

**MOTION EVENTS IN JAPANESE AND ENGLISH:
DOES LEARNING A SECOND LANGUAGE CHANGE THE WAY YOU VIEW THE
WORLD?**

by

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BA, The Chinese University of Hong Kong, 2006

Submitted to the Graduate Faculty of
Arts and Sciences in partial fulfillment
of the requirements for the degree of
Master of Arts

University of Pittsburgh

2009

UNIVERSITY OF PITTSBURGH
SCHOOL OF ARTS AND SCIENCES

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Using Talmy's typological framework for the expression of motion events, the purpose of the present study is to investigate whether learning a second language that is typologically different from the learner's first language (L1) would change how the learner pays attention to different aspects of motion events. In Study 1, the participants were monolingual English speakers, and L1 English learners of Japanese as a *foreign* language at two different proficiency levels (i.e., lower and higher). They were presented with target videos, and for each target video a Path-match and a Manner-match video, and were instructed to indicate which video was most like the target one. Given that English is an S-language, which conflates Manner and Motion in the main verb, and Japanese is a V-language, which conflates Path and Motion in the main verb, it was hypothesized that (1) the L1 English learners of Japanese would fixate longer on the Path-match videos than the monolingual English speakers, and (2) advanced L1 English learners of Japanese would fixate longer on the Path-match videos than the less advanced learners of Japanese. Both hypotheses were not confirmed by the findings. In Study 2, the participants were monolingual Japanese speakers and Japanese learners of English as a *second* language (L2) at two different proficiency levels (i.e. low and advanced). They were asked to do the same tasks as in Study 1. It was hypothesized that (1) the Japanese learners of English would fixate longer on the Manner-match videos than the monolingual Japanese speakers, and (2) advanced Japanese learners of English would fixate longer on the Manner-match videos than the less-advanced learners of

English. Again, no significant differences were found among the three groups. The present study therefore suggests that in the domain of motion events, in contrast to what previous research has suggested, learning a second language that is typologically different from the learner's first language may not result in any alteration of habitual attention on different aspects of an event.

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PREFACE

This thesis is a product of effort of many people. I thank my thesis director, Yasuhiro Shirai, for his advice as well as his continuous patience and support. I would also like to thank my other committee members, Alan Juffs and Natasha Tokowicz, for their help despite their busy schedule. This work was supported by the research grant offered by the Department of Linguistics of the University of Pittsburgh, and the Japan Iron and Steel/Mitsubishi Graduate Fellowship of the East Asian Studies Center of the University of Pittsburgh. I would also like to thank Letitia Naigles and Jill Hohenstein for allowing me to use their materials. There are many people who helped me modify the materials for the experiment. These people are Claire Siskin, LaShanda Lemmon, Christina Schoux, and Atsuko Muroga. I would also like to thank all the participants in the study. Lastly, I would like to thank my family for their tolerance, support, and love.

1.0 INTRODUCTION

Languages of the world, while sharing many characteristics, differ in numerous ways. To use the language properly, users have to comply with the different requirements set forth by the respective languages they use. For example, we say “the bear fell off the bridge” in English, where past tense must be included in the verb if the event happened in the past. In many other languages such as Mandarin Chinese, tense is not required, and speakers can say “the bear fall off the bridge” even though the event happened in the past. Japanese speakers, on the other hand, have to make it clear whether the focus is on the action of falling, using the past tense suffix *-ta*, or the state as a result of the falling action, using the imperfective suffix *-teiru*. Through the daily use of the language, could these “requirements” possibly have an effect on the way we view the world?

The notion that the language we speak determines the way we think about the world is called the linguistic relativity hypothesis. The strong version, which is often associated with Benjamin Whorf’s writings, states that human cognition is determined by language. However, such an assertion has been refuted by a number of studies. For example, Berlin and Kay (1969) showed that speakers of different languages do not differ in the way they view colors, despite some color terms being present in some languages, and absent in others. However, recent studies have found that languages shape our thought in more subtle ways (e.g. Boroditsky, 2001; Slobin 1996). The weaker version of linguistic relativity hypothesis has regained the attention of

linguists and psychologists. The present study is interested in the possible relationship between linguistic relativity and second language acquisition. The Universal-Grammar based approach treats language as a separate module in the mind, independent of other aspects of general cognition (Pinker, 1999; Mitchell & Myles, 2004). In other words, learning a language, either first or second, should not result in any change in speakers' or learners' way of thinking. Jackendoff (2003), who attempts to explain Universal Grammar from a more functional perspective, agrees that some concepts might be easier to access in some languages because they provide means to express those concepts more easily. However, he insists that it is the mapping of linguistic forms and meaning that differs among languages, but not the meaning itself. In other words, thought and concepts do not depend on language.

However, this only refutes the strong version of Sapir-Whorf hypothesis, and such understanding neglects the effect that frequent use of certain structures or words may have on our attention to the concepts that these structures or words represent, which Slobin (1996) called "thinking for speaking". In fact, there is empirical evidence that shows languages do have an effect on non-linguistic cognition, as will be discussed below. Therefore, it is important and interesting to investigate whether learning a second language has a similar effect.

1.1 S-LANGUAGES AND V-LANGUAGES

Talmy (1985, 2000) proposed that natural human languages manifest one pattern or the other "on the basis of where they characteristically express the schematic core of the event complex - in the verb or in the satellite to the verb". There are four basic components of a motion event, Figure, Motion, Ground, and Path: (1) Figure refers to the entity that undergoes movement, (2) Motion

refers to the displacement of the Figure from one place to another, (3) Ground refers to the object in relation to which the Figure moves, and (4) Path refers to the locus of the movement with respect to the Ground. In addition to these four components, there are also coevents that accompany a motion event. Two of the coevents that are most relevant to research in this area are Cause and Manner. Cause refers to the force that causes the motion event to happen, and Manner refers to the manner of the motion.

Languages such as English, Russian and Mandarin Chinese typically encode Path in the “satellites to verbs”, and are called “satellite-framed” languages, or S-languages. Other languages such as French, Spanish, Korean and Japanese typically encode Path in the main verb and are called “verb-framed” languages, or V-languages. To illustrate how an S-language and a V-language differ, consider the following sentences in English (1a) and Japanese (1b):

- (1) a. He swam across the pool.

MOTION + MANNER PATH

- b. *Kare-wa pūru-o oyoide watat-ta.*

He-TOP pool-in swim-ger cross-past.

MANNER MOTION + PATH

“He crossed the pool swimming”

As we can see, in English, the main verb *swim* depicts the Manner of the movement, i.e. move with the manner of swimming. On the other hand, in Japanese, the main verb *wataru* ‘cross’ describes Path, and the Manner of swimming is described by a phrase external to the main verb¹.

¹ It is important to note that a language belonging to a particular typology does not imply that verbs which follow patterns of another typology are completely absent in that language. Talmly (2000, p. 27) lists three criteria in determining which typology a language belongs, which are (1) it is colloquial in style, rather than literary, stilted and

This typology of verb conflation patterns has attracted linguists' and psychologists' interest in how it may impose an effect on speakers' non-linguistic cognition. Slobin (2000) claims that "non-dramatic" influences of languages do exist and they deserve scientific attention. He explains that because S-languages encode Manner in the main verb, it makes Manner "a syntactically obligatory component" which is usually expressed (2000, p. 110). On the other hand, Manner is not obligatory in V-languages because this domain is described using an additional optional phrase. He thus argues that speakers of different languages should differ in terms of online processing, thus resulting in linguistic relativity or determinism.

1.2 LITERATURE REVIEW

Although the strong version of the Sapir-Whorf hypothesis (i.e. language we speak determines how we view the world) had long been abandoned (e.g. Berlin and Kay, 1969), there is empirical evidence showing that languages shape our thought by forcing us to pay more attention to certain aspects of an event due to the need to encode that information in linguistic forms. In this section, we will first look at studies that show how a native language has an effect on conceptualizations on its speakers. Then we will look at studies of second language learners, and finally studies that focus on motion events, the target of the present study.

so on (2) it is frequent in occurrence in speech, rather than only occasional, and (3) it is pervasive, rather than limited.

1.2.1 The effect of native language on cognition

One cognitive domain that is extremely interesting yet not very much researched is the concept of time. Boroditsky (2001) attempts to investigate, using a non-linguistic task, whether speakers of different languages would ‘think’ about time differently, depending on how time concepts are encoded in the languages they speak. In her study, Boroditsky used native speakers of English and Mandarin Chinese as participants. The difference between these two languages in terms of expressing time is that, in Mandarin Chinese time is often systematically expressed as if it were vertical (e.g. *shang* “up” for past, as in *shang ge yue* “last month”, and *xia* “down” for future, as in *xia ge yue* “next month”), whereas in English and most other languages such a vertical metaphor is absent. She shows that Mandarin speakers were able to confirm faster that March comes before April if they were primed with a vertical array of objects than a horizontal one, whereas the opposite was true for English native speakers, thus suggesting the preponderance of native speakers of Mandarin Chinese to think about time vertically.

A better researched domain is the conceptualization of shapes and substances. Lucy and Gaskin (2001) investigated how native speakers of English and Yucatec Maya differ in terms of how they classify objects. The difference between the two languages is the existence and absence of mass/count distinction. In English, one can say *one candle* and *two candles*, but not *one wax* and *two waxes* unless they are kinds (e.g., *the waters of the Atlantic vs the Pacific*). In Yucatec Maya, on the other hand, all objects are expressed as if they are substances. For example, candles are referred to as “two long units of wax”. The non-linguistic task they used involves the following. They presented a sample of an object (e.g. a plastic comb with a handle) and asked their native English and native Yucatec Mayan participants to indicate which of the two other objects was more similar to the sample, one matched in shape (a wooden comb with a handle) or

one matched in substance (a plastic comb without a handle). They found that English native speakers preferred the shape-matched objects, whereas Yucatec Maya speakers preferred substance-matched objects. They therefore concluded that the way Yucatec Maya uses to refer to objects causes its speakers to attend more to the substance that make up objects.

Again using a non-linguistic task similar to Lucy and Gaskin (2001), Imai and Mazuka (2007) presented 4-year-old English and Japanese speakers with a standard item (e.g. a cork pyramid) and asked them to indicate whether the shape alternative (e.g. a plastic pyramid) or the material alternative (e.g. a piece of cork) is more like the standard. Results show that whereas English native speakers chose shape over substance, Japanese native speakers chose substance over shape, indicating that English speakers have a greater tendency to construe an entity as individuated object, whereas Japanese speakers have a greater tendency to construe an entity as non-individuated object. They attributed the result to the lack of mass/count distinction in Japanese.

Berman and Slobin (1994) used the *Frog, where are you?* picturebook to elicit speech from English-, Spanish-, German- and Hebrew-speaking children and adults. Different from the studies discussed above, the task that their participants did was a linguistic one. His results suggest that children attend to different aspects of an event in a number of domains. For example, English and Spanish speaking participants seldom failed to mark aspectual distinctions, whereas German and Hebrew speaking participants seldom attempt to mark aspectual distinction, although it is possible to make such an attempt. He therefore argues that the presence of aspectual marking in English and Spanish causes their native speakers to selectively attend to these aspects of an event, while its absence in German and Hebrew fails to do so. Slobin (1996)

therefore suggests “different online organization of the flow of information and attention to the particular details that receive linguistic expression” as a result of the language one speaks.

Choi and Bowerman (1991) compared the development of motion expressions of Korean and English infants by examining the speech of English- and Korean-speaking children. English conflates motion with Manner or Cause regardless of whether the motion is spontaneous or caused. In contrast, Korean conflates motion with Path in transitive clauses for caused motion, but with deixis and expresses Path and Manner separately in intransitive clauses for spontaneous motion. They found that, as early as 17-20 months, English children were able to generalize path particles such as *up*, *down* and *in* for both spontaneous and caused motion, whereas Korean children were able to separate spontaneous and caused motion strictly and used different verbs for each type of event. They thus argue that children do not map spatial verbs directly to nonlinguistic spatial concepts, rather they are influenced by the semantic organization of their language from the beginning, suggesting that spatial relations are actually learned through language.

Another interesting area is spatial relations. Choi, McDonough, Bowerman, and Mandler (1999) tested Korean and English speaking children as young as 18-23 months old by showing them two video scenes in which one of them matches with an audio presentation. In English, *in* is used to refer to containment, as in *put a cassette in a case*, and *on* is used to denote support and contiguity, as in *put a top on a pen*. On the other hand, Korean only makes a distinction between tight- and loose-fit, and both of these actions are categorized as tight-fit and expressed using the same term *kkita*. Results show that Korean speaking children spent more time looking at the tight-fit scene than the containment scene when an audio presentation with the Korean verb indicating tight-fit situation was presented, whereas English speaking children spent more

time looking at the containment scene than the tight-fit scene when an audio presentation with the preposition *in* was presented. This suggests that children are guided by “language-specific principles” when comprehending spatial terms as early as 18-23 months.

One might argue that Choi et al. (1999) simply showed that children were able to comprehend tight-loose fit morphology at a young age. However, McDonough, Choi, and Mandler (2003) provide even more convincing evidence as to how language directs a speaker’s attention using a non-linguistic task. They tested 9-14 month-old English and Korean learning children as well as adult native speakers of English and Korean using a preferential looking test. In the experiments, half of the participants were shown two videos, one showing tight-fit containment and the other loose-fit containment. They found that for both English and Korean learning children there was a significant difference between the time looking at one video and the other, whereas such difference was only found with adult Korean speakers, but not adult English speakers. They therefore conclude that young children are more flexible in comprehending different spatial relations, but adults become less sensitive to those spatial relations that are not systematically encoded in their native language, thus confirming the power of language to shape thought.

Previous research not only suggests that our attention to certain aspects of a situation seems to be guided by the structures of our first language, and that some of our non-linguistic concepts (e.g. spatial concepts) are probably learned through language.

1.2.2 The effect of second/foreign language on cognition

Several studies investigating bilinguals or L2 learners have also been conducted. One interesting finding is that bilingual speakers’ attention to aspects of an event may differ according to the

language they use at the moment of the experiment. Boroditsky, Ham and Ramscar (2002) conducted an experiment with Indonesian-English bilinguals and English monolinguals. They were presented with sets of two pictures, and were asked to rate how similar the two pictures were. Half of the sets had two pictures showing different actors, but the actors were performing the same stage of an action (e.g. going to kick a ball), and half of them had two pictures showing the same actors performing different stages of an action (e.g. going to kick a ball vs. kicking a ball). The Indonesian-English bilinguals were found to perform differently when tested in different languages. While they rated the same-actor-different-tense pictures as more similar when tested in Indonesian, they rated the same-tense-different-actor pictures as more similar when tested in English. These results suggest that they paid more attention to tense when tested in English, and less when tested in Indonesian, which does not have tense morphology.

Pavlenko (2003) demonstrated that there is a difference between foreign language learners of English and second language learners in performance on memory tasks involving visual recall. She was particularly interested in how Russian learners of English describe the concept of *privacy* and *personal space*, because these terms are not lexicalized in Russian. Using two short films, she elicited speech from Russian EFL learners, Russian ESL learners, and native English speakers. To analyze her data, she used the device of interpretive frames, which refer to “the structures of expectation about aspects of the situation” (p. 260). She found that whereas Russian ESL learners were able to use more interpretive frames to describe the concepts of *privacy* and *personal space* in both English and Russian, those who learned English as a foreign language did not spontaneously draw on these concepts. Her study therefore suggests that speakers of a language that has a word for a given concept tend to be more aware of that concept than speakers of a language that does not have a word for it.

Cook, Bassetti, Kasai, Sasaki, and Takahashi (2006) conducted an experiment similar to Imai and Mazuka (2007), which was discussed in the previous section, with Japanese learners of English. Results show that Japanese learners of English who stayed three years or more in English-speaking countries showed more preference to shape than those who stayed three years or less, although both groups preferred material to shape for simple objects and substance, which is the opposite of the results of the English monolingual participants. They again explain that the results are due to the mass/count contrast in English, which is absent in Japanese. Their findings are also interesting in the sense that they show that there is a difference between learners who stayed longer in the target language environment and those who stayed shorter. However, because Cook et al. did not compare the English proficiency of the two Japanese groups, it is not clear whether it is the length of stay or the proficiency of English that matters, because it is generally true that learners who stay longer in the target language environment tend to be more proficient in that language.

Similarly, Athanasopoulos (2006) also focused on the lack of a plural marking system in Japanese and compared monolingual English and monolingual Japanese speakers with Japanese speakers of English as a second language. The participants were given six pictures, one of which being the target, and they were instructed to pick one picture from the remaining five pictures which they thought was most like the target. The five pictures were classified under three categories, namely Animals [+animate, +discrete], Implements [-animate, +discrete] and Substances [-animate, -discrete]. One picture differed from the target by the number of Animals, two by the number of Implements, and two by the number or amount of Substances. In this study, the crucial distinction lies in the distinction between Implements and Substances. Because of the lack of a plural marking system in Japanese, Japanese native speakers should not

distinguish between Implements and Substances, whereas English native speakers should distinguish between them. He showed that intermediate English learners and monolingual Japanese speakers only regarded changes in the number of Animals as significant and the changes in number/amount of Implements and Substances as less significant, whereas advanced English learners and monolingual English speakers regarded both changes in the number of Animals and Implements as significant, showing a distinction between Implements and Substances. He therefore concluded that the cognitive disposition of advanced English learners deviated from the L1 norm and mirrored the L2 norm.

From these studies we know that L2 also has some effect on the learners' non-linguistic cognition, and it seems that whether the learners learn the target language as a second language or a foreign language is a factor.

1.2.3 Studies of Motion Events

1.2.3.1 First language acquisition

As mentioned earlier, Berman and Slobin (1994) used a picture storybook, *Frog, where are you?* to elicit speech of children and adults of a range of different languages. One of the domains where they found discrepancies among the speech of children of different native languages is the way they expressed motion events. They found that speakers of V-languages showed a remarkably consistent pattern of not using Manner verbs, although Manner verbs are available in their languages. This result suggests that speakers of V-languages lack "habitual attention to manner" (Slobin, 2000: 113).

Oh (2003) conducted several experiments with English and Korean speaking children and adults, where Korean is a V-language like Spanish. The procedures involved presenting them

with video clips and asked them to describe what was happening in the clips, as well as administering a memory task to see how well they remembered both the non-manner information and the manner information of the motion in the clips. Results showed that English speaking participants used manner verbs more often than Korean speaking participants. Moreover, whereas both groups were similarly accurate when answering non-manner information questions, English native speakers were significantly more accurate than Korean native speakers at manner related questions, indicating that the English native speakers had better memory than the Korean native speakers for manner information in motion clips.

Hohenstein (2005) was interested in how children of different ages acquiring English and Spanish may pay a different amount of attention to Manner or Path. She presented sets of Manner-match and Path-match video clips to 3.5- and 7-year-old English-speaking and Spanish-speaking children and asked them to indicate the one that was more like the target video clip. The time that each subject looked at each manner-match and path-match scene was measured. The results are reproduced in Figure 1. She found that 7-year-old English speaking children fixated on the manner-match video clips longer than 3.5-year-old English speaking children, as well as 3.5-year-old and 7-year-old Spanish speaking children. The two younger groups, on the other hand, did not differ. These results suggest that children gradually become more attentive to the aspects that their language needs to encode (i.e. Manner in English). Interestingly, both the 3.5-year-old English-speaking and Spanish speaking children looked longer at the Path-match video, and the 7-year-old Spanish speaking children looked a little longer at the Manner-match video than the Path-match videos.

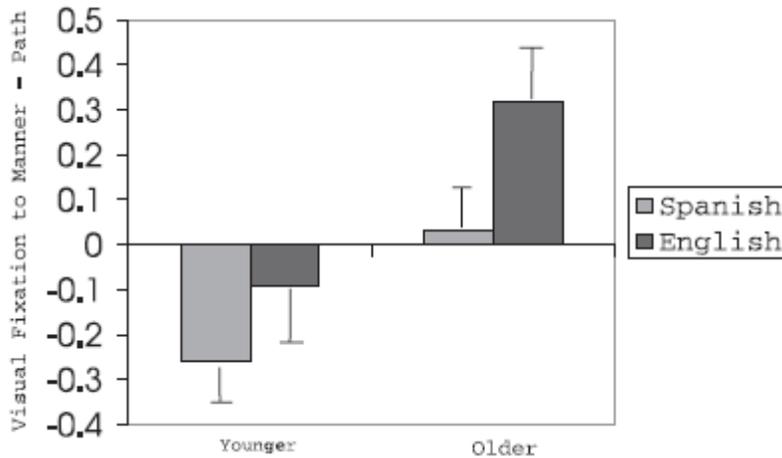


Figure 1. Means and standard errors, in number of seconds, of fixation to path screen subtracted from fixation to manner screen in the nonlinguistic task by age and language (Adapted from Hohenstein, 2005, p. 412)

I would suggest that this can be explained by assuming that Path is a basic component of a Motion event but Manner is not (Talmy, 2000, more on this below). Younger children (i.e., 3.5-year-olds) may still be in the process of understanding the important aspects of a Motion event. They therefore pay more attention to the Path-matched videos, as reflected by the negative values of fixation to Manner minus fixation to Path, instead of the Manner-match videos, because paying attention to something less basic (i.e. Manner) requires extra cognitive resources on top of that needed for the basic ones. The 7-year-old Spanish speaking children, on the other hand, might have more experience with motion events and therefore be more familiar to them, and were able to utilize more resources to focus on Manner.

To summarize, studies concerning motion events show that native speakers of an S-language will pay more attention to manner than native speakers of a V-language. Speakers of a V-language tend to use more path conflated verbs than manner conflated verbs. However, there is no study showing that speakers of a V-language are more path-oriented than speakers of an S-language. This coincides with how Talmy (2000) characterizes a Motion event. In his

characterization, Path is one of the four basic components of a Motion event, whereas Manner, together with Cause and other elements, belongs to the set of Co-events. Talmy did not explain why he treats Manner as a co-event instead of a basic component, but the research so far seems to be compatible with such a characterization: if Path is more basic than Manner, then it is not surprising that native speakers of V-languages have more difficulty with Manner than native speakers of S-languages have with Path.

1.2.3.2 Second language acquisition

Some studies show that learners' L2 influence the way they produce their L1. Hohenstein, Eisenberg, and Naigles (2006) investigated how advanced Spanish-English bilinguals who had Spanish as their L1 used their first and second languages. These participants were either early or late bilinguals. The participants were presented with 12 videos and were instructed to describe the motion events depicted in the videos. They found that they used more Path verbs when speaking in English than English monolinguals, and more Manner verbs when speaking in Spanish than Spanish monolinguals. However, when combining the use of manner modifiers, they found that the overall mention of Manner of the bilinguals in Spanish was the same as that of Spanish monolinguals, whereas their overall mention of Manner in English was lower than that of English monolinguals. They interpreted their results as evidence of L1 to L2 transfer, but not L2 to L1 in the need to talk about Manner.

Cadierno (in press) examines whether an L1 transfer is observed when learning to talk about motion in a foreign language that is typologically different from the learner's first language. She investigated L1 Spanish, L1 German and L1 Russian low-intermediate learners of Danish, where German, Russian and Danish are S-languages, and Spanish is a V-language. She found that L1 German and L1 Russian learners use a wider variety of manner verbs in a picture

description task and are able to produce and recognize a larger number of manner verbs than Spanish learners of Danish in the vocabulary knowledge tasks. She therefore concludes that the same typology of L2 to a learner's L1 can facilitate the learning of the L2, and learners with a V-language as their L1s have to pay relatively high attention to Manner information and thus encounter difficulty to produce native-like utterances.

In another study, Cadierno and Ruiz (2006) investigate the acquisition of Spanish, which is a V-language, by advanced learners whose L1s are Danish and Italian. They predicted that Danish learners of Spanish would exhibit a higher degree of elaboration of both the Manner and Path components than both Italian learners of Danish and Spanish native speakers. However, the results showed that Danish learners of Spanish did not use more Manner verbs than the other two groups. They therefore concluded that there is a limited role of thinking for speaking. The results also seem to contradict those of Cadierno (in press) discussed above. They therefore hypothesized that the influence of L1 thinking for speaking pattern may be stronger at the low and intermediate levels, but it gradually disappears when learners become more advanced.

Brown (2007) investigated how Japanese native speakers with intermediate English knowledge expressed motion events with gestures and speech. Her participants included monolingual Japanese speakers, monolingual English speakers, and Japanese speakers with intermediate knowledge of English in the US and in Japan. She elicited narratives from her participants with a six-minute animated Sylvester and Tweety Bird Cartoon. Her results show that Japanese speakers with intermediate knowledge of English behaved like both Japanese and English monolinguals: the number of occasions on which they expressed Manner through gesture without mentioning it in speech was similar to that of Japanese monolinguals, and the number of occasions on which they expressed Manner in speech, and gesture was only used to express Path,

was similar to that of English monolinguals. In contrast to studies previously discussed which suggest that there is a difference between second and foreign language learners, she found no significant difference between the two groups of Japanese learners of English for most of the results.

Previous research seems to suggest that there is some L2 to L1 influence in the way motion events are expressed. However, there are two important points that worth mentioning. First, as can be seen in Table 1, there is no study conducted with second language learners regarding the S- and V-language typology using a non-linguistic task. This poses a question: if there is any difference in the way of expressing a motion event between second language learners and the native speakers, is it due to a difference at the linguistic level (i.e. second language learners learn the linguistic terms in the second language to express a motion event, but there may not be a difference at the cognitive conceptual level), or is it due to the difference at the cognitive conceptual level (i.e., second language learners in fact become more aware of the information that is not required in their L1 but required in their L2)? Second, the effect of proficiency has not been investigated systematically. Brown (2007) and Cadierno (in press) investigated low-intermediate learners, and Cadierno and Ruiz (2006) examined advanced learners. However, there is no single study that examines both low and advanced learners such that we can compare directly the results of learners of different proficiencies. Therefore, this study uses a non-linguistic task, which will be discussed in the following section, and focuses on comparing how low and advanced learners may differ in performing the task.

Table 1. Summary of the studies reviewed based on the type of tasks used (linguistic/non-linguistic)

Domains	Linguistic task(s)	Non-linguistic task(s)
<i>S-language and V-language typology (L1)</i>	Berman & Slobin (1994) Choi & Bowerman (1991)	Oh (2003) Hohenstein (2005)
<i>S-language and V-language typology (L2)</i>	Hohenstein et al. (2006) Cadierno (in press) Cadierno and Ruiz (2006) Brown (2007) ²	
<i>Others (L1)</i> <ul style="list-style-type: none"> • <i>Mass/count</i> • <i>Spatial relations</i> • <i>Tense/aspect</i> • <i>Time concepts</i> 	Choi et al. (1999) Berman & Slobin (1994)	Imai & Mazuka (2007) Lucy & Gaskin (2001) McDonough et al. (2003) Boroditsky (2001)
<i>Others (L1)</i> <ul style="list-style-type: none"> • <i>Mass/count</i> • <i>Tense/aspect</i> • <i>Lexicalized concepts</i> 	Pavlenko (2003)	Cook et al. (2006) Athanasopoulos (2006) Boroditsky et al. (2002)

To summarize, previous research suggests that both the native and second language may have an effect on how individuals pay attention to different aspects of an event. For first language learners, it has been shown that speakers of different languages conceptualize time, objects/substances, and tight/loose-fit differently. In the domain of motion events, it has also been shown that native speakers of an S-language tend to pay more attention to Manner than native speakers of a V-language.

For second language learners, the situation is more complicated. First, it is not clear under what conditions this effect is observed. For example, whether studying a second language as opposed to a foreign language matters or not is not yet clear. Cook et al. (2006) shows that there is a difference between second language learners and foreign language learners, in that

² Brown (2007) may be seen as a non-linguistic study, because she examined how Japanese learners of English describe motion events through gestures. However, the participants' task was to describe motion events, and these gestures were made during speech production. In addition, Brown's major focus was on how an L2 may affect an L1 at a linguistic level, and not at a conceptual level. Therefore, I consider it a linguistic study.

second language learners behave more like monolinguals of the target language than foreign language learners. However, Brown (2007) found no difference between her two groups of English learners, one in Japan and the other in the United States when proficiency was controlled. Second, in the area of motion events, there is evidence suggesting that native speakers of an S-language pay more attention to Manner information than native speakers of a V-language. However, there is no evidence showing that native speakers of a V-language pay more attention to Path than those of an S-language. Studies of second language learners show that learning a second language has some effect on the way they describe motion events in their native language. However, because all of these studies involve linguistic tasks, it is not clear whether such an effect is at the linguistic level or the conceptual level. Moreover, there are no conclusive results regarding the effect of proficiency.

In the present study, I replicate Hohenstein (2005) with second language learners. There are four reasons for doing so. First, a non-linguistic task, such as the one in Hohenstein (2005), allows us to know whether there is any effect of a second language at the conceptual level, which is lacking in previous research where the area of L2 motion events is concerned. Second, such a non-linguistic task can be completed by monolinguals and second language learners of all levels. In this way, we can compare directly the effects of language proficiency. Third, as Hohenstein states, her method produces ‘a continuous variable that may reveal differences in attention to motion events rather than overt choice differences’ (p. 408). Finally, we can directly compare the results with Hohenstein’s to see if there are any differences between adult second language learners and child first language learners. The details of the methodology will be explained in the following section.

2.0 CURRENT STUDY

2.1 STUDY 1: ACQUISITION OF JAPANESE BY L1 ENGLISH LEARNERS

From Cook et al. (2006) and Pavlenko (2003), we know that there may be a difference between foreign and second language learners. Therefore, two separate studies were carried out. In the first study, the effect of a foreign language learning on cognition is investigated. The second study, which will be described in the later part of this chapter, investigates second language learners.

2.1.1 Research questions

The research questions of the current study are:

- (1) Given that Japanese is a V-language, and English is an S-language, will L1 English learners of Japanese as a foreign language pay more attention to Path than monolingual English speakers?
- (2) If yes, do more proficient learners show more of this effect than less proficient learners?

2.1.2 Hypotheses

Hypothesis 1: L1 English learners of Japanese will look longer at the Path-match videos than monolingual English speakers. In other words, they will pay more attention to Path than monolingual English speakers.

Hypothesis 2: The more advanced the L1 English learners of Japanese are, the longer they will look at the Path videos. In other words, high proficiency level L1 English learners of Japanese will pay more attention to Path than low proficiency level L1 English learners of Japanese.

From previous research, we know that native speakers of different languages attend to different aspects of a motion event, and that second or foreign language learners would deviate from the norm of their L1 and become more L2-like in their way of expressing an motion event after learning an L2 with a verb conflation pattern different from their L1. Although it is discussed in the literature review that Path is probably more basic than Manner, it is not confirmed by any study so far. To keep things simple, I will treat Path and Manner as if they are equally cognitively salient.

2.1.3 Methodology

2.1.3.1 Participants

46 English native speakers participated in the study. They were recruited through various means, including the author visiting Japanese classes to make announcements, asking friends and through friends of friends. All of them were either graduate or undergraduate students at the University of Pittsburgh. The grouping was based on the levels of the classes they were taking at

the time of the experiment. 14 of them were at least in their third year of studying Japanese and were considered high proficiency learners, 15 were in their first year of studying Japanese and were considered low proficiency learners, and 17 were considered as English monolinguals.

One of the low proficiency learners was of Korean descent, and she admitted that she considered both English and Korean as her first language. Therefore, she was eliminated from the study. In other words, only 14 participants were in the AJL group. Most of the 17 English monolinguals were not true monolinguals. Some of them reported they had studied another language that belongs to the same typology as English (e.g. German). Others had some knowledge of Spanish or French, but they all claimed that they were currently not studying or using it, and they did not remember any Spanish except for some simple fixed expressions such as ‘thank you’. Therefore, it is assumed that the effect of Spanish is minimal and they could be considered monolingual based on the self-rated proficiency questionnaire discussed below.

2.1.3.2 Materials

Dictation test

To estimate their proficiency in Japanese, each participant was asked to complete a dictation test in Japanese at the beginning of the experiment. A dictation test was used because it has been shown to measure learners’ Japanese proficiency effectively (Kaga, 1991).

The Japanese dictation test was adapted from Nishi (2008), which in turn was adapted from Kaga (1991) (see Appendix A). The dictation test consisted of 18 chunks, each chunk becoming longer towards the end of the passage. The exact-chunk method was used as the scoring method (Kaga, 1991). The participants were allowed to write in either Hiragana, the Japanese orthography, or Romaji, romanization of Hiragana. In this scoring method, participants get 1 point only if the whole chunk is correct. The chunk scoring method was chosen because it

has been shown to produce largest difference between learners of different proficiency among other scoring methods (Kaga, 1991). Because there were 18 chunks in the dictation test, the maximum score of the test was 18.

Video viewing

This part of the experiment is a replication of Hohenstein (2005). The setting of the experiment was as follows. Three videos were played simultaneously on a single computer screen of size 12” x 9”. Two of them were placed on the upper half of the screen, and the third video was placed in the middle of the lower half of the screen (Figure 2). A video camera sat in the middle on top of the computer screen. The video camera was used to record participants’ length of visual fixation on each of the two screens. The audio instruction came from both speakers.

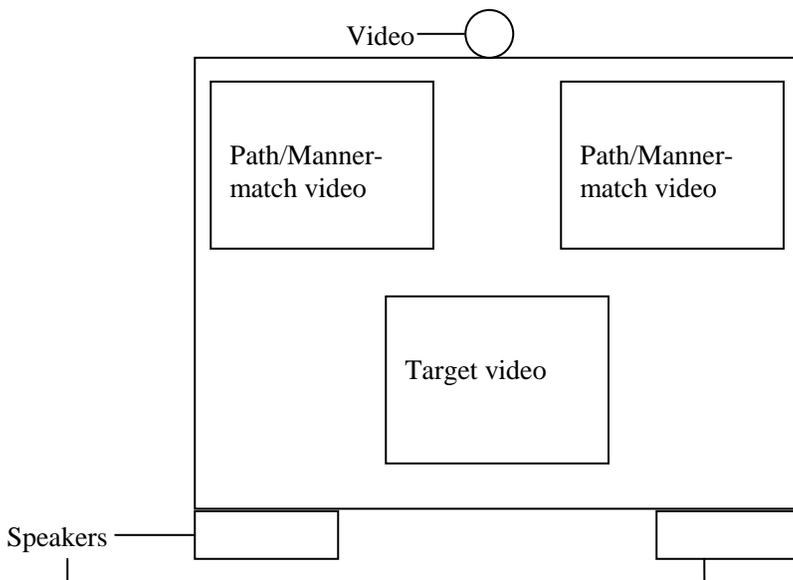


Figure 2. Settings of the video viewing session

Each set of item comprise a target, a Manner-match, and a Path-match video. During the test session, the target video was on first in the window on the lower half of the screen, followed

by the two simultaneous alternate videos in the windows on the upper half of the screen. When the alternate videos were playing, the target window was black. The alternate videos always showed the same actor as the target video (e.g. a girl WADDLING across a bridge). The two alternate videos were Path-match (e.g. the girl sidestepping ACROSS THE BRIDGE) and Manner-match (the girl WADDLING in front of the bridge). The participants were instructed to watch each video and listen to the direction from the speakers. For example, the participant would hear on one occasion, “this is three” during the target video, “Point to the one that is most like three” when the target is off and the alternates are on. The participants were tested in their first language. The length of fixation on each screen was coded afterwards. It is assumed that if they pay more attention to, say, Manner, they will spend more time looking at the screen that shows the Manner-matched motion clip. There were altogether 12 different items, and each item was repeated three times. In other words, each participant looked at 36 items. A complete list of the video clips is in Appendix C. Of the 16 motions in the target video clips that can be lexicalized into manner verbs in English, 11 can be lexicalized into manner verbs in Japanese. Of the remaining 5 motions, 4 involves using mimetic adverbs (e.g. *yotayota aruku* “waddle”) and 1 is a loanword from English (i.e. *skip*). The corresponding Japanese translation of each manner verb is listed in Table 2. This is important because even if the participants utilized language to assist them through the task, both English and Japanese would provide equal opportunities for the participants to encode Manner of the motion. In other words, if we find that the participants pay more attention to Manner than Path, such a difference is not due to the limitation imposed by the languages, but rather to the participants’ preference to pay attention to Manner.

Table 2. Manner verbs in the target videos in English and Japanese

<i>Item</i>	<i>Target</i>	<i>Japanese translation</i>
1	March	<i>Koushin suru</i>
2	Skip	<i>Sukippu suru</i>
3	Crawl	<i>Hau</i>
4	Walk	<i>Aruku</i>
5	Walk	<i>Aruku</i>
6	Spin	<i>Kaiten suru</i>
7	Waddle	<i>Yotayota aruku</i> “walk in-a-swinging-manner”
8	Run	<i>Hashiru</i>
9	Cartwheel	<i>Sokuten suru</i>
10	Run	<i>Hashiru</i>
11	Somersault	<i>Zenten suru</i>
12	Leap	<i>Tobihaneru</i>

There were a total of 36 sets of videos. Each target and alternate video lasted 4 sec and, followed by 3 sec of black screen. The videos are from the same as those used in Hohenstein (2005)³. The entire task lasted approximately 7 min.

The recordings were coded by the investigator using the following procedures⁴. The recordings were played back using Windows Movie Maker. The time at which a participant started looking at one side of the screen was considered to be the time from which visual fixation started and was recorded. The time at which the participant’s gaze started to shift to the other side was considered to be the time visual fixation stopped and was also recorded. The shifting period (i.e., the time difference between the time at which the participant stopped looking at one side and the time at which the participant started looking at the other side) was excluded. Also, periods of time that the participants were obviously not looking at either of the videos were also

³ I thank Drs. Hohenstein and Naigles for providing me with the video clips used in their studies.

⁴ The coding procedures of the present study may not be the same as Hohenstein (2005) because no details were given in the latter.

excluded. Participants usually looked at both sides back and forth, so the time periods that the participants fixated on a given side were added up.

Self-rated language proficiency questionnaire & background information questionnaire

Participants were then asked to complete a questionnaire with a list of can-do statements adapted from Feigenbaum (2007) (taken from Clarke, 1981). The kind of self assessment provides an easy tool for assessing learners' ability in more narrowly defined situations, and has been shown to be an effective instrument for placement purposes (LeBlanc & Pairchaud, 1985; Peirce, Swain, & Hart, 1993; Oscarson, 1987). On the can-do statements questionnaire, participants were asked to rate their speaking and listening abilities of their second language on a 3-point scale, including "quite easily", "with some difficulty" and "great difficulty or not at all". The self-rated questionnaire was used for two reasons. First, it provides another measure of the proficiency of the learners. Second, because the dictation test is different in different languages while the self-rated questionnaire can be translated into different languages without changing the contents, the self-rated questionnaire allows us to compare the proficiency of the second language of the participants with different L1s. This is very useful as the same experiment was conducted in Study 2 in which the participants were Japanese native speakers who learned English as a second language.

In addition, participants were also asked questions about their experience with Japanese and other languages, including how long they had studied Japanese, at what age they started studying Japanese, what other languages they speak and their proficiency in these languages (see Appendix F).

2.1.3.3 Procedures

The participants were asked to do the tasks in the following order: the dictation test, video viewing, self-rated questionnaire, and background information questionnaire. The dictation test was done first because it is important to make sure that the participants' performance in the dictation test was optimal and thus their proficiency in Japanese can be accurately measured. If other tasks were done before the dictation test, the participants might become tired and fail to perform in the dictation test as well as they otherwise would. The fact that the video-viewing session was ordered second was due to similar reasons. Because the other two tasks did not require as much attention as the first two tasks, and did not have any time constraints, they were conducted at the end. The participants also completed a production test at the end, which involved describing six motion events shown in short video clips. However, the results will not be reported here because of the complexity of its analysis.

The experiment was carried out by the researcher in an office in one of the buildings on the campus of the University of Pittsburgh. The office was not used by anyone at the time of the experiment, so disturbance to the participants during the experiment was minimal.

The dictation test lasted 9 minutes, and the video-viewing session lasted 7 minutes. There was no time constraint for the self-rated questionnaire and the background information questionnaire, but most participants completed all four tasks in about 25 minutes. They were paid US\$10 after completing all the tasks.

2.1.4 Results

2.1.4.1 Proficiency in Japanese of native English speakers

Of the 14 participants in the high proficiency group, 7 reported that they had lived in Japan for nine months to twenty months (mean = 11 months) prior to the experiment (Subgroup 2), 7 reported that they had either never lived in Japan, or only had lived there for up to only 4 months (mean=1 month)(Subgroup 1).

To find out whether the length of stay in Japan is a factor, the 7 participants who had stayed in Japan for nine months or more were compared against the 7 participants who had stayed there for less than 4 months using a Wilcoxon rank sum test. The results suggest no significant difference between the two groups in terms of their performance in the dictation test ($W = 29, p = 0.6$). However, there was a significant difference between the two sub-groups in terms of the self-rated questionnaire such that Subgroup 1 had a higher mean score than Subgroup 2 ($W = 45.5, p < 0.05$). An ANOVA test revealed that the monolingual group, the low-proficiency group, and the high-proficiency group were different in their performance of both the dictation test ($F(2,42) = 39.09, p < 0.001$) and self-rated can-do questionnaire ($F(2,42) = 113.51, p < 0.001$). Post hoc tests suggested that they were all significantly different from each other.

The mean scores of the dictation test and the self-rated questionnaire are listed in Table 3.

Table 3. Results of dictation test and self-rated questionnaires of L1 English learner groups

Group	Dictation test (max=18, min=0)	SD	Self-rated questionnaire (max=78, min=26)	SD
Monolingual (N = 17)	0.235 (1.3%)	0.970	27.88	2.52
Low proficiency (N = 14)	2.786 (15.5%)	2.007	48.43	6.33
High proficiency (N = 14)	7.714 (42.9%)	3.582	60.07	8.38
- Subgroup 1 (N = 7)	7.143 (39.7%)	3.860	54.29	7.99
- Subgroup 2 (N = 7)	8.286 (46.0%)	3.485	65.86	3.18

A two-way Pearson's correlation test shows that the correlation between the result of the dictation test and that of the self-rated questionnaire is significant at the 0.01 level ($r = 0.747$, $df = 43$, $p < 0.01$). A Pearson's correlation test also revealed a marginally significant correlation between the self-rated questionnaire score and the length of stay in Japan ($r = 0.522$, $df = 12$, $p = 0.055$). No significant correlation was found between the dictation test score and the length of stay in Japan ($r = 0.104$, $df = 12$, $p > 0.05$).

2.1.4.2 Length of visual fixation

The length of visual fixation was measured in terms of (length of visual fixation on Manner videos) – (length of visual fixation on Path video). Therefore, a positive number indicates longer fixation on Manner-match videos, and a negative number indicates longer fixation on Path-match videos.

Before the three groups were compared, the two subgroups of the high proficiency group were compared. A Wilcoxon rank sum test⁵ revealed that the two subgroups did not differ in terms of visual fixation ($W = 16$, $p > 0.05$). Because there is no difference between the subgroups, we will treat them as one single group.

⁵ The Wilcoxon rank sum test was used because the distribution was not normal (Baayen, 2008). ANOVAs are used for analysis of data that is roughly normally distributed.

The mean lengths of visual fixation of the L1 English learner groups are shown in Table 4 and 5 and Figure 3.

Table 4. Mean lengths of fixation on Manner- and Path-match videos of L1 English learner groups

	Mean length of fixation on Manner-match videos (seconds)	Mean length of fixation on Path-match videos (seconds)	Mean Manner – Path (seconds)
Monolingual	1.851	1.683	0.168
Low proficiency	1.750	1.822	-0.071
High proficiency	1.777	1.802	-0.026

Table 5. Mean lengths of visual fixation (Manner-Path) of L1 English learner groups

Group	Mean Manner-Path (seconds)	Standard deviation
Monolingual (N = 17)	0.168	0.969
Low proficiency (N = 14)	-0.071	0.913
High proficiency (N = 14)	-0.026	0.881
- Subgroup 1 (N = 7)	0.281	1.040
- Subgroup 2 (N = 7)	-0.230	0.669

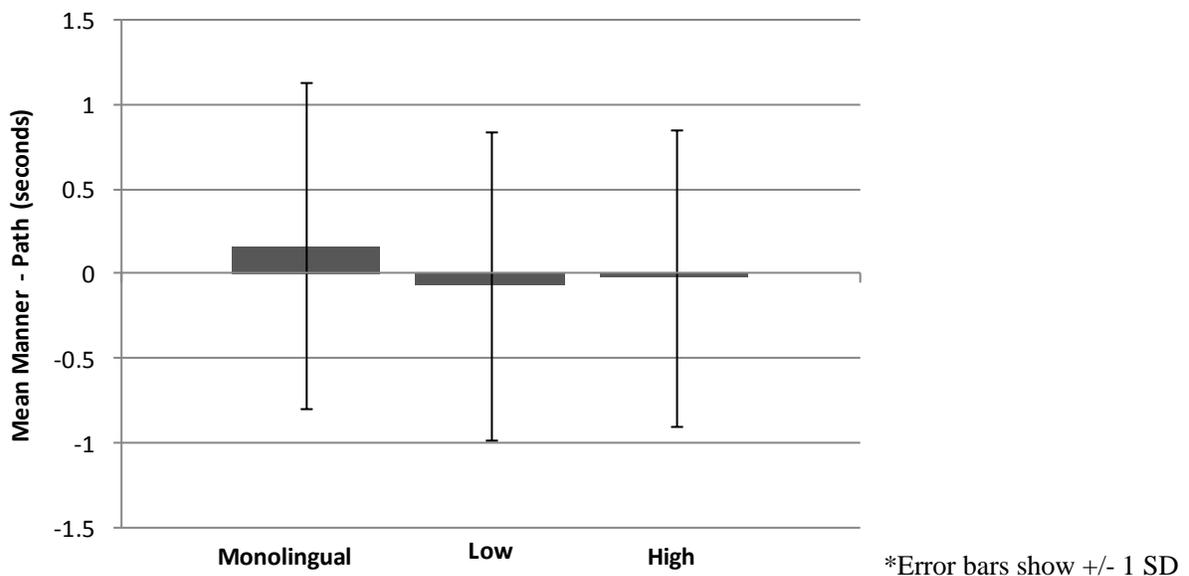


Figure 3. Mean values of visual fixation on Manner-match video minus visual fixation on Path-match videos of English monolinguals and L1 English learners of Japanese of two proficiency levels

A one-way ANOVA revealed that there was no significant effect of proficiency level ($F(2, 42) = 0.307, p > 0.05$). In other words, despite the knowledge of Japanese of the low proficiency and high proficiency groups, they did not look longer at the manner video than the path video significantly longer than the monolingual group, going against our hypothesis. A repeated measures ANOVA with item as the within-subject factor also revealed no significant results ($F(2,22) = 1.031, p > 0.05$).

The participants' visual fixation on each item was also examined. Using ANOVA it was found that there is no significance among the L1 English learner groups on any of the items.

Figure 4 shows the means of visual fixation by the three groups on each item.

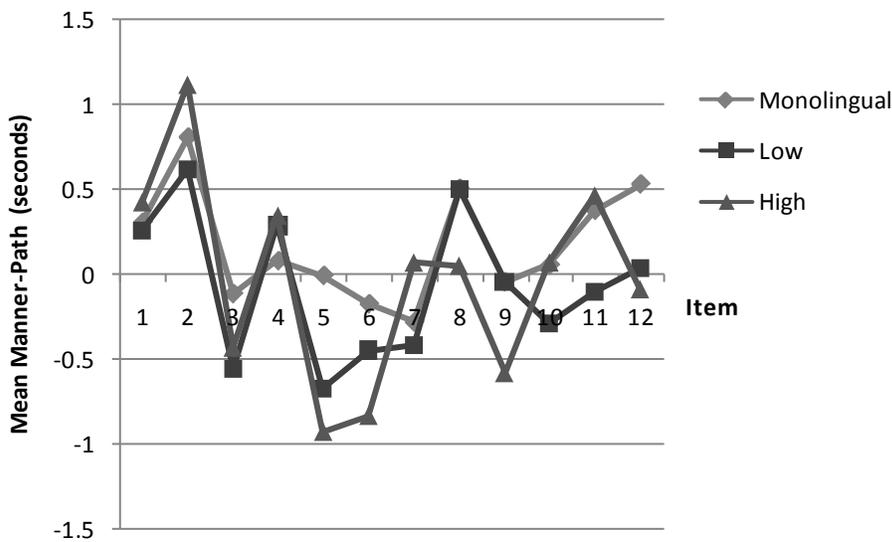


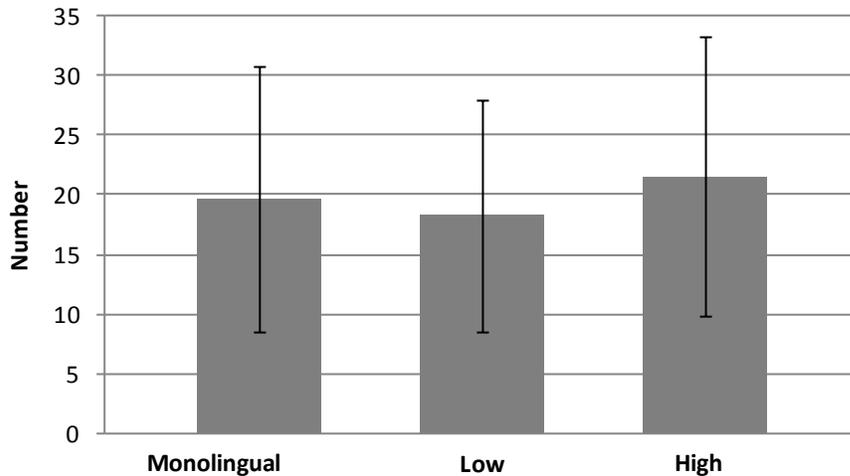
Figure 4. Mean length of visual fixation by the three L1 English learner groups by item and proficiency

2.1.4.3 Choice of videos

Because no significant difference was found in the mean length of visual fixation, the participants' choice of video is also examined, i.e. the video they chose when they were asked either the Manner-match or the Path-match videos were more similar to the target videos. Again, we tested the two subgroups in high proficiency group with a Wilcoxon rank sum test and found no significant difference ($W = 25.5, p > 0.05$). Table 6 and Figure 5 show the mean number of manner videos chosen of each group. One way ANOVA suggests that there is no effect of proficiency for the number of Manner-match videos chosen ($F(2,42) = 0.576, df = 2, p > 0.05$).

Table 6. Number of Manner-match videos chosen by participants of each group

Group	Mean number of Manner-match videos	Standard deviation
Monolingual (N = 17)	19.59	11.153
Low proficiency (N = 14)	18.29	9.723
High proficiency (N = 14)	21.57	11.706
- Subgroup 1 (N = 7)	22.42	14.221
- Subgroup 2 (N = 7)	20.71	9.641



*Error bars show +/- 1 SD

Figure 5. Mean number of Manner-matched videos chosen by English monolinguals and L1 English learners of Japanese of two proficiency levels

2.1.5 Discussion

Hypothesis 1 predicts that the L1 English learners of Japanese will look longer at Path-match videos than the monolingual English speakers. Results showed that there was no significant difference among the three groups of participants for the length of visual fixation on Manner minus that on Path. Moreover, there was also no significant difference among the three groups in the number of Manner-match videos that they indicated to be more similar to the target. Therefore, Hypothesis 1 was not confirmed. Because Hypothesis 2 is contingent on Hypothesis 1, Hypothesis 2 is also not confirmed.

The results of Study 1 suggest that L1 English learners of Japanese as a foreign language do not pay more attention to Path than monolingual English speakers. Previous studies show that there is a difference between foreign language learners and second language learners, in that the change in conceptualization may occur in second language learners but not in foreign language

learners (e.g. Cook et al., 2006). Therefore, a second study was conducted to investigate how second language learners may differ from foreign language learners.

2.2 STUDY 2: ACQUISITION OF ENGLISH BY L1 JAPANESE LEARNERS

2.2.1 Research questions

In Study 1, we found that L1 English learners who learn Japanese as a foreign language do not pay more attention to Path information than monolingual English speakers, suggesting that there is no effect on their habitual attention after learning a foreign language that is typologically different from their L1. The purpose of Study 2 is to investigate if there is an effect on language learners who are living in the target language environment. The participants in this study were Japanese learners of English who were living in the United States at the time of experiment. Given the difference between English and Japanese in terms of the way motion events are expressed, the research questions of the current study are:

- (1) Will Japanese learners of English as a second language pay more attention to Path?
- (2) If yes, do more proficient learners show more of this effect than less proficient learners?

2.2.2 Hypotheses

Given the findings of previous research, the hypotheses of the current study are as follows:

Hypothesis 1: Japanese learners of English will fixate longer on Manner-match videos than Japanese monolinguals. In other words, Japanese learners of English will pay more attention to Manner than monolingual Japanese speakers.

Hypothesis 2: The more advanced the Japanese learners of English are, the longer they will look at the Manner videos. In other words, high proficiency Japanese learners of Manner will pay more attention to Manner than low proficiency Japanese learners of English.

2.2.3 Methodology

2.2.3.1 Participants

The participants of Study 2 were 47 Japanese native speakers. They were recruited through advertising on the Komachi Japanese mailing list, which serves the Japanese speakers in the Pittsburgh area, visiting a local Japanese church, and through friends. The mean length of residence in the United States is 3.4 years (min = 1 month, max = 20 years).

Unlike the L1 English participants in Study 1, the Japanese participants came from various backgrounds: some of them were graduate students at the universities in Pittsburgh, and some of them were housewives. Therefore, it was impossible to know their English proficiency at the time of recruitment. They were thus grouped based on their performance on the dictation test and the self-rated proficiency questionnaire described in Study 1. The grouping is given in the Results session.

2.2.3.2 Materials

The procedures were the same as Study 1; there was a dictation test, video viewing, a self-rated questionnaire, a background information questionnaire, and a production test. The only difference was that the instructions on all the materials were in Japanese.

Dictation test

An English dictation test has been shown to be an effective way of testing general proficiency of English learners (e.g. Oller, 1971, Fouly & Cziko, 1985). The English dictation test used in this study was adapted from Stump (1978). This particular English dictation test was chosen because it effectively differentiates the language ability of fourth and seventh grade English native speakers (having means of 57.5 and 68.5 respectively).

Video viewing

The setting was the same as in Study 1. Instead of English instructions, the instructions were in Japanese. For example, in one instance, the instruction was “*kore wa san ban desu. Niteiru hou o yubisashite kudasai*” (This is three. Please point the more similar one with your finger). The Japanese instructions were slightly different from the English versions in Study 1. These modifications were made to make them more natural based on the suggestion by the native Japanese speaker who recorded these instructions. The coding method was also the same as in Study 1.

Self-rated questionnaire and background information questionnaire

The contents of both questionnaires are the same as those in Study 1, except there is one extra question in the background information questionnaire (see Appendix E and F) that asked the participants how long they had been living in the US. The self-rated questionnaire was translated into Japanese by the author and proofread by a Japanese native speaker.

2.2.3.3 Procedures

The procedures were the same as in Study 1. The dictation test was done first, then the video-viewing session, and lastly the two questionnaires. The participants also completed the same production task in Study 1, but again the results will not be reported here. For some participants, the experiment was carried out at the home of the investigator, because it was considered to be more convenient for them. One participant requested the experiment be carried out at the resting corner for staff in his place of work, which was the library of a university. All participants finished all the tasks in about 25 minutes. The participants were rewarded US\$10 upon completing all tasks.

2.2.4 Results

2.2.4.1 English proficiency of participants

As mentioned above, the grouping was based on the participants' performance on the dictation test and the self-rated questionnaire. To obtain more or less the same number of participants in each group, the participants were divided into three groups based on the following criteria: (1) participants who scored 1 out of 8 or below in the dictation AND 50 (min = 26, max = 78) or below in the self-rated questionnaire were considered Japanese monolinguals, (2) participants who scored 1 or 2 out of 8 in the dictation test AND scored between 50 and 60 (min = 26, max = 78) in the self-rated questionnaire were considered low proficiency learners of English, and (3) participants who scored 3 or above out of 8 in the dictation test were considered high proficiency learners of English. The decision to take into account both tests was due to the fact that many participants were not students or people who were used to writing in a speedy manner.

Therefore, even though they may be rather proficient in English, their performance in dictation may have been affected by their speed of writing.

The results of the dictation show that the three native Japanese speaker groups are significantly different in terms of their proficiency in English (one-way ANOVA, $F(2, 44) = 64.2, p < 0.001$). The results of self-rated questionnaire show similar trends (one-way ANOVA, $F(2, 44) = 26.54, p < 0.001$). Pearson's correlation test suggests the dictation test and the self-rated questionnaires are significantly correlated ($r = 0.56, p < 0.01$). The means of each group are shown in Table 7.

Table 7. Mean scores of dictation test and self-rated questionnaire

Group	Dictation test	SD	Self-rated questionnaire (max=78, min=26)	SD
Monolingual (N = 15)	0.333 (4.1%)	0.488	48.93	8.276
Low proficiency (N = 16)	1.188 (13.8%)	0.403	59.69	6.426
High proficiency (N = 16)	4.313 (53.9%)	1.662	68.25	7.398

2.2.4.2 Length of visual fixation

The mean lengths of visual fixation on Manner videos minus that on Path videos of the native Japanese groups are shown in Table 8 and 9 and Figure 6.

Table 8. Mean length of fixation on Manner- and Path-match videos of L1 Japanese groups

	Mean length of fixation on Manner-match videos (seconds)	Mean length of fixation on Path-match videos (seconds)	Mean Manner – Path (seconds)
Monolingual	1.999	1.535	0.463
Low proficiency	1.861	1.703	0.158
High proficiency	1.985	1.604	0.381

Table 9. Mean lengths of visual fixation (Manner-Path) of L1 Japanese groups

Group	Mean Manner-Path (seconds)	Standard deviation
Monolingual (N = 15)	0.463	0.624
Low proficiency (N = 16)	0.158	0.568
High proficiency (N = 16)	0.381	0.590

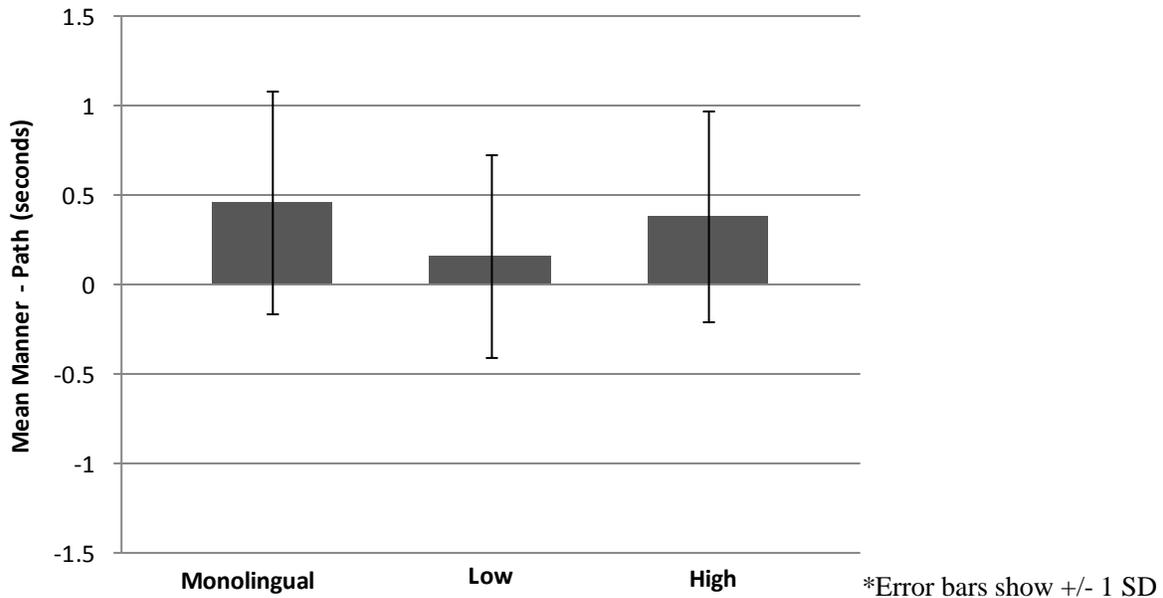


Figure 6. Mean Manner-Path of Japanese monolinguals and Japanese learners of English of two proficiency levels

Again, the differences of mean manner minus path are not significantly among the Japanese groups ($F(2, 44) = 1.11, p > 0.05$). A repeated measure ANOVA with item as the within-subject variable also revealed no significant difference ($F(2, 22) = 1.245, df = 22, p > 0.05$).

The results by item were also tested using one-way ANOVA. The mean length of Manner minus Path of each item is shown in Figure 7. Significant difference for the length of visual fixation was found between the native Japanese groups for Item 2 ($F(2, 44) = 44.88, p < 0.001$) and a marginally significant difference was found for Item 7 ($F(2, 44) = 1.707, p = 0.051$). For

Item 2 (the target was SKIP AROUND A STATUE), post hoc tests (Tukey HSD, Scheffe and LSD) suggest that there is a significant difference between the monolingual group and the high proficiency group, with the monolingual group looking longer at the Manner video than the high proficiency group. For Item 7 (the target was WADDLE ACROSS A BRIDGE), Tukey HSD and LSD also tests show significance difference between the monolingual group and the high proficiency group, and again with the JM group looking longer at the Manner video. Figure 5 shows the means of visual fixation by the three groups on each item.

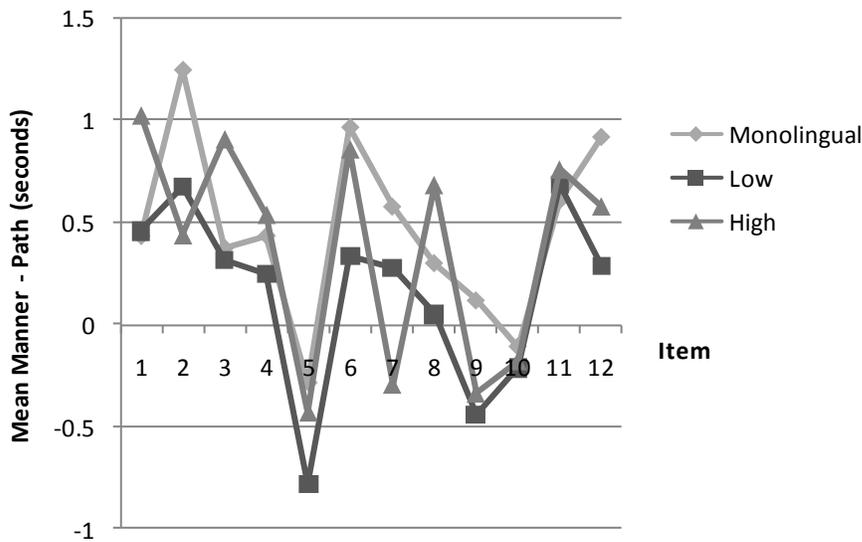


Figure 7. Mean length of visual fixation by the three L1 Japanese groups by item and proficiency

2.2.4.3 Choice of videos

The means of the number of Manner-match videos that the participants chose during the video viewing session of each group are shown in Table 10 and Figure 8. ANOVA shows that the differences between the groups are not significant ($F(2, 44) = 1.85, p > 0.05$).

Table 10. Mean number of manner videos chosen by native Japanese groups

Group	Mean number of manner videos	SD
Monolingual (N = 17)	28.53	6.833
Low proficiency (N = 16)	23.00	9.750
High proficiency (N = 16)	26.19	7.176

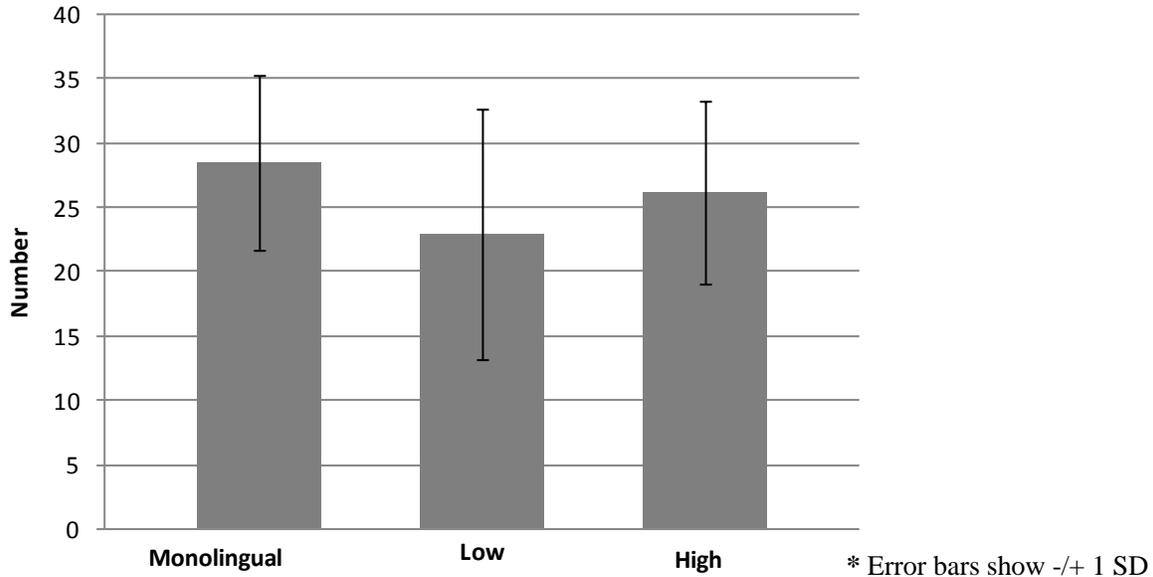


Figure 8. Mean number of Manner-match videos chosen by the Japanese participants of each group

2.2.5 Discussion

The first hypothesis of Study 2 predicts that Japanese native speakers would pay more attention to Manner, and thus look longer at the Manner-match videos during the video viewing session. However, no significant difference was found for visual fixation duration (Manner – Path). There was also no significant difference between the groups for the number of Manner-match videos chosen. Therefore, Hypothesis 1 is not confirmed. Also, no significant difference was found between the high proficiency and low proficiency group in terms of visual fixation duration and number of Manner-match videos chosen. Therefore, Hypothesis 2 is also not confirmed.

However, we did find that Item 2 showed a significant effect of proficiency, and Item 7 approached significance, with the monolingual group looking longer at the Manner-match video than the high-proficiency group. For Item 2, the target video is SKIP AROUND THE STATUE, and the Manner-match and Path-match videos are SKIP BEHIND STATUE and JUMP AROUND STATUE respectively. For Item 7, the target video is waddle across bridge, and the Manner-match and Path-match videos are WADDLE IN FRONT OF BRIDGE and SIDESTEP ACROSS BRIDGE respectively. It is not clear as to why a (marginally) significance difference was found only with these two items. This issue will be discussed in more detail in the following section.

3.0 GENERAL DISCUSSION

The purpose of the current study was to investigate whether learning a foreign or second language would result in a change of habitual attention to a certain aspect of an event. The way motion events were perceived was investigated.

In Study 1, we examined L1 English learners of Japanese as a foreign language. Based on the results, both Hypothesis 1 and 2 were not confirmed. The results of the two measures, duration of visual fixation and number of manner-match video chosen, suggest that L1 English learners of Japanese did not pay more attention to the Path information in motion events than the monolingual English speakers, and the high proficiency learners did not pay more attention to Path than low proficiency learners. In Study 2, we looked at Japanese learners of English as a second language. Again, neither Hypothesis 1 nor 2 were confirmed. The results of the two measures suggest that Japanese learners of English did not pay more attention to Manner than monolingual Japanese speakers, and high proficiency Japanese learners of English did not pay more attention to Manner than low proficiency learners. Hohenstein (2005) found significant differences between Spanish- and English-speaking children. However, no significant difference was found in the present study. It may be tentatively concluded that Hohenstein's results cannot be extended to L2 learners.

The only significant difference found was between Japanese monolingual group and high-proficiency Japanese learners of English group in Study 2 for Item 2 and a marginally

significant difference for Item 7, with the high-proficiency group paying less attention to Manner than the monolingual group for both items. I cannot offer any explanation for such results. Hohenstein (2005) reported that the responses to the test items were not uniform, with Item 7 and Item 11 (target video being SOMERSAULT ACROSS PATH) seeming to induce more attention to Manner than Item 5 for her participants. However, how these results can shed light on the results is not clear. One possible reason might be that different Manners and Paths are different in terms of saliency, and there is an interaction created with different combinations of Manner and Path in one set of Item. For example, for Item 7, the two Manners are WADDLE and SIDESTEP, and the two Paths are IN FRONT OF BRIDGE and ACROSS BRIDGE. Both WADDLE and SIDESTEP are not commonly seen, but ACROSS BRIDGE is a commonly seen one and IN FRONT OF BRIDGE can easily be construed as a motion irrelevant to the bridge. This may cause some participants to think the Manner is more important, and some not.

Previous research suggests that there is an influence of the speakers L2 on their L1 production. For example, Brown (2007) found that Japanese native speakers were more likely to express Manner than monolingual Japanese speakers when speaking in Japanese after learning English. However, in the present study, we did not find any difference between the second language learners and monolinguals in terms of their attention to Manner/Path information of motion events. As was discussed in Chapter 1, all previous studies that examined verb conflation pattern in L2 (see Table 1) used linguistic tasks whereas a non-linguistics task (viewing of videos) was used in the present study. It may therefore be suggested that in the domain of motion events learning a second language that is typologically different from the learner's first language may not lead to a change of non-linguistic habitual attention. In other words, there is no effect of learning a V-language as a second language on the increase of the attention to Path information,

or an S-language as a second language on the increase of the attention to Manner information. Combining the results of previous studies, the results of the present research also suggest that such a change may not be required to produce native like utterances in the learners' L2.

3.1 THE EFFECT OF PROFICIENCY AND THE LENGTH OF RESIDENCE

One possible reason why no significant difference was found might have to do with the length of residence in the target language environment. Cook et al. (2006) showed that Japanese learners of English who had stayed in English-speaking countries for three years or more demonstrated more effect of the second language than those who stayed less than three years. To test this possibility, the high-proficiency Japanese learners of English group in Study 2 was further divided into two subgroups, one with those who had stayed in the United States for three years or more, and one with those had stayed in the United States for less than three years. The result is shown in Table 9 and Figure 9.

Table 11. Mean values of Manner minus Path with high proficiency Japanese learners of English

Group	Mean Manner-Path (seconds)	Standard deviation	Dictation test score
Monolingual (N = 15)	0.463	0.624	0.333
Low proficiency (N =16)	0.158	0.568	1.188
High proficiency (< 3 years) (N = 5)	0.298	0.684	4.200
High proficiency (≥3 years) (N = 11)	0.419	0.574	4.364

Although again a one-way ANOVA revealed no significant difference among the four groups, it is interesting to see that the mean value of visual fixation on Manner-match videos minus that on Path-match videos for those who had stayed in the United States for three years or

more is higher than that of those who stayed less than three years. This will be discussed in more details in the following section.

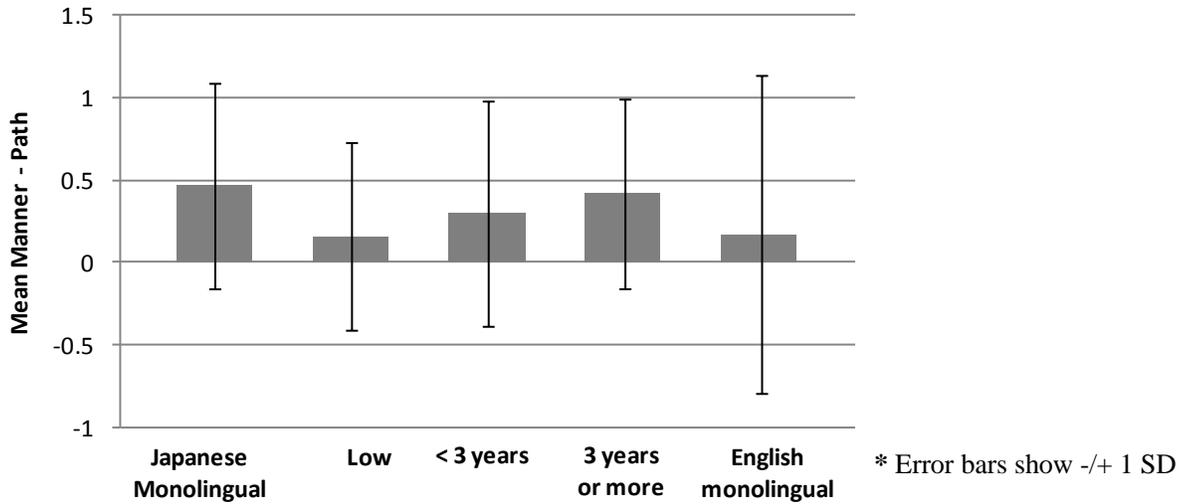


Figure 9. Mean values of visual fixation on Manner minus that on Path for the Japanese Monolingual group, the low-proficiency ESL group, and the two high-proficiency ESL subgroups

3.2 U-SHAPED DEVELOPMENT

Although the differences among groups are not significant, an interesting aspect of the results was observed. There seems to be a U-shaped behavior with language development regarding the overall mean lengths of visual fixation on Manner videos minus that on Path videos. Among the three native English speaker groups, the low-proficiency group has the lowest mean of Manner-Path value, indicating they looked at the Path-match videos longer than the Manner-match videos, whereas the high-proficiency group has a mean value closer to the English monolingual group. In other words, the low-proficiency group seems to be more affected by the properties of the V-language as a second language than the high-proficiency group, which goes against the

hypothesis set forth in this study that a bigger effect would be found in more advanced learners than in less advanced learners. Among the three native Japanese speaker groups, the monolingual has the highest mean of Manner minus Path, indicating they looked at the Manner-match videos longer than the Path-match videos, and both low-proficiency and high-proficiency groups have a lower mean.

At first glance, the two studies show different trends. However, if we compare their performance of the self-rated questionnaire, we can see that the participants in the Japanese monolingual group are not 'real' monolinguals, and their English proficiency is in fact comparable to the Japanese proficiency of the low proficiency L1 English learners of Japanese group. Figure 10 shows the means of the scores of the self-rated questionnaires of each group. The mean score of low proficiency L1 English learners of Japanese is 48.43, and that of monolingual Japanese speakers is 48.93. Therefore, in both studies we found the biggest effect of the second language in learners with some knowledge of the second language, and more advanced learners show less of an effect. In other words, there seems to be a U-shaped pattern for the attention to Manner and Path along proficiency: for English native speakers, their attention shifts to Path after learning some Japanese, but they become less attentive to Path when they become more advanced; for Japanese native speakers, their attention shifts to Manner after knowing some English, and they become less so when they are more proficient in the language.

In fact, the notion of a U-shaped development is not new to the field of second language acquisition. Kellerman (1985) discussed such a phenomenon in some detail. He provides three examples where native Dutch speakers exhibit a U-shaped behavior when learning a second language: intransitive use of *break* in English, the linguistic marking of hypotheticalness in conditional sentences in English, and the acceptability of Dutch-like idiomatic expressions in

German. He claims that second language learners, like first language learners, also go through three stages. In the first stage, learners appear to be error-free in some limited linguistic domains. In stage 2, their performance becomes more deviant from the target norm, appearing to be less accurate than before. Finally, in stage 3, they become accurate and native-like again. In the case of the intransitive use of *break*, Kellerman (1979) showed that intermediate learners tend to reject the intransitive use of *break* as in *the cup broke* to a larger degree than less proficient and more proficient learners, although the corresponding translation in Dutch is grammatical. Kellerman argues that the drop in accuracy is a result of reanalyzing the linguistic input. In stage 1, learners largely memorize the language by chunks. But in stage 2, they start to understand the implicit information in the linguistic forms, and begin to produce their own forms, which, however, turn out not to conform to the native norm.

Why, then, is there a U-shaped pattern in the attention paid to Manner in motion events? Although Kellerman's examples are somewhat different from the data of the present study in the sense that Kellerman's examples are linguistic performance whereas the present study deals with non-linguistic attention, his explanation may be able to explain our data. I propose that it is because the L2 linguistic input forces the learners to reorganize the information received through their perceptions (i.e., visual perception of a motion event), and that requires low proficiency learners to shift their attention to something that is required in their L2 but not in their L1. When Japanese native speakers begin to learn English, they start to realize that it is necessary to pay attention to Manner if they want to talk about a motion event in English. This new requirement becomes a cognitive burden to them. At this point, they may need to heighten their attention to Manner. As a result, less cognitive resources are available for the Path information. More proficient learners, on the other hand, have more experience with the new requirement. They are

more used to paying attention to Manner than less proficient learners. Therefore, they have more cognitive resources for both Manner and Path, and thus seemingly paying less attention to Manner than less proficient learners. The same can be used to explain the results with English native speakers. We will see, however, that the U-shaped function of English native speakers has a ‘shallower trough’ than the Japanese native speakers, and this will be explained later in this chapter in terms of difference in ‘basicness’ between Manner and Path.

The possible cognitive change as a result of L2 learning is also evident in Kroll, Michael, Tokowicz, and Dufour (2002). In this study, Kroll et al. investigate the acquisition of lexical fluency. They asked the participants to complete four tasks, two of which involves naming objects in their L1 (English) and L2 (French) respectively. Surprisingly, they found that less fluent French learners were significantly slower in naming objects in English than more fluent learners, despite the fact that they were all native speakers of English. Based on the results of a subsequent experiment, they concluded that the processing of L1 is affected by the efficiency of L2 processing. Learners’ L1 lexicon undergoes changes because new information is acquired in L2. This interpretation is somewhat similar to what we saw in the results of the present study.

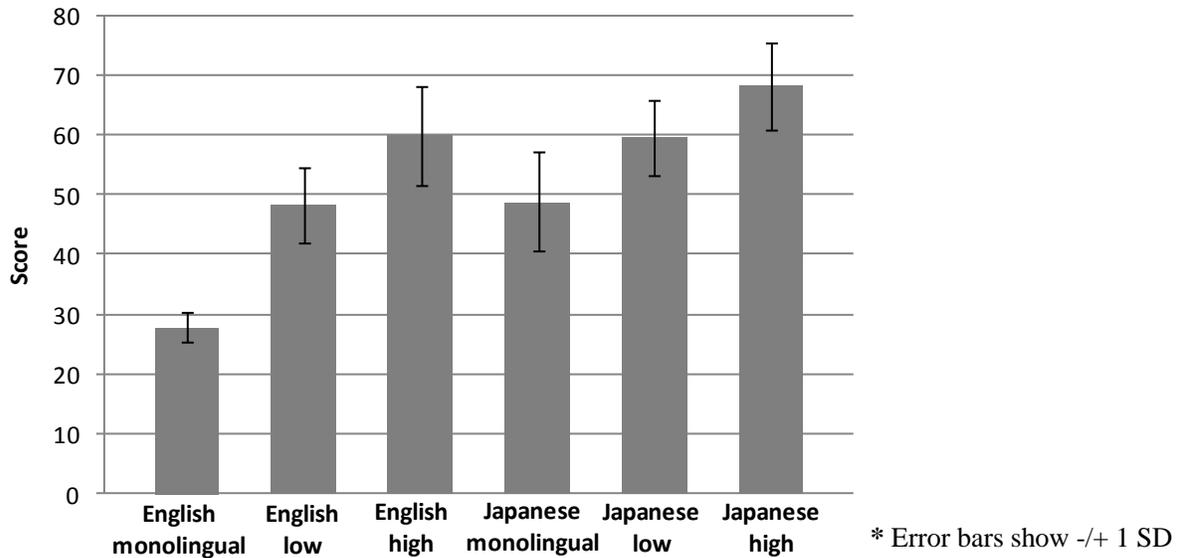


Figure 10. Mean scores of the self-rated questionnaire

However, there is one complication here. If the results of Hohenstein (2005) are also applicable to adults Japanese speakers based on the fact that both Spanish and Japanese are V-language, we should see that the mean value of Manner minus Path for Japanese monolingual speakers should be below the one for the English monolingual speakers (see Figure 11). If that is the case, the Japanese learners in fact go through an S-shaped development rather than a U-shaped one. Moreover, when the Japanese participants have lived in the United States for three or more years, the value goes further up, as discussed earlier in this chapter (see Table 9 and Figure 9), further suggesting that the value change is not random. However, since we do not have data from native-like L1 English learners of Japanese, we are not sure whether the value of Manner minus Path for advanced L1 English learners of Japanese would go down again, with them paying more attention to Path than high proficiency group in Study 1 and suggesting an S-shaped behavior, or it would go up, having them pay more attention to Manner and suggesting advanced second language learners would eventually pay more attention to Manner, regardless of which typology (i.e., S-language or V-language) the second language belongs to.

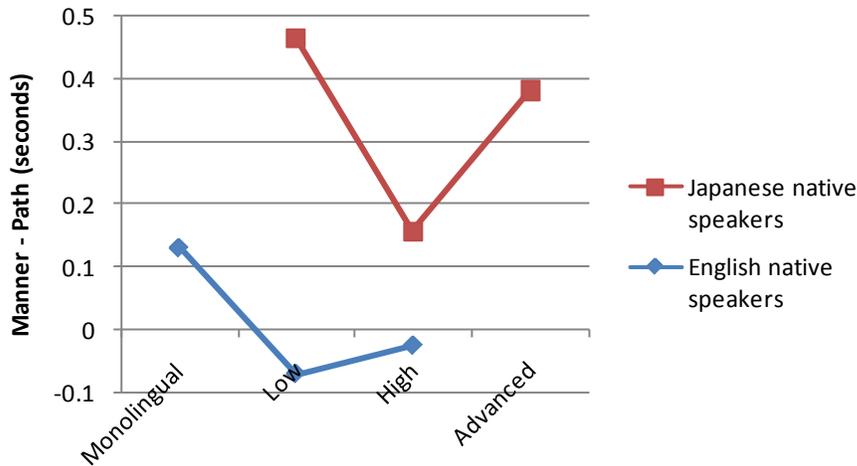


Figure 11. Mean value of Manner minus Path vs. proficiency

3.3 ASYMMETRY OF ‘BASICNESS’ BETWEEN PATH AND MANNER

Talmy (2000) characterizes a motion event as having four basic components, which include Path, and a set of coevents, which includes Manner. The fact that we found significant differences in two items for the Japanese participants but not for the L1 English participants, and that there are greater variations among the Japanese groups than the English group in terms of the mean value of Manner minus Path, may suggest that there is an asymmetry between Path and Manner in terms of the amount of attention paid to each of them by speakers, with Path being more basic than Manner. Because English requires Manner to be coded in the main verb, and Path is also usually added in the satellite as the form of a prepositional phrase, native English speakers may have been used to paying attention to additional information (i.e., Manner) on top of the basic components (i.e., Path). On the other hand, Japanese native speakers often only pay attention to Path. Through learning an S-language like English, learners suddenly realize the

importance of focusing on Manner. This may be the reason why we only found significant variation among the Japanese native speakers groups, but not among the L1 English learner groups.

No study so far has attempted to investigate whether Path is cognitively more basic. Although it was not their aim to investigate this issue, Allen, Özyürek, Kita, Brown, Furman, Ishizuka, and Fujii (2007) have presented some interesting findings. They investigate how English-, Japanese-, and Turkish-speaking children and adults differ in terms of syntactic packaging of Manner and Path. They found that, regardless of their native language, the adult participants produced predominantly descriptions that have both Manner and Path (>80%) when asked to describe a number of motion events, and almost half of the children's descriptions have both Manner and Path. What is interesting is that they also found that regardless of their native language the children produced more Path-only descriptions (38% on average) than Manner-only (18% on average). It is not clear whether these percentages are significantly different from each other, because this issue was not of the authors' interest, but this finding surely is in line with the claim that Path is more basic than Manner.

3.4 DIRECTIONALITY OF TRANSFER

If the line of reasoning is on the right track, we may also expect L1 influence when a native speaker of a V-language learns an S-language as a second language, but not for a native speaker of an S-language learning a V-language. Cadierno (in press) showed that second language learners have difficulty attaining the L2 norm when their L1 is Spanish, which is a V-language, and their L2 is Danish, which is an S-language. Hohenstein et al. (2006) also found similar

results when looking at both early and late Spanish-English bilinguals who had Spanish as their L1. In a recent study, Park (2008) elicited both L1 Korean, which is a V-language, and L2 English production from Korean learners of English, and compared them with the L1 English production of English native speakers. Her results also showed that L1 Korean and L2 English production by Korean native speakers showed significantly more instances of Path than L1 English. These studies seem to point to the same conclusion that it is difficult to be native-like, at least in production, when a native speaker of a V-language learns an S-language as a second language.

On the other hand, Cadierno and Ruiz (2006) showed that there was little L1 interference when the learners' L1 was Danish and their L2 was Spanish, meaning that they described motion event in a way similar to native Spanish speakers, which is different from the findings of Cadierno (in press), in which low/intermediate proficiency Spanish learners of Danish mentioned Manner in a production task less than Danish native speakers, showing L1 interference. Cadierno and Ruiz attributed the difference in results to proficiency, because the two studies were looking at learners of different proficiency levels. However, an alternative explanation is that Path is more basic than Manner. If the claim that Path is conceptually more basic than Manner is correct, Danish native speakers were trained to pay attention to both Path and Manner when they acquired their first language. Therefore, when they learn a V-language as a second language, there is no need for them to shift their attention from one to another. They only need to make a linguistic decision on what verb to use to describe the motion event. In contrast, Spanish native speakers were not trained to pay attention to Manner, which is not an obligatory component when describing a motion event in their native language. Therefore, when they study a manner-salient S-language as L2, they need to start paying attention to Manner, to which they are not

used to pay attention. As a result, it is more difficult for them to attain the norm of Danish native speakers.

However, one previous study seems to pose a challenge to this hypothesis. Inagaki (2001) conducted a bidirectional study that examined both L1 Japanese learners of English and L1 English learners of Japanese. The participants were asked to judge a number of sentences in both Japanese and English. He found that L1 Japanese learners of English were able to learn that manner verbs in English can serve as the main verb of a sentence that describes a motion event, which is generally not allowed in their L1. In contrast, L1 English learners of Japanese, despite of their high proficiency, were unaware that manner verbs in Japanese cannot be used as the main verb in a sentence describing an motion event. He explained that because only a subset of the English structures are possible in Japanese, when Japanese native speakers learn English, there is positive evidence to guide them to learn the new structure. On the other hand, there is a lack of negative evidence for English native speakers such that they are able to know that structures possible in their L1 are not possible in their L2.

It may appear at first sight that these findings contradict the above hypothesis, in that Inagaki actually suggests that a native speaker of a manner-salient S-language learning a path-salient V-language as a second language is in fact more difficult than the opposite. However, a closer examination reveals that this may not be the case. First, the task that Inagaki used was a grammaticality judgment task. Participants were provided with pictures of motion events, each of which was described by three or four different sentences, and the participants were asked to indicate which of those sentences they think were grammatical. In other words, participants can indicate more than one sentence that they think is grammatical. In that case, although English learners of Japanese did indicate PP + manner verb as an acceptable structure in Japanese, they

were also able to indicate that the norm PP + path verb⁶ is an acceptable structure. In fact, the rating for PP + path verb is higher than that of PP + manner verb in his study. It would thus be reasonable to predict that, when they are asked to do a production task, like the ones in Hohenstein et al (2006) and Cadierno and Ruiz (2006) where only *one* structure will be produced, they are more likely to produce PP + path verb.

Second, the explanation offered by Inagaki (2001) and the claim about directionality of transfer are in fact compatible with each other. Inagaki claimed that Japanese learners of English are learning a new structure based on the positive evidence in the input. It might be exactly that a heightened attention to Manner is needed. On the other hand, English learners of Japanese do not have any new structures to learn, and therefore they do not need extra attention to either Path or Manner, to which they have already been paying attention when speaking their L1.

In sum, if there is an asymmetry between Path and Manner in a motion event in terms of their basic-ness, we would also expect an asymmetry of directionality of transfer. However, obviously we would need more research that investigates the acquisition of an V-language by L1 S-language speakers to confirm such a claim.

⁶ In Inagaki (2001), the structure is termed PP + directed V. A different terminology is used here for ease of presentation.

4.0 CONCLUSION

This chapter summarizes the main points of previous chapters, discusses the limitations of the present study, and suggests possible future studies.

In Chapter 1, previous studies concerning how language may shape thought were reviewed. Previous research shows that both the native and second languages have an effect on how speakers pay attention to different aspects of an event. Particularly in the area of motion events, there is evidence suggesting that native speakers of an S-language pay more attention to Manner information than native speakers of a V-language, but that there is no evidence showing that native speakers of a V-language pay more attention to Path than those of an S-language. Studies on second language learners show that learning a second language has some effect on the way they describe motion events in their native language. However, because all of these studies involve linguistic tasks, it is not clear whether such an effect is at the linguistic level or the conceptual level. Moreover, there are no conclusive results regarding the effect of proficiency.

In Chapter 2, the methodology, procedures and results of the two studies conducted were described. In both studies, a dictation test and a self-rated can-do questionnaire were used to measure their proficiency in the participants' second language, and a video-viewing session was used to measure quantitatively their respective attention to Manner and Path. In Study 1 in which participants were monolingual English speakers and L1 English learners of Japanese as a foreign language, no significant difference was found among the English monolingual group, the low

proficiency group, and the high proficiency group, which implies that foreign language learners do not pay more attention to Path than Manner than monolingual English speakers, and there is no effect of proficiency. In Study 2 in which participants were monolingual Japanese speakers and Japanese learners of English as a second language, no significant difference was found among the Japanese monolingual group, the low proficiency group, and the high proficiency group, again indicating that second language learners do not pay more attention to Manner than Path than monolingual Japanese speakers, and there is no effect of proficiency.

Chapter 3 gives a general discussion of the results of both studies. Three important points were made: (1) development seems to follow a U-shaped function, with low proficiency learners showing more of an effect from their foreign/second language than in the monolingual and high proficiency counterparts, (2) the Japanese participants showed bigger variations in terms of their attention to Manner than the English participants, which is consistent with Talmy's characterization of a motion event, in which Path is a basic component and Manner is not, and (3) there may be an asymmetry in terms of the direction of transfer due to the difference in basicness between Path and Manner, with Manner being more difficult to master than Path.

There are a few limitations of the present study. First, as mentioned above, the number of participants was relatively small. A larger sample size may allow us to detect smaller differences and eventually obtain significant results. Second, the participants that were labeled 'Japanese Monolingual' were not real monolinguals. Because of logistic constraints, it was not possible to recruit real monolingual Japanese speakers, most of whom are in Japan. Because the participants in the present study already knew some English at the time of the experiment, they may have developed some attention to Manner information. It may be one of the reasons why I did not find any significant difference when compared them with more advanced learners. Last but not least,

the coding method may not be problem-free. The basic assumption is that the longer a participant fixates on a Manner/Path-match video, the more attention he/she pays to Manner/Path. However, some of the participants fixated on the video at which they did NOT point, meaning that they did not fixate on the video that they thought was more similar to the target. This seems to violate the basic assumption of this experiment. Moreover, the coding method included the entire period of time when the videos were on. In other words, as long as the participants were fixating on a video and the video was on, the period of time was counted. However, it may be difficult to decide whether to include the period of time after the participants have chosen a video as instructed, because the participants may not have paid attention to any details of the videos after choosing a video. Again, the basic assumption that longer fixation equals more attention is violated.

For future research, it will be essential to replicate the study with a larger number of participants, and to include a group of true Japanese monolinguals, and a group of advanced L1 English learners of Japanese who have stayed in Japan for three years or more to confirm the U-shaped or S-shaped development. As discussed earlier, if the mean value of Manner minus Path further increases for advanced L1 English learners of Japanese, we might conclude that learners with different L1/L2 combinations would converge when they become more proficient in their L2, which means they would ultimately pay more attention to Manner, regardless of what their L2 requires. Such results would be compatible with the claim that Manner is less basic than Path, because advanced L2 learners are able to process information needed in the language efficiently, and extra cognitive resources would automatically be used for non-basic elements. On the other hand, if the value goes down again, we might conclude that second language learners would ultimately move toward the same direction as the native speakers in terms of attention (i.e.,

paying more attention to Path when the L2 is a V-language, and to Manner when it is an S-language).

It would also be interesting to investigate the basicness of Path and Manner, and its effect on the directionality of transfer. As discussed above, there are very few studies that look at the acquisition of a V-language by learners whose native language is an S-language. There is also no bidirectional study, except for Inagaki (2001), which looks at the asymmetry of transfer concerning motion events. If we find that the acquisition of a V-language by learners whose L1 is an S-language is easier than the reverse, then it would lend support to the claim that Path is more basic than Manner, and that there is indeed an asymmetry in terms of the direction of transfer, due to the arguments presented in the previous chapter.

To conclude, although there is still much more to explore in the domain of motion events, the present study has presented new issues that have not been examined thus far. These issues may lead us to a deeper understanding of motion events, and eventually to the understanding of the relationship between language and cognition.

APPENDIX A

JAPANESE DICTATION TEST (FOR ENGLISH NATIVE SPEAKERS) (KAGA, 1991)

Instruction

You are going to listen to a passage. Please write down what you hear. The passage is divided into 18 sections. You are going to hear the same passage three times. For the first time, you will hear the entire passage, but you are not allowed to take notes. For the second time, you will hear the same passage section by section. This time, please write down what you hear as much as possible. Finally you will hear the entire passage once again. Please check what you wrote and make any changes if necessary. Please write down the phrases using any character, either Romanized Japanese or Hiragana. Please do not use Kanji.

It becomes more difficult towards the end of the passage, but please try not to give up, and try to write as much as you can.

- 1 天気が
- 2 いいから、
- 3 どこかへ ピクニックに
- 4 行こうと 思っても
- 5 どこも 車が たくさんで
- 6 行く 気が しない。
- 7 山に 登って みようと 思っても
- 8 高い 山の 上の 方に まで
- 9 りっぱな 道が できて しまっ ている。
- 10 たまに うるさい 町から のがれたいと 思っても
- 11 休みの 日に 山や こう外に 出かけて みても
- 12 自然の けしきを 楽しもう などと いう ことは
- 13 とても むずかしい 注文で あまり かんたんには できなく なって きた。
- 14 以前は 歩かなければ とても 行けなかった ような 高い 山の うえにも
- 15 今は あちこちに 車が 自由に 通れる 広い 道が 作られて いる。
- 16 その上、そんな 道の 両側 におみやげを 売る 店が 多く なって きた。
- 17 最近 は 自然の 草や 木が どうなっても 動物や 鳥が 少なく なって しまっ ても、
だれも あまり かまわ ない ようだ。

- 18 今のうちに何とかしなければ、将来日本では自然の美しさがみられないという可能性がじゅうぶんに考えられる。

- 1 teNki-ga
2 iikara
3 dokoka-e pikunikku-ni
4 ikoo-to omottemo
5 doko-mo kuruma-ga takusaN-de
6 iku ki-ga shinai.
7 yama-ni nobotte miyoo-to omottemo
8 takai yama-no ue-no hoo-nimade
9 rippana michi-ga dekite shimatte iru.
10 tamani urusai machi-kara nogaretai-to omotte
11 yasumi-no hi-ni yama-ya koogai-ni dekakete mitemo
12 shizeN-no keshiki-o tanoshimoo nado-to iu koto-wa
13 totemo muzukashii chuumoN-de, amari kaNtaN-niwa dekinaku natte kita.
14 izeN-wa arukanakereba, totemo ikenakatta yoona takai yama-no ue-nimo
15 ima-wa achikochi-ni kuruma-ga jiyuu-ni tooreru hiroi michi-ga tsukurarete iru.
16 sonoue, soNna michi-no ryoogawa-ni omiyage-o uru mise-ga ooku natte kita.
17 saikiN-wa shizeN-no kusa-ya ki-ga doonattemo doobutsu-ya tori-ga sukunaku natte shimattemo,
dare-mo amari kamawanai yoo-da.
18 ima-no uchi-ni naNtoka shinakereba, shoorai nihon-dewa shizen-no utsukushisa-ga mirarenai-to
iu kanousei-ga jyuubun-ni kangaerareru.

APPENDIX B

ENGLISH DICTATION TEST (FOR JAPANESE NATIVE SPEAKERS) (STUMP, 1978)

Instruction

テープを聞いて、文章の内容をそのまま書いてください。文章は18の部分に区切っております。テープは三回流れます。一回目は、何も書かずに聞いてください。二回目は、部分ごとに読んでいきますので、聞いている間に、書いてください。最後に、文章をもう一度聞いて、間違ったところを直してください。

徐々に難しくなりますが、最後まであきらめないでください。

(Translation: You are going to listen to a passage. Please write down what you hear. The passage is divided into 18 sections. You are going to hear the same passage three times. For the first time, you will hear the entire passage, but you are not allowed to take notes. For the second time, you will hear the same passage section by section. This time, please write down what you hear as much as possible. Finally you will hear the entire passage once again. Please check what you wrote and make any changes if necessary.

It becomes more difficult towards the end of the passage, but please try not to give up, and try to write as much as you can.)

1. Yesterday I saw a lady
 2. who was walking down a street near my house.
 3. She looked confused and a little bit lost,
 4. so I asked her if she knew where she was going.
 5. She said that she was looking for Maple street.
 6. I told her that I would walk with her to Maple street,
 7. since it was just a couple of blocks away.
- I showed her where the street was and then I walked home.

APPENDIX C

LIST OF VIDEO CLIPS USED IN VIDEO VIEWING EXPERIMENT

Table 12. List of video clips used in video viewing experiment

<i>Item</i>	<i>Target</i>	<i>Manner-Match</i>	<i>Path-Match</i>
1	March in gate	March out gate	Sidestep in gate
2	Skip around statue	Skip behind statue	Jump around statue
3	Crawl into tent	Crawl in front of tent	Scoot backwards into tent
4	Walk uphill	Walk downhill	Crawl uphill
5	Walk out building	Walk in building	Twirl out building
6	Spin around bench	Spin on top of bench	Jump around bench
7	Waddle across bridge	Waddle in front of bridge	Sidestep across bridge
8	Run downhill	Run uphill	Roll downhill
9	Cartwheel toward tree	Cartwheel away from tree	Leap toward tree
10	Run downstairs	Run upstairs	One leg hop downstairs
11	Somersault across path	Somersault beside path	Roll across path
12	Leap out of tunnel	Leap into tunnel	Two leg hop out tunnel

APPENDIX D

SELF-RATED PROFICIENCY QUESTIONNAIRE (FOR ENGLISH NATIVE SPEAKERS)

PROFICIENCY RATINGS

Directions: Listed below are a number of “can do” statements about a person’s *speaking* ability in a foreign language. Please read each description carefully and indicate by circling the appropriate number in one of the three columns, whether you would be able – at the present time – to carry out this task “quite easily,” “with some difficulty,” or “with great difficulty or not at all.”

	Quite Easily	With Some Difficulty	With Great Difficulty or not at all
1. Say the days of the week.	3	2	1
2. Count to 10 in the language.	3	2	1
3. Give the current date (month, day, year).	3	2	1
4. Order a simple meal in a restaurant.	3	2	1
5. Ask directions on the street.	3	2	1
6. Buy clothes in a department store.	3	2	1
7. Introduce myself in social situations, and use appropriate greetings and leave-taking expressions.	3	2	1
8. Give simple biographical information about myself (place of birth, composition of family, early schooling, etc.)	3	2	1
9. Talk about my favorite hobby at some length, using appropriate vocabulary.	3	2	1
10. Describe my present job, studies, or other major life activities accurately and in detail.	3	2	1
11. Tell what I plan to be doing 5 year from now, using appropriate future tenses.	3	2	1
12. Describe the U.S. education system in some detail.	3	2	1
13. Describe the role played by Congress in the U.S. government system.	3	2	1
14. State and support with examples and reasons a position on a controversial topic (for example, birth control, nuclear safety, environment pollution).	3	2	1

Regardless of how well you currently speak the foreign language, please answer each of the following in terms of your present level of *listening comprehension* in the language.

	Quite Easily	With Some Difficulty	With Great Difficulty or not at all
1. Understand very simple statements or questions in the language (“Hello”, “How are you?”, “What is your name?”, “Where do you live?”, etc.)	3	2	1
2. In face-to-face conversation, understand a native speaker who is speaking slowly and carefully (i.e. deliberately adapting his or her speech to suit me).	3	2	1
3. In face-to-face conversation with a native speaker who is speaking slowly and carefully to me, tell whether the speaker is referring to past, present, or future events.	3	2	1
4. In face-to-face conversation, understand native speakers who are speaking to me as quickly and colloquially as they would to another native speaker.	3	2	1
5. On the telephone, understand a native speaker who is speaking to me slowly and carefully (i.e. deliberately adapting his or her speech to suit me).	3	2	1
6. On the telephone, understand a native speaker who is talking as quickly and as colloquially as he or she would to a native speaker of the language.	3	2	1
7. Understand two native speakers when they are talking rapidly with one another.	3	2	1
8. Understand movies without subtitles.	3	2	1
9. Understand news broadcasts on the radio.	3	2	1
10. Understand train departure announcements and similar kinds of “public address system” announcements.	3	2	1
11. Understand the words of popular song on the radio	3	2	1
12. Understand play-by-play description of sports events.	3	2	1

APPENDIX E

SELF-RATED PROFICIENCY QUESTIONNAIRE (FOR JAPANESE NATIVE SPEAKERS)

次はあなたの**英語**の会話能力に関する文です。あなたはどれほどできるか、ふさわしい数字に○をつけてください。3は「簡単にできる」、2は「少し難しい」、1は「非常に難しい、あるいはまったくできない」です。

	簡単にできる	少し難しい	非常に難しい、 或いはまったくできない
1. 日曜から土曜まで曜日をいう	3	2	1
2. 1から10まで数える	3	2	1
3. 今日の日付を言う（何年何月何日）	3	2	1
4. レストランで簡単な注文をする	3	2	1
5. 街で道を聞く	3	2	1
6. デパートで服を買う	3	2	1
7. 社交的な場で自己紹介をし、適切にあいさつをし、帰ることを告げる	3	2	1
8. 簡単に自分のことを言う（例えば、出身、家族構成、教育など）	3	2	1
9. ある程度詳しく自分の趣味を適切な言葉で説明する	3	2	1
10. 今の仕事や勉強や生活を詳しく説明する	3	2	1
11. 適切な動詞のテンスを使い、これから5年後何をしているかの計画を説明する	3	2	1
12. 日本の教育制度をある程度詳しく説明する	3	2	1
13. 日本の政治システムにおける国会の役割を説明する	3	2	1
14. 意見のわかるるトピック（中絶、核兵器、環境問題など）に関して例を挙げ、自分の立場とその理由を説明する	3	2	1

あなたの英語の聴解能力について、ふさわしい数字に○をつけてください。なお、この部分を解答するとき、自分の会話能力を無視してください。

	簡単にできる	少し難しい	非常に難しい、或いはまったくできない
1. 簡単な文や質問を理解する（例えば、“Hello”，“How are you?”，“What is your name?”，“Where do you live?”，etc.）など	3	2	1
2. 相手が目の前にいる会話で、英語母語話者がゆっくり、はっきりと話してくれればわかる	3	2	1
3. 相手が目の前にいる会話で、英語母語話者がゆっくり、はっきりと話してくれれば、過去のこと、現在のこと、それとも未来のことを言っているかわかる	3	2	1
4. 相手が目の前にいる会話で、英語母語話者が他の母語話者に話すような速さで、口語体で話してもわかる	3	2	1
5. 電話で、英語母語話者がゆっくり、はっきりと話してくれればわかる	3	2	1
6. 電話で、英語母語話者が他の母語話者に話すような速さで、口語体で話してもわかる	3	2	1
7. 二人の英語母語話者が速く話しても、その会話がわかる	3	2	1
8. 字幕がなくても映画の内容がわかる	3	2	1
9. ラジオのニュースの放送がわかる	3	2	1
10. 列車の出発をつけたりする駅などでのアナウンスがわかる	3	2	1
11. ラジオの英語の歌の歌詞が聞き取れる	3	2	1
12. スポーツ番組の実況中継がわかる	3	2	1

APPENDIX F

BACKGROUND INFORMATION QUESTIONNAIRE (ENGLISH AND JAPANESE VERSIONS)

(English version)

1. How long have you been studying Japanese? _____
2. At what age did you start studying Japanese? _____
3. What languages, other than English and Japanese, do you speak? _____
4. Rate your ability of other foreign languages
 - a. _____ native-like fluent fair poor
 - b. _____ native-like fluent fair poor
 - c. _____ native-like fluent fair poor
 - d. _____ native-like fluent fair poor

(Japanese version)

1. 英語をどれぐらい勉強しましたか? _____
2. アメリカに来てどれぐらい経ちましたか? _____
3. 何歳から英語を勉強し始めましたか? _____
4. 日本語と英語の他に、何語が話せますか? _____
5. あなたのその他の言語のレベルを評価してください。
 - a. _____ 母語話者に近い 流暢 まあまあ あまり話せない
 - b. _____ 母語話者に近い 流暢 まあまあ あまり話せない
 - c. _____ 母語話者に近い 流暢 まあまあ あまり話せない

d. _____ 母語話者に近い 流暢 まあまあ あまり話せない

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