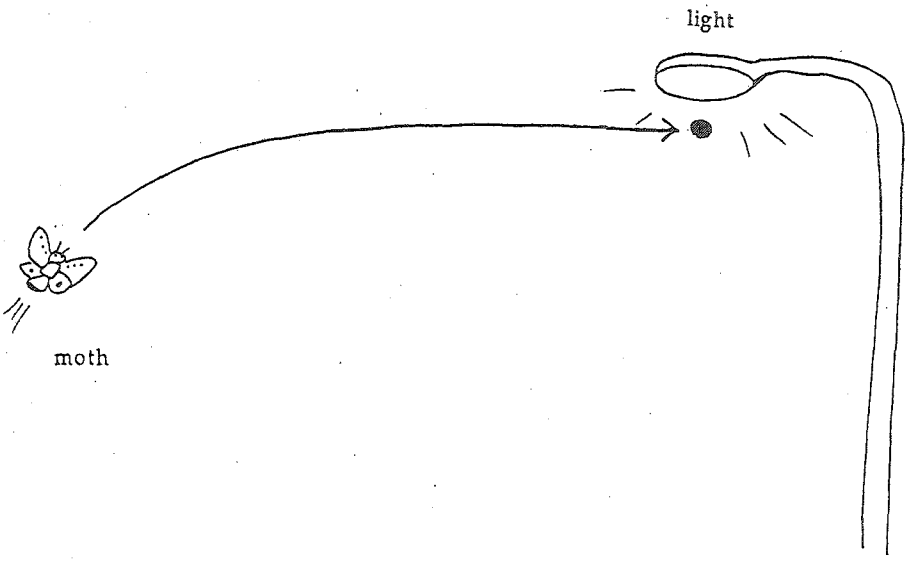
	unnatural			natural	
1. Jim was the park.	1	2	3	4	NS
2. Jim was into the park.	1	2	3	4	NS
3. Jim was in the park.	1	2	3	4	NS
4. Jim was from the park.	1	2	3	4	NS

(Picture 12)



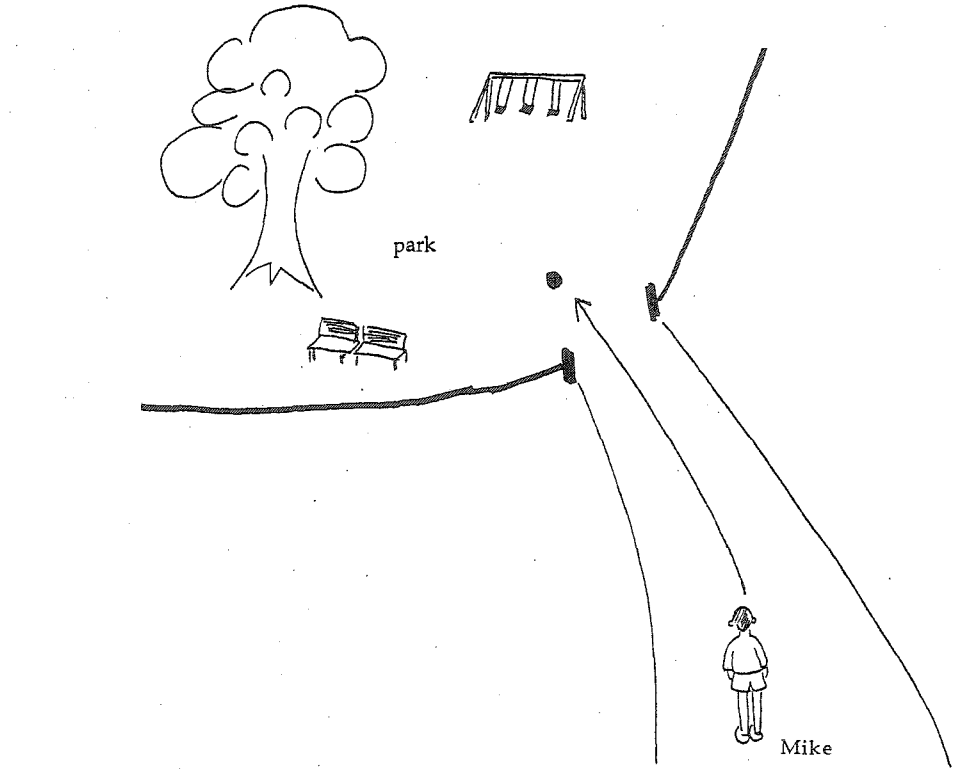
	unnatural			natural	
1. John walked to school.	1	2	3	4	NS
2. John went to school by walking.	1	2	3	4	NS
3. John walked at school for a while.	1	2	3	4	NS
4. John walked and went to school.	1	2	3	4	NS
5. John went to school walking.	1	2	3	4	NS

(Picture 13)



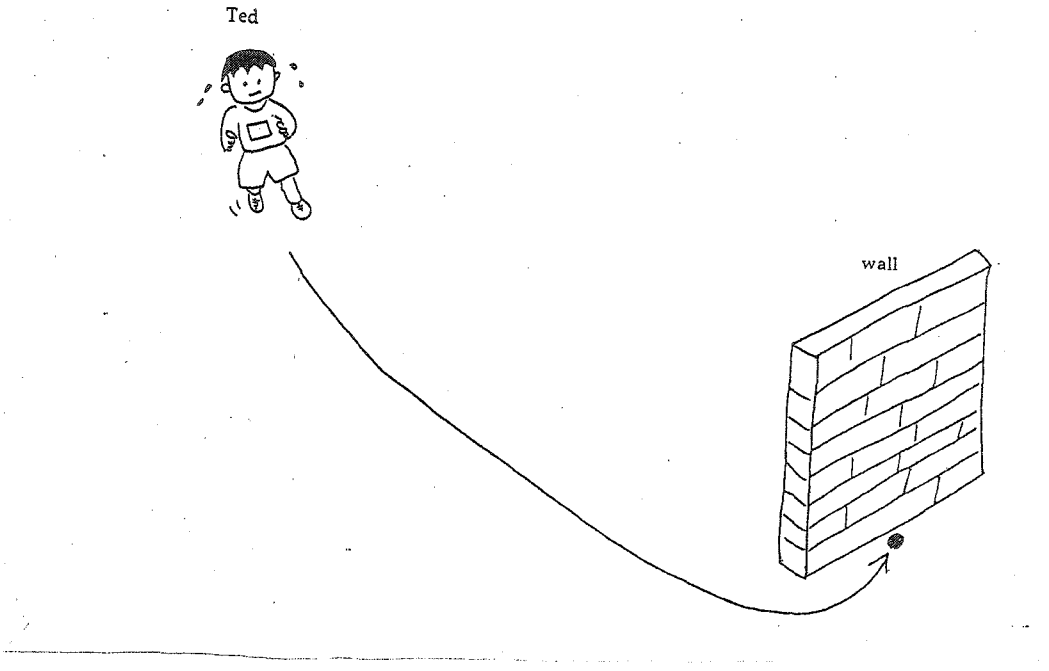
	unnatural			natural	
1. The moth went under the light by flying.	1	2	3	4	NS
2. The moth flew and went under the light.	1	2	3	4	NS
3. The moth flew under the light for a while.	1	2	3	4	NS
4. The moth flew under the light.	1	2	3	4	NS
5. The moth went under the light flying.	1	2	3	4	NS

(Picture 14)



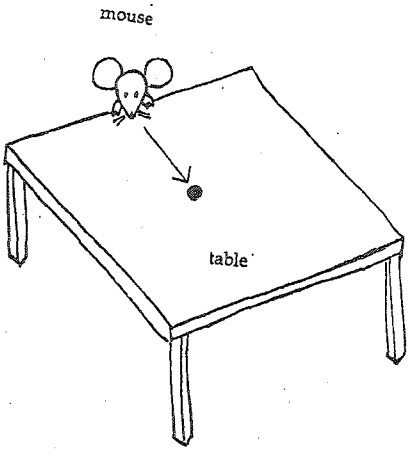
	unnatural			natural	
1. Mike went the park.	1	2	3	4	NS
2. Mike went from the park.	1	2	3	4	NS
3. Mike went to the park.	1	2	3	4	NS
4. Mike went at the park.	1	2	3	4	NS

(Picture 15)



	unnatural			natural	
1. Ted went behind the wall by running.	1	2	3	4	NS
2. Ted went behind the wall running.	1	2	3	4	NS
3. Ted ran behind the wall for a while.	1	2	3	4	NS
4. Ted ran behind the wall.	1	2	3	4	NS
5. Ted ran and went behind the wall.	1	2	3	4	NS

(Picture 16)



	unnatural			natural	
1. The mouse went onto the table crawling.	1	2	3	4	NS
2. The mouse went onto the table by crawling.	1	2	3	4	NS
3. The mouse crawled onto the table.	1	2	3	4	NS
4. The mouse crawled and went onto table.	1	2	3	4	NS
5. The mouse crawled on the table for a while.	1	2	3	4	NS

Appendix F JSL Grammaticality Judgment Task in Study 3

In this task, you will see a number of pictures each showing a situation. Each picture is followed by a set of Japanese sentences. **Look at the picture carefully and then decide to what degree each sentence sounds natural or unnatural to you as a description of the situation.** Circle only **one** of the five choices following each sentence, as follows:

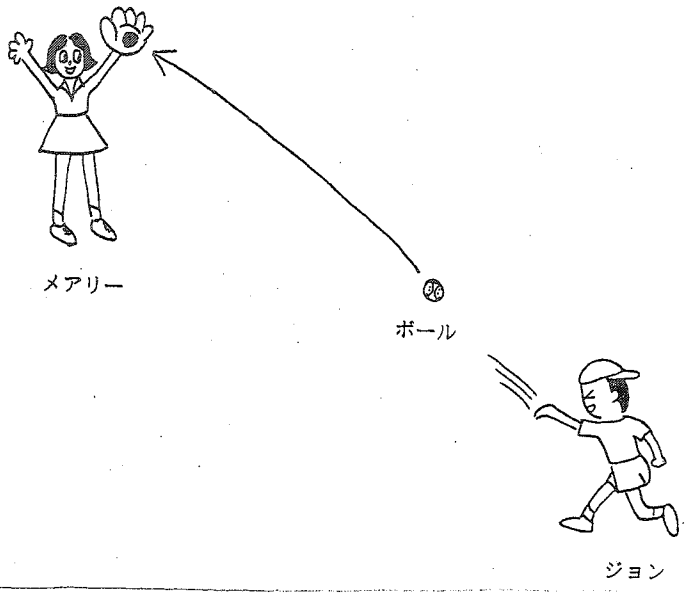
1	=	completely unnatural
2	=	fairly unnatural
3	=	fairly natural
4	=	completely natural
NS	=	not sure

There are no right or wrong answers. I want you to concentrate on **how you feel** about the sentences. **Don't go back and change your answers** because I am interested in your first impression.

All pictures show **situations that took place in the past.** Thus all the sentences will be in the past tense. Some pictures have **an arrow with a blob** (-----> ●), indicating that an action took place and was completed. In other words, these pictures depict a situation where something moved somewhere. The arrow indicates the **direction** of the movement and the blob indicates the **endpoint** of the movement.

We will start with an example. Please try it for practice.

(Example)

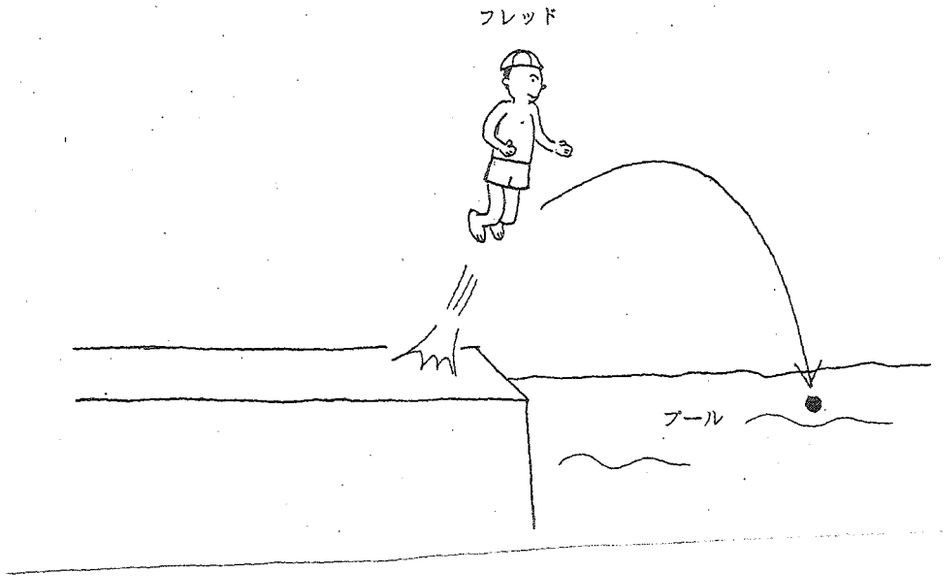


	unnatural			natural	
1. ジョンはメアリーをボールを投げた。	1	2	3	4	NS
2. ジョンはボールをメアリーに投げた。	1	2	3	4	NS
3. ジョンはメアリーをボールで投げた。	1	2	3	4	NS
4. ジョンはメアリーにボールを投げた。	1	2	3	4	NS

The picture in this example shows that "John threw the ball toward Mary (----->) and the ball finally reached Mary (●)".

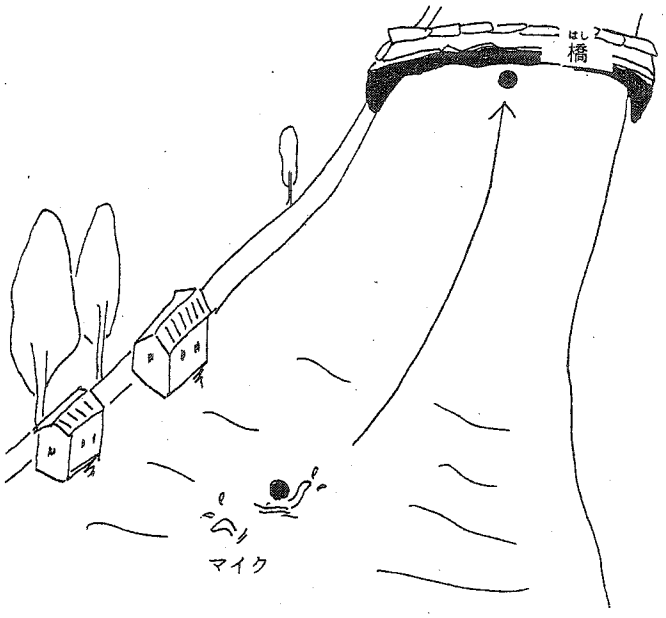
Now, please begin!

(絵1)



	unnatural			natural	
1. フレッドはプールの中にとんで入った。	1	2	3	4	NS
2. フレッドはプールの中でとんだ。	1	2	3	4	NS
3. フレッドはプールの中にとんだ。	1	2	3	4	NS
4. フレッドはとんでプールの中に入った。	1	2	3	4	NS

(絵2)

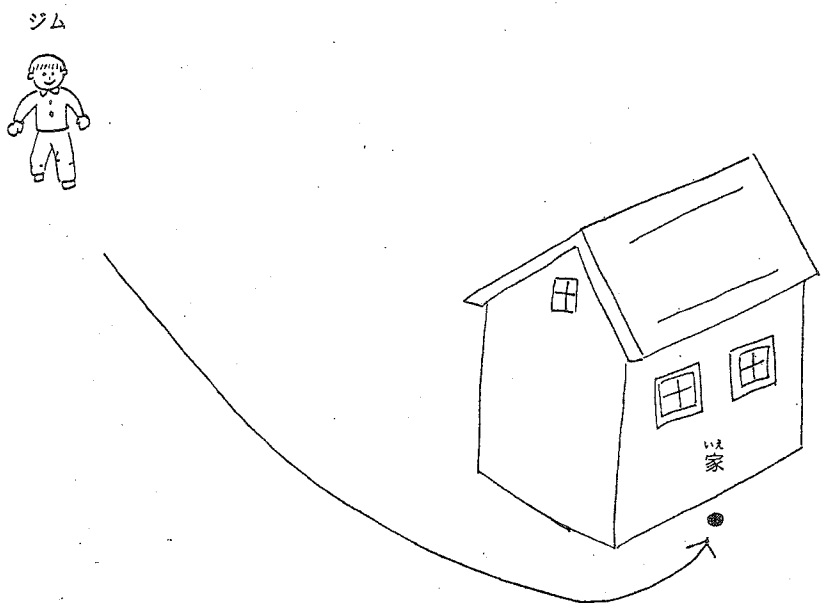


	unnatural			natural	
1. マイクは橋の下で泳いだ。	1	2	3	4	NS
2. マイクは泳いで橋の下に行った。	1	2	3	4	NS
3. マイクは橋の下に泳いで行った。	1	2	3	4	NS
4. マイクは橋の下に泳いだ。	1	2	3	4	NS

(絵3) Vocabulary: 注ぐ = pour

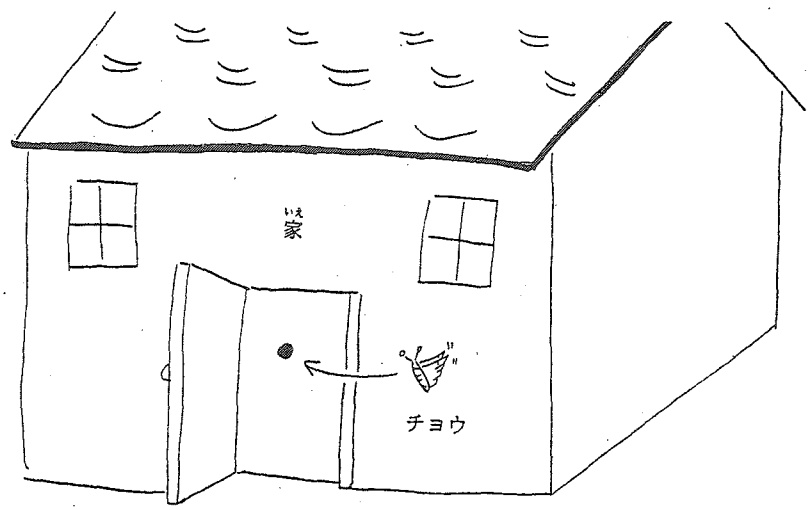
	unnatural			natural	
1. ナンシーはバケツに水を注いだ。	1	2	3	4	NS
2. ナンシーはバケツを水を注いだ。	1	2	3	4	NS
3. ナンシーは水をバケツに注いだ。	1	2	3	4	NS
4. ナンシーはバケツを水で注いだ。	1	2	3	4	NS

(絵4)



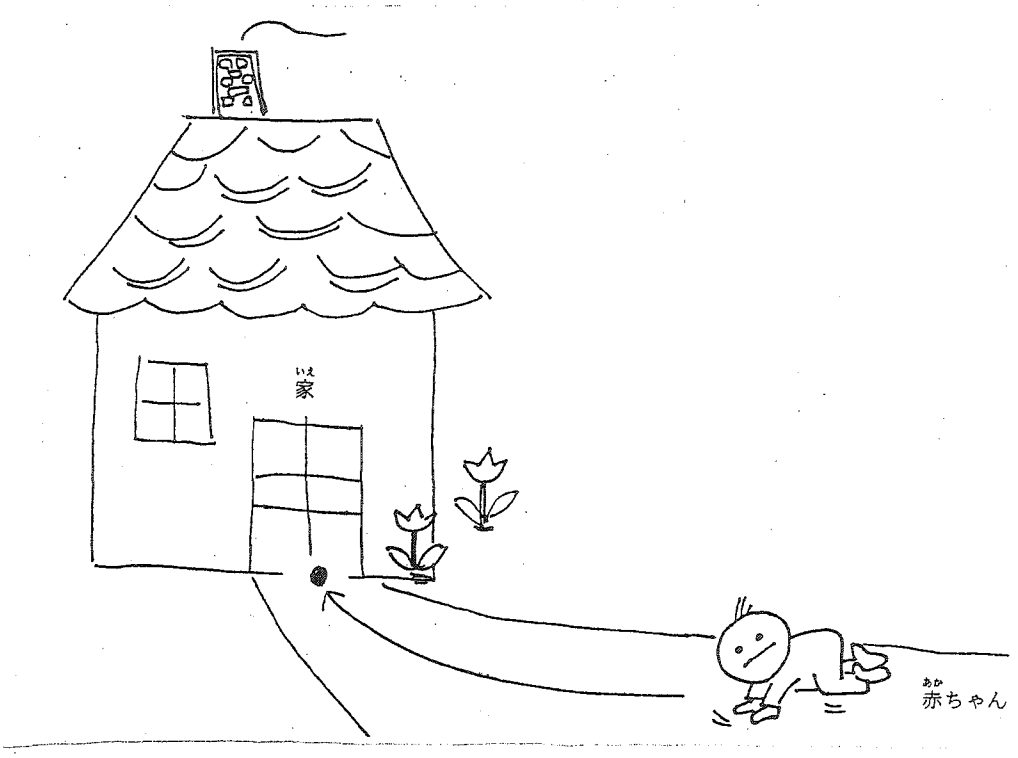
	unnatural			natural	
1. ジムは家の裏で歩いた	1	2	3	4	NS
2. ジムは家の裏に歩いた。	1	2	3	4	NS
3. ジムは家の裏に歩いて行った。	1	2	3	4	NS
4. ジムは歩いて家の裏に行った。	1	2	3	4	NS

(絵5)



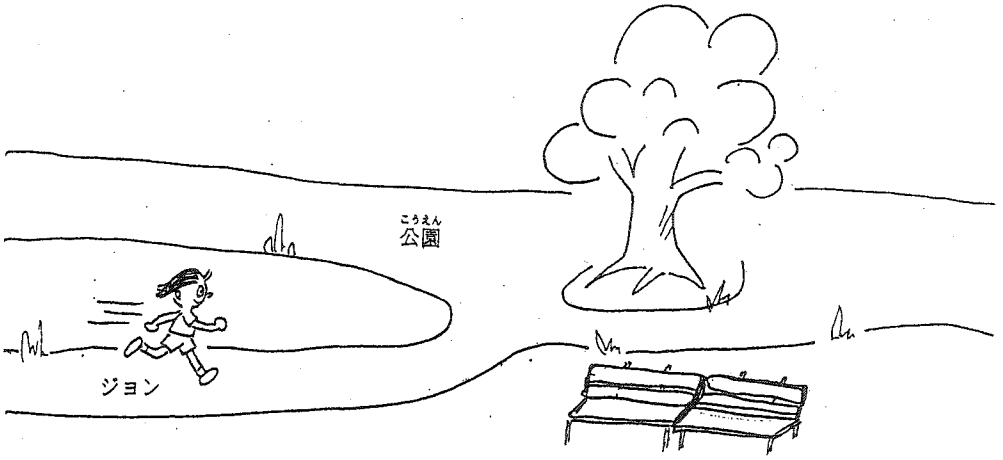
	unnatural			natural	
1. チョウは家の中にとんだ。	1	2	3	4	NS
2. チョウはとんで家の中に入った。	1	2	3	4	NS
3. チョウは家の中でとんだ。	1	2	3	4	NS
4. チョウは家の中にとんで入った。	1	2	3	4	NS

(絵6) Vocabulary: はう = crawl



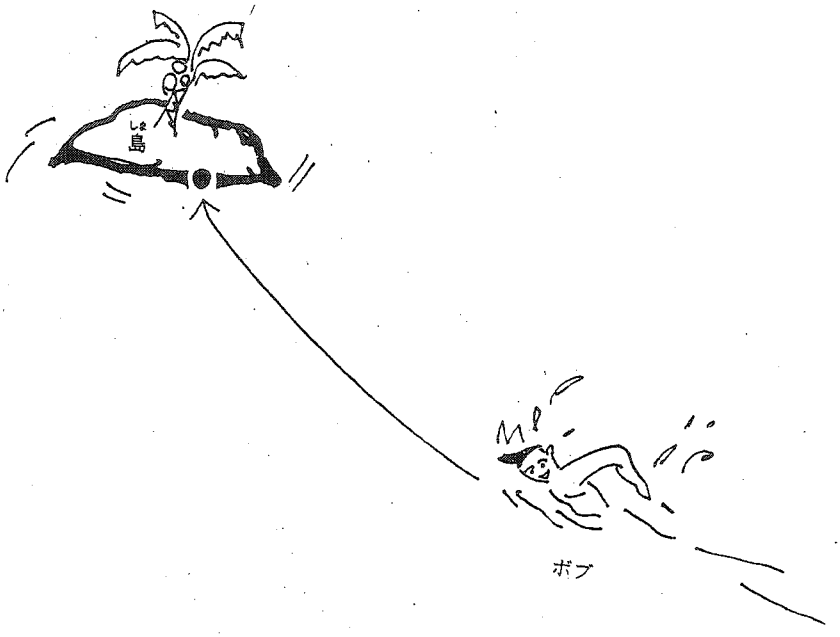
	unnatural			natural	
1. 赤ちゃんは家にはって行った。	1	2	3	4	NS
2. 赤ちゃんは家ではった。	1	2	3	4	NS
3. 赤ちゃんははって家に行った。	1	2	3	4	NS
4. 赤ちゃんは家にはった。	1	2	3	4	NS

(絵7)



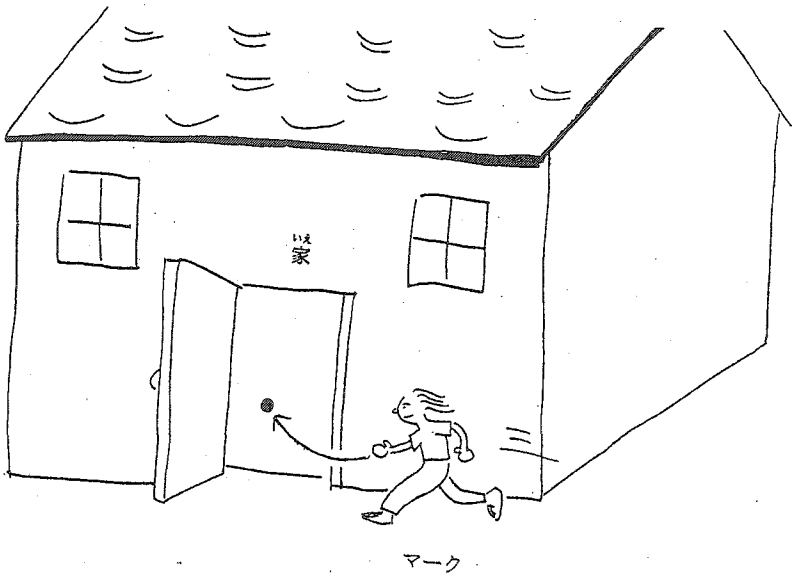
	unnatural			natural	
1. ジョンは公園を走った。	1	2	3	4	NS
2. ジョンは公園で走った。	1	2	3	4	NS
3. ジョンは公園に走った。	1	2	3	4	NS
4. ジョンは公園から走った。	1	2	3	4	NS

(絵8)



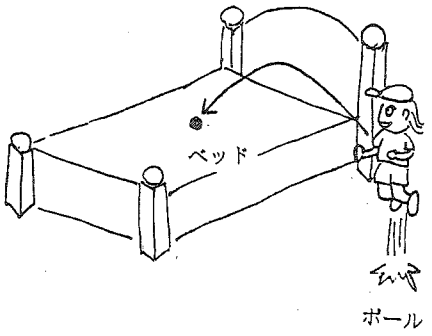
	unnatural			natural	
1. ボブは島に泳いで行った。	1	2	3	4	NS
2. ボブは島に泳いだ。	1	2	3	4	NS
3. ボブは島で泳いだ。	1	2	3	4	NS
4. ボブは泳いで島に行った。	1	2	3	4	NS

(絵9)



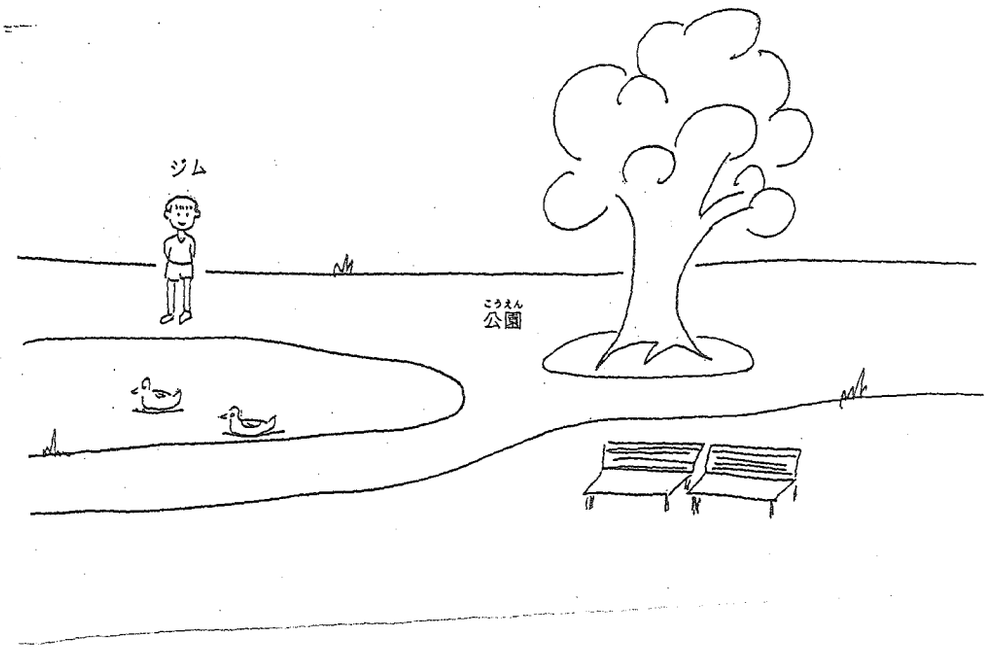
	unnatural			natural	
1. マークは家の中に走った。	1	2	3	4	NS
2. マークは走って家の中に入った。	1	2	3	4	NS
3. マークは家の中で走った。	1	2	3	4	NS
4. マークは家の中に走って入った。	1	2	3	4	NS

(絵１０)



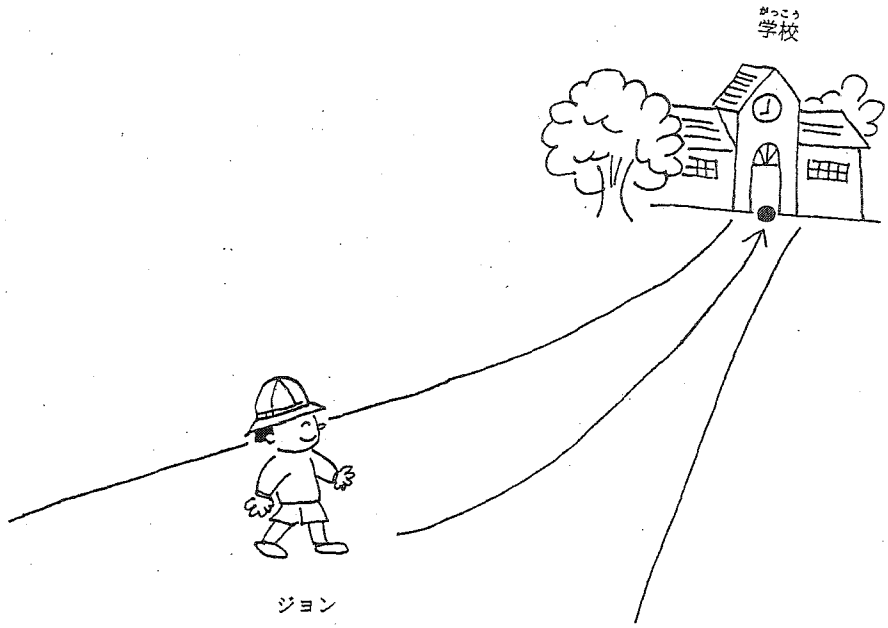
	unnatural			natural	
1. ボールはベッドの上にとんであがった。	1	2	3	4	NS
2. ボールはベッドの上にとんだ。	1	2	3	4	NS
3. ボールはとんでベッドの上にあがった。	1	2	3	4	NS
4. ボールはベッドの上でとんだ。	1	2	3	4	NS

(絵１１)



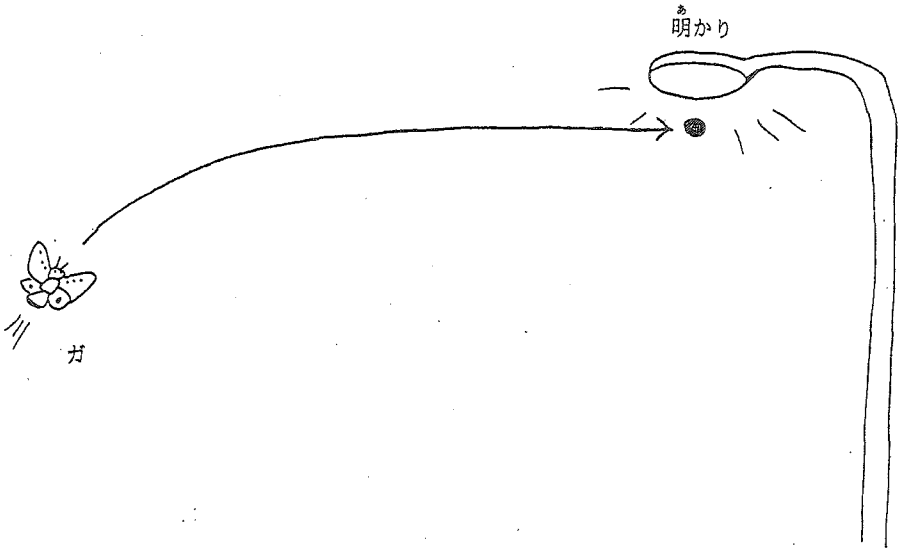
	unnatural			natural	
1. ジムは公園をいた。	1	2	3	4	NS
2. ジムは公園にいた。	1	2	3	4	NS
3. ジムは公園でいた。	1	2	3	4	NS
4. ジムは公園からいた。	1	2	3	4	NS

(絵12)



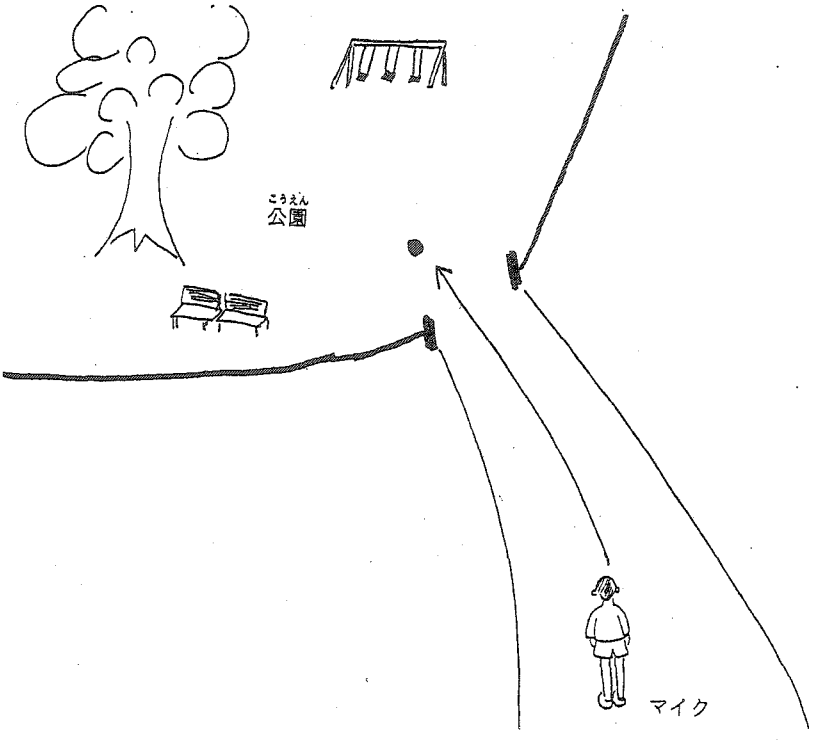
	unnatural			natural	
1. ジョンは学校に歩いた。	1	2	3	4	NS
2. ジョンは歩いて学校に行った。	1	2	3	4	NS
3. ジョンは学校で歩いた。	1	2	3	4	NS
4. ジョンは学校に歩いて行った。	1	2	3	4	NS

(絵１３)



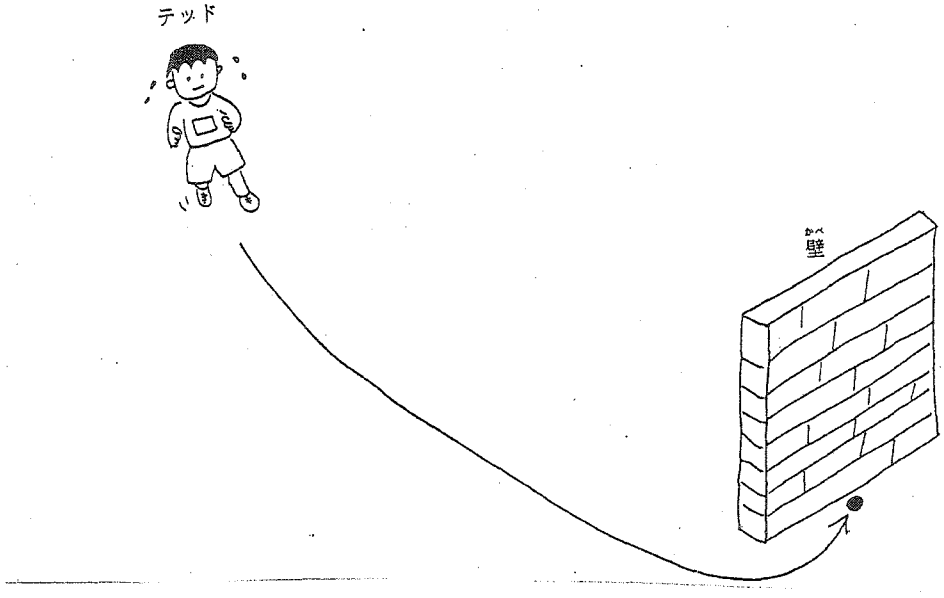
	unnatural			natural	
1. ガはとんで明かりの下に行った。	1	2	3	4	NS
2. ガは明かりの下でとんだ。	1	2	3	4	NS
3. ガは明かりの下にとんだ。	1	2	3	4	NS
4. ガは明かりの下にとんで行った。	1	2	3	4	NS

(絵１４)



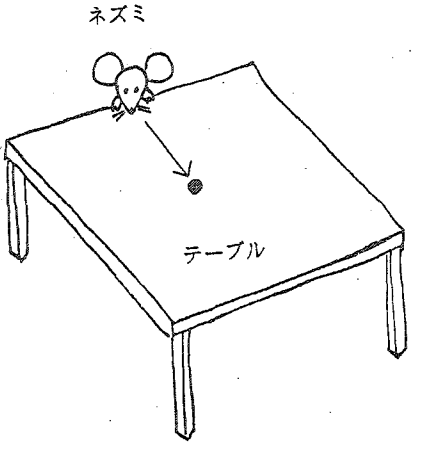
	unnatural			natural	
1. マイクは公園を行った。	1	2	3	4	NS
2. マイクは公園から行った。	1	2	3	4	NS
3. マイクは公園に行った。	1	2	3	4	NS
4. マイクは公園で行った。	1	2	3	4	NS

(絵１５)



	unnatural			natural	
1. テッドは走って壁の後ろに行った。	1	2	3	4	NS
2. テッドは壁の後ろに走って行った。	1	2	3	4	NS
3. テッドは壁の後ろに走った。	1	2	3	4	NS
4. テッドは壁の後ろで走った。	1	2	3	4	NS

(絵16) Vocabulary: はう = crawl



	unnatural			natural	
1. ネズミはテーブルの上にはってあがった。	1	2	3	4	NS
2. ネズミははってテーブルの上にあがった。	1	2	3	4	NS
3. ネズミはテーブルの上にはった。	1	2	3	4	NS
4. ネズミはテーブルの上ではった。	1	2	3	4	NS

Appendix G Sentences Included in the ESL Picture-Matching Task in Study 1

A: Test sentences

1. Jim walked behind the house.
2. Bob walked in the store.
3. John ran inside the gym.
4. Ted ran behind the wall.
5. Mark ran in the house.
6. Peter swam inside the cave.
7. Mike swam under the bridge.
8. The baby crawled under the table.
9. The mouse crawled on the table.
10. Paul jumped on the bed.
11. Fred jumped in the pool.
12. The bird flew above the tree.

B: Distractors

Directional only

1. Sam walked to the beach.
2. John walked onto the stage.
3. The butterfly flew into the house.

Locational only

4. Jim was in the park.
5. John ran at the racetrack.

Ambiguous

6. Mary ate the chocolate on the table.
7. Tom watched the man with binoculars.
8. The chicken is ready to eat.

Appendix H ESL Picture-Matching Task in Study 1

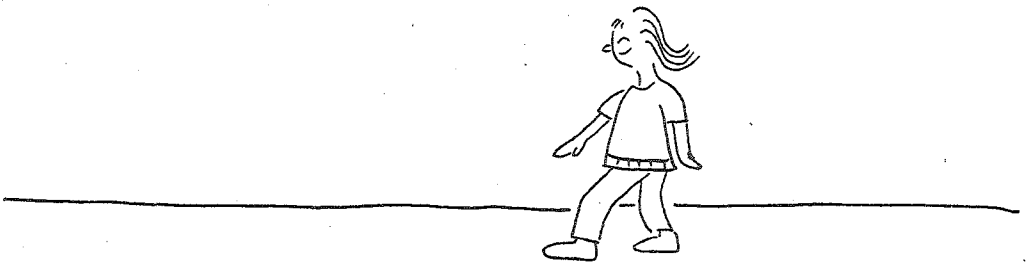
In this task, you will see a set of sentences. Each sentence is followed by a pair of pictures showing different situations. **Look at the sentence and decide which picture or pictures the sentence describes.** Circle **1 only** if you believe the sentence can match the first picture only, **2 only** if you believe the sentence can match the second picture only, and **either 1 or 2** if you believe the sentence can match either the first or the second picture.

All pictures show **situations that took place in the past.** Thus all the sentences will be in the past tense. Some pictures have **an arrow with a blob** (----> ●). These pictures depict a situation where "something moved somewhere". The arrow indicates the **direction** of the movement and the blob indicates the **endpoint** of the movement. Therefore ----> ● indicates that an action took place and was completed. We will start with three examples. Please try them for practice.

ex. 1. **Nancy walked.**

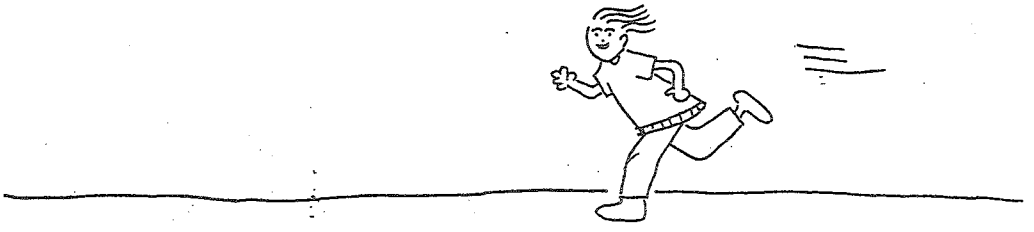
1 only 2 only either 1 or 2

1



Nancy

2

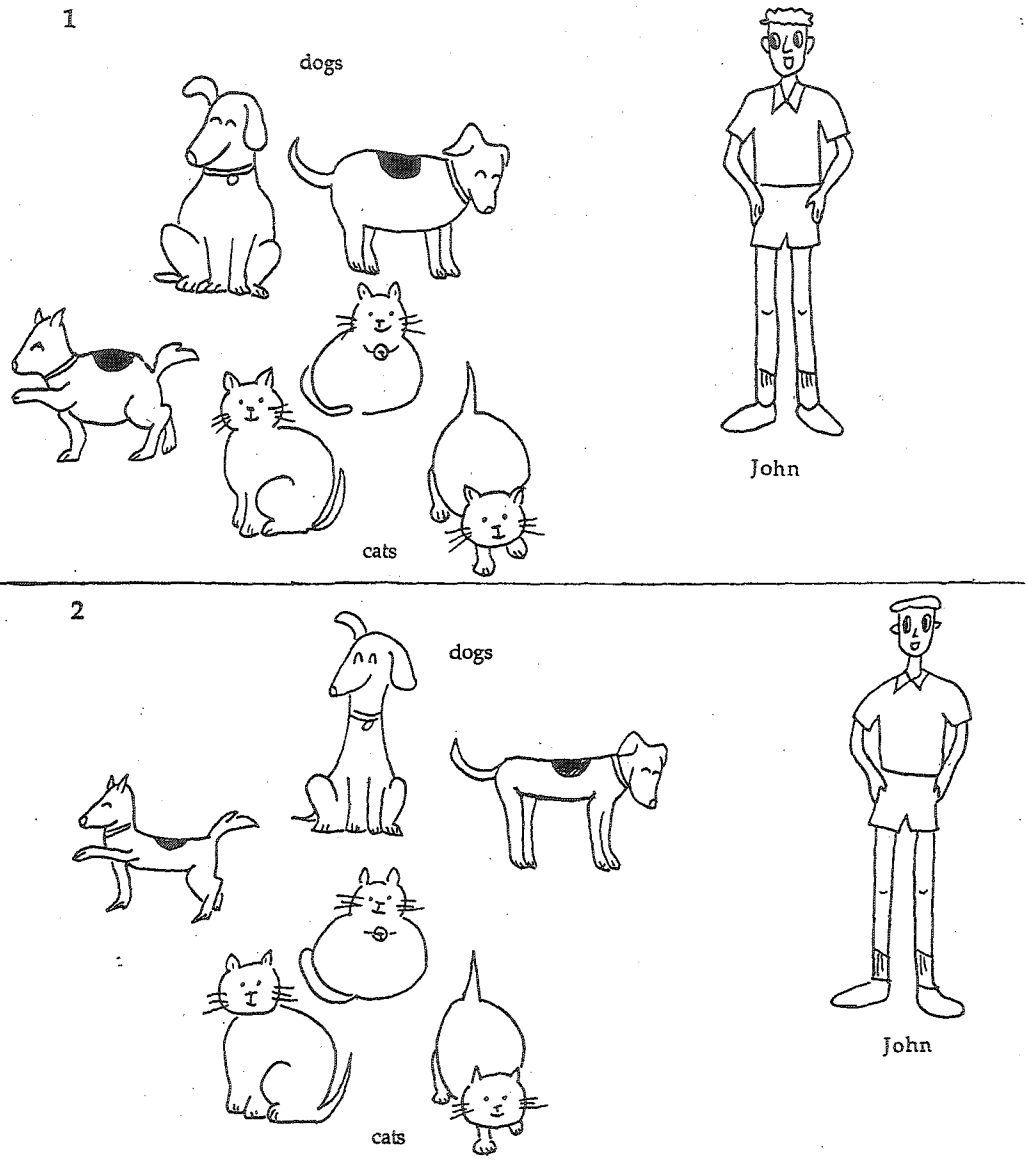


Nancy

In this example, you should have circled 1 only. The sentence says Nancy walked, which matches Picture 1, but not Picture 2, where Nancy ran.

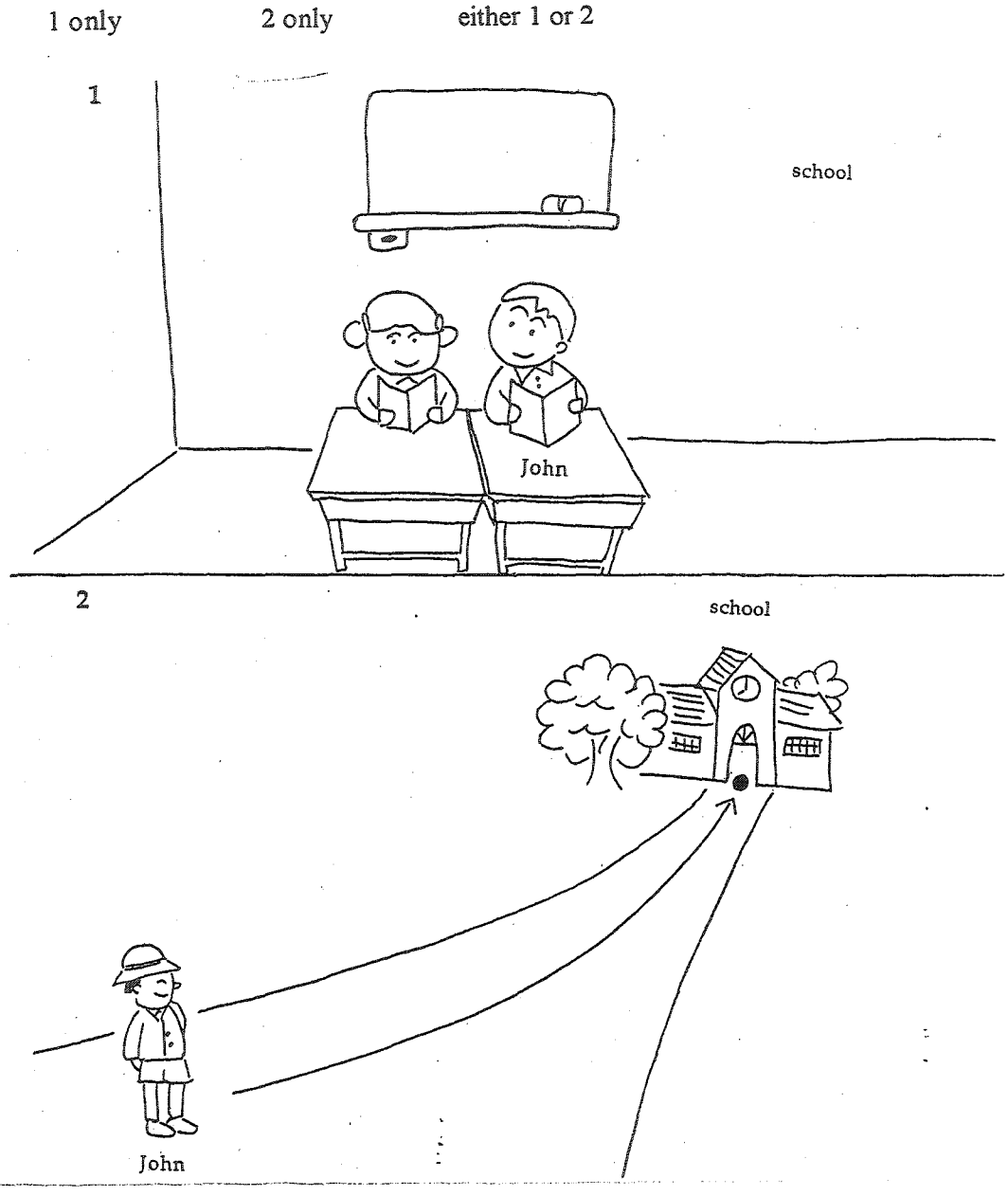
ex. 2. **John saw fat cats and dogs.**

1 only 2 only either 1 or 2



In this example, you should have circled either 1 or 2. This sentence can mean either John saw fat cats and fat dogs (Picture 1) or John saw dogs and fat cats (Picture 2).

ex. 3. **John went to school.**

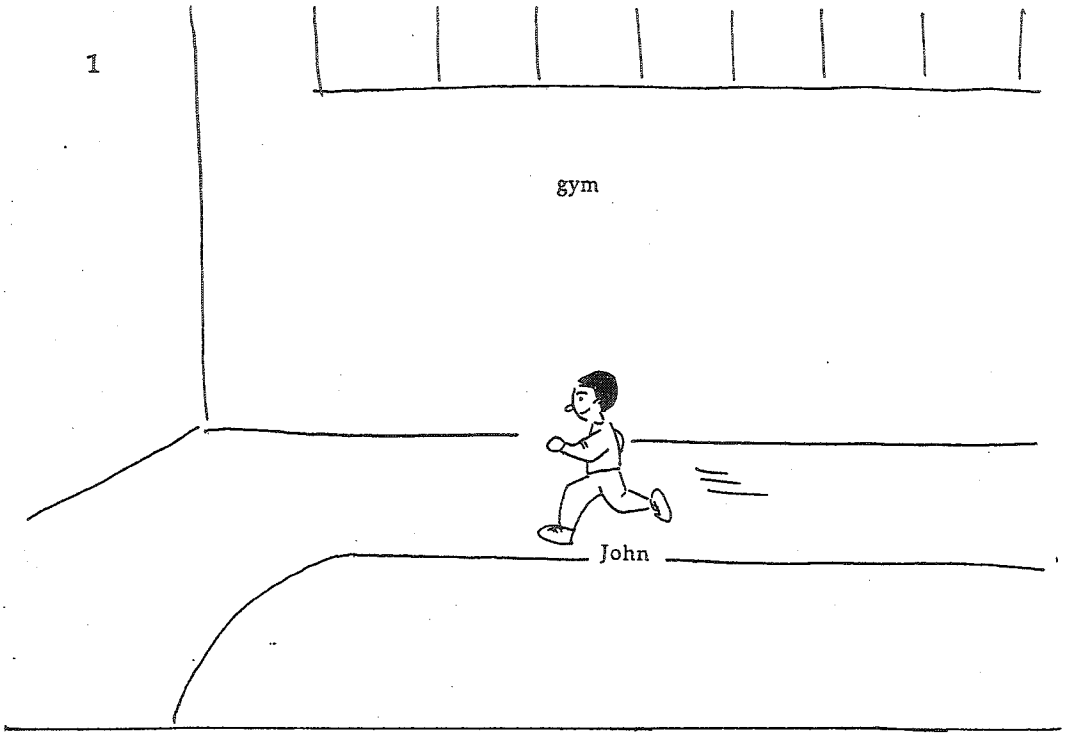


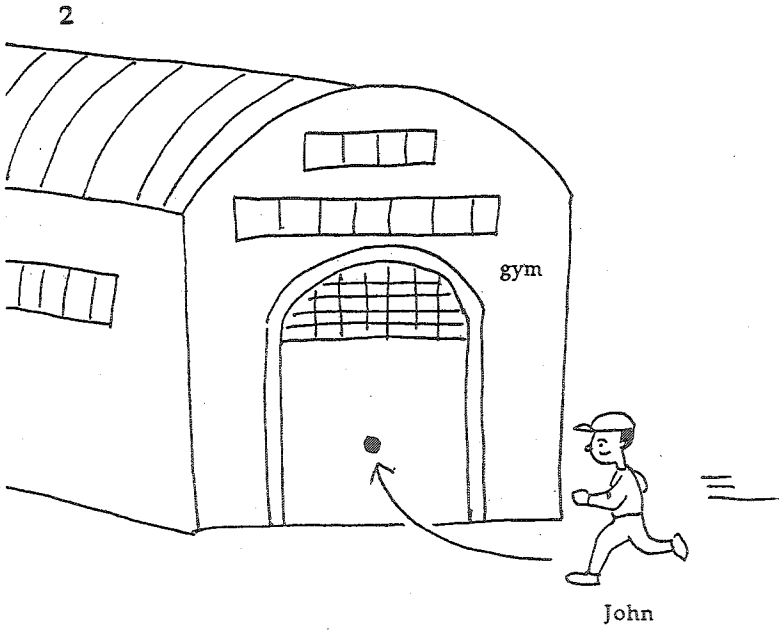
school". This is a result of going to school, but the picture does not show him going. Picture 2 shows that "John went toward school (----->) and finally reached school (●)". Therefore, the sentence can match Picture 2 only.

Now, you are ready to begin!

1. **John ran inside the gym.**

1 only 2 only either 1 or 2

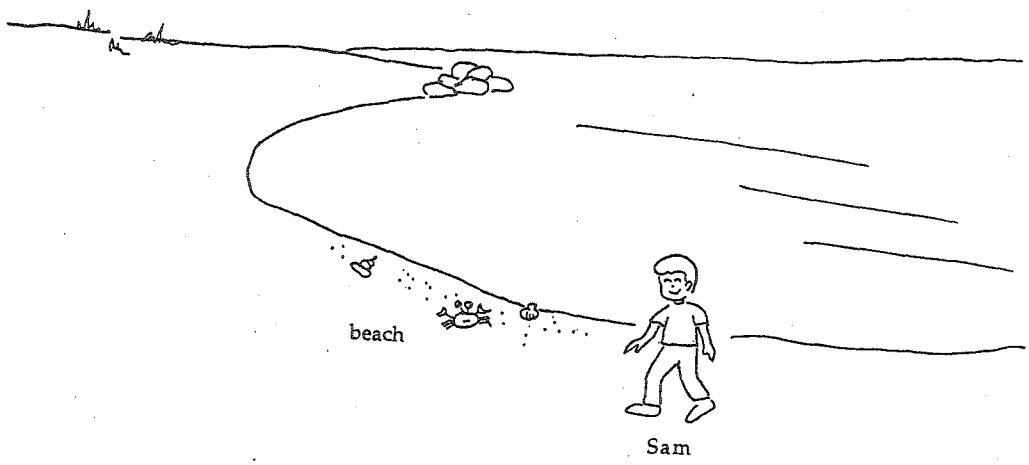




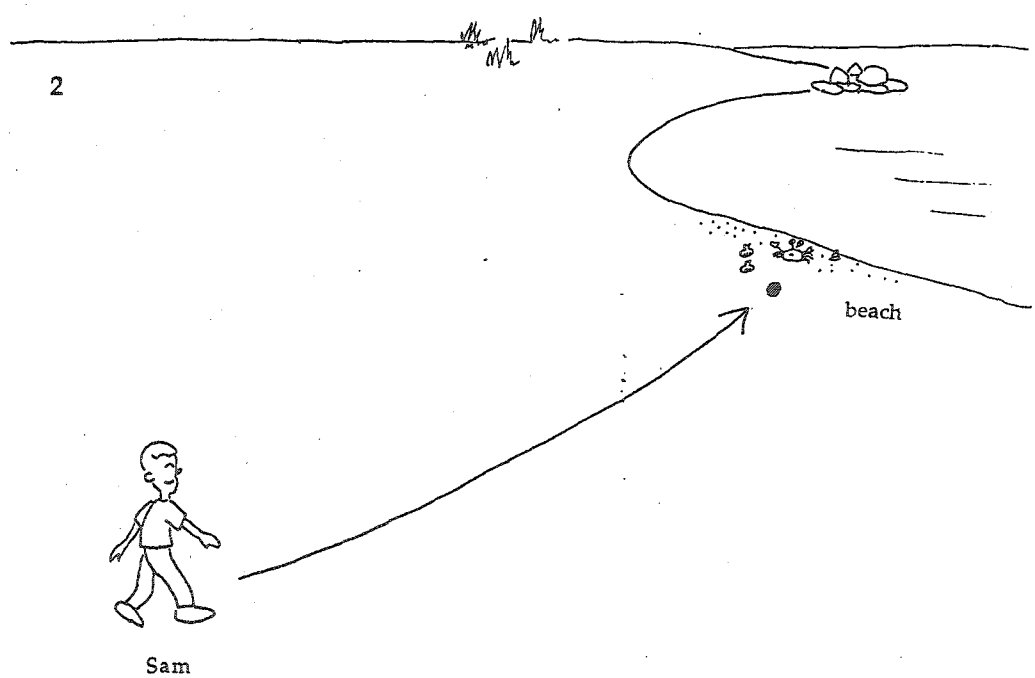
2. **Sam walked to the beach.**

1 only 2 only either 1 or 2

1



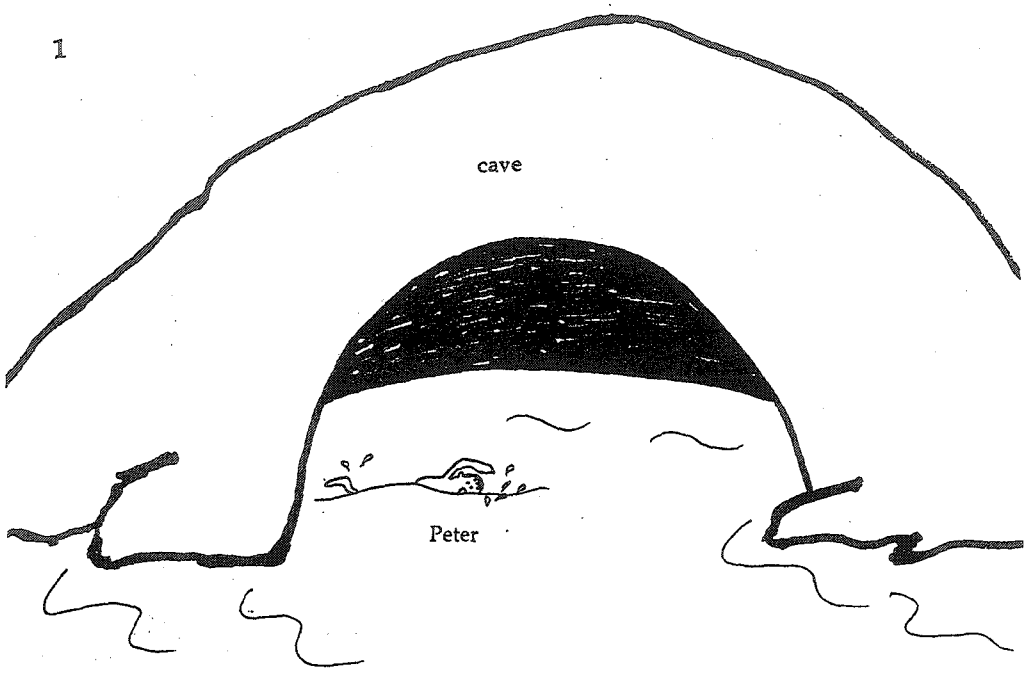
2



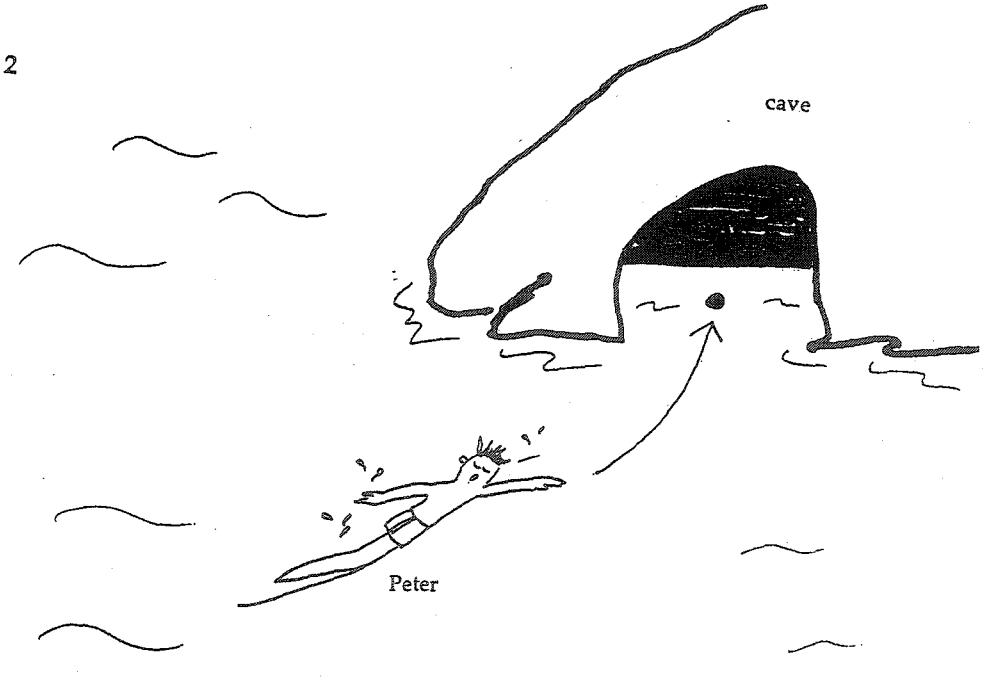
3. **Peter swam inside the cave.**

1 only 2 only either 1 or 2

1



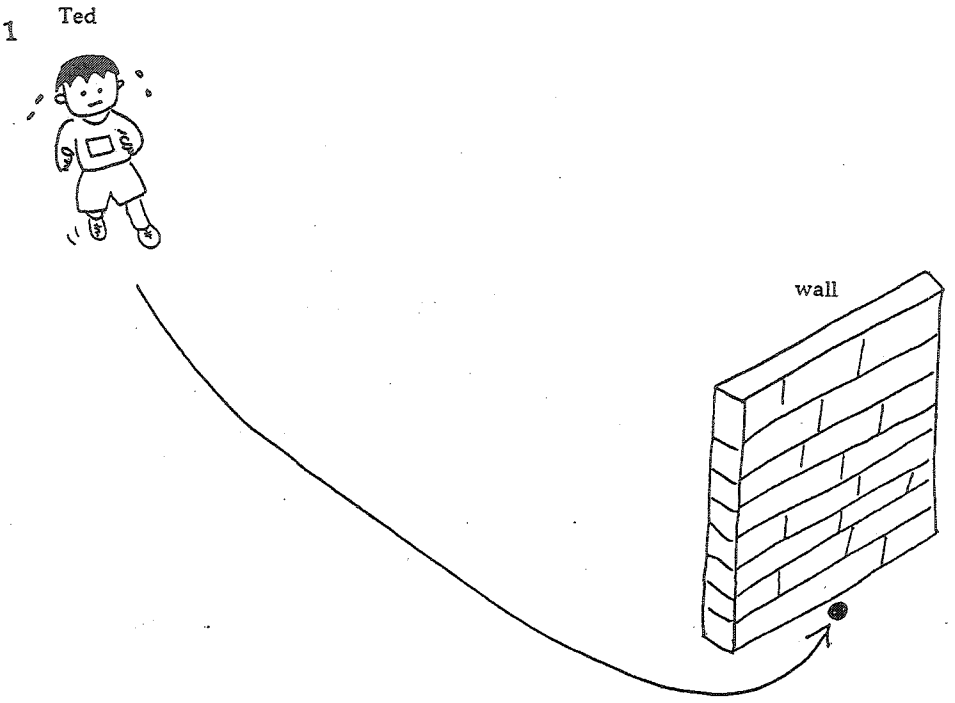
2



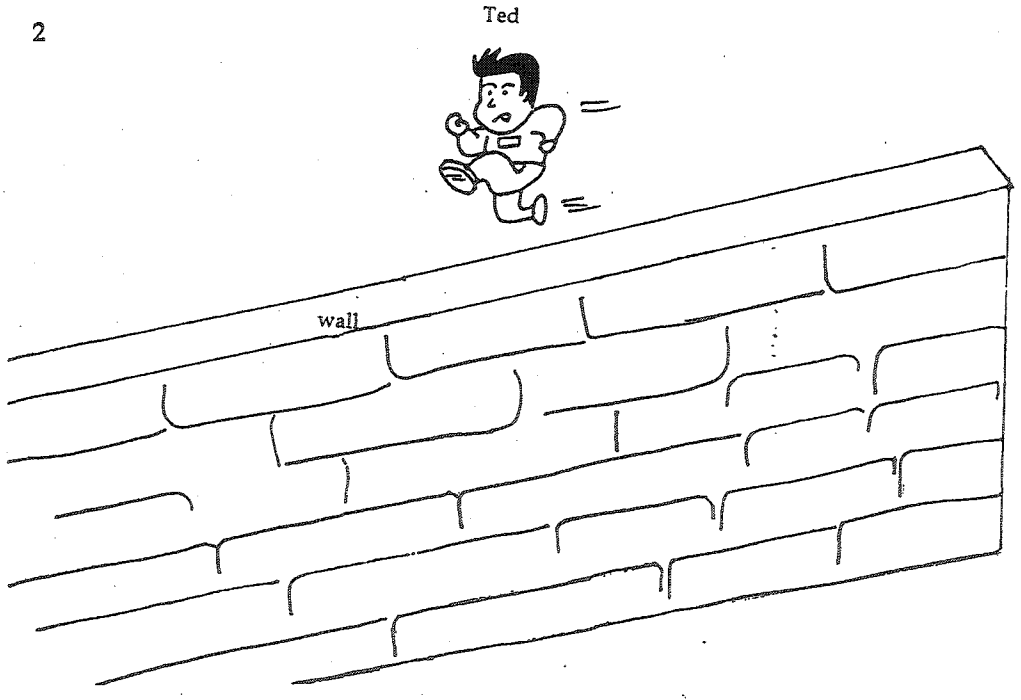
4. **Ted ran behind the wall.**

1 only 2 only either 1 or 2

1



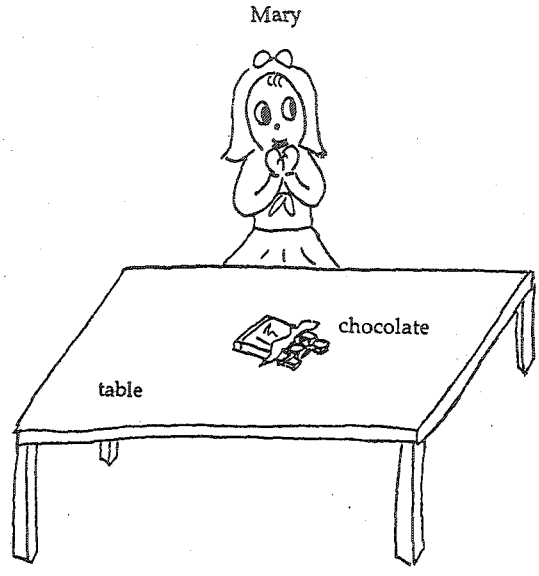
2



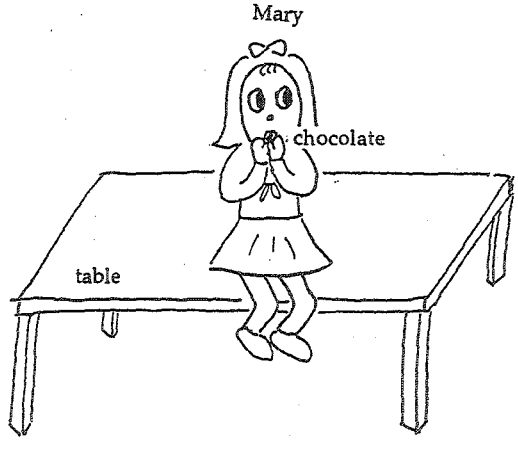
5. **Mary ate the chocolate on the table.**

1 only 2 only either 1 or 2

1



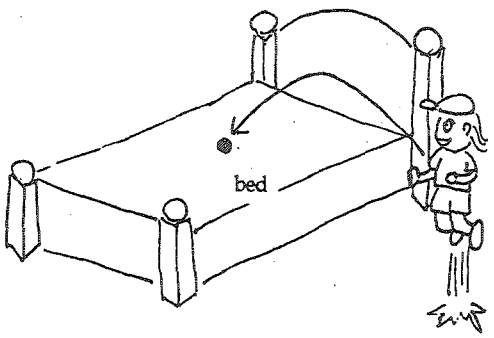
2



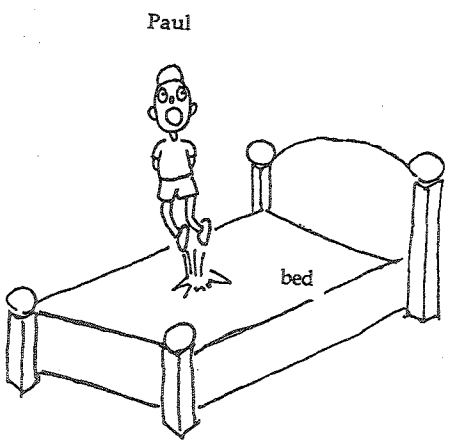
6. **Paul jumped on the bed.**

1 only 2 only either 1 or 2

1



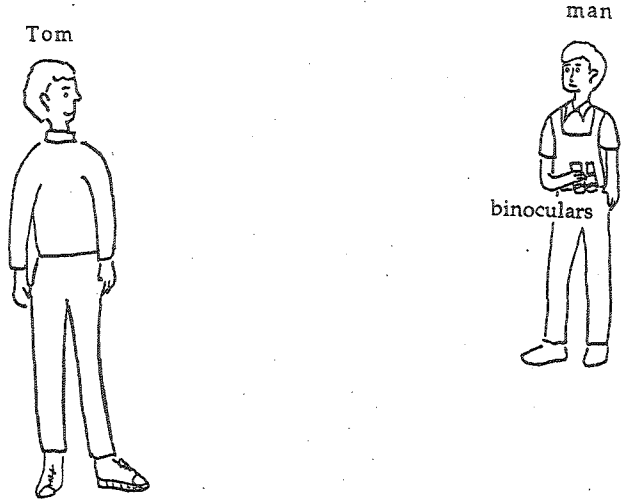
2



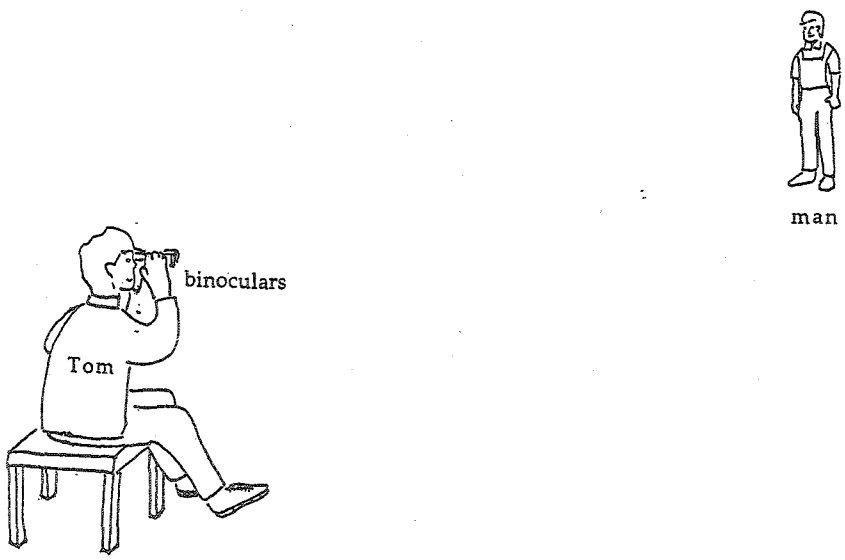
7. **Tom watched the man with binoculars.**

1 only 2 only either 1 or 2

1



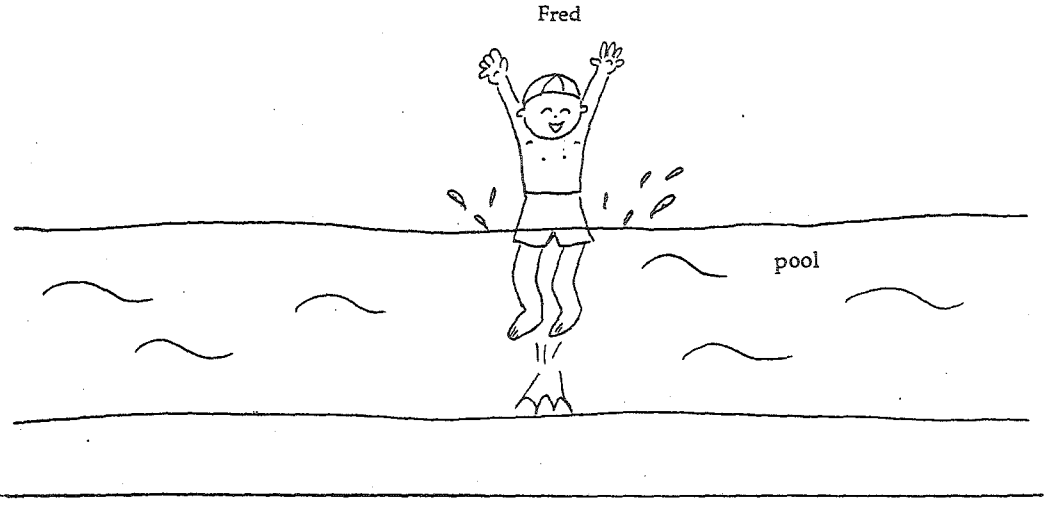
2



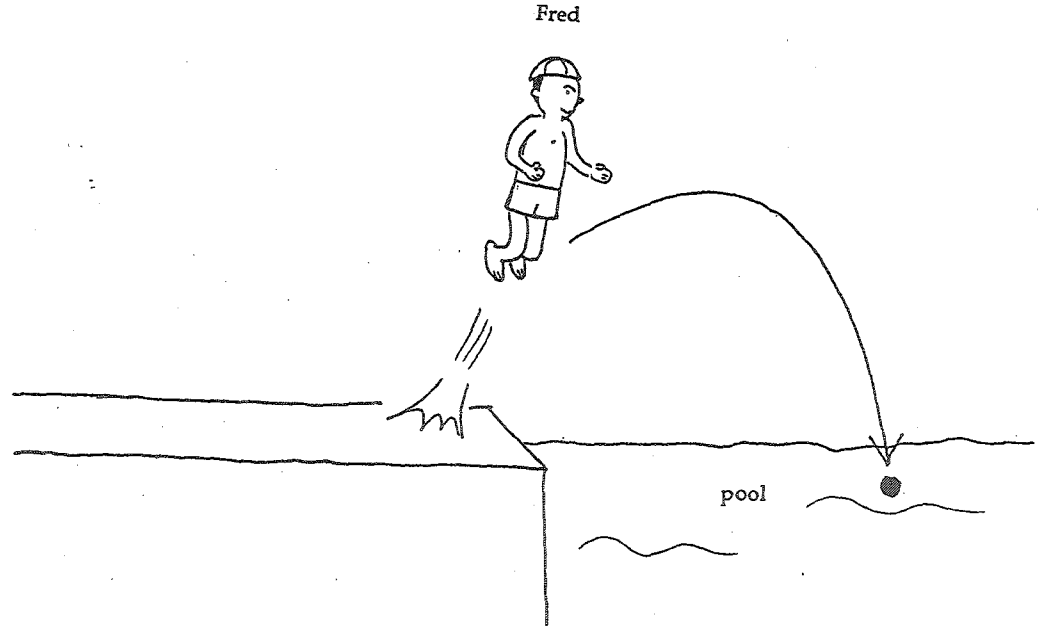
8. **Fred jumped in the pool.**

1 only 2 only either 1 or 2

1



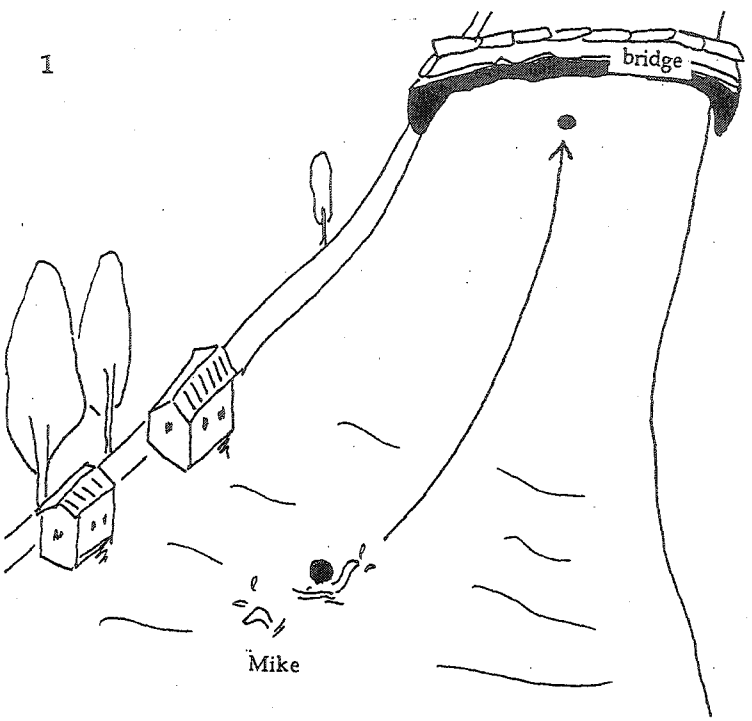
2



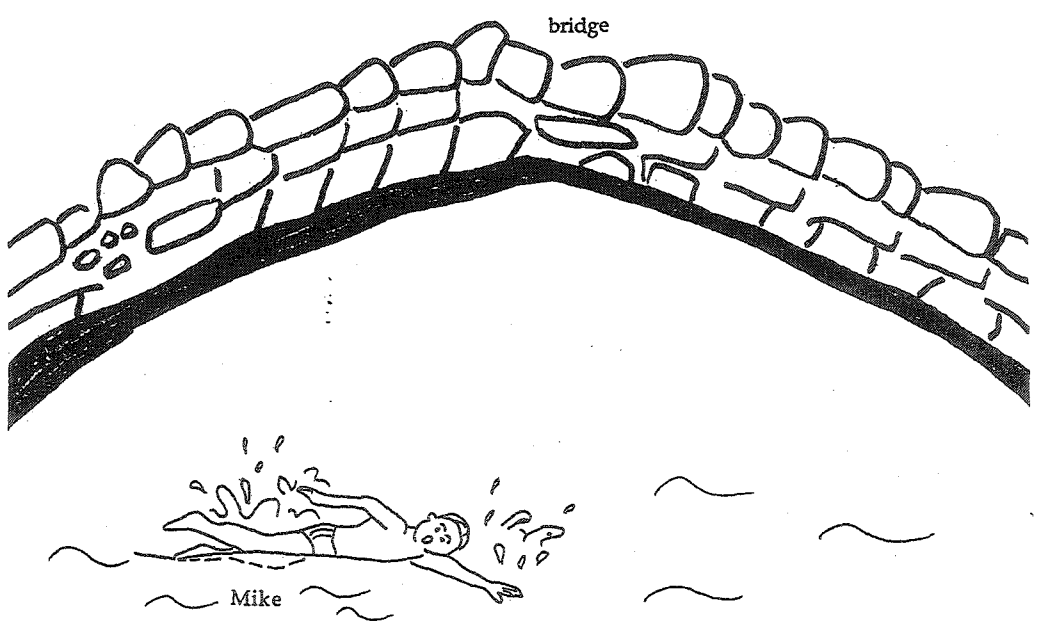
9. **Mike swam under the bridge.**

1 only 2 only either 1 or 2

1

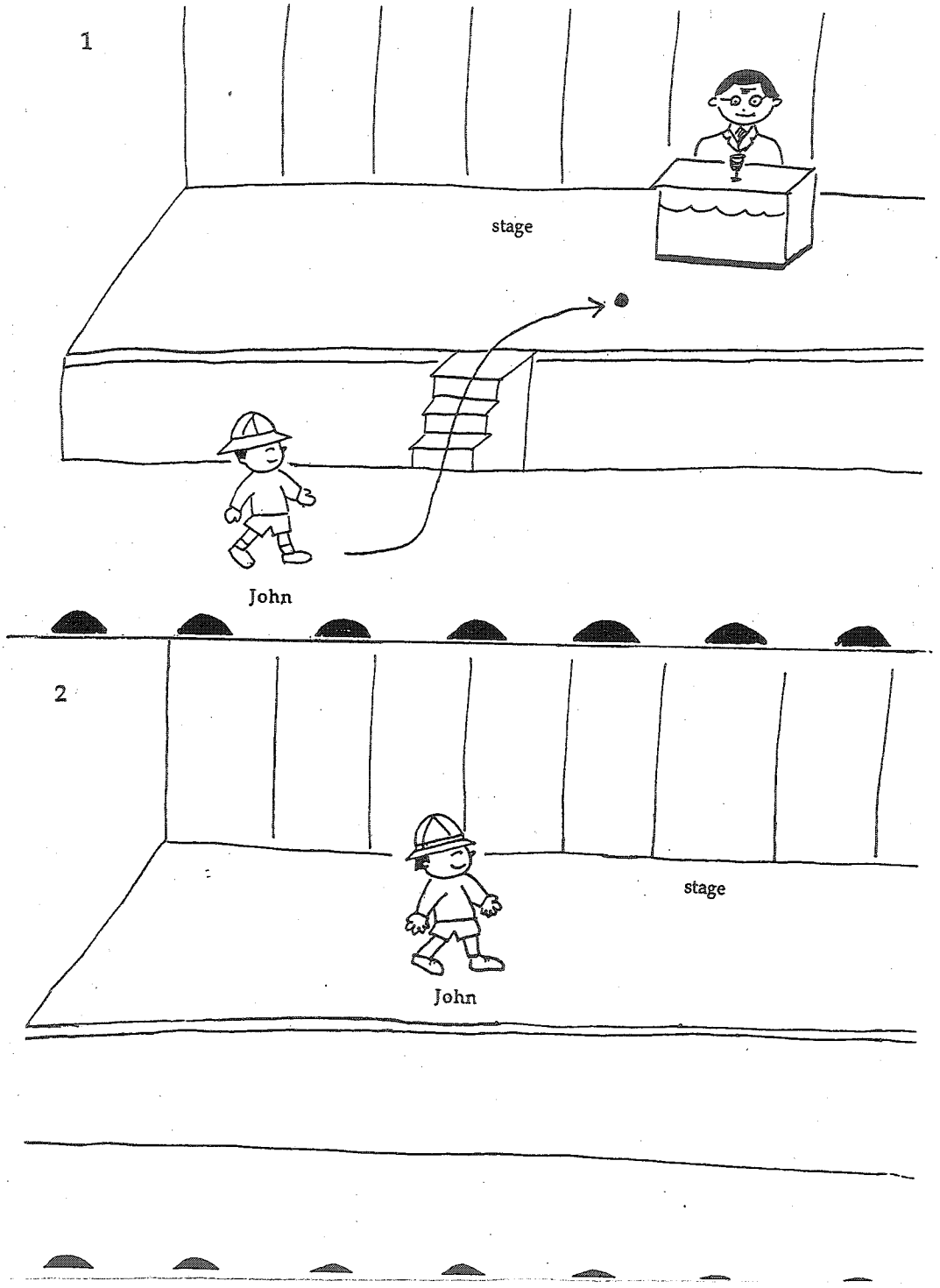


2



10. **John walked onto the stage.**

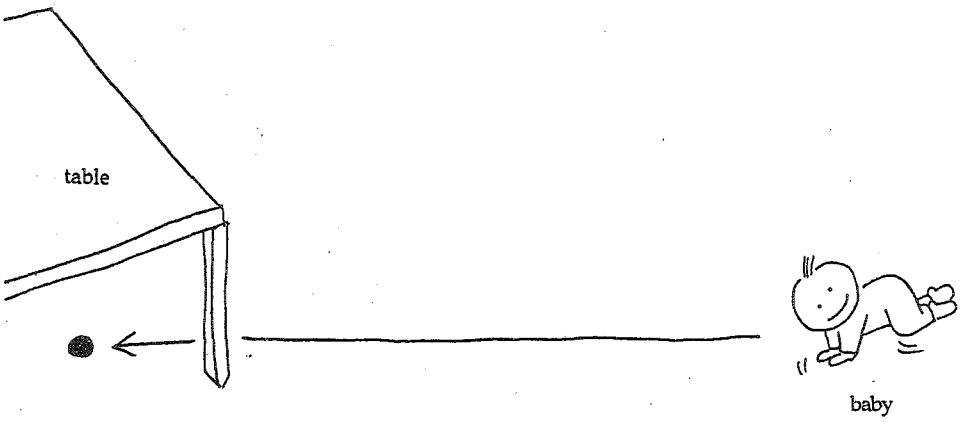
1 only 2 only either 1 or 2



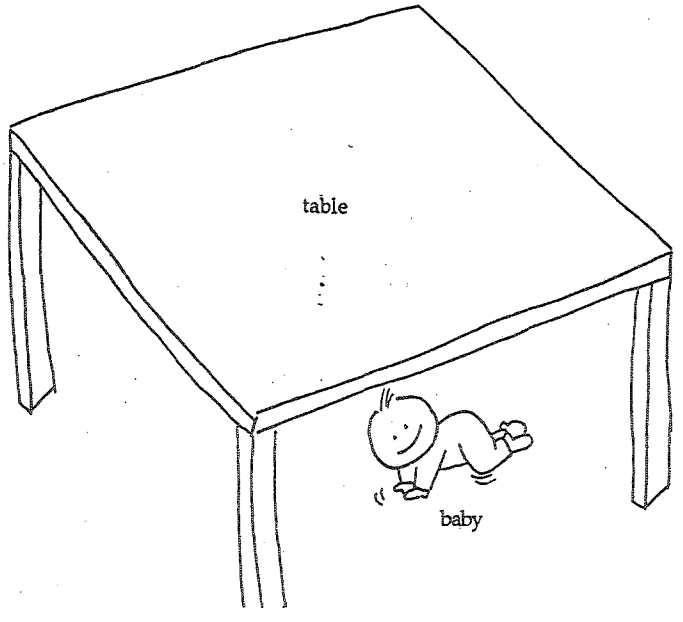
11. **The baby crawled under the table.**

1 only 2 only either 1 or 2

1



2

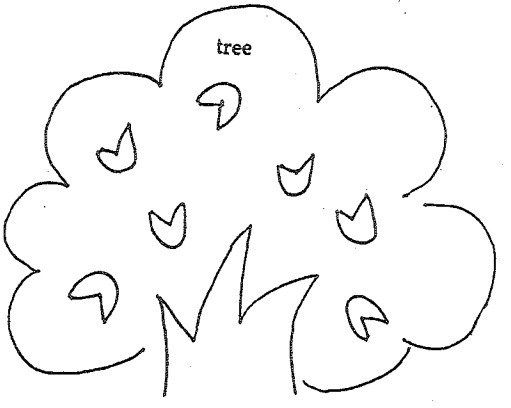


12. **The bird flew above the tree.**

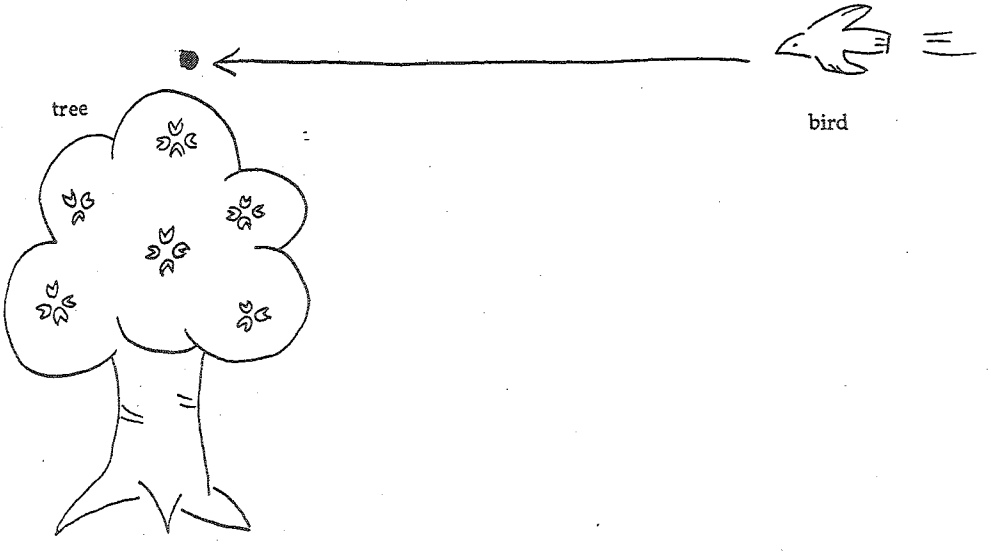
1 only 2 only either 1 or 2

1

bird



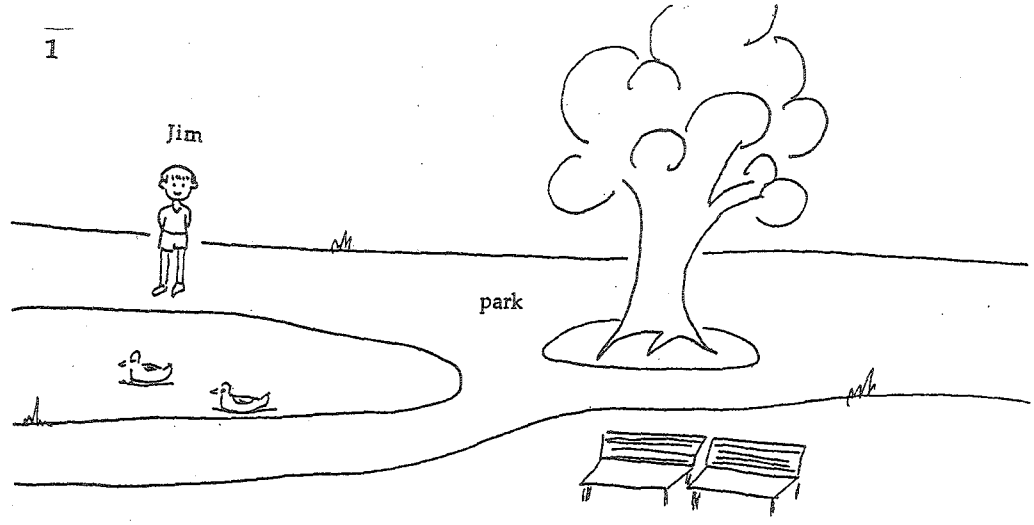
2



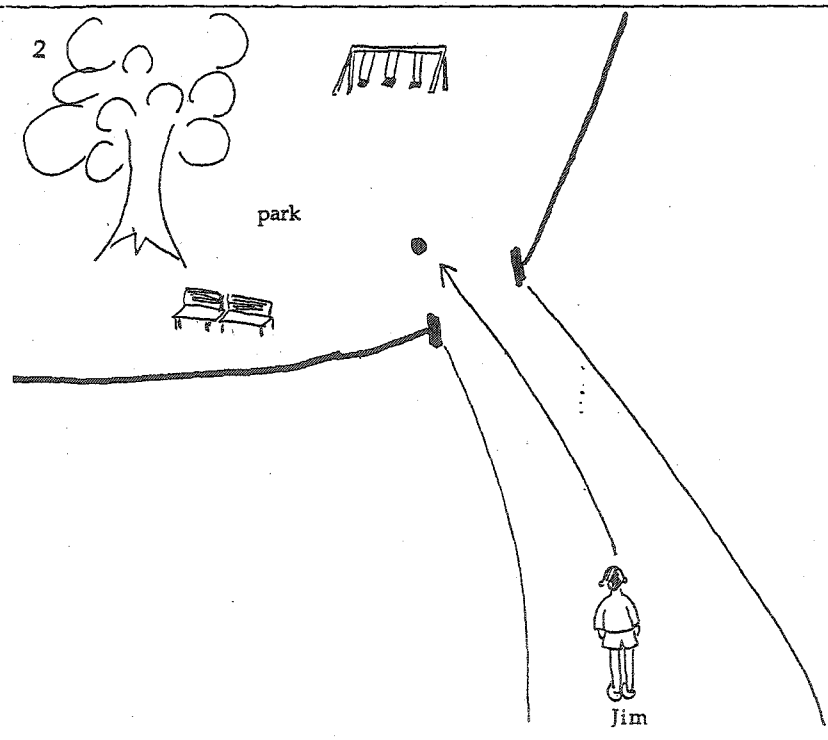
13. **Jim was in the park.**

1 only 2 only either 1 or 2

1

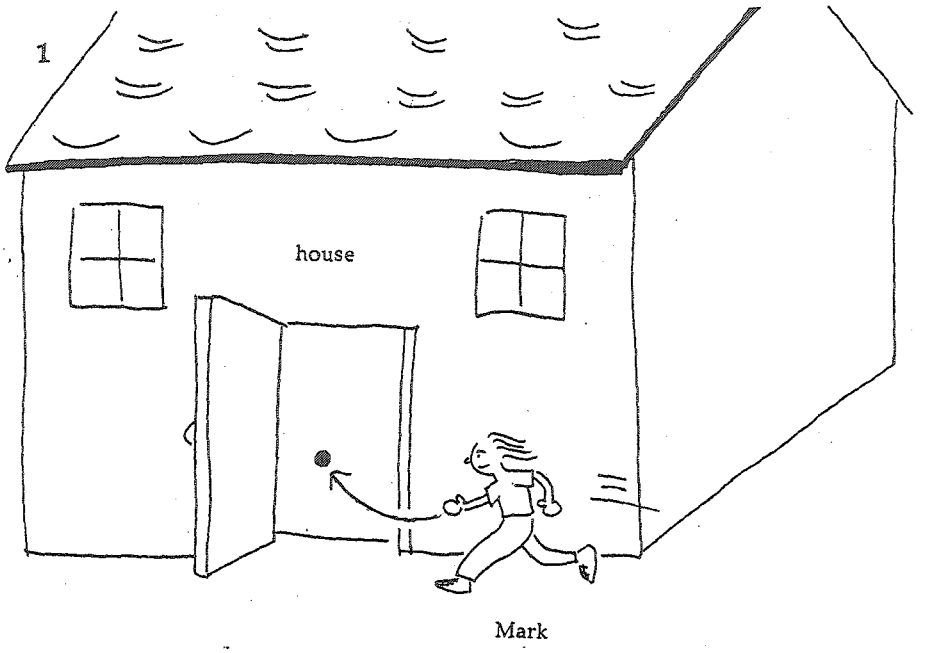


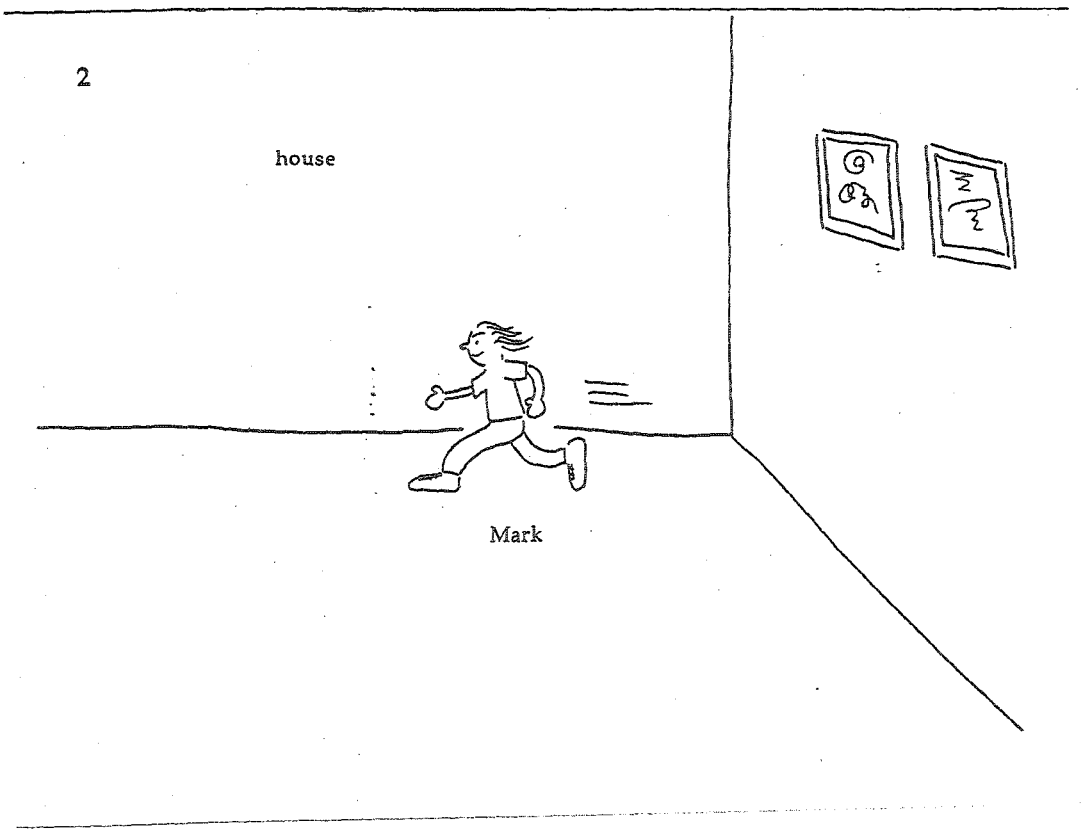
2



14. **Mark ran in the house.**

1 only 2 only either 1 or 2

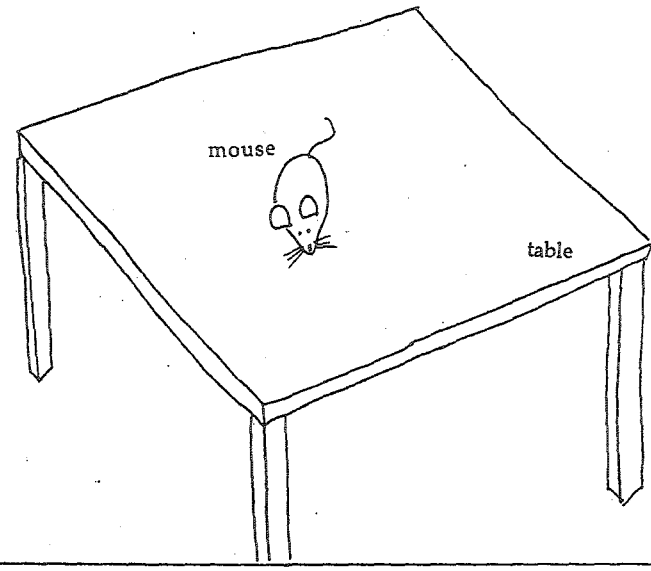




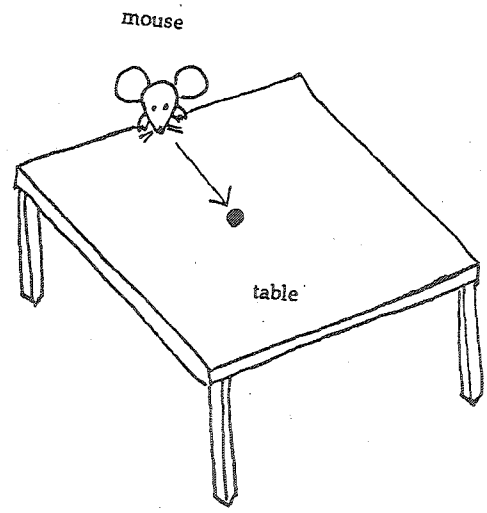
15. **The mouse crawled on the table.**

1 only 2 only either 1 or 2

1

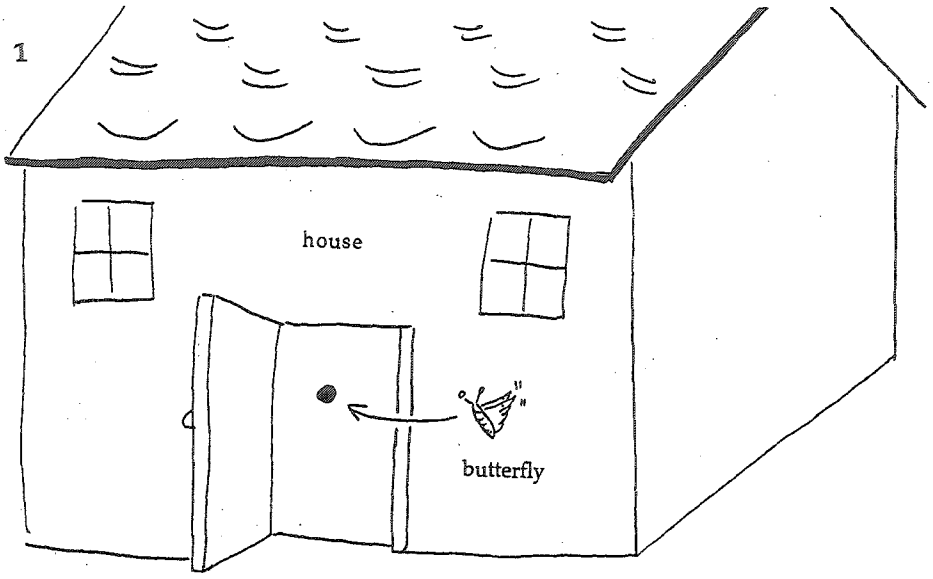


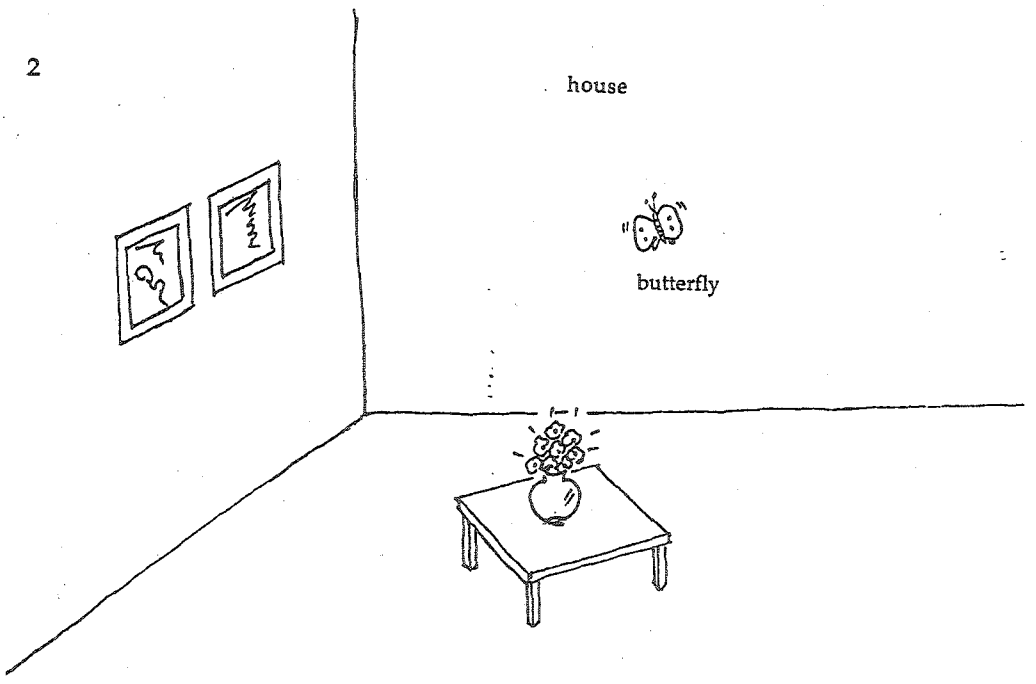
2



16. **The butterfly flew into the house.**

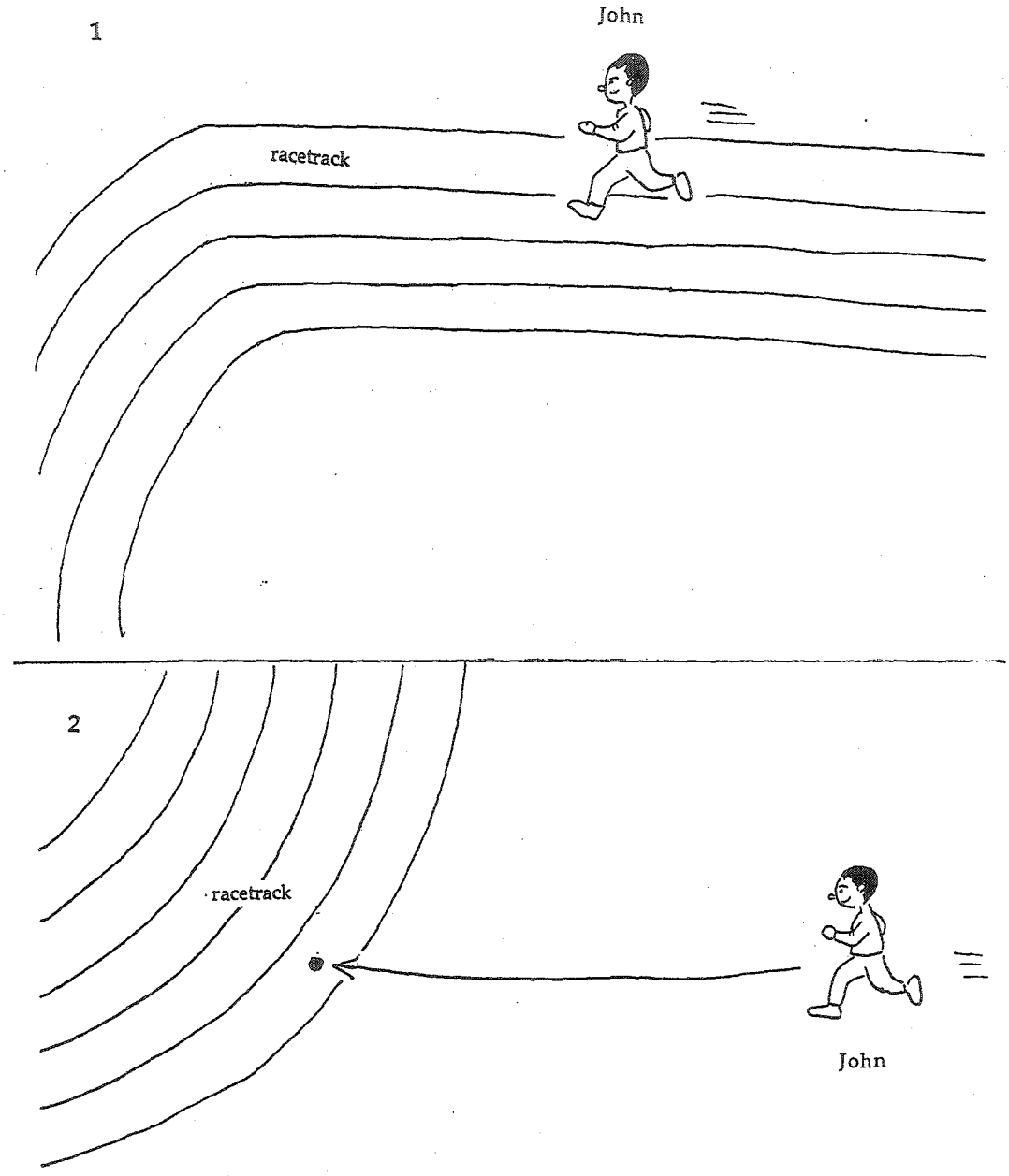
1 only 2 only either 1 or 2





17. **John ran at the racetrack.**

1 only 2 only either 1 or 2

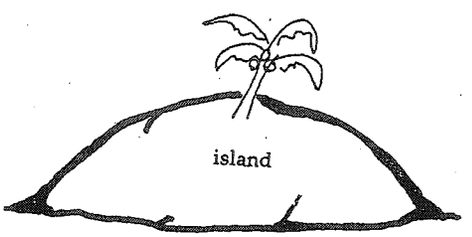


18. **The blimp flew over the island.**

1 only 2 only either 1 or 2

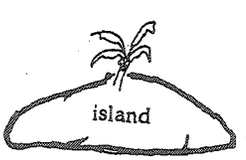
1

blimp



2

blimp



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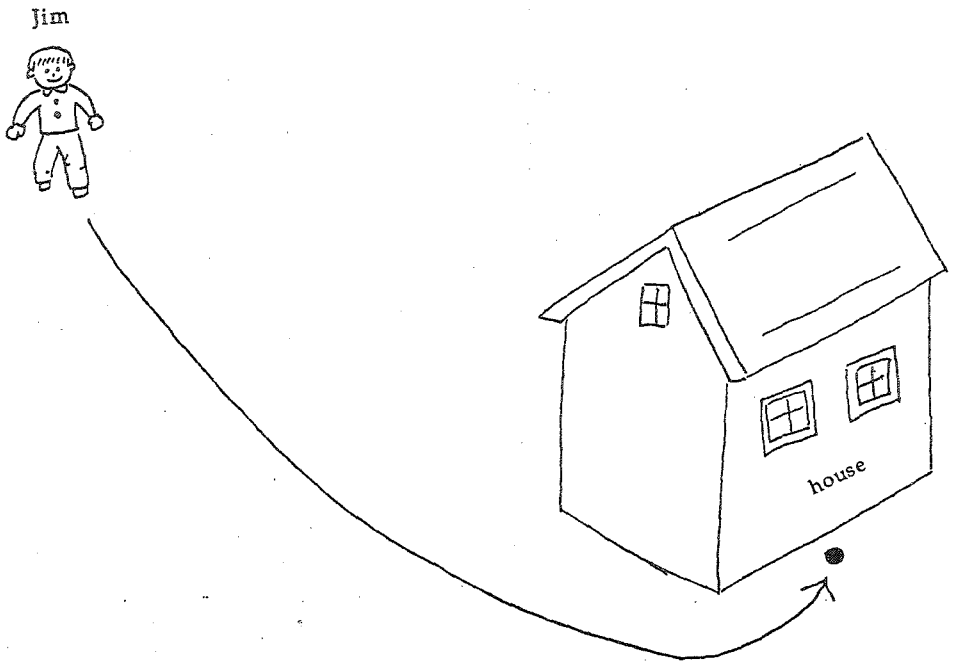
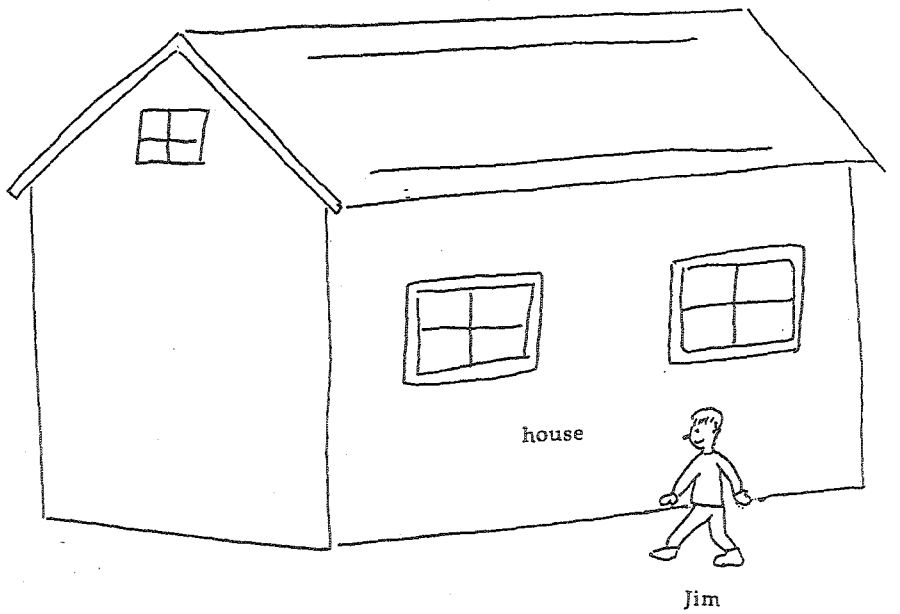
19. **Jim walked behind the house.**

1 only 2 only either 1 or 2

1



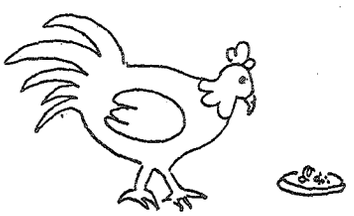
2



20. **The chicken was ready to eat.**

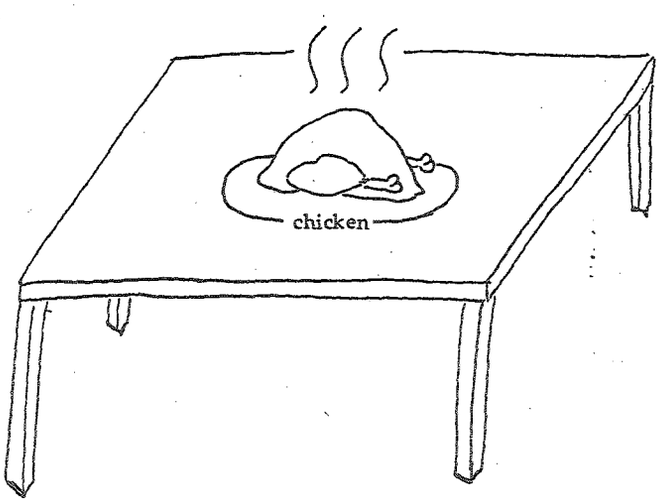
1 only 2 only either 1 or 2

1



chicken

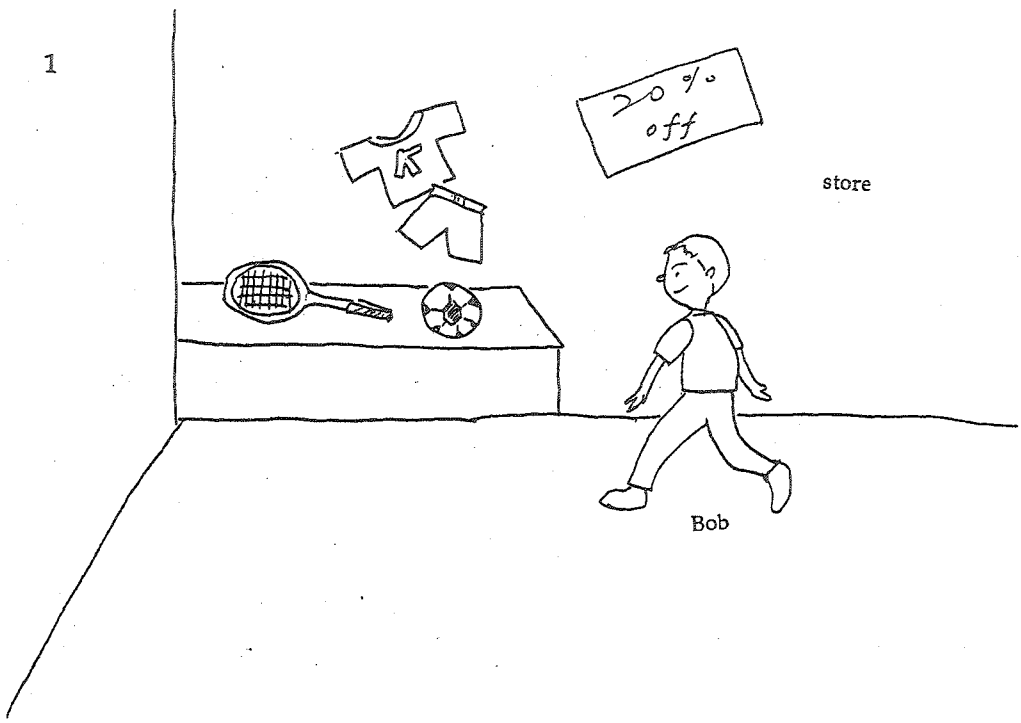
2



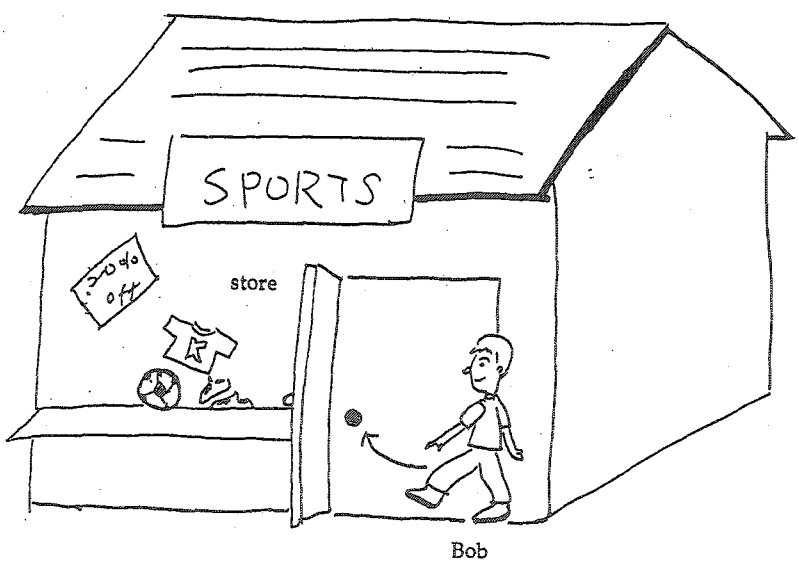
21. **Bob walked in the store.**

1 only 2 only either 1 or 2

1



2



Appendix I Sentences Included in the ESL Picture-Matching Task in Study 2

A: Test sentences

1. Jim walked behind the house.
2. Tom walked under the bridge.
3. Ted ran behind the wall.
4. Mary ran on the stage.
5. Peter swam in the cave.
6. The baby crawled under the table.
7. The mouse crawled on the table.
8. Fred jumped in the pool.

B: Distractors

Directional only

1. Sam walked to the beach.
2. John ran into the gym.
3. Paul jumped onto the bed.

Locational only

4. Jim was in the park.
5. John ran at the racetrack.

Ambiguous

6. Tom watched the man with binoculars.
7. John saw fat cats and dogs.

Appendix J ESL Picture-Matching Task in Study 2

In this task, you will see a set of English sentences. Each sentence is followed by a pair of pictures showing different situations. **Look at the sentence and decide which picture or pictures the sentence describes.** Circle **1 only** if you believe the sentence can match the first picture only, **2 only** if you believe the sentence can match the second picture only, and **either 1 or 2** if you believe the sentence can match either the first or the second picture.

There are no right or wrong answers. I want you to concentrate on **how you feel** about the sentences.

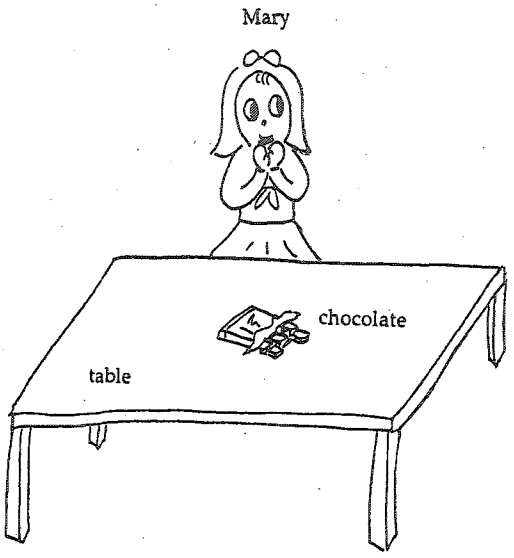
All pictures show **situations that took place in the past.** Thus all the sentences will be in the past tense. Some pictures have **an arrow with a blob** (-----> ●), indicating that an action took place and was completed. In other words, these pictures depict a situation where something moved somewhere. The arrow indicates the **direction** of the movement and the blob indicates the **endpoint** of the movement.

We will start with two examples. Please try them for practice.

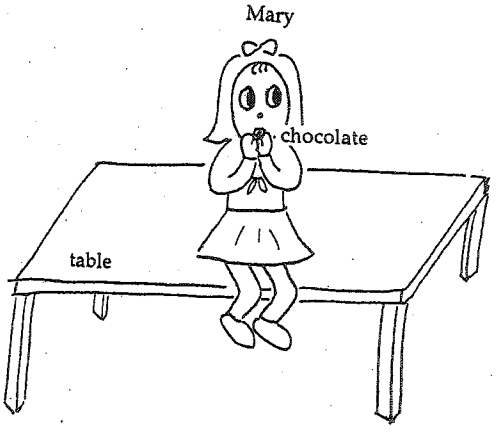
ex. 1. **Mary ate the chocolate on the table.**

1 only 2 only either 1 or 2

1

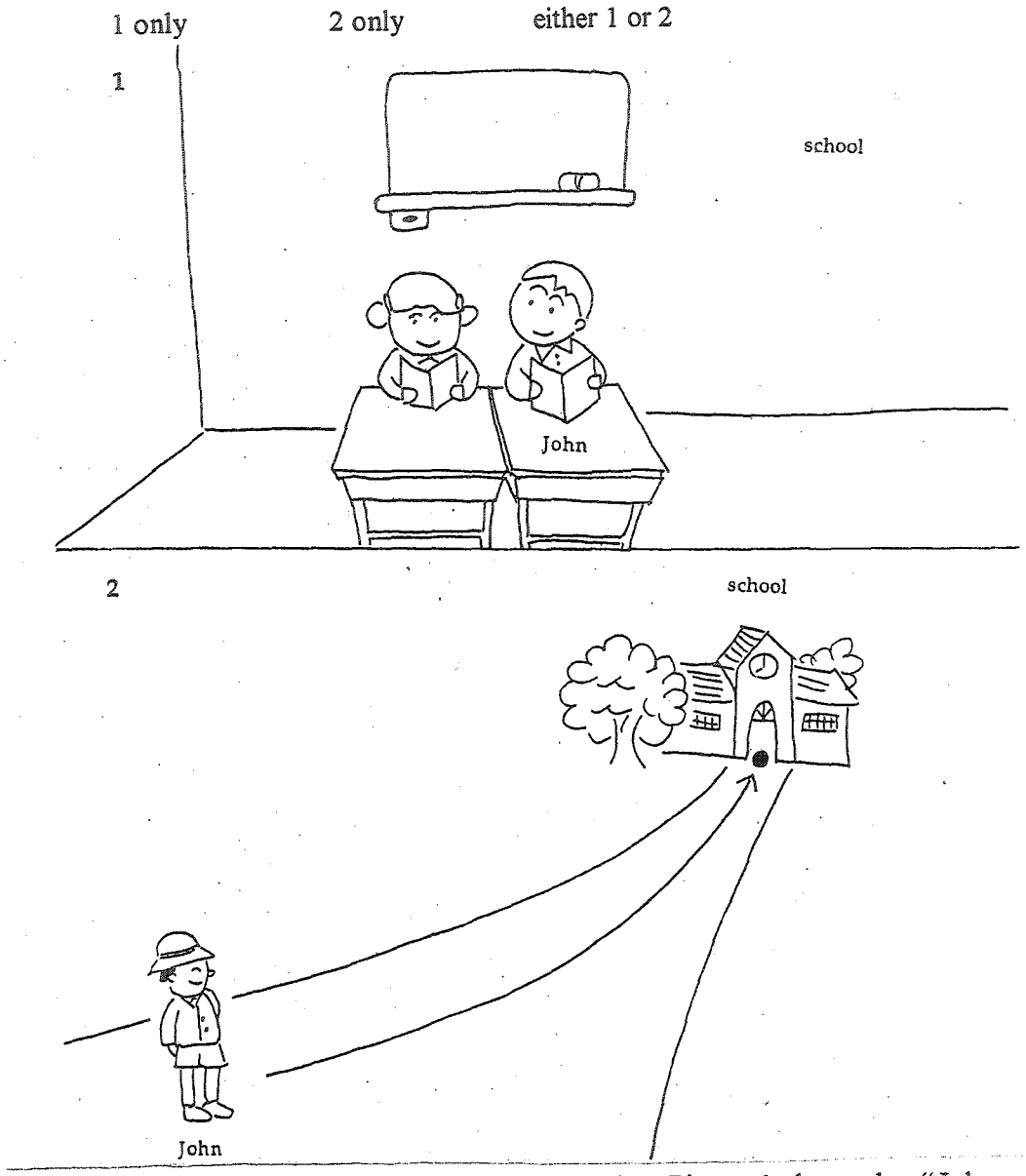


2



This sentence means either Mary ate the chocolate which was on the table (Picture 1) or Mary ate the chocolate while she was on the table (Picture 2). You may prefer the first interpretation, but the second interpretation is also **possible**, so you should circle either 1 or 2.

ex. 2. **John went to school.**

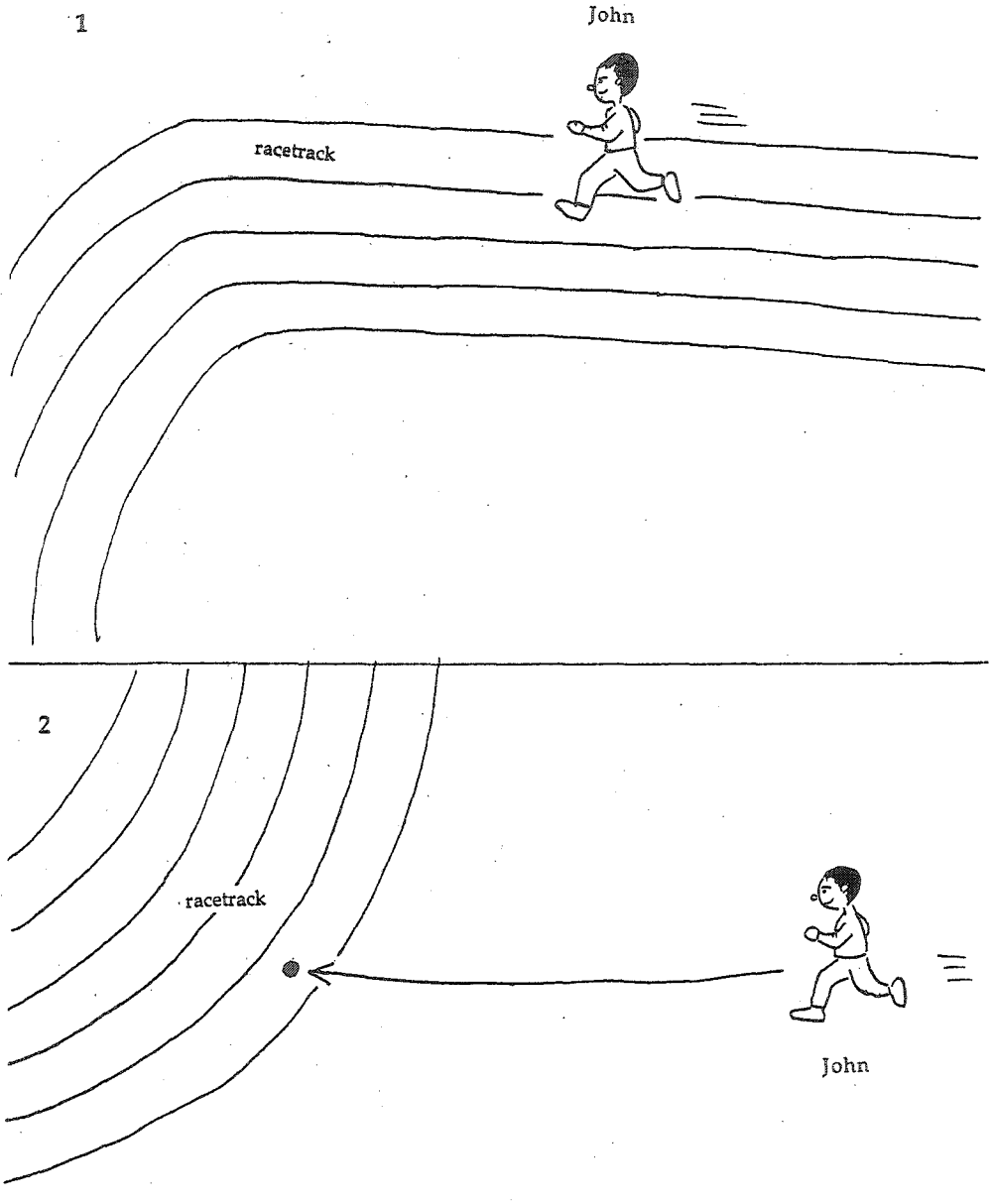


In this example, you should have circled 2 only Picture 1 shows that "John was at school". This is a result of going to school, but the picture does not show him going. Picture 2 shows that "John went toward school (----->) and finally reached school (●)". Therefore, the sentence matches Picture 2 only.

Now, please begin!

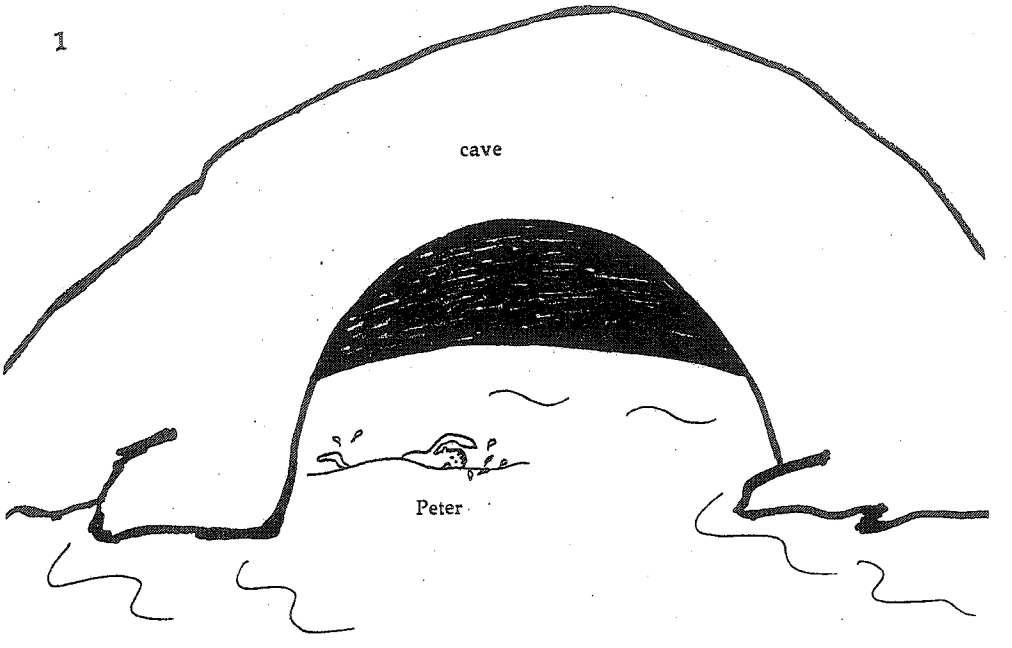
1. **John ran at the racetrack.**

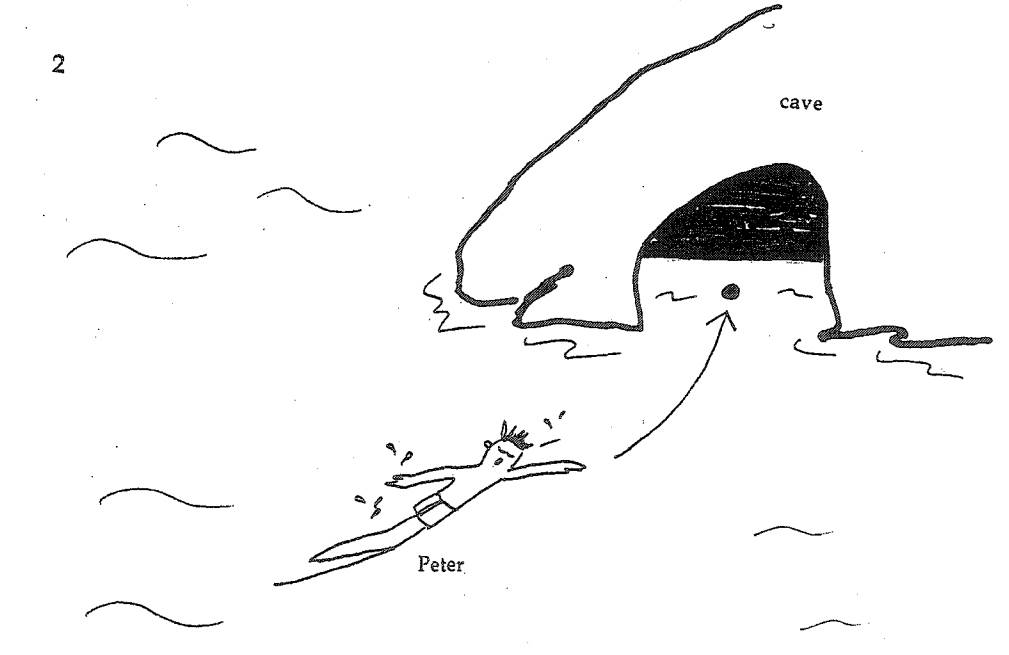
1 only 2 only either 1 or 2



2. **Peter swam in the cave.**

1 only 2 only either 1 or 2

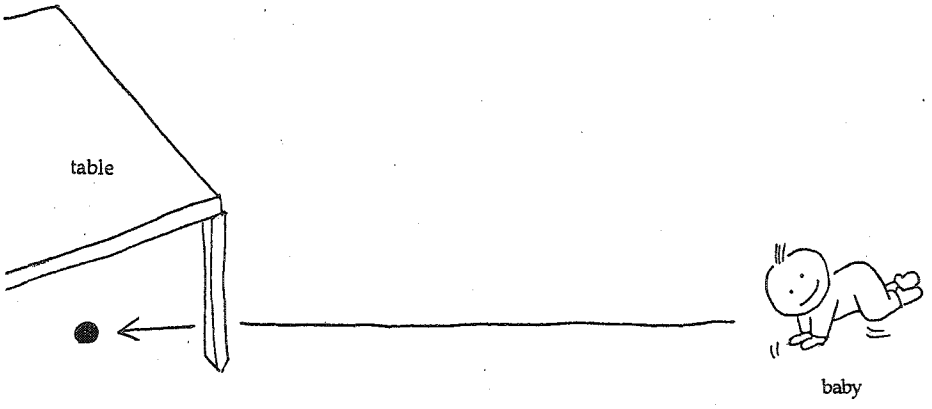




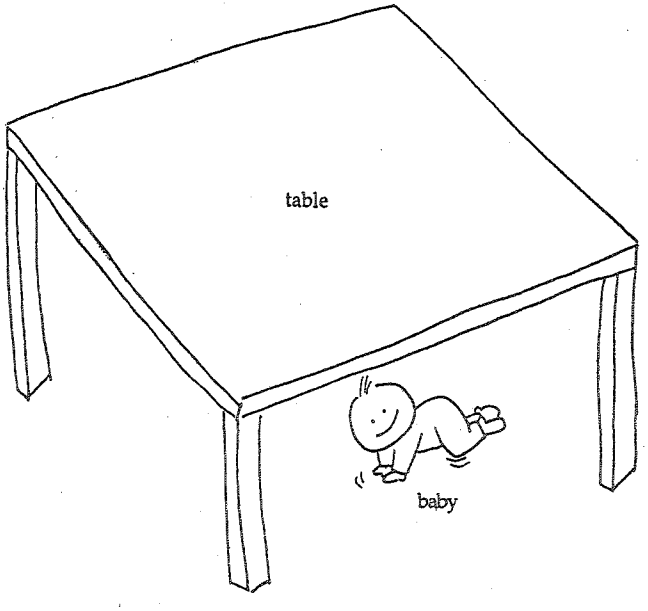
3. **The baby crawled under the table.**

1 only 2 only either 1 or 2

1

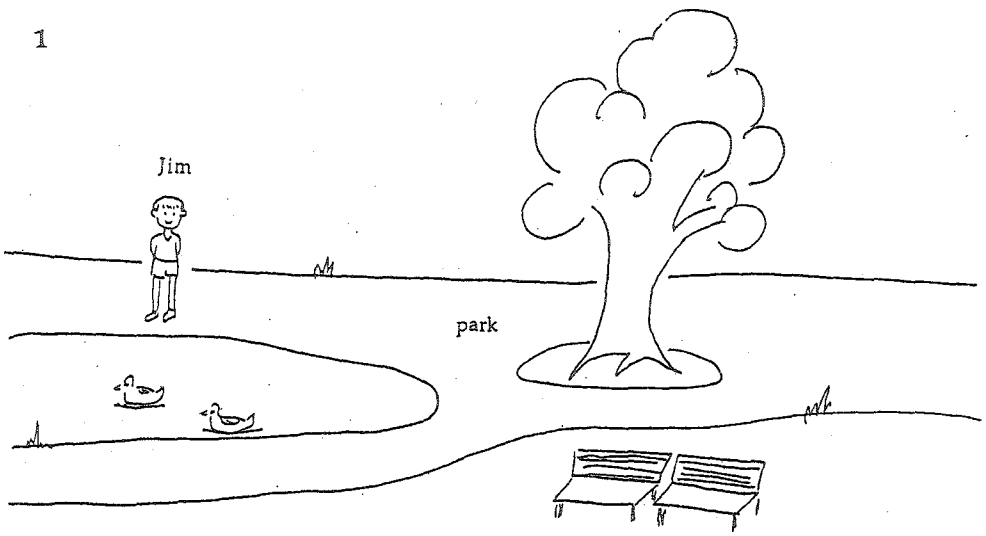


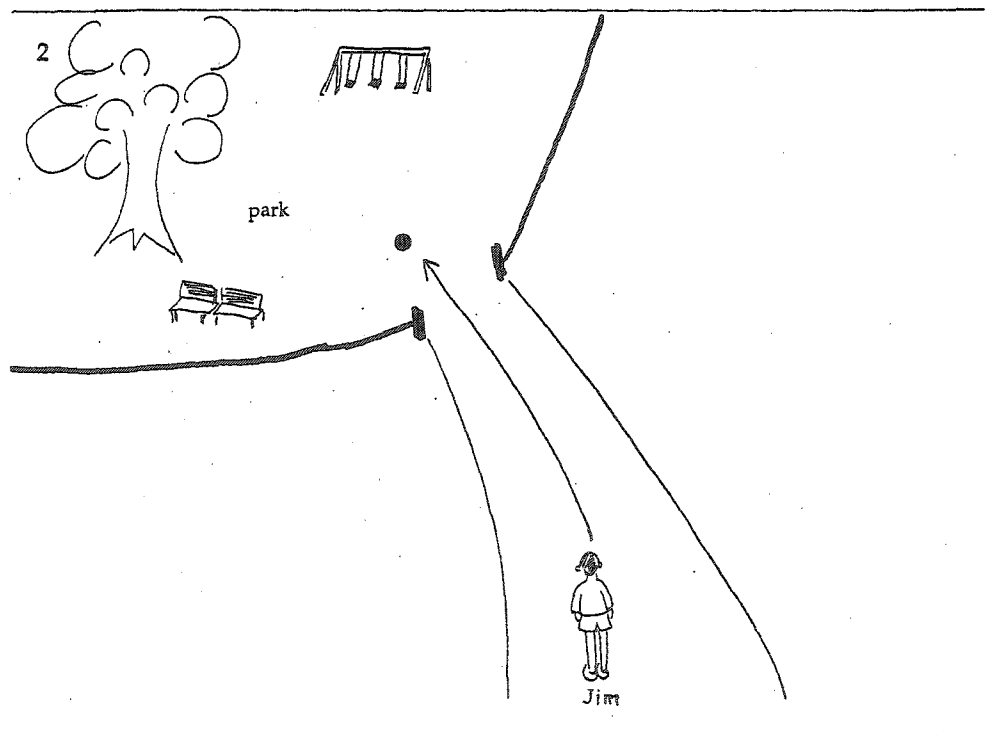
2



4. **Jim was in the park.**

1 only 2 only either 1 or 2

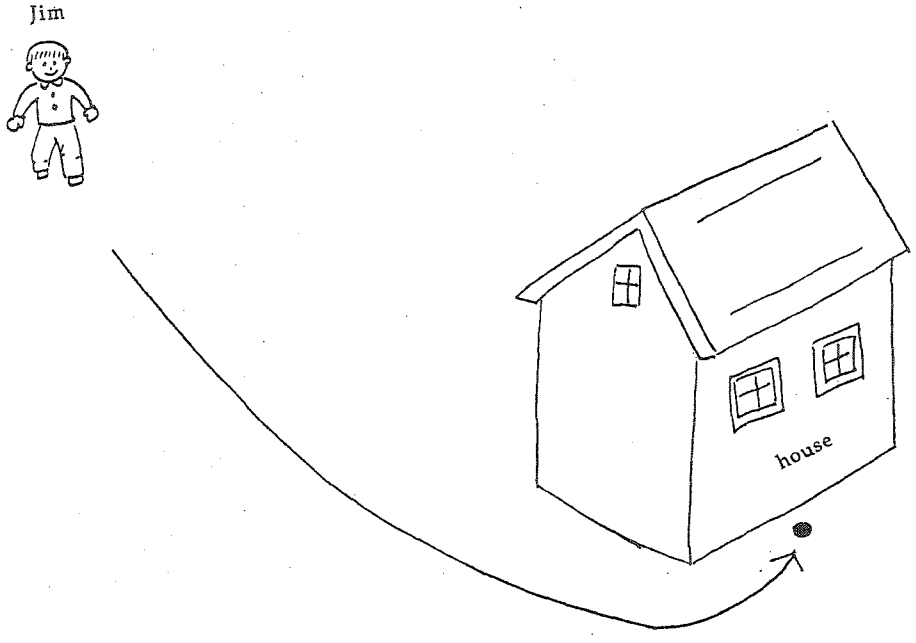




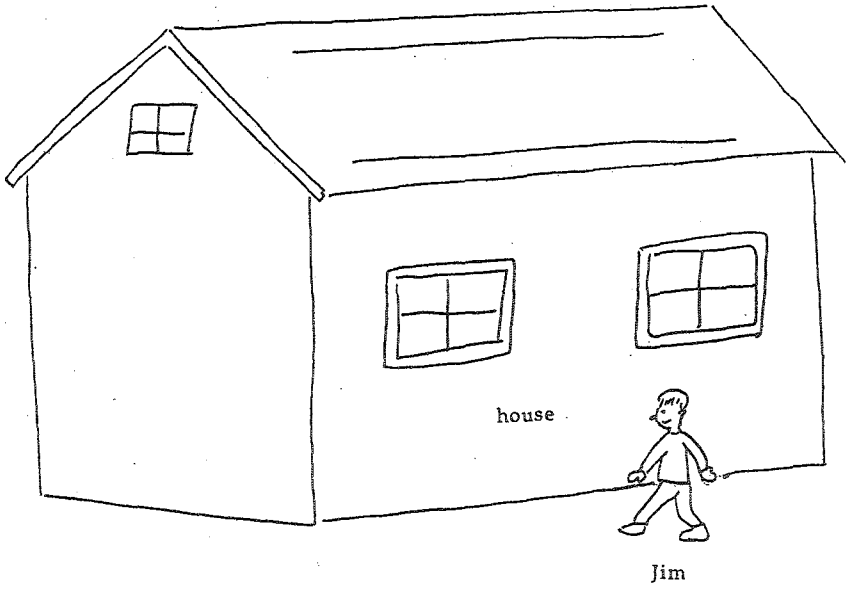
5. **Jim walked behind the house.**

1 only 2 only either 1 or 2

1



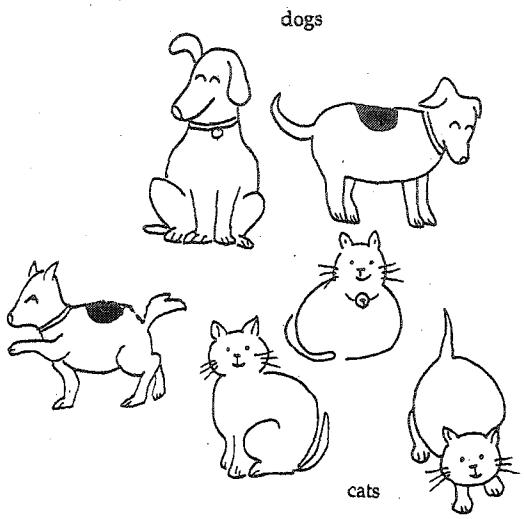
2

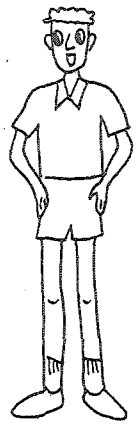


6. **John saw fat cats and dogs.**

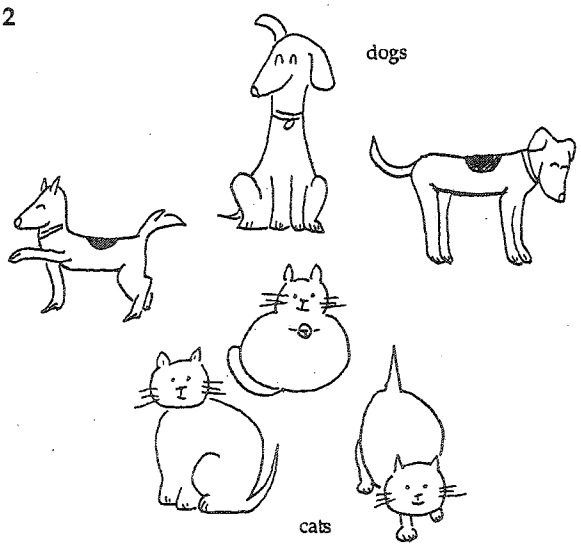
1 only 2 only either 1 or 2

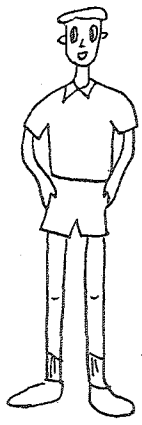
1





2

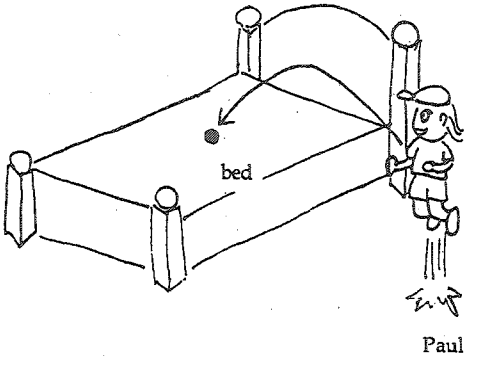




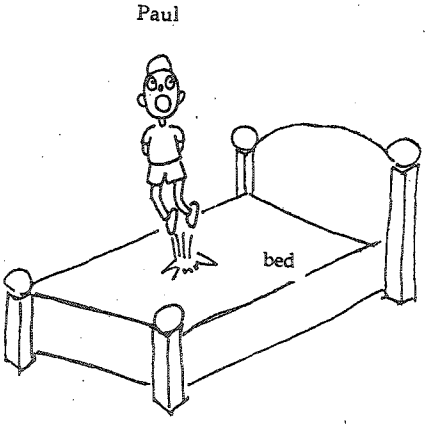
7. **Paul jumped onto the bed.**

1 only 2 only either 1 or 2

1



2



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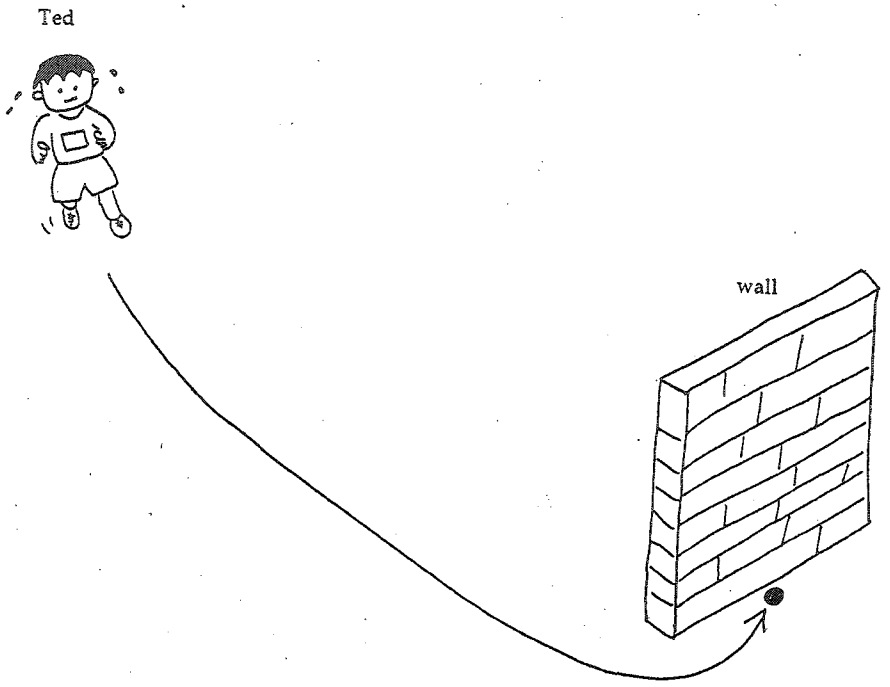
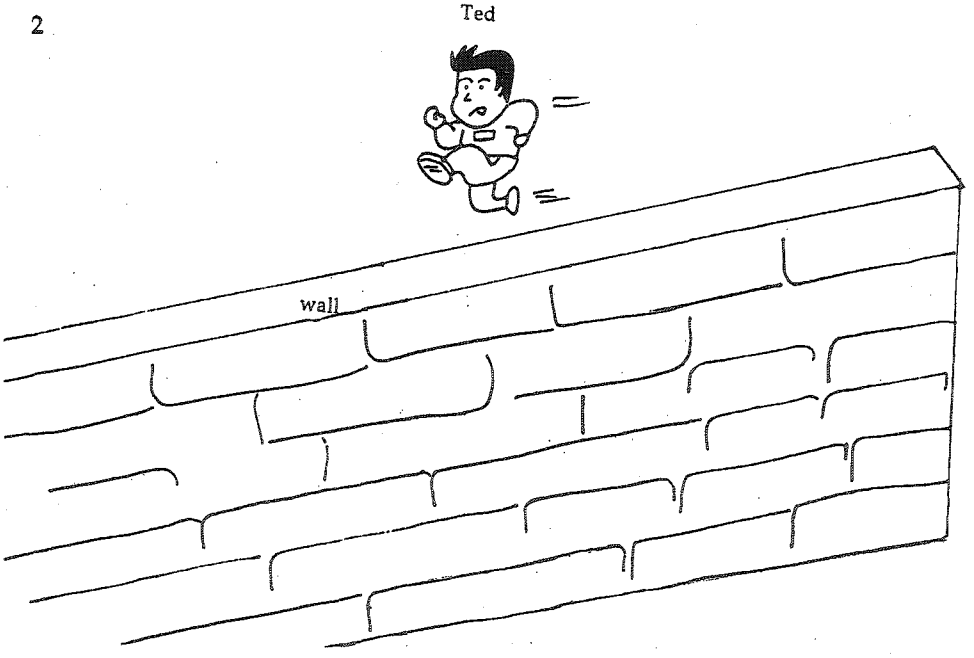
8. **Ted ran behind the wall.**

1 only 2 only either 1 or 2

1



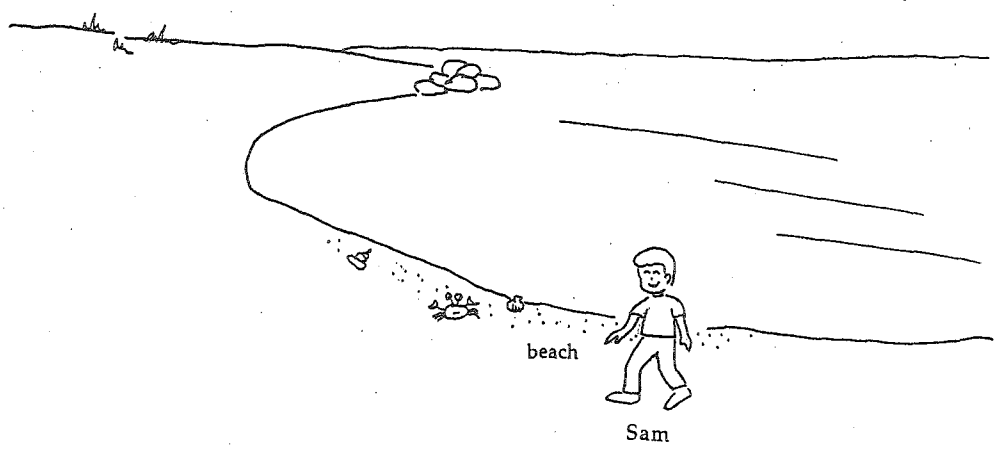
2



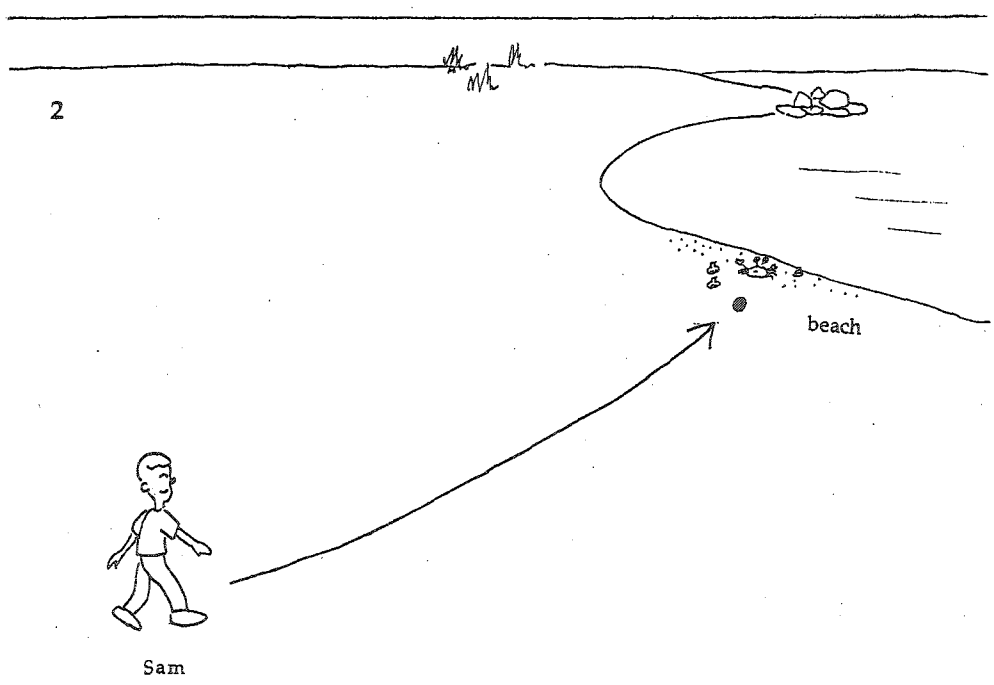
9. **Sam walked to the beach.**

1 only 2 only either 1 or 2

1



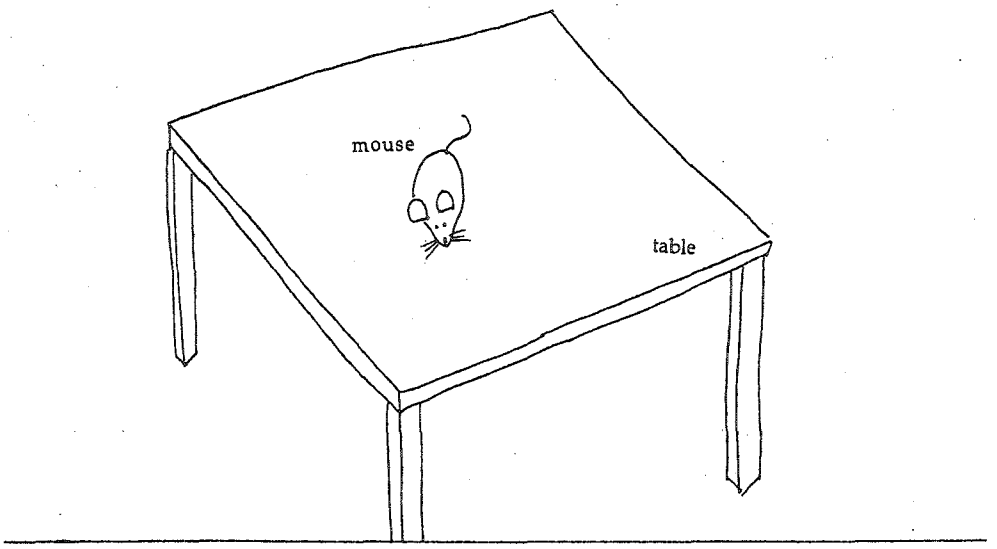
2



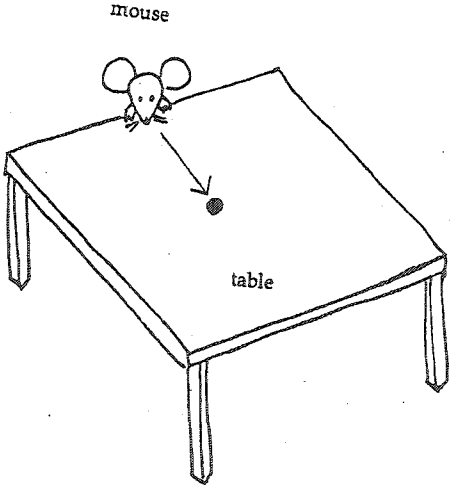
10. **The mouse crawled on the table.**

1 only 2 only either 1 or 2

1



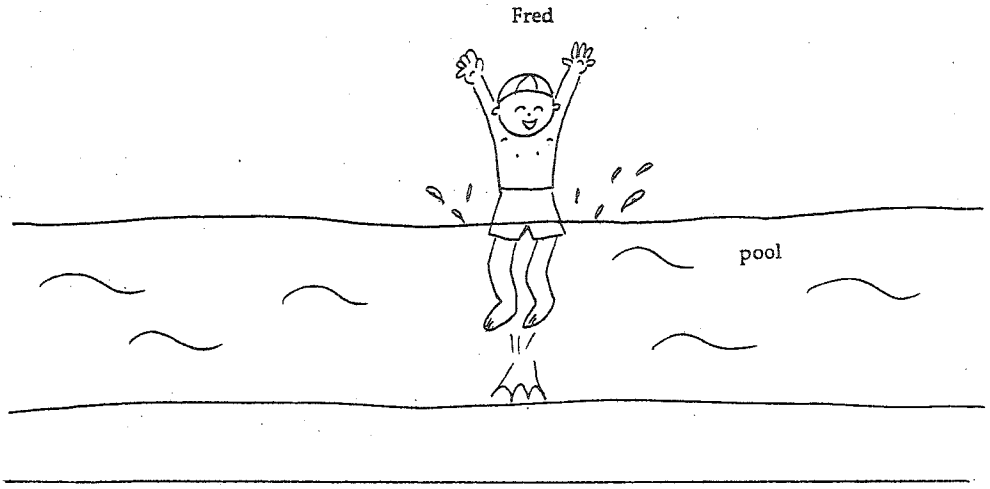
2



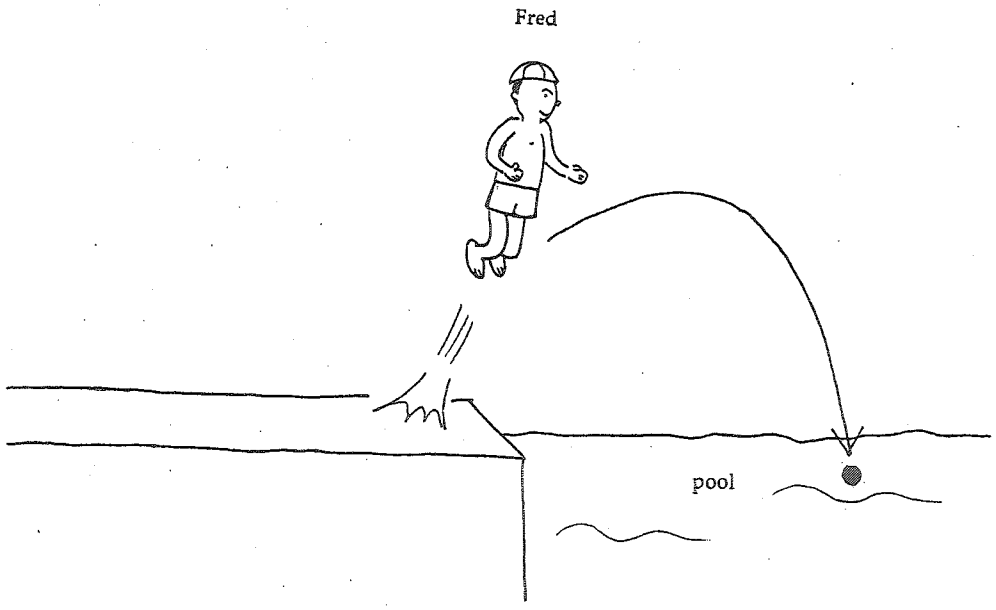
11. **Fred jumped in the pool.**

1 only 2 only either 1 or 2

1



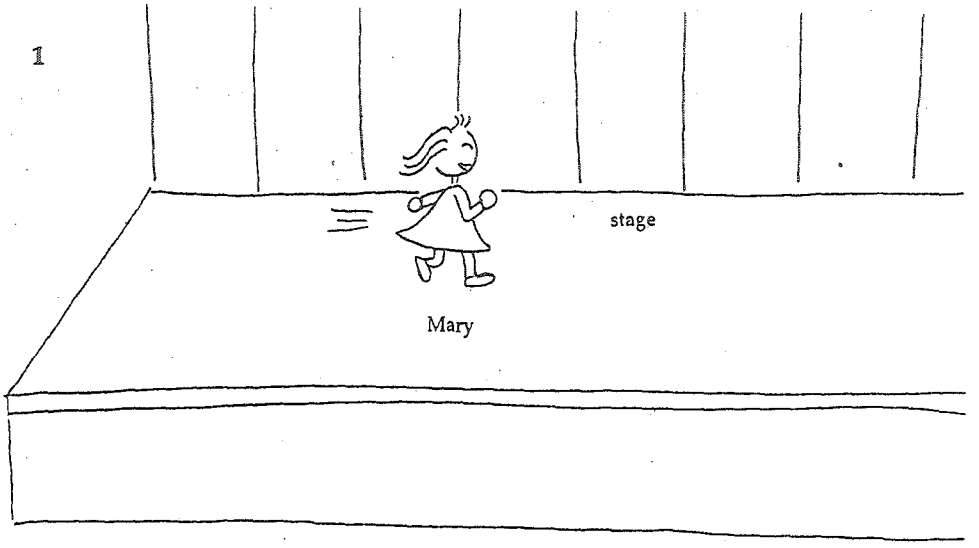
2



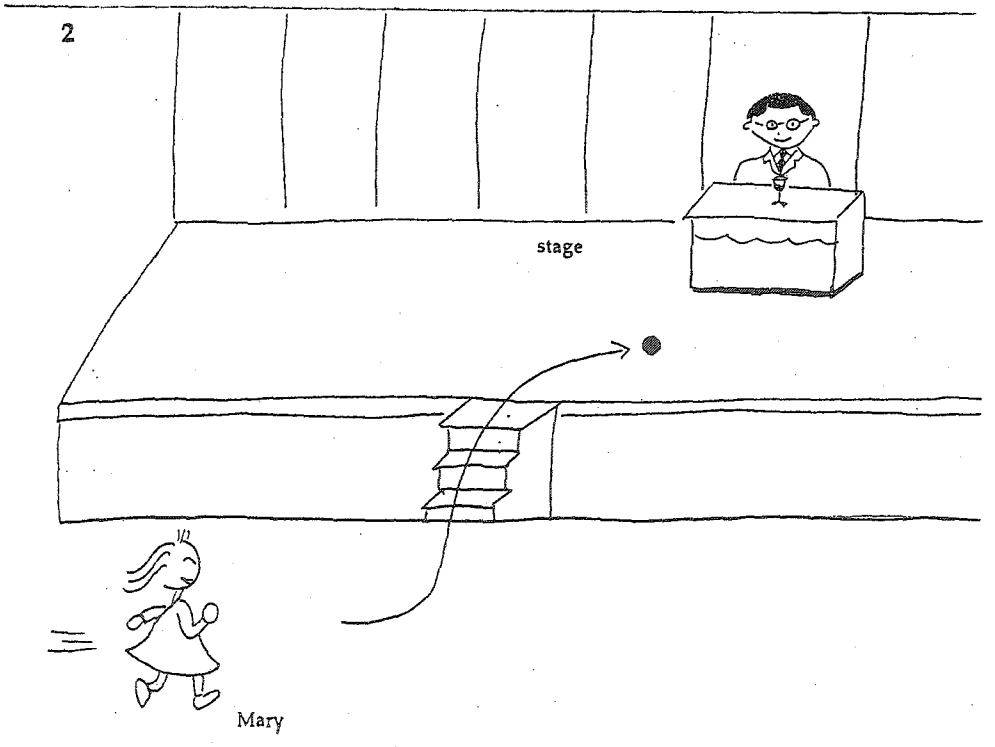
12. **Mary ran on the stage.**

1 only 2 only either 1 or 2

1



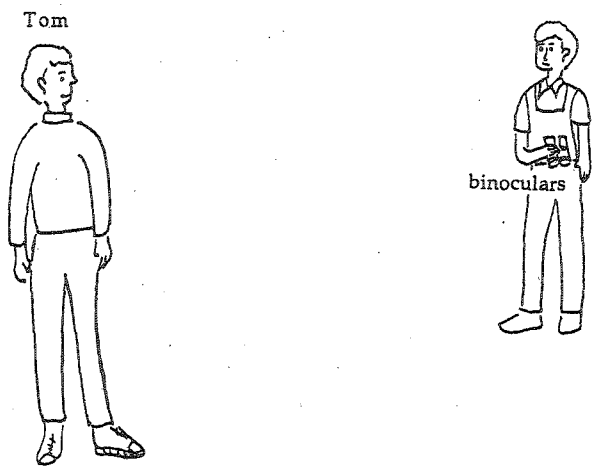
2



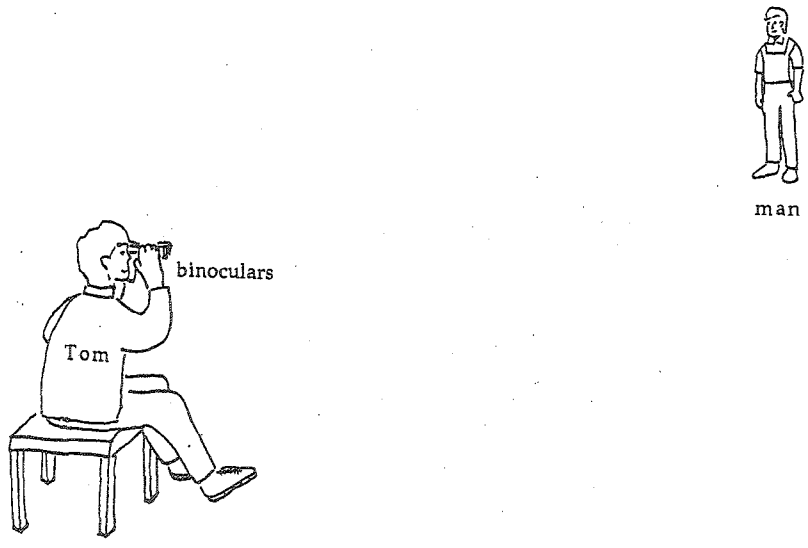
13. **Tom watched the man with binoculars.**

1 only 2 only either 1 or 2

1



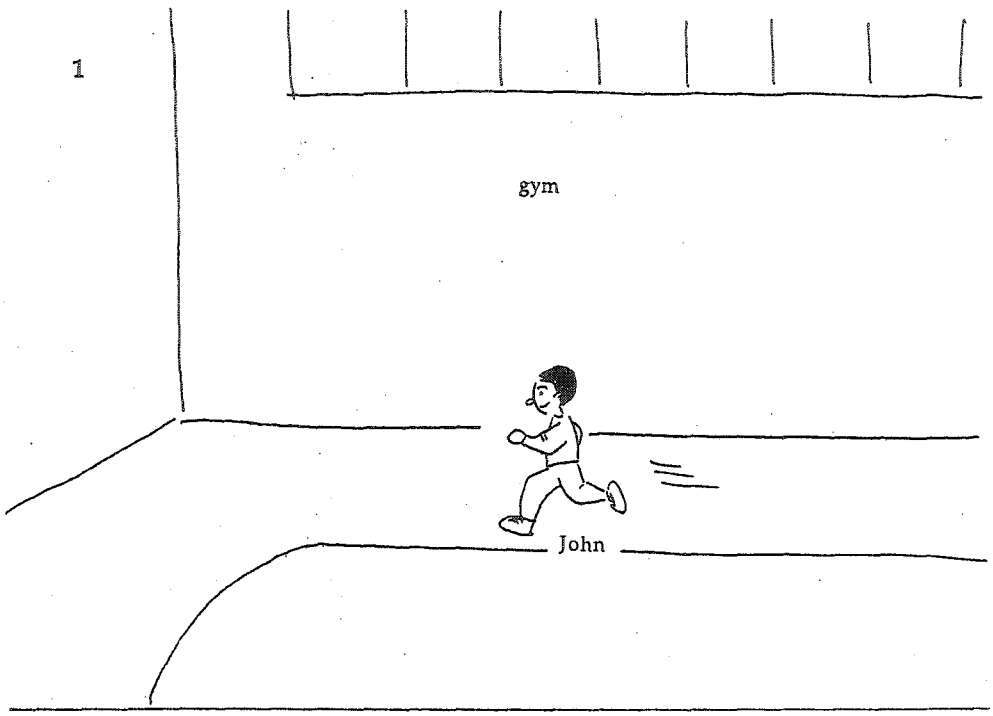
2



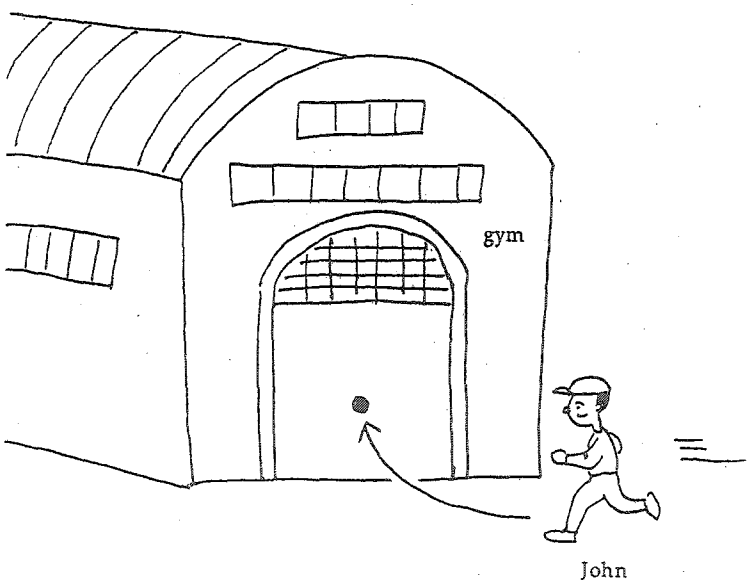
14. **John ran into the gym.**

1 only 2 only either 1 or 2

1



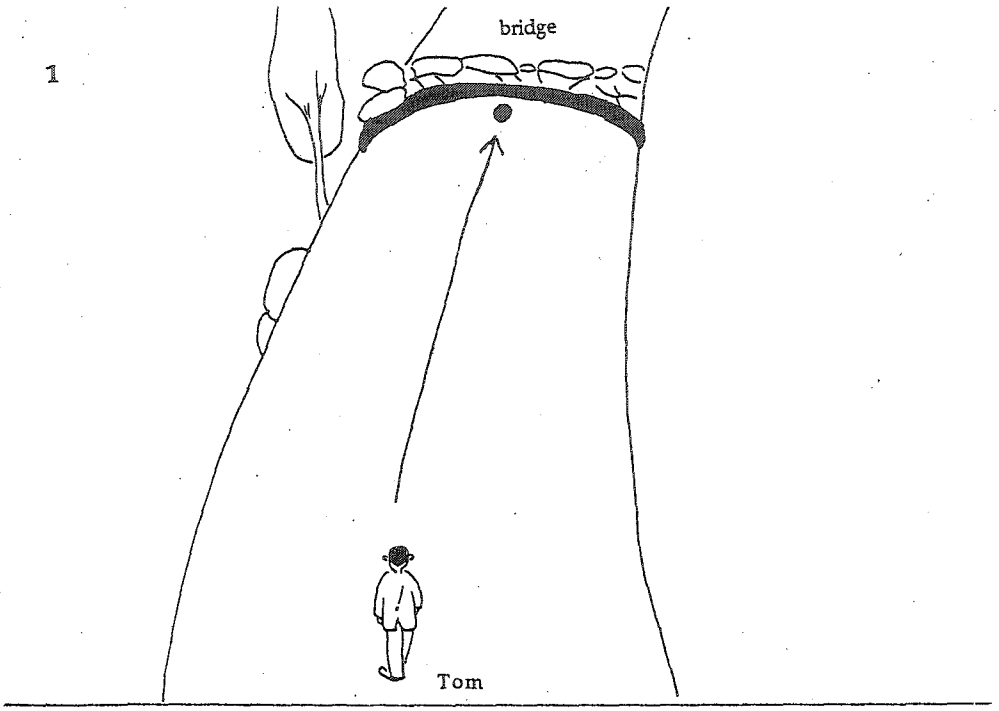
2



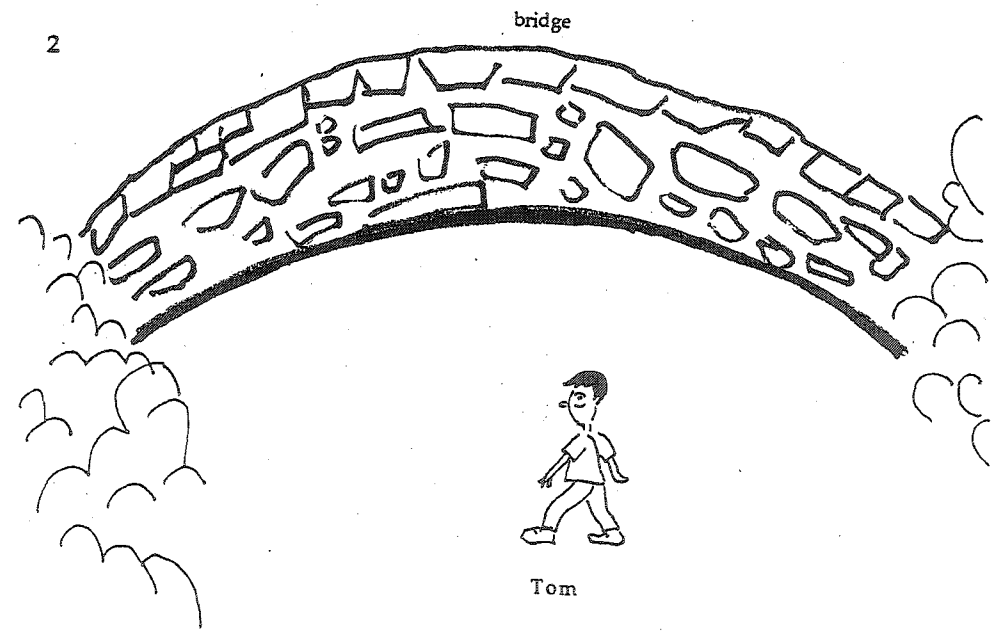
15. **Tom walked under the bridge.**

1 only 2 only either 1 or 2

1



2



Appendix K Sentences Included in the JSL Picture-Matching Task in Study 2

A: Test sentences

1. Tom-wa hasi-no sita-de aruita
   Tom-TOP bridge-GEN under-at walked
   "Tom walked under the bridge."

2. John-wa taiikukan-no naka-de hasitta.
   John-TOP gym-GEN in-at walked
   "John ran in the gym."

3. Akachan-wa ie-no ura-de hatta.
   baby-TOP house-GEN behind-at crawled
   "The baby crawled behind the house."

4. Paul-wa beddo-no ue-de tonda.
   Paul-TOP bed-GEN on-at jumped
   "Paul jumped on the bed."

5. Hikoosen-wa sima-no ue-de tonda.
   blimp-TOP island-GEN over-at flew
   "The blimp flew over the island."

B: Distractors

Directional only

1. Sam-wa hamabe-ni aruite itta
   Sam-TOP beach-at walking went
   "Sam went to the beach walking."

2. Mary-wa steezi-no ue-ni hasitte agatta.
   Mary-TOP stage-GEN on-at running went-up
   "Mary went onto the stage running."

3. Peter-wa dookutu-no naka-ni oyoide haitta.
   Peter-TOP cave-GEN in-ni swimming entered
   "Peter entered the cave swimming."

Ambiguous

4. Mary-wa Paul to Tom-no otoosan-ni atta.
   Mary-TOP Paul and Tom-GEN father-DAT met
   "Mary met Paul and Mary's father."

5. John-wa Mary-ga sukidatta.
   John-TOP Mary-NOM loved
   "John loved Mary" or "John, Mary loved."

Appendix L JSL Picture-Matching Task in Study 2

In this task, you will see a set of Japanese sentences. Each sentence is followed by a pair of pictures showing different situations. **Look at the sentence and decide which picture or pictures the sentence describes.** Circle **1 only** if you believe the sentence can match the first picture only, **2 only** if you believe the sentence can match the second picture only, and **either 1 or 2** if you believe the sentence can match either the first or the second picture.

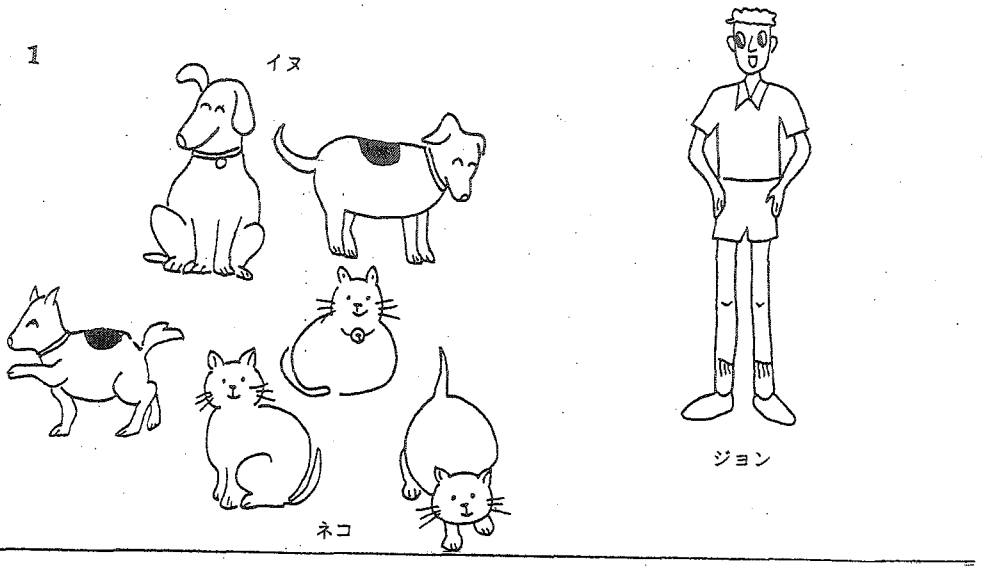
There are no right or wrong answers. I want you to concentrate on **how you feel** about the sentences.

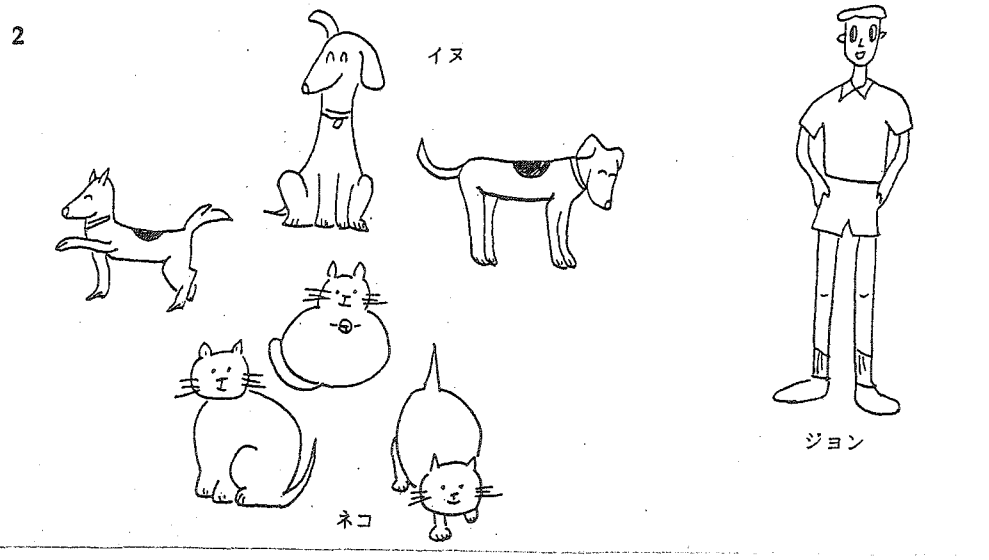
All pictures show **situations that took place in the past.** Thus all the sentences will be in the past tense. Some pictures have **an arrow with a blob** (------> ●), indicating that an action took place and was completed. In other words, these pictures depict a situation where something moved somewhere. The arrow indicates the **direction** of the movement and the blob indicates the **endpoint** of the movement.

We will start with two examples. Please try them for practice.

ex. 1. ジョンは太(ふと)ったネコとイヌを見(み)た。

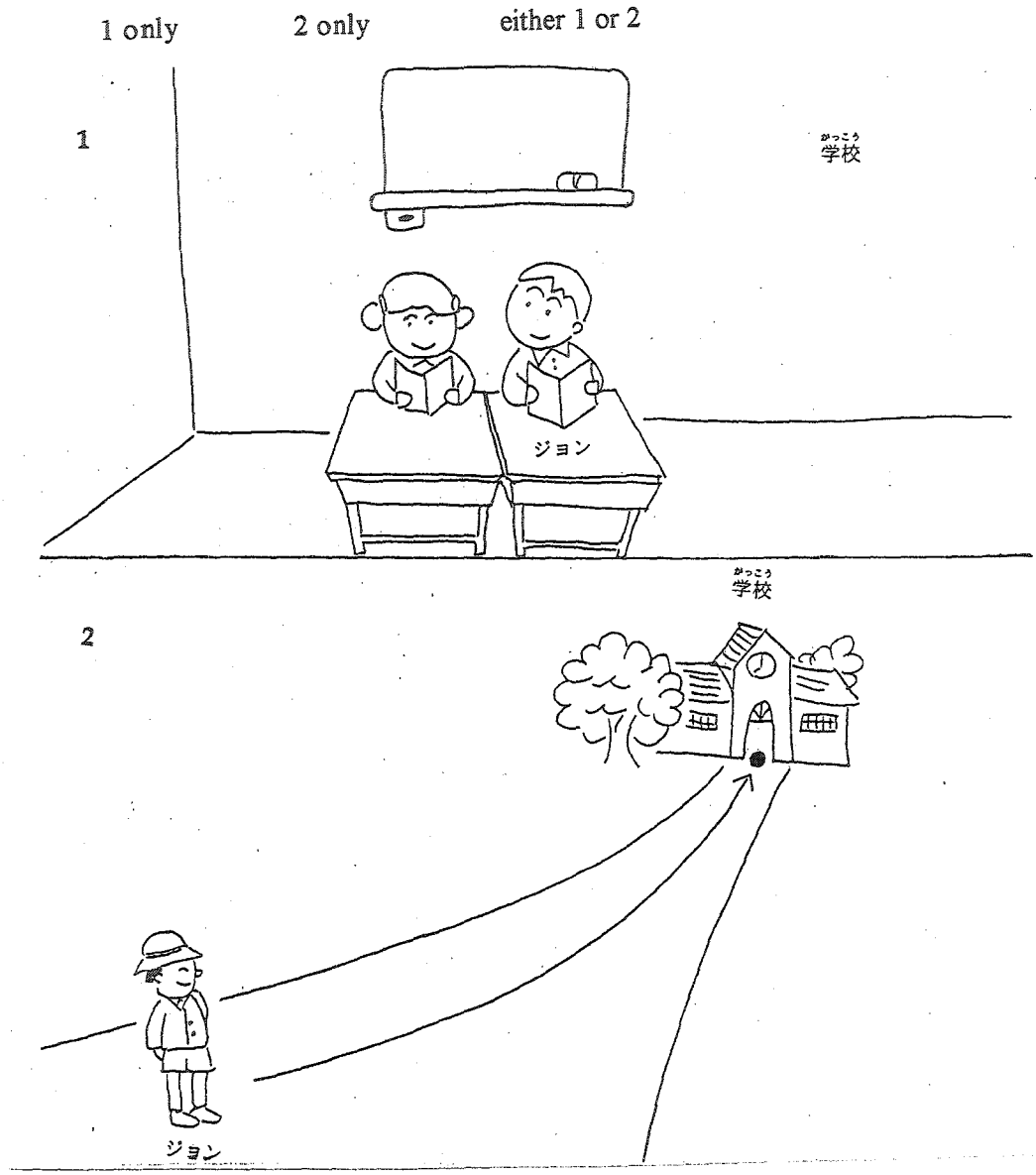
1 only　　2 only　　either 1 or 2





This sentence means either John saw <u>fat cats</u> and <u>fat dogs</u> (Picture 1) or John saw <u>dogs</u> and <u>fat cats</u> (Picture 2). You may prefer the first interpretation, but the second interpretation is also **<u>possible</u>**, so you should circle <u>either 1 or 2</u>.

ex. 2. ジョンは学校(がっこう)に行(い)った。



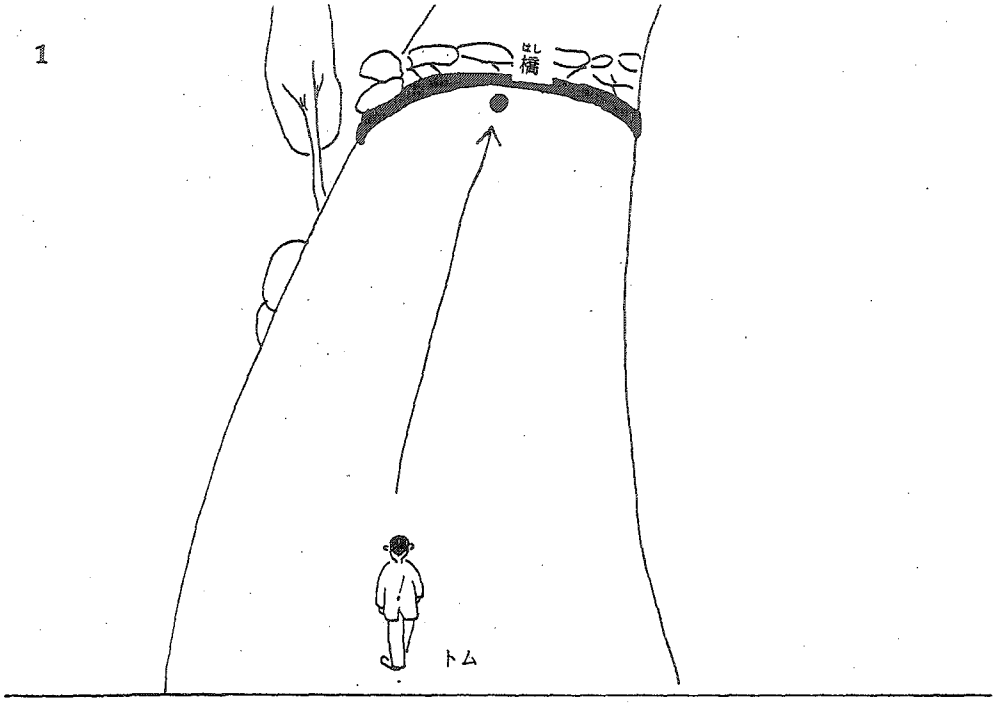
In this example, you should have circled 2 only Picture 1 shows that "John was at school". This is a result of going to school, but the picture does not show him going. Picture 2 shows that "John went toward school (----->) and finally reached school (●)". Therefore, the sentence matches Picture 2 only.

Now, please begin!

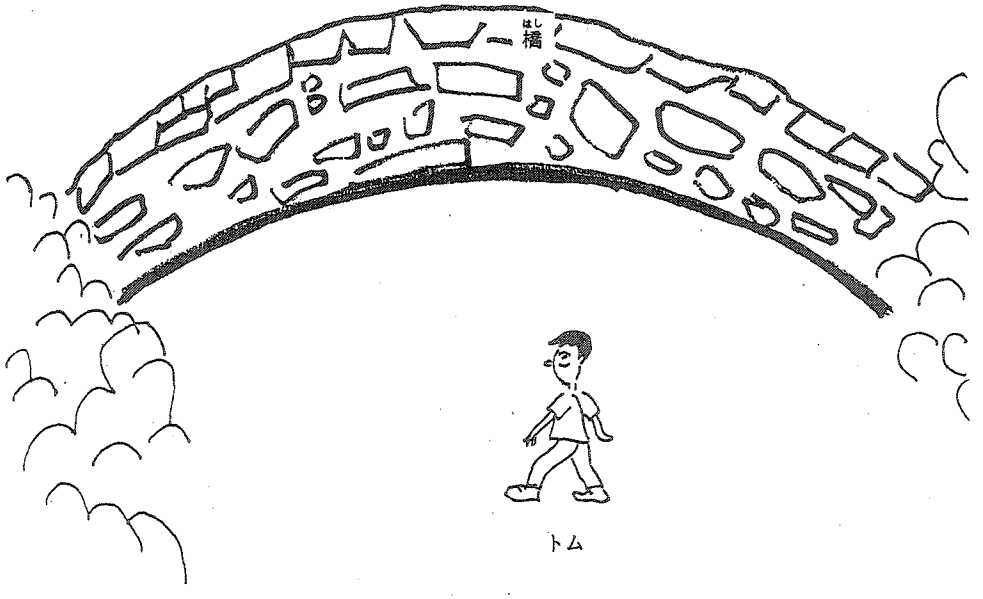
1. トムは橋(はし)の下(した)で歩(ある)いた。

1 only　　2 only　　either 1 or 2

1

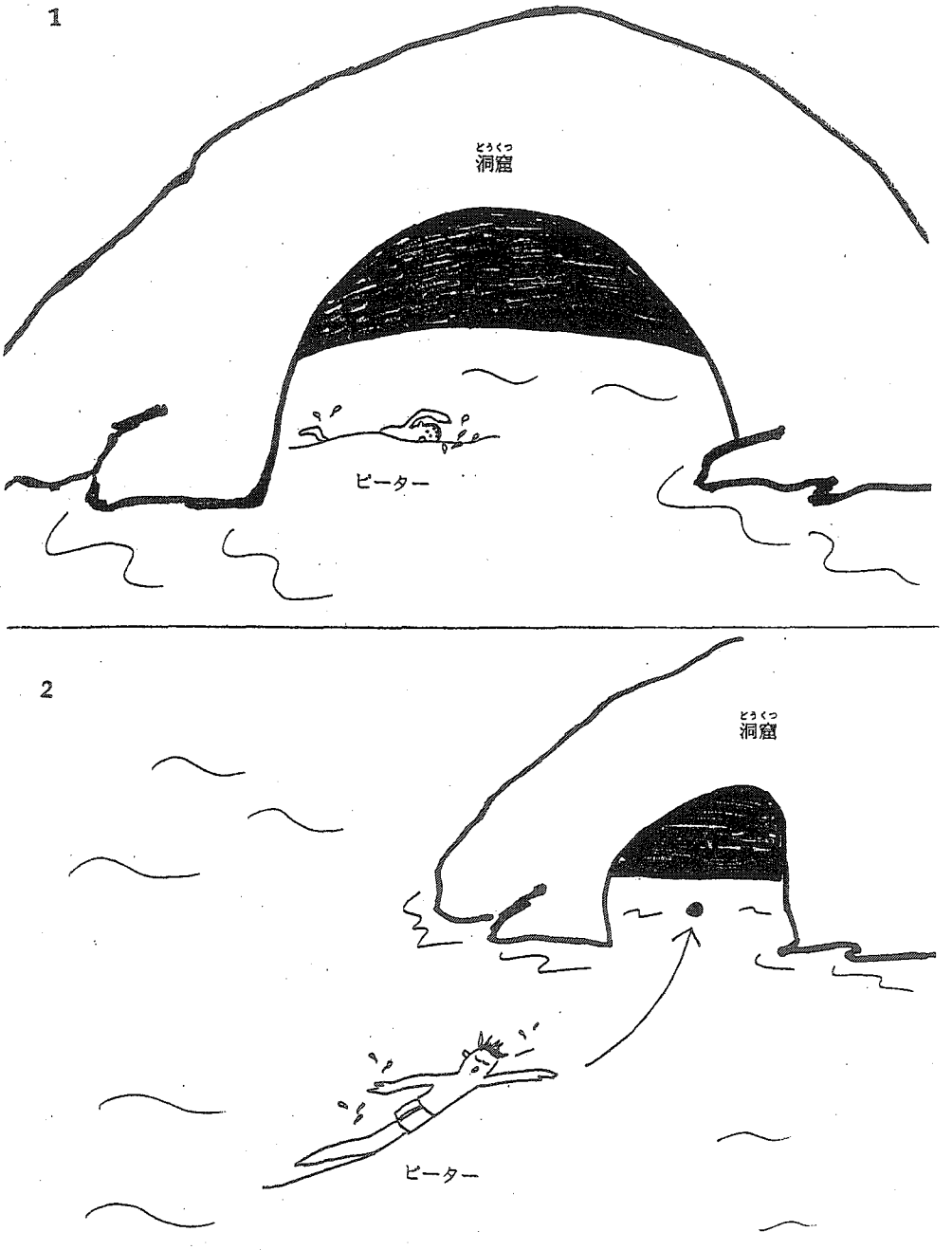


2



2. ピーターは洞窟の中に泳いで入った。

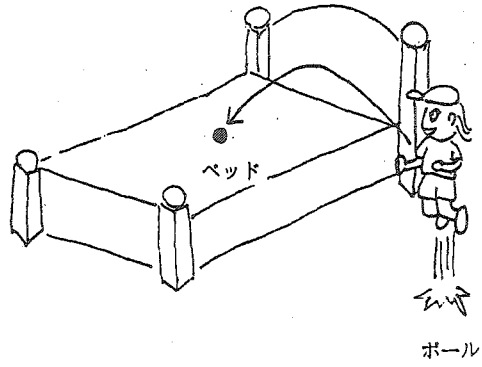
1 only　　2 only　　either 1 or 2



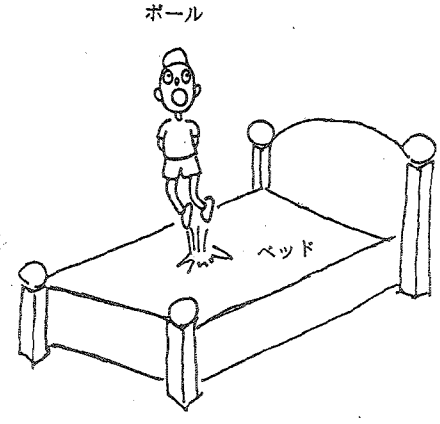
3. ボールはベッドの上(うえ)でとんだ。

1 only　　2 only　　either 1 or 2

1



2



4. メアリーはポールとトムのお父(とう)さんに会(あ)った。

1 only　　2 only　　either 1 or 2

1

メアリー

ポール

トムのお父(とう)さん

2

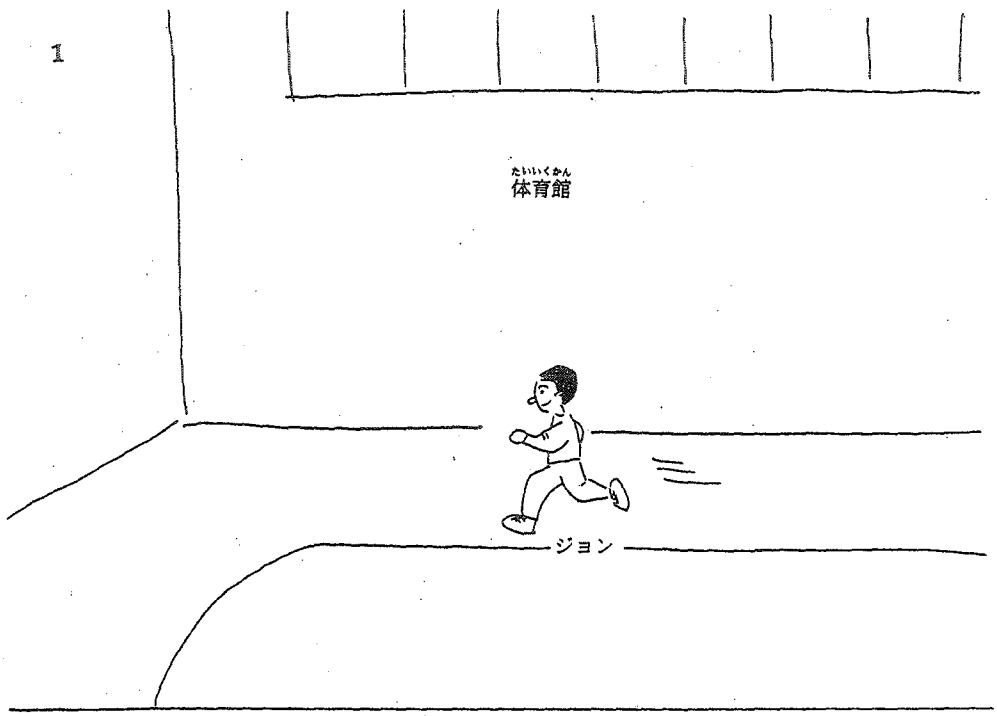
メアリー

ポールとトムのお父(とう)さん

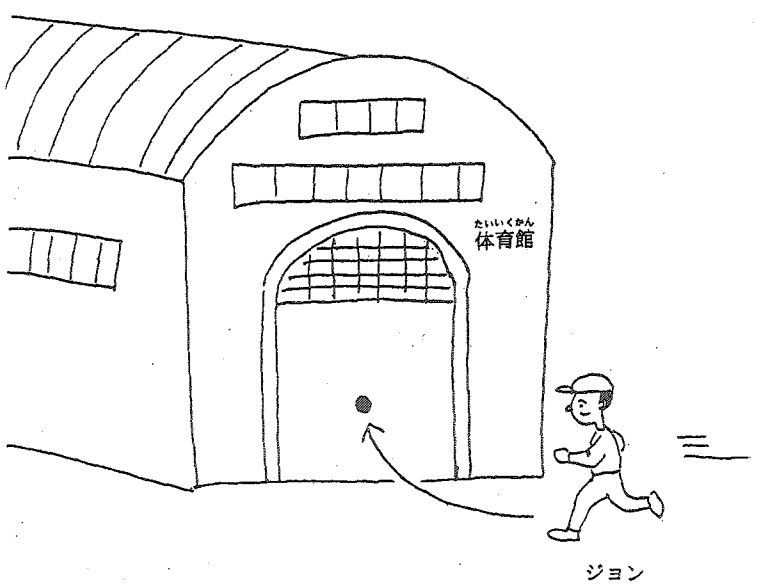
5. ジョンは体育館(たいいくかん)の中(なか)で走った。

1 only　　2 only　　either 1 or 2

1



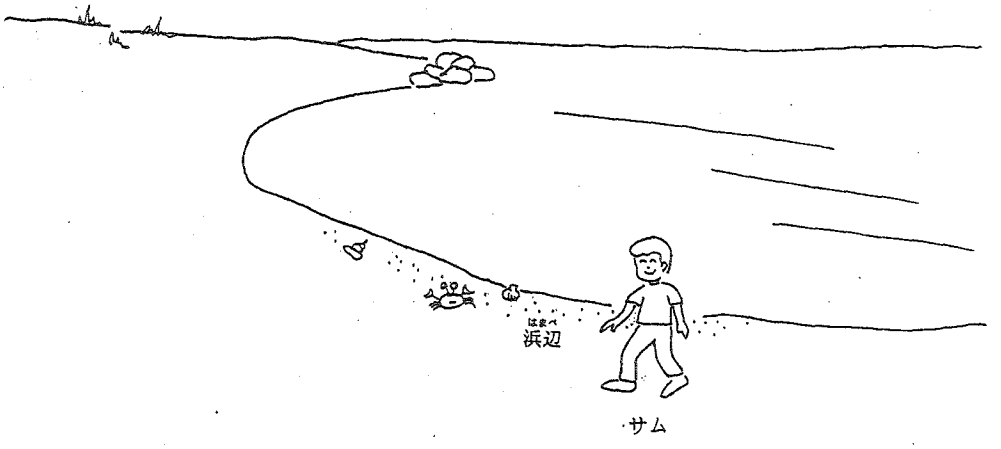
2



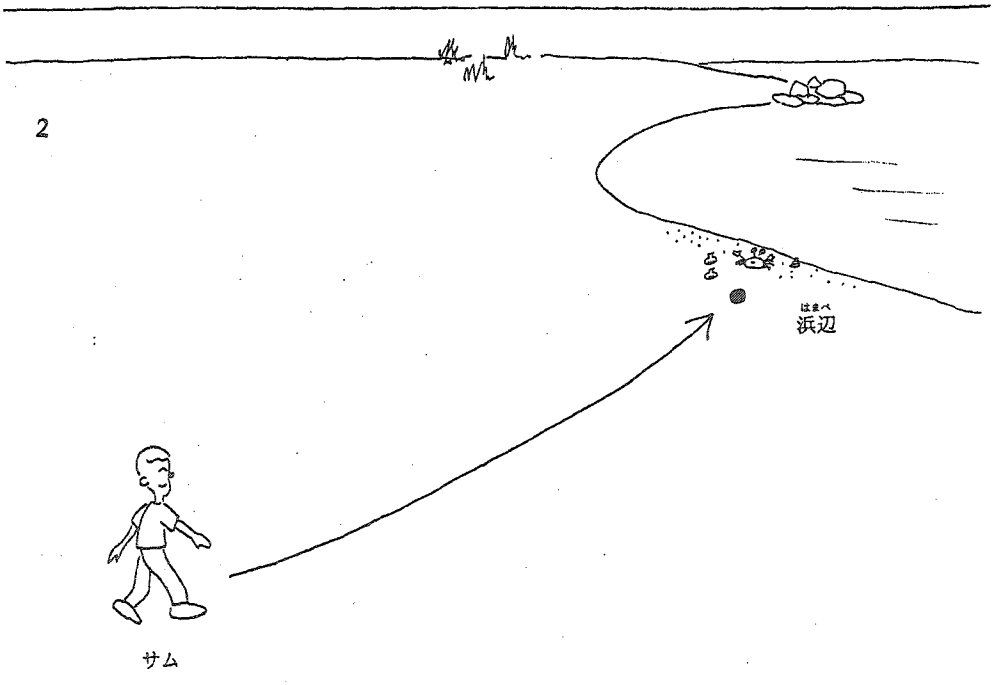
6. サムは浜辺(はまべ)に歩(ある)いて行(い)った。

1 only　　2 only　　either 1 or 2

1



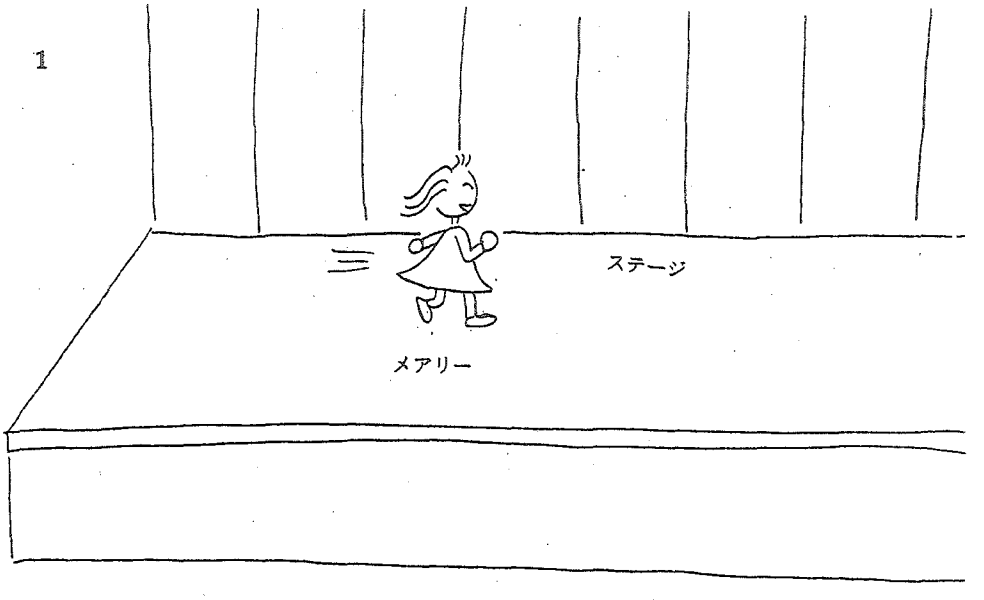
2



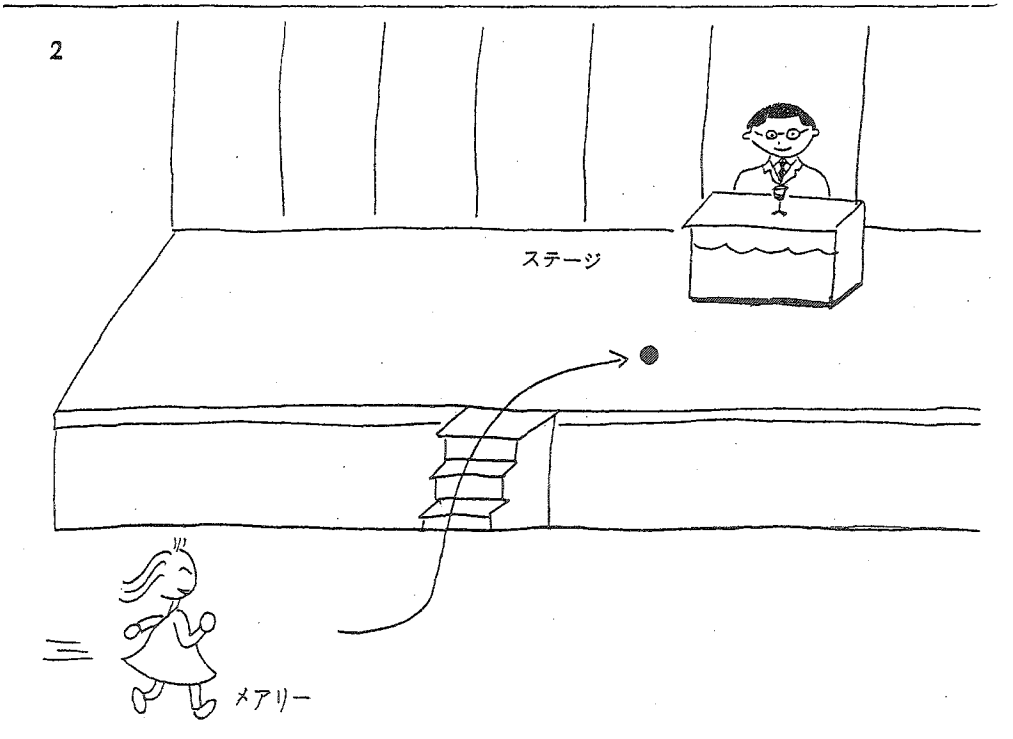
7. メアリーはステージの上に走ってあがった。

1 only　　2 only　　either 1 or 2

1



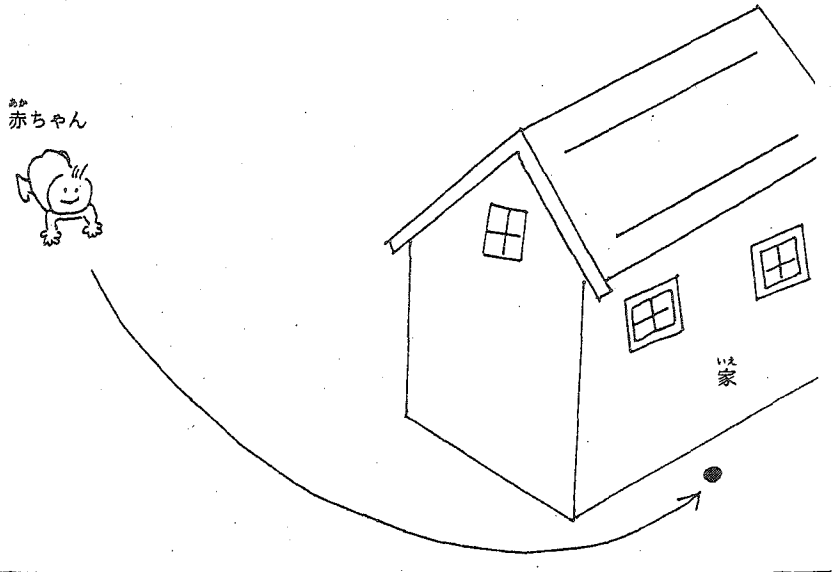
2



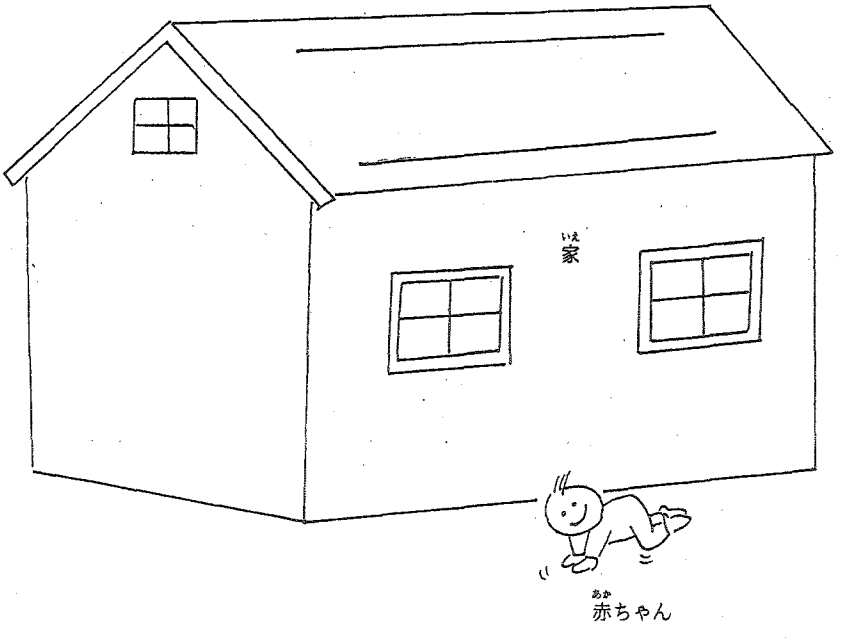
8. 赤ちゃんは家の裏ではった。(はう= crawl)

1 only　　2 only　　either 1 or 2

1



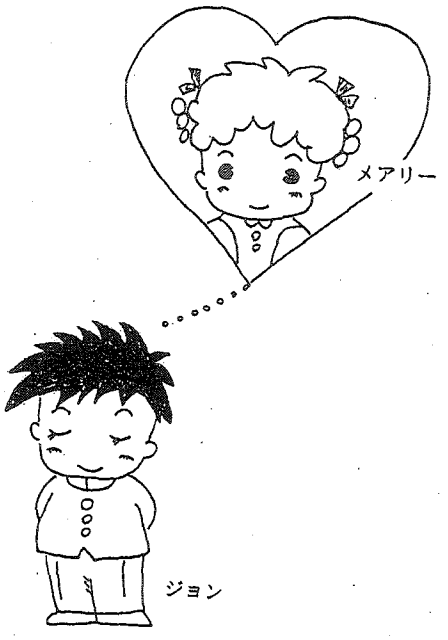
2



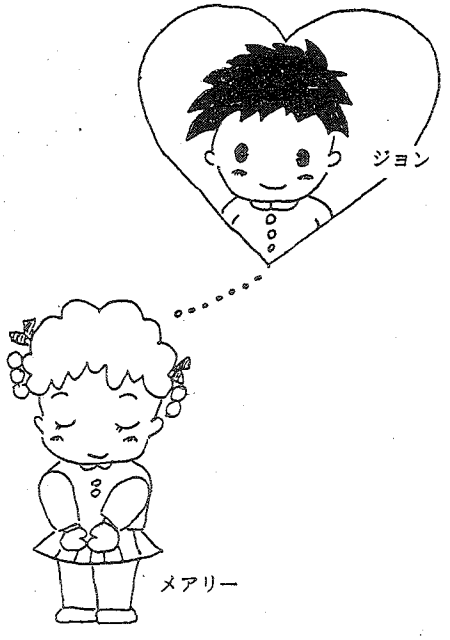
9. ジョンはメアリーが好(す)きだった。

1 only　　2 only　　either 1 or 2

1



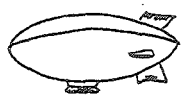
2.



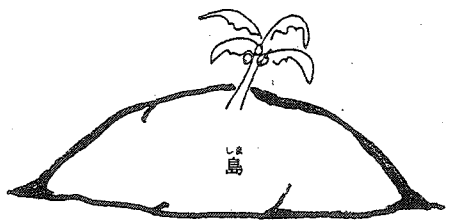
10. 飛行船は島の上でとんだ。

1 only　　2 only　　either 1 or 2

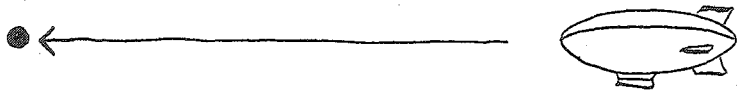
1



飛行船



2



飛行船