

**Acquisition and Processing of Japanese Passives
by Heritage Speakers and JFL Learners:
Effects of Manner of Input and Early Age of Acquisition**

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Abstract

The general aim of this study is to investigate the similarities and differences in knowledge and processing of Japanese passive constructions by heritage speakers and second language (L2) learners of Japanese. These groups acquire language differently in terms of age and context/manner of acquisition, and comparing their linguistic behaviour allows us to examine whether heritage speakers have an advantage over L2 learners due to their early exposure and natural context of input. In order to examine this issue, the linguistic knowledge of Japanese passives and the way in which they are processed were compared between the two populations.

I tested the two different types of passives that are available in Japanese: the type that involves the syntax-semantics-discourse interface (indirect passive and *ni*-direct passive), and the one that does not involve that interface (*niyotte* passive). It has been found that advanced heritage speakers and L2 learners have difficulties with structures involving different structural levels, especially structures at the interface with discourse (Laleko & Polinsky, 2013; Montrul & Polinsky, 2011, among many others), as the interfaces involving an external cognitive domain (e.g., syntax-discourse) require more processing resources than linguistic internal interfaces (e.g., syntax-semantics) (Sorace, 2011).

While such representational and processing difficulties have been reported for several languages, previous studies on the acquisition of Japanese passives by both L1 and L2 learners have found the opposite: namely, that the *niyotte* passive, which does not involve an external interface, being acquired later than the other two passives, which are discourse dependent (Harada & Fukuda 1998 for L1; Hara 2002 for L2). These results may be attributed to syntax derivation or frequency of use. The *niyotte* passive is considered to be derived by movement, while the other two are said to be base-generated. Thus, both the complexity of the syntactic derivation and the fact that usage of *niyotte* passive is usually limited to formal speech or written texts may delay acquisition.

Examining the acquisition and processing of Japanese passives allows us to analyse the factors that play a crucial role in determining the difficulty of acquisition. In order to investigate these factors, I used two experimental tasks, an acceptability judgment task (AJT) and a self-paced listening task (SPL). The former investigated heritage speakers' and Japanese as a foreign language (JFL) learners' knowledge of each type of Japanese passives. The latter allowed us to test whether there are any differences in the processing of the two types of passives; specifically, whether the passives with an external interface are more difficult for L2 learners and heritage speakers to process. A control group of native speakers and a group of first generation immigrants to Canada were also tested to compare their results to those of the two experimental groups, allowing us to investigate whether heritage speakers have knowledge and processing patterns similar to those of the control group due to their early language exposure to the language and contextualized input.

The results of the AJT showed that each experimental group displayed a stronger knowledge of different aspects of Japanese passives. While the heritage speakers recognised the pragmatic features of the *ni*-direct passive, the JFL learners did not. In contrast, the JFL learners showed syntactic and semantic knowledge of the indirect passive, unlike the heritage speakers. These contrastive results indicate that different manners of input lead to different acquisition outcomes. Furthermore, neither group demonstrated knowledge of the low frequency *niyotte* passive, and thus input frequency, rather than the discourse-related interface, appear to be more

critical for the acquisition of Japanese passives. With respect to the SPL, the speakers' performance was native-like in the case of the heritage speakers but non-native with the JFL learners, indicating that early age of exposure has an effect on language processing. Taken together, the results from the both tasks showcase the importance of both implicit and explicit manner of input, especially in the case of low frequency structures, as well as the early age of acquisition of a language.

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List of Abbreviation

The following abbreviations are used to label the linguistic terms used in this thesis.

Acc	Accusative case
Caus	Causative suffix
CL	Classifier
Comp	Complementizer
Conj	Conjunctive suffix
Cop	Copular
Dat	Dative case
Gen	Genitive case
Hon	Honorific suffix
Imp	Imperative suffix
Neg	Negative suffix
Nom	Nominative case
Pass	Passive suffix
Past	Past tense suffix
Poten	Potential suffix
Pres	Present tense suffix
Prog	Progressive suffix
Top	Topic marker
Ques	Question marker

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Introduction

The age at which one is exposed to a language and the quantity and quality of input one receives are the most influential factors in successful language acquisition. It is essential to receive a sufficient amount of adequate input at the right time. Age is an undebatable factor and the earlier the exposure, the better the expected end state. Children acquiring a first language (L1) who receive sufficient and valuable input from birth successfully attain adult-like competence. In second language (L2) acquisition, younger learners generally show an advantage over older learners (Klein, 1996; among others), and post-puberty L2 learners are expected to face challenges in attaining native-like proficiency. While the source of the challenges in post-puberty language acquisition is still controversial, it is clear that biological changes that occur with age and affect acquisition (Bialystok & Hakuta, 1999; Hakuta, Bialystok, & Wiley, 2003; Bley-Vroman, 1980, 1990; DeKeyser, 2000; Paradis, 2004).

Another factor that affects language acquisition is input. Without input, one is less likely to develop typical linguistic abilities, as illustrated in the case of Genie (e.g., Curtiss, 1977, 1981), a girl who suffered severe linguistic deprivation and neglect from 20 months to 13 years of age when she was found in a Los Angeles suburb in 1970. At the time of her discovery and rescue, her utterances were limited to only a few phrases due to a lack of linguistic experience (i.e. input). Although her linguistic abilities improved tremendously after rehabilitation, her competence was still significantly less than native-like, a fact which was attributed to post-puberty acquisition (e.g. Curtiss, 1977).

The importance of age and input is well documented in both L1 and L2 acquisition, and heritage language (HL) acquisition sheds light on this. Heritage language speakers (HS), who acquire the HL as L1 at home but are immersed in a society where another language is the

dominant language (Benmamoun et.al., 2013; Montrul, 2008, 2012; Valdés, 2000) are similar to monolingual children in terms of early exposure to the language, but often face challenges in attaining adult native-like proficiency (unlike their monolingual counterparts) because of their limited input as well as the influence from the majority language spoken in the larger community. HSs are also similar to adult L2 learners in that both groups attain a non-nativelike end-state, in spite of the different age of acquisition.

Although L2 learners and HSs share similar non-native like end states of acquisition, their linguistic performance is not the same. Though these populations received limited input that affects acquisition, the manner of input is completely different: HSs receive natural and implicit input whereas L2 learners usually receive structural and explicit input. Thus, comparing these two populations contributes to filling the gap between monolingual L1 and adult L2 acquisition and to further understanding the role of age and manner of input in language acquisition.

Consequently, one of the aims of this dissertation is to address these effects of age and input in language acquisition. I will investigate this by comparing the knowledge and processing of Japanese passives by Japanese heritage speakers (JHSs) and learners of Japanese as a foreign language (JFL).

Japanese passives are late-learned structures due to their complexity. They are divided into two types: the affective passive and the *niyotte* passive. The former is a pragmatically dependent structure, whereas the latter is pragmatically independent. Structures licenced at the pragmatic level are argued to cause more processing load than those located at a linguistic internal interface (such as syntax-semantic interface), and consequently are more problematic for bilinguals to acquire (Sorace, 2011). Comparing the online processing of linguistic external and internal interfaces allows us to test whether the linguistic external interface is in fact more costly

to process. This comparison also allows us to examine whether the processing cost affects bilinguals' acquisition of the structure. The syntactic derivation of the *niyotte* passive, which is a pragmatically independent structure, is more complex than the affective passive. Comparing the knowledge and processing of these two types of passives allows us to examine whether the syntax-pragmatics interface is more problematic for bilinguals to acquire than complexity of the syntactic derivation. Consequently, the second aim of this dissertation is to investigate the source of difficulties in the acquisition of passives.

In order to examine these questions, two experiments were conducted: an offline acceptability judgment task and an online self-paced listening task. The former examines the actual knowledge of Japanese passives, and the latter tests online processing of passives by the JHSs and JFL learners.

The contribution of this dissertation is three-fold. At a theoretical level, I propose a new syntactic analysis of Japanese passives that is empirically supported by the results of the online experiment. At the descriptive and experimental levels, I contribute data comparing actual knowledge and processing in JHSs and JFL learners, and show how age of acquisition and manner of input influence the knowledge of a structure as well as online processing. The online processing results provide evidence of an additional processing load at the linguistic external interface compared to the linguistic internal interface. In acquisition and psycholinguistic research, my study also offers the possibility of being replicated with other populations. Finally, at the applied level, this research provides pedagogical insights into L2 and HL learning and teaching. A better understanding of the similarities and differences between HL and L2 acquisition benefits a classroom with students from diverse backgrounds, and the analysis and description of

the passives in this study can be important sources of information in the preparation of teaching materials and in teacher training.

The dissertation is structured in the following manner:

Chapter 1 offers the theoretical background of this dissertation. It gives an overview of HL and adult L2 acquisition. It has been reported that HSs have an advantage over L2 learners in some linguistic areas (i.e. phonology and syntax) but not others, and their performance also varies according to the type of experimental task used (e.g. Montrul, 2008, 2012). While the HSs do have advantages over the L2 learners with simple, early-learned syntactic structures, they do not perform better given complex structures such as passives as they are usually acquired later in language development. Passives are late-learned structures and both L1 children and L2 learners have difficulty mastering them. One of the potential sources of the difficulties is the pragmatic aspect of the passives, and therefore the Interface Hypothesis (Sorace, 2003, 2011; Sorace & Serratrice, 2009) is introduced in this chapter. The complexity of syntactic derivation, another potential factor that may influence the late acquisition of Japanese passives, is also discussed. In addition, this chapter reviews the previous literature investigating bilingual sentence processing to contribute to a better understanding of HSs and L2 learners' processing and to provide the background for the experimental study on the processing of Japanese passives.

Chapter 2 provides an account of the formal features that play a role in Japanese passives in the context of a syntactic analysis of these constructions. This constitutes the theoretical basis for the study. I propose to divide the passives into two types depending on their syntactic derivation: the *niyotte* passive and the affective passive. The former is a 'pure' passive and it is derived by promoting a theme to a subject of a sentence like passive constructions in various languages including English. The latter, whose syntactic analysis was developed based on of

Pylkkänen's (2000, 2002) applicative approach, is base-generated, and the passive morpheme is an applicative which introduces the subject as an affectee. This chapter also discusses the differences in frequency of each passive construction, and this affects the acquisition process.

Chapter 3 summarises the previous literature on the acquisition of Japanese passives by L1 children and JFL learners as well as the processing of passives by native Japanese speakers. It has been reported that L1 monolingual children acquire passives later in language development. This fact may lead the JHSs to an incomplete acquisition of passives. JFL learners are also reported to have difficulties mastering the passives due to their complex structure and pragmatic aspects.

Chapter 4 presents the predictions of the study as well as the research questions and hypotheses. The pragmatic aspect, syntactic complexity, frequency, and manner of input are discussed as factors that may play a role in the acquisition of passives and therefore shape the results of the study. The first three factors are then used to predict hierarchies of the development of passives. This chapter also provides an overview of two experiments, including a description of the participants, the experimental design and overall data collection procedure.

Chapter 5 outlines and discusses the method and results of the offline acceptability judgment task (AJT). This task examines participants' knowledge of Japanese passives. The results show no effect of age, and no advantage of the JHSs over the JFL learners. There is, however, an effect of manner of input as illustrated in the fact that the JHSs are more sensitive to the pragmatic aspect of the passives than the JFL learners, while the JFL learners outperformed the JHSs in terms of the syntactic structure of indirect passives.

Chapter 6 presents and discusses the method and results of the online self-paced listening task (SPL). This task investigates participants' online processing of Japanese passive sentences.

The results show both age and input effects, as the JHSs process the passive sentences more similarly to the monolingual Japanese speakers than the JFL learners do. The results also indicate that pragmatic dependent structures do indeed require a greater processing load than pragmatic independent ones. A comparison of the results from the offline and online tasks highlight the effects of age and the manner of input.

Chapter 7 discusses the key findings of the experiments and implications of these results.

Finally, the dissertation concludes with a summary of the study, and discusses the limitations of this study as well as suggestions for future research.

Chapter 1. Heritage Language and Second Language Acquisition and Processing

1.1 Introduction

This chapter provides the theoretical base of the present study. Research on language acquisition comparing heritage speakers (HSs) to second language (L2) learners has steadily increased over the past few decades (see Benmamoun, Montrul & Polinsky, 2013; Montrul, 2008, 2012, for an overview of heritage language studies). This field of research has been receiving more attention as the number of HSs learning their heritage languages (HL) in postsecondary institutions increases (e.g., Polinsky & Kagan, 2007). They often share a class with students who are learning the language as an L2, and having students with different language backgrounds in the same class raises pedagogical issues given that the knowledge and processing of language properties and registers may differ between HS and L2 learners (Montrul 2010, 2012).

Investigating both populations allows us to examine how age and the manner of acquisition influence both the ultimate attainment and development of a language. Furthermore, understanding the similarities and differences between the populations may provide us with pedagogical insights.

This chapter first introduces HL acquisition and compares it to L2 acquisition. Then, the Interface Hypothesis (IH) (Sorace, 2003, 2011; Sorace & Serratrice, 2009) will be discussed as it is at the core of this study, and the pragmatic/discourse-related interface will also be addressed as one of the potential factors that has an influential role in language acquisition. The description of another potential factor, the complexity of syntactic derivation, follows. Finally, a discussion on bilingual sentence processing will conclude this chapter and provide a transition to chapter 2.

1.2 Acquisition of the heritage language and the second language

1.2.1. Heritage language acquisition

HSs are defined as those who acquire their L1 as a minority language where a dominant language other than their L1 is spoken in the wider society (Benmamoun et.al., 2013; Montrul, 2008, 2012; Valdés, 2000). They usually speak the HL with their families and with people in the community who share the same minority language. The definition of HSs is broad and there are various types of speakers with a wide range of proficiency levels. HSs are usually considered bilinguals and are typically divided into two categories: simultaneous bilinguals, those who learn the languages simultaneously and in a similar manner from birth, and sequential bilinguals, those who acquire their HL as the L1 and then the dominant language later as L2 before puberty (Montrul, 2008). The different environments and circumstances in which HSs are raised are two of the factors that lead to HSs with a variety of linguistic profiles. On one hand, if the HSs grow up in a family where only the HL is spoken and consequently receive enough input to develop the language, they are likely to become highly proficient HSs at a young age. With enough exposure to the language, some speakers may attain and maintain a certain level of proficiency in the language to adulthood. On the other hand, some HSs may lose proficiency in their HL due to increased influence from the majority language spoken in the wider society and restricted exposure to the HL. In both cases, the majority language in the environment often becomes the HSs' dominant language once they receive formal education in the majority language. Changes in the amount of input may influence the development of both languages, often enhancing the development of the language of the majority to the detriment of the HL.

Another factor which affects the development of a HL is literacy (Benmamoun et.al, 2013). Monolingual L1 children usually acquire literacy through formal instruction at school,

and that furthers their language development. Once the HSs start school, the quality and quantity of the input¹ in the HL are much more restricted than in the dominant language (Polinsky & Kagan, 2007), which leads to the acquisition of a HL often being labeled as ‘incomplete acquisition’ or a case of ‘attrition’ (Montrul, 2002, 2008, 2010; Polinsky 2006, 2008)². When the HL input decreases, HSs may not receive enough input to acquire late-learned linguistic features, also resulting in ‘incomplete acquisition’. Any shifts in dominance from the L1 HL to the L2 language of the wider society may create the opportunity for the L2 to influence the HL, consequently causing L1 HL attrition (Polinsky, 2011).

Many HSs register in language courses during post-secondary education in order to regain and/or improve proficiency in their HL (Polinsky & Kagan, 2007), which has been affected by a majority language spoken in the wider society. Knowing which language properties are vulnerable to incomplete acquisition or to attrition enables us to develop a curriculum focusing on those properties in an effort to provide effective instruction to HSs.

1.2.2 Heritage language and late L2 acquisition

The fundamental differences between HL and L2 acquisition are the age of acquisition, and the quality, quantity and manner of input. HSs acquire a target language (TL) at an early age with intensive exposure in natural contexts. The input is usually oral and received in a natural setting, and thus many HSs do not develop a high level of literacy in the HL. Late L2 learners acquire a TL after puberty, when they already have a solid knowledge of their L1. The input is usually

¹ Quality of input is affected by the language spoken by family and community members, which may change over the years.

² Even though incomplete acquisition and attrition are different phenomena, it is not easy to determine whether the deficit of a linguistic feature in the HL is attributed to an effect of one or the other, especially when a targeted feature is acquired later in the L1 (Sorace, 2004).

restricted to classroom instruction with literacy as a tool. Montrul (2012) claims that the different types of input influence ‘the processing of language and linguistic performance in different tasks’(p27). All this accounts for the fact that HSs outperform L2 learners in tasks that require implicit linguistic knowledge such as oral production, while the L2 learners outperform the HSs in tasks such as acceptability Judgments, in which metalinguistic knowledge and explicit learning can be utilized (Montrul, 2009, 2010).

The naïve prediction is that HSs have advantages in acquisition over L2 learners due to their earlier exposure to the language combined with their background knowledge of the language and culture. Several studies have been conducted to compare HL and L2 acquisition in order to examine possible advantages of HSs over L2 learners. In general, the findings in previous studies have not confirmed the prediction, but rather have shown that the advantages of HSs over L2 learners are selective. Table 1 presents a contrast between HSs and L2 learners as summarised by Montrul (2012).

Table 1: Advantage of heritage speakers over L2 learners

Area of linguistic knowledge	Advantage for heritage speakers
Phonology	Yes
Lexicon	No (difference by words)
Syntax	Yes
Discourse-syntax	No
Semantics	No (difference by task)

(Adapted from Montrul, 2012)

The advantage for HSs has been evident in phonology and syntax, but not in other areas of linguistic knowledge. Phonology is the area in which HSs are most likely to have an advantage due to their early exposure to the language, at periods of development which are crucial for the acquisition of language-specific phonemes (e.g. Werker & Tees, 2005).

While syntax is labeled as another area where HSs have an advantage over L2 learners, it has been reported that HSs do show difficulties in the acquisition of complex syntax which involve argument replacement such as passives³ and long-distance dependencies (Benmamoun et.al, 2013; Montrul, 2016).

Despite different pathways of acquisition, both populations infrequently attain a level of proficiency that is compatible with that of monolingual L1 speakers. As HSs do not receive formal education in the HL, their proficiency level does not usually reach the higher education level of monolingual L1 speakers of the language. The deficits in their linguistic performance can be attributed to incomplete acquisition or L1 attrition as well as the influence of their dominant language.

In the case of L2 acquisition, it is well documented that learners encounter learnability issues such as L1 transfer and fossilization. L1 transfer is a common phenomenon in L2 acquisition as the solid knowledge of L1 is utilized as a means to process and produce the L2. It has been reported that HSs also transfer some features of the dominant language to their HL (Montrul 2008, 2012; Montrul & Ionin, 2010). For example, Montrul and Ionin (2010) found that Spanish HSs whose dominant language is English exhibited an influence of English in their Spanish in the interpretation of definite articles in some contexts. Likewise, attrition is an issue not only for the HL but also for the L1 of near-native adult L2 speakers living in an environment where the L2 is primarily spoken (e.g Schmid, 2009, 2011; Schmid, & Köpke, 2007).

The current study examines the similarities and differences in the acquisition of syntactically complex structures by HSs and L2 learners who differ with respect to age and manner of acquisition. To this end, this dissertation compares the knowledge and processing of

³ Polinsky (2009), who examined HS's knowledge of A' and A chain dependence, argues that the difficulty in acquiring the passive is not purely due to core syntax, but that missing morphological cues or shallow processing may also play a role.

Japanese passives by Japanese HSs (JHSs) and learners of Japanese as a foreign language (JFL learners).

1.3 Interface Hypothesis

1.3.1 Framework

The IH, first put forth by Sorace and her colleagues (Belletti, Bennati & Sorace, 2007; Sorace, 2003, 2005, 2006, 2007; Sorace & Filiaci, 2006, Sorace & Serratrice, 2009; Tsimpli, Sorace, Heycock & Filiaci, 2004), proposes that properties of narrow syntax that may be at an internal interface such as syntax, semantics, and phonology are more accessible for achieving near-native levels by L2 learners⁴ than properties located at external interfaces such as the syntax-discourse interface. Sorace (2011) argues that language deficit is likely caused by either the underspecification of the grammatical representation or by processing difficulties, and processing seems to have a more significant impact (e.g. Hopp, 2006). The syntax-discourse interface, which demands ‘a higher processing cost’, is more vulnerable for bilinguals than linguistic representations, as bilinguals are ‘less efficient at processing structures at the syntax-pragmatics interface than syntactic processing’ (Sorace, 2011: 17). This proposal is consistent with the framework of the economy of interpretation proposed by Reuland (2001), which states that processes within a formal language computational system (i.e. syntax and semantics) are less costly than those with discourse components. Moreover, regarding the language processing system, Pylkkänen and McElree (2006) state that discourse processing is ‘higher-order’ than the processing of the lexical and syntactic interfaces. Based on these claims, the hierarchy of

⁴ IH was developed to test near-native L2 learners, however, it has now been extended to test HSs as well. See Montrul & Polinsky (2011) for their argument that IH is applicable to HSs as well as L1 attriters (Shumid, 2011).

linguistic encoding and processing, which applies in the course of language acquisition, could take the shape shown in (1).

(1) formal linguistic interfaces < syntax-discourse/pragmatics interface

This hierarchy predicts that linguistic structures licensed at the discourse-related interface are less accessible to bilinguals, and that they are not only harder to attain for L2 learners but also more susceptible to attrition.

1.3.2 Studies that have investigated the discourse-related interface

A substantial amount of research has been conducted to investigate the IH from a broader perspective (Hopp, 2006, 2007, 2009; Laleko & Polinsky, 2013, 2015; Slabakova, 2008; Slabakova & Montrul, 2005; Valenzuela, 2006; among many others), and many studies have found that near-native L2 learners are able to attain native-like competence of structures that are interfaced at internal linguistic levels, but not ones interfaced at discourse/pragmatic levels. For instance, Slabakova and Montrul (2005), who investigated the acquisition of aspectual shift in Spanish verbs by English speakers, found that learners with a high level of proficiency fail to acquire certain pragmatic coercion processes even though they acquire grammatical knowledge and that learners with an intermediate level of proficiency had not acquired either the grammatical knowledge or the pragmatic aspectual shift.

Hopp (2007, 2009) also confirmed that the large processing load of the discourse-related structures affects acquisition. The goal of his study was to explore whether the locus of the difficulties in attainment of the syntax-discourse interface is the grammatical representation or

computational representation. He examined the knowledge and processing of scrambling in German by L1 Russian, L1 Dutch, and L1 English speakers with advanced to near-native proficiency in L2 German. Scrambling involves word order flexibility, such as in German, where an object is allowed to precede a subject in embedded clauses as in (2b).

(2) a. Ich glaube, dass der Vater den Onkel geschlagen hat. (SO)

I think that the father the uncle beaten has
'I think that the father hit the uncle.'

b. Ich glaube, dass den onkel der VATER geschlagen hat. (OS)

(Hopp, 2007)

This scrambling involves the syntax-discourse interface in that it is restricted to the context in which the scrambled object is defocused and the subject in the embedded clause receives the focus. The subject of the embedded clause in (2a), 'vater' was scrambled in (2b) in order to receive focus.

An offline acceptability judgment task was employed in order to examine L2 learners' knowledge of the scrambling, and an online self-paced reading task was run to examine real time processing strategies. The results of the acceptability judgment task exhibited effects of L2 proficiency and type of L1. The L1 English and L1 Russian speakers showed native-like judgement for all sentence types while their L1 Dutch counterparts, whose L1 has scrambling with the opposite structure to that of German, did not. The self-paced reading task also revealed that L2 German processing strategies of L1 English and L1 Russian speakers are very similar to that of native German speakers. Hopp (2009) claims that these results indicate that near-native L2 speakers are capable of attaining native-like grammatical representation and processing strategies irrespective of the L1. Regarding the results of the L1 Dutch speakers, Hopp argues that the differences in results are derived from learnability issues such as L1 transfer, rather than

representational deficits. He further postulates that the difficulties with discourse-related structures are due to computational difficulties in processing different types of linguistic information in real time, which cause a higher cognitive working load.

Although the IH has been discussed only in bilingual contexts, the hierarchy presented in (1) has been also observed in L1 acquisition. Even when children master syntactic structures, they often fail to understand pragmatic conditions. In a study by Chien & Wexler (1990), for instance, children competently comprehend the syntactic locality condition of reflexive bindings by the age of 6 but not the long distance binding of pronouns. The authors explain that the children's failure in understanding that pronouns cannot be locally bound is not due to lack of acquisition of binding principles, but rather to pragmatic principles.

If the IH applies to L1 acquisition as well, HS who acquire the HL as an L1 may be prone to issues at the discourse related interface.

1.3.3 Controversy over the Interface Hypothesis

Some researchers have argued against the IH claim that the interface involving discourse/pragmatics is more problematic to acquire than the formal linguistic internal interface. White (2011) argues that all interfaces are equally (non) problematic for L2 learners, considering the evidence against claims suggesting that grammar internal interfaces are more easily acquirable compared to external interfaces.

Montrul (2011) also advocates that the division between the syntax-semantics interface and syntax-discourse interface is not so obvious with certain structures such as those that involve the syntax-semantics-discourse interface. To illustrate this, she discussed an example of Differential Object Marking (DOM) in Spanish, which was assumed to involve only the syntax-

semantics interface (Guijarro-Fuentes & Marinis, 2007), claiming that DOM is actually a more complex and pragmatic aspect that has to be considered in order to produce correct marking. This claim arose from the fact that advanced L2 learners as well as HSs have problems recognizing the grammaticality of DOM (Guijarro-Fuentes & Marinis, 2007; Montrul, 2004), while L1 Spanish children master the semantic constraints of DOM at an early stage of their acquisition (age 3). It is indeed difficult to discern whether some structures involve the syntax-semantics interface or the syntax-discourse interface (Montrul, 2011), or an internal interface and an external interface (White, 2009). Perhaps the difficulty lies in the complex nature of the structures themselves, a factor which will be discussed next.

1.4 Syntactic complexity

Economy is a principle that applies to language acquisition within the Minimalist Framework (Chomsky, 1995, 2001, 2005), and it predicts that computational complexity causes a delay. In other words, complex structures are expected to appear later in children's language development compared to simple structures, as they are more costly to process (Jakubowicz, 2002). For example, the syntactic operation of Move (such as changing a statement into a question) is considered more costly than Merge (such as combining two phrases into one slightly longer clause), and consequently, children tend to acquire structures requiring Move later than structures that require only Merge (Sorace, 2003). If this prediction applies to both L1 and L2 acquisition, difficulties in acquiring discourse-related syntactic structures may not arise from the interface *per se* but in relation to narrow syntax, namely the complexity of derivation.

Laleko and Polinsky (2016) postulate that the discourse-related interface is not the only component causing the divergence of bilinguals from monolingual native speakers, but that

structural complexities which require more processing and working memory capacities in order to interpret context are also key components. To illustrate this proposal, they investigated the knowledge of topic and subject marking in Japanese and Korean by L2 learners and HSs. Topic marking in both languages demands pragmatic information in its operation, whereas subject marking is simply a syntactic operation, which does not require pragmatic information.

The results of an acceptability judgment task showed that both L2 learners and HSs of both Japanese and Korean rated subject markers in a more native-like way compared to topic markers. This means that the bilinguals were more vulnerable to topic marking, which requires discourse information. This result is consistent with the contention of the IH that structures interfaced at the discourse-level are problematic for bilinguals. Laleko and Polinsky (2016), however, argue that the discourse-related interface alone does not fully explain the deficit in topic marking. First, topic marking is syntactically more complex than subject marking, as it demands a higher syntactic projection than subject marking (a topic marker poses in TopP which is above TP, and the subject marker stays within TP). Second, bilinguals were less native-like in the anaphoric condition of topic marking than in general conditions, which Laleko and Polinsky account for by stating that the anaphoric condition requires a ‘link with prior discourse (p.411)’. The first point highlights the role of complex derivation in bilingual acquisition. According to these authors, the second point suggests that memory may also be a factor in the vulnerability of some discourse-related conditions.

1.5 Sentence processing

1.5.1 Bilingual sentence processing

Under the IH, processing load plays a crucial role in language acquisition. Discourse-related structures are more difficult to acquire as they cost more in processing than the structures interfaced within internal linguistic domains. Syntactic complexity itself is also recognised as a factor that affects processing load.

‘The interaction between syntactic complexity and processing complexity is a long-standing issue in the literature on the language processing system (Ferreira & Clifton, 1986; Frazier, 1985; Stevenson & Merlo, 1997), and the idea that structural information affects sentence processing is no longer controversial despite the fact that consensus has not been reached on the exact mechanism of this interaction.’

(Laleko & Polinsky 2016: 400)

This subsection will explore sentence processing in bilinguals. Scores of studies have been conducted to investigate L2 sentence processing in comparison to native sentence processing, and the results are controversial. The following subsection will review the debate on L2 sentence processing. Then, sentence processing in HSs will be discussed.

1.5.2 L2 sentence processing

Many studies on L2 sentence processing have investigated parsing and garden path strategies in the contexts of *wh*-dependencies (e.g. Marinis et al., 2005; Williams et. al., 2001), relative clause attachment (Dussias, 2003; Felser, Roberts, Gross & Marinis, 2003; Papadopoulou & Clahsen, 2003), and anaphora resolution (Rodriguez, 2008). The results of these studies have not resolved the question as to exactly how bilingual sentence processing is carried out and achieved.

Some argue that L2 learners attain a native-like mechanism of L2 sentence processing, and that their sentence processing patterns are the same as monolingual native speakers (Hoover & Dwivedi, 1998; Hopp, 2007, 2009; Jackson & Dussias, 2009; Williams et. al., 2001). Others

argue that L2 learners exploit a processing strategy that is different from native speakers (Felser, Roberts, Marinis, & Gross, 2003; Papadopoulou & Clahsen, 2003; Clahsen & Felser, 2006). The following subsections will summarise the debates over sentence processing in bilinguals.

1.5.2.1 Native-like strategies of L2 sentence processing

Jackson and Dussias (2009) found that highly-proficient L2 German learners with L1 English attained native-like processing strategies in subject versus object *wh*-questions. During a self-paced reading task, L2 German learners exhibited longer reading times for object-extractions than for subject-extractions as well as sensitivity to case marking information during processing. Their performance matched that of L1 German speakers, with no evidence of transfer from English. Based on the results, the authors propose that L2 German speakers master linguistic properties of case marking, and are able to access these properties during real time processing.

Similarly, the aforementioned study by Hopp (2009), who investigated the acquisition of the syntax-discourse interface, posited that L2 learners can acquire native-like processing strategies; however, it may be difficult to attain discourse-level structures as this imposes computational demands due to the processing of different types of information.

Therefore, even when L2 learners show similar processing patterns to native speakers, as was reported in the above studies, individual differences are inevitable due to different factors such as working memory and lexical automaticity (Hopp, 2014) or working memory and proficiency level (Jackson & van Hell, 2011; Sagarra & Herschensohn, 2010; for a review, see Roberts, 2012).

1.5.2.2 Distinctive L2 sentence processing

While quite a few studies have found different processing strategies between L2 learners and monolingual native speakers, there is no consensus on the locus of these differences. Many proposals have been put forth in an attempt to account for the results, including limited working memory (e.g. Rodriguez, 2008) and the influence of L1 processing (e.g. MacWhinney, 1987, 1997b; MacWhinney & Bates, 1989)⁵. While it is plausible that differences in processing may be due to L1 transfer (e.g. Juffs, 1998), several studies fail to show evidence of such transfer (as outlined below).

Papadapoulou and Clahsen (2003) investigated parsing strategies of L2 learners by examining relative clause attachment in Greek relative clauses by L1 Spanish, L1 German, and L1 Russian speakers learning L2 Greek. In all these languages, including Greek, a preference for high attachment is expected. The relative clause ‘who was on the balcony’ in (3) can modify either the first DP, ‘the servant’, or the second DP, ‘the actress’.

- (3) Someone shot [the servant]DP-1 of [the actress]DP-2 who was on the balcony.
(Papadapoulou & Clahsen, 2003: 502)

High attachment means that the relative clause attaches to the first DP, and low attachment to the second DP. It has been documented that English native speakers prefer low attachment, and they tend to interpret the example sentence as ‘it was the actress who was on the balcony’.

⁵ Studies using behavioural tasks were included here, as the current study employs only a behavioural experiment. The influence of the L1 was also found in studies examining neural processing through the use of ERPs (Event-Related Potentials) (Sabourin & Stowe, 2008; Tokowicz & MacWhinney, 2005). Sabourin & Stowe (2008) found that L2 speakers are capable of attaining native-like processing if they can apply their L1 processing mechanism to their L2 processing.

Papadopoulou and Clahsen employed an offline grammaticality acceptability judgment task and an online self-paced reading task. In both tasks, two antecedent conditions ([DP₁ of DP₂] and [DP₁ PP(with) DP₂]) and two attachment conditions (high and low) were tested, as in the examples in (4)⁶.

(4) a. DP of DP-high attachment

A man called [the student (masc) of the teacher (fem)] who was disappointed (masc) by the new educational system.

b. DP of DP-low attachment

A man called [the student (masc) of the teacher (fem)] who was disappointed (fem) by the new educational system.

c. DP PP DP-high attachment

A man called [the student (masc) with the teacher (fem)] who was disappointed (masc) by the new educational system.

d. DP PP DP-low attachment

A man called [the student (masc) with the teacher (fem)] who was disappointed (fem) by the new educational system.

(Papadopoulou & Clahsen: 511-512)

The results of both the offline and online tasks revealed that all three groups of L2 Greek learners had the same preferences regardless of the L1, and they showed a preference for low attachment in the PP conditions of the test sentences (contrary to the prediction of L1 influence). If L1 transfer had occurred, high attachment would always be preferred. The L2 learners of Greek did not show a clear attachment preference in the antecedent condition [DP₁ of DP₂]. Papadopoulou and Clahsen argue that the L2 processing strategy is not influenced by the L1, but rather that L2 learners rely on lexical/thematic cues as a parsing strategy, while native Greek speakers use syntactic structures as well as lexical/thematic cues (i.e. the thematic PP).

⁶ The test sentences in the study by Papadopoulou and Clahsen were in Greek. They are translated here for ease of illustration.

Similar claims and results consistent with those of Papadapoulou and Clahsen (2003) were presented by Felser, Roberts, Gross and Marinis (2003), who studied relative clause attachment in English by L1 Greek and L1 German speakers. They found that L2 learners did not show any clear attachment preferences for relative clauses preceded by [DP₁ of DP₂] (e.g. the servant of the actress), irrespective of the preferences of the native speakers of English or the attachment preferences in the learners' L1. Felser et al. claim that the results of the online processing indicate that the learners rely more on lexical information than phrasal structure. Comparatively, the native speakers use the phrasal structures as a cue more than the learners.

In line with the summarised studies, Clahsen and Felser (2006) later proposed the influential 'Shallow Structure Hypothesis' which claims that the L2 syntactic representation is shallow and less-detailed, and therefore L2 speakers rely more on lexical-thematic as well as pragmatic information in the process of comprehension, while native speakers exploit 'structure-driven' strategies.

Despite the controversy on the nature of L2 processing, the studies above showcase that L2 processing strategies are different from those of native monolingual speakers. Now let us turn to HS processing in which HSs develop a processing mechanism of the HL as the L1.

1.5.3 Heritage language sentence processing

Relatively fewer studies have been conducted on HL processing compared to L2 processing. This subsection will review two studies and one discussion on HL processing.

Montrul (2006) examined the knowledge and processing of syntactic and semantic phenomena of unaccusative and unergative verbs in Spanish and English by HSs of Spanish living in the US. She employed a grammaticality judgment task as an offline method and a visual

probe recognition task as an online method. The results showed that the HSs performed in a very similar manner to Spanish monolinguals, and that they did not show any advantage in English, their current dominant language. There was no sign of L1 attrition or dominant language transfer found in the HSs' processing in this study.

Sekerina and Trueswell (2011), however, found contradictory results in a study examining the processing of contrastiveness⁷ in Russian by native and HSs of Russian living in the US. Contrastiveness in Russian is licensed at the discourse-syntax and prosody interface level, and it could be marked by 1) contrastive pitch; 2) non-canonical word order; or 3) split construction (an adjectival phrase is detached from the noun it is modifying). The results of their eye-tracking experiments using a visual word paradigm showed that the HSs' reaction times were much slower than those of the native speakers. While the native speakers detected the pragmatic effect of the contrastives early, using word order and visual content as clues, the HSs did not use any clues and consequently needed to 'wait and see' after all the disambiguating lexemes were presented in order to process the different source of information. The authors postulate that the HSs' slower processing indicates L1 attrition.

Montrul (2009) suggests that the non-nativelike performance of HSs is due to insufficient input. However, compared to adult L2 learners, HSs have an advantage due to the early age of acquisition. Within the framework of the Fundamental Difference Hypothesis by Bley-Vroman (1989, 1990, 2009), Montrul argues that HL acquisition, including processing patterns, is somewhere between monolingual native speakers and L2 learners. HSs acquire the language as an L1 where an 'efficient and reliable learning and processing system' (p. 232) is accessible,

⁷ Contrastiveness is marked only by prosody (i.e. pitch accents) in English, and the word in focus receives stressed contrastive pitch. For instance, the colour 'red' is stressed in 'Press the RED button' when there are buttons of various colours and the red one should be chosen.

however as adult HSs, they are not comparable to monolingual native speakers owing to lack of input that results in insufficient linguistic knowledge. They do, however, have an advantage over L2 learners who have an inefficient learning system which hinders them from attaining ‘native-like’ performance.

1.5.4 Summary of bilingual sentence processing

While much research has examined bilingual sentence processing, the specific mechanisms involved have not yet been discovered. Despite the controversy in this area, it is clear that different factors such as age and the manner of acquisition, proficiency, and working memory all affect sentence processing. If the hypothesis proposed by Montrul (2009) holds, HSs who acquire the language as an L1 have a more similar processing mechanism to that of native speakers than L2 learners do. This hypothesis will be tested in the current study as well as whether native speakers, HSs and L2 learners process structures of different levels of interfaces differently.

1.6 Summary

Chapter 1 has provided the theoretical background for this study. The primary differences between HL acquisition and L2 acquisition are age of acquisition and manner of input, which affect HSs and L2 learners in different ways. The HSs often encounter issues such as attrition and transfer from the dominant language, which can be attributed to difficulties in attaining and/or maintaining native-like proficiency. Under the IH, attaining a native-like competence at the syntax-discourse interface is more difficult and more susceptible to effects of attrition than the linguistic internal interface. The IH hypothesises that the non-convergence between bilingual

speakers and monolingual speakers is likely due to the computational rather than the grammatical representation, and also to the discourse-related interface, which requires more processing load and thus is more problematic for HSs.

Contrary to this, some argue that the complexity of the syntactic representation is the source of the non-convergence, in that bilinguals have more difficulty with syntactically complex structures than simple ones.

On the basis of these arguments, the current study addresses the following questions:

- Do HSs have advantages over L2 learners due to their early exposure to the language as well as to receiving input in an immersed, natural setting?
- What is the source of the difficulties in the acquisition of Japanese passives? Are the structures that are licensed at the syntax-pragmatics interface more problematic than those that have a more complex syntactic representation?

These questions will be examined by comparing the knowledge and processing of Japanese passives by JHSs and JFL learners. The passives have been selected for categorical variability: there are two types of passives⁸, which differ with respect to level of interface as well as syntactic operation. The first type, the *niyotte* passive, is syntactically more complex than the other, and it is interfaced within linguistic knowledge. The other type, the affective passive, is interfaced at the syntax-pragmatic level, and its syntactic representation is simpler than the *niyotte* passive. Table 2 outlines the characteristics of each type of passive.

⁸ The passives are traditionally divided into three types: *niyotte*, *ni*-direct and indirect passives. As discussed in the next chapter, I propose that they can be divided into only two types given that the *ni*-direct and indirect passives share syntactic, semantic, and pragmatic features, though their surface structure seems different.

Table 2: Outline of Japanese passives by type

Passive type	Interface with pragmatics	Involvement of A-movement	Frequency
<i>Niyotte</i>	no	Yes	Low
affective	yes	No	High

Thus, comparing these two structures allows us to examine what interferes more significantly in the process of language acquisition: the syntactic representation or the discourse-level interface.

Furthermore, it has been shown that while HSs have an advantage over L2 learners in syntax in general, such an advantage does not appear with complex structures. Comparing the knowledge of Japanese passives of JHSs and JFL learners will allow us to further examine whether or not the HSs have an advantage, and it will also allow us to investigate how differences in age of acquisition and manner of input affect both their representation and processing.

Chapter 2. Japanese Passives

2.1 Introduction

The goal of this dissertation is to investigate the knowledge and processing of Japanese passives by HSs and L2 learners. Japanese passives are complex in that 1) there are different types of passives; and 2) each type of passive has a different syntactic derivation and different semantic and pragmatic features. This chapter presents the characteristics as well as the syntactic and semantic analyses of the passives.

First, the characteristics of Japanese passives are presented in the next section. Japanese passives are traditionally divided into three types of passives⁹ in accordance with their syntactic, semantic, and pragmatic features: the *niyotte* passive, the direct *ni*-passive and the indirect passive. When examining the acquisition of these different types of passives I will investigate the source of difficulties in acquisition, namely the syntactic representation, the syntax-semantics-pragmatics interface, and some other factors such as manner of input and input frequency.

The subsequent section presents the characteristics of Japanese passives. Section 3 discusses a syntactic analysis of passives which is controversial due to their features. In the analysis of Japanese passives that I propose, passives are divided into two types – rather than three– on the basis of their syntactic derivation. In light of Pylkkänen’s (2000, 2002) applicative approach, I argue that the passive morpheme of both the *ni*-direct and the indirect passive is an

⁹ Some researchers claim that there is also a fourth type of passive which is the ‘possessive passive’. The majority of researchers, however, believe that possessive passives belong to the indirect passive since the possessive passive’s syntactic, semantic and pragmatic features are the same as those of the indirect passive. The reason that it is sometimes considered distinct from the indirect passive is that the subject and object of the possessive passive have ownership or kinship relations. As in the example below, the subject *Hanako* is assumed to be a possessor of a ring.

- (i) Hanako-ga yubiwa-o imooto-ni tor-are-ta.
Hanako-Nom ring-Acc sister-Dat take-Pass-Past
‘Hanako was affected by her sister stealing (her) ring.’

Semantically, *Hanako* is still an *affectee* of the action of the event of ‘her sister’s stealing her ring’, and the structure is consistent with the applicative analysis of the *ni*-passives as discussed in section 2.3.

applicative, and only the *niyotte* passive is derived from an active sentence by Move. The applicative approach to the indirect and the *ni*-direct passive will be presented. Section 3 first outlines the reviews of previous studies on Japanese passives in which the *ni*-direct passive was analysed as an instance of Move. It then develops an account of why the *ni*-direct passive does not involve movement. The last section describes the frequency of use of Japanese passives, which may affect the acquisition and development of the structures.

2.2 Characteristics of Japanese passives

All three passives share the same feature in that the morpheme *rare*¹⁰ is added to the verb stem, and agents are realised by *ni* (indirect and *ni*-direct passives) or *niyotte* phrases (*niyotte* passive).

Syntactically, the *niyotte* and *ni*-direct passives are compatible, on the surface, with their active counterparts as shown in example (5).

- (5) a. Active
 Hanako-ga Taroo-o ket-ta.
 Hanako-Nom Taroo-Acc kick-Past
 ‘Hanako hit Taro.’
- b. *Niyotte* passive
 Taroo-ga Hanako-niyotte ke-rare-ta
 Taro-Nom Hanako-by kick-Pass-Past
- c. *Ni*-direct passive
 Taroo-ga Hanako-ni ke-rare-ta
 Taro-Nom Hanako-Dat kick-Pass-Past

As with passives in many other languages, the theme in an active sentence, *Taroo*, is raised to the subject position in a passive sentence, while the agent, *Hanako*, is demoted to an optional *by*-

¹⁰ The morpheme could be ‘*are*’ or ‘*rare*’ depending on verb conjugation types. Throughout this dissertation ‘*rare*’ is consistently used to indicate both types.

phrase. The theme *Taroo* in the subject position is marked by nominative case in both (5b) and (5c), but the agent *Hanako* is marked by the *by*-phrase *niyotte* in the case of (5b) and by the dative case *ni* in (5c).

The indirect passive^{11, 12} has unique syntactic features in that: (i) it is realised by adding a subject as an extra argument; and (ii) not only transitive verbs but also intransitive verbs can undergo passivisation as shown in (6). When transitive verbs are passivised in an indirect passive structure, the sentence can hold accusative as well as dative objects, as shown in (7).

(6) Jiroo-ga akatyan-ni yoku nak-are-ru.
 Jiro-Nom baby-Dat often cry-Pass-Pres
 ‘Jiro is affected by (his) baby crying.’

(7) Hayashi butyoo-ga hisyo-ni daizina syorui-o nakus-are-ta
 Hayashi director-Nom secretary-Dat important document-Acc lose-Pass-Past
 ‘Director Hayashi was affected by his secretary losing an important document.’

The agent of the indirect passive has to be expressed by a *ni*-dative phrase and not by *niyotte*.

Semantically, the *ni*-direct and indirect passives, both of which have an agent marked with the dative case *ni*, share the feature that the subject of the sentence has a theta role as an affectee of the passive verbs (Kuroda, 1979b¹³). The *niyotte* passive does not have such a restriction.¹⁴ Therefore the subject, *Taro*, in (1c) is an affectee and he is adversely affected by the

¹¹ The indirect passive is sometimes referred as ‘adversity passives’ given that the subject of the sentence is adversely affected.

¹² Some other Asian languages have adversity passives equivalent to the Japanese indirect passive. According to Toyota (2011), the language families that have adversity passives are: Altaic (e.g. Japanese, Korean); Austronesian, (e.g. Indonesian, Vietnamese); Sino-Tibetan (e.g. Chinese, Thai); and Tungstic (e.g. Even).

¹³ Kuroda expanded Inoue’s (1976) observation to his argument of the affectedness of subjects in *ni* passives. Inoue claimed that the dative case *ni* indicates the influence of the agent on the subject.

¹⁴ The historical development of passives may account for this fact. The *ni*-direct and indirect passives are indigenous to the Japanese language, which traditionally conveys the affectivity of the subject. The *niyotte* passive with a neutral meaning was developed as an influence of European languages in the 16th century. See Kinsui (1997) for a detailed discussion on the historical development of Japanese passives.

event of *Hanako* hitting him. There is no such adverse connotation in the *niyotte* passive sentence (5b), and the meaning of the sentence is neutral. Affectedness applies to the indirect passive, and the subjects *Jiroo* in (6) and *Hayashi butyoo* in (7) are affectees of the events of the baby crying and the secretary losing an important document, respectively.

The following examples of an idiomatic expression demonstrate this semantic contrast between the *ni*-direct and *niyotte* passives. An idiomatic verb phrase can be passivised in the *niyotte* passive but not in the *ni*-direct passive (Hoshi, 1991, 1999) as in (8).

- (8) a. John-ga tyuui-o hara-ta (Active)
 John-Nom heed-Acc pay-Past
 ‘John paid heed.’
- b. Tyuui-ga John niyotte hara-are-ta (Niyotte passive)
 Heed-Nom John-by pay-Pass-Past
 ‘Heed was paid to it.’
- c. *Tyuui-ga John ni hara-are-ta (Ni-direct passive)
 Heed-Nom John-Dat pay-Pass-Past
 ‘Heed was affected by John’s paying attention to it.’ (Hoshi, 1999:198)

Hoshi (1991) claims that the ungrammaticality of the passive sentence in (8c) arises from the difference in the syntactic derivation of the *niyotte* and *ni*-direct passives^{15,16}. The subject *tyuui*

¹⁵ Hoshi (1999) also discusses that the difference between the *niyotte* and *ni*-direct passives is equivalent to that of the English be- and get-passives as shown in (ii).

- (ii) a. Heed was paid to our warnings.
 b. *Heed was got paid to our warnings. (Kitagawa & Kuroda, 1992: 86)

The external argument of the get-passive is in a theta position as it is base-generated, and therefore the sentence in (iib) is ungrammatical. See also Honda (2011) for his argument supporting Hoshi’s claim.

(‘heed’) in the *niyotte* passive in (8b) is moved from the complement position of the verb *harau* (‘pay’) to a non-theta position, while *tyuui* in the *ni*-direct passive in (8c) is base-generated in a theta position resulting in a semantic violation. The *ni*-direct passive sentence (8c) is problematic in that the subject *tyuui* cannot hold an affectee role, as it is not affected by John paying attention. The sentence in (8b), on the other hand, is grammatical because the morpheme in the *niyotte* passive does not assign such a role. Given that they have an affectee role, subjects of sentences in the *ni*-direct and indirect passives are usually animate,¹⁷ while there is no such restriction in the *niyotte* passive.

Pragmatic contexts also play an important role in passives as the *ni*-direct and indirect passives convey the negative connotation of the semantic role of the affected subject of an event caused by an agent. The use of the passives varies depending on the context and the speaker’s

¹⁶ The ungrammaticality of (8c) may be caused by the dismembering of the idiom as in (iii), (personal conversation with Daiho Kitagawa), which supports the proposal that the *ni*-direct passive cannot involve movement as discussed in section 2.4.2.

(iii) heed [DAT *pro* pay]

¹⁷ Inanimate subjects are restricted, and they are compatible only with a perfect reading as in (iv). The sentence (iva) allows only the simple past reading, and an inanimate subject marked with the dative case *ni* is ungrammatical. The sentence (ivb) can be interpreted as perfect tense as well as simple past, and therefore an inanimate subject can appear even in the *ni*-direct passive.

(iv) a. Simple past
 Hamlet-wa Shakespeare *ni/ *niyotte* kak-are-ta.
 Hamlet-Top Shakespeare-dat/ by write-Pass-Past
 ‘Hamlet was written by Shakespeare.’

b. Perfect reading
 Sono mati-wa gun-ni/ *niyotte* sihais-are-ta
 That town-Top military-Dat/ by control-Pass-Past
 ‘That town has been controlled by the military.’

The meaning of the sentence (ivb) with the dative *ni* is that the town is still in the state of being controlled. Even though the subject is inanimate, it receives an affectee role, and the speaker’s sympathy to what has happened to the town is implied in the *ni*-direct passive.

point of view towards the event¹⁸. When the *ni*-direct or indirect passives are used, it is implied that a speaker feels empathy towards a subject and/or an event that has occurred. For example, both sentences (5b) and (5c) are grammatically correct, however their meanings are different given that (5c) conveys an affective connotation while (5b) does not. When a speaker uses the *ni*-direct passive as in (5c), s/he implies her/his empathy towards *Taroo*. If the speaker does not have empathy towards *Taroo*, or any judgment with respect to what had happened to him, s/he would use the *niyotte* passive in (5b) to state simply a fact. Omura and Utsuo (1981) claim that pragmatic features affect how L1 Japanese speakers process passives. In the course of processing, the listener must notice that a speaker uses a passive form instead of an active ‘in order to incooperate the speaker’s implication’ (Omura & Utsuo, 1981:24).

The following table summarises the characteristics of the three passives discussed.

Table 3: Characteristics of Japanese passives

		<i>Niyotte</i> passive	<i>Ni</i> -direct passive	Indirect passive
Syntax	Extra argument	No	No	Yes
	Agent case	<i>niyotte</i>	<i>ni</i>	<i>ni</i>
Semantics	Affected subject	No	Yes	Yes
	Animacy of subject	Not restricted	Restricted	Restricted
Pragmatics	Adversity interpretation	No	Yes	Yes

2.3 Syntactic analysis

The analysis of Japanese passives has been studied for decades and various proposals have been put forth. Despite extensive studies, there is still some controversy on how the passive

¹⁸ The ‘speaker’s point of view’ is often referred as *shiten*. See Kuno (1987: 204-206) for his extensive discussion on *shiten*.

constructions should be analysed. This controversy is attributed to the different syntactic and semantic characteristics of the passives.

Although there is disagreement on the analysis of the direct passive, there is a consensus on the derivation of the indirect passive in which the subject is base-generated due to the existence of the internal argument of a transitive verb and an intransitive verb in the passive.

The contention surrounding the direct passives is: 1) whether the derivations of the *niyotte* and *ni*-direct passives are the same; and 2) whether their derivations involve Move. The analysis of derivations by Move enjoys a higher level of acceptance due to the existence of active counterparts (Fukuda, 2006; Hoshi, 1991, 1994, 1999; Kubo, 1990, 1992; Miyagawa, 1989; Saito, 1982), though a few authors argue that the *ni*-direct passive is not derived by Move, and that its derivation is base-generated like the indirect passive (Ariji, 2006; Kitagawa & Kuroda, 1992; Kuroda, 1979b).

Following analyses of base-generation in the *ni*-direct passive that are based on examples such as (4), I argue that Japanese passives can be divided into two types: the pure passive (*niyotte* passive) and the affective passive (*ni*-direct and indirect passives)¹⁹. The pure passive involves the suppression of external arguments and case absorption as a cross-linguistic mechanism of passivisation (Baker, Johnson & Roberts, 1989; Chomsky, 1981; Jaeggli, 1986). In contrast, I propose that the passive morpheme *rare* in the affective passive is an applicative that introduces an affectee in the subject position of the sentence and links it to an eventuality, focusing on the relationship between the subject and the event (Shibatani, 1997) and the affectedness of a subject that is brought about by the event (Kuroda, 1979b). The features of the morpheme that are consistent with those of applicative morphemes studied cross-linguistically

¹⁹ The terms ‘pure passive’ and ‘affective passive’ have been used in different contexts in the literature. I use ‘pure passive’ only to refer to the *niyotte* passive whose subject is derived by Move, and ‘affective passive’ for the *ni*-direct and indirect passives whose subjects are base-generated and carry an affectee role.

are: 1) it does not suppress an argument; and 2) it introduces an extra argument which is an affectee (Baker, 1996; Kayne, 1994; Pylkkänen, 2002, 2008; among others). For instance, an indirect passive sentence such as (7), repeated here in (9b), does not suppress the internal object ‘important document’, as one can see from comparing it to the active sentence in (9a).

- (9) a. Hisyo-ga daizina syorui-o nakusi-ta.
 Secretary -Nom important document-Acc lose-Past
 ‘The secretary lost an important document.’
- b. Hayashi butyoo-ga hisyo-ni daizina syorui-o nakus-are-ta
 Hayashi director-Nom secretary-Dat important document-Acc lose-Pass-Past
 ‘Director Hayashi was affected by his secretary’s losing an important document.’ (=7)

The external argument *Hayashi butyoo* is introduced in the passive sentence (9b) as an affectee of the event of the secretary losing a document.

I adopted Pylkkänen’s influential applicative theory (2002, 2008) in my analysis of the affective passive, though the proposed structure here differs from Pylkkänen’s high applicative construction as follows: 1) an applicative head merges above *VoiceP* rather than under it; 2) the affectee is introduced by the applicative and surfaces as a subject; and 3) a dative marked agent is introduced by *Voice*²⁰.

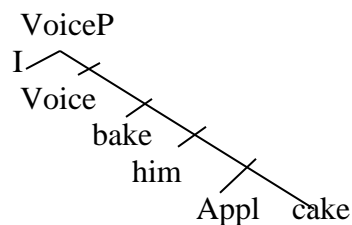
This section first introduces the analysis of the passive morpheme as an applicative. Pylkkänen’s (2000, 2002) applicative construction and her approach to the indirect passive in Japanese is outlined first. Then, I propose a single structure in which the passive morpheme establishes a relation between an event and an individual who is affected by the event.

²⁰ Kim (2012a, 2012b) proposes a similar structure for the indirect passive, claiming that the applicative head is merged under T and above *VoiceP*, and calling the passive morpheme *peripheral Appl*.

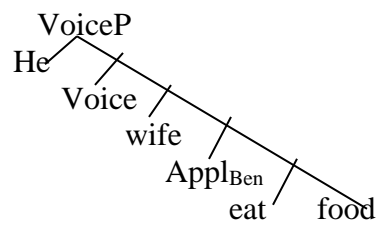
2.3.1 Applicative structures in Pylkkänen (2000, 2002)

The function of applicative morphemes is to add an argument to the verb. Depending on the function of the added argument, Pylkkänen (2000, 2002) proposes two types of applicative heads: high applicatives and low applicatives. The examples below show double-object structures in English and Chaga (a Bantu language spoken by the Chaga people). Pylkkänen calls the Chaga type of construction ‘high applicative’ as in (10a) and the English type ‘low applicative’ as in (10b).

(10) a. *Low Applicative* (English)



b. *High Applicative* (Chaga)



Pylkkänen (2002: 19)

In the low applicative in (10a), the applicative head is applied within VP, and it relates two objects in a possession relationship. The applicative head that introduces the argument *wife* in (10b) is applied VP externally, and it gives the argument a benefactive role relative to the event of ‘eating food’.

Pylkkänen argues that Japanese indirect passives can also be explained with high and low applicatives. Following Kubo’s (1992) observation, Pylkkänen separates the indirect passive into two types. One has two arguments that have a possessive relationship and the other has two objects that do not have such a relation. The former, exemplified by (11), is treated as a low

applicative construction. The case in which there is no possessor relationship between the two objects, as in (12), is treated as a high applicative construction.

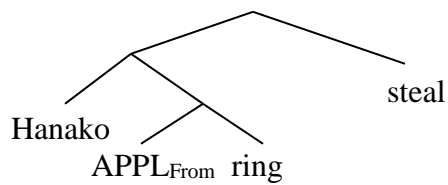
- (11) Hanako-ga doroboo-ni yubiwa-o tor-are-ta
Hanako-Nom thief-dat ring-Acc steal-Pass-Past
'Hanako was affected by the thief stealing her ring.'
- (12) Taro-ga Hanako-ni sinkoosyuukyoo-o hajime-rare-ta
Taro-Nom Hanako-Dat new religion-Acc begin-Pass-Past
'Taro was adversely affected by Hanako starting a new religion.'

In (11), the Applicative head is VP internal and relates two arguments, *Hanako* and *ring*, making *Hanako* an affectee of an event and the possessor of the ring. *Taro* in (12), on the other hand, is an affectee, but there is no possessor relation with the new religion, because the Applicative head attaches outside of VP. The affectee, rather, has a relation to the event '*Hanako* starting a new religion'.

Even though Pylkkänen's analysis of the Japanese indirect passive seems to be promising, there are some remaining problems. First of all, the structure of the low adversity passive is syntactically problematic. The tree in (13) shows a simplified structure of sentence (11). Although an Applicative head does link the direct object and added argument in the structure, it does not explain how and why the added argument *Hanako* is moved to the specifier position of *VoiceP* at PF syntactically²¹.

²¹ Pylkkänen explains that the movement is motivated only semantically.

(13) Low adversity construction



Pylkkänen (2002: 62)

Secondly, there is a semantic problem. Pylkkänen proposes the denotation of the low applicative as in (14). According to her proposal, the added argument has to be either the recipient or the source of a direct object.

(14) a. Recipient applicative

$\lambda_x. \lambda_y \lambda_{\langle e, \langle s, t \rangle \rangle}. \lambda_e. f(e, x) \ \& \ \text{Theme}(e, x) \ \& \ \text{to-the-possession}(x, y)$

b. Source applicative

$\lambda_x. \lambda_y \lambda_{\langle e, \langle s, t \rangle \rangle}. \lambda_e. f(e, x) \ \& \ \text{Theme}(e, x) \ \& \ \text{from-the-possession}(x, y)$

(Pylkkänen, 2002: 69)

The added argument *Hanako* in (11) is indeed a source of the direct object ‘ring’. Following the denotation of the low applicative in (14b), the sentence can be denoted as in (15).

(15) $\lambda_x. \lambda_e. \text{Stealing}(e) \ \& \ \text{Agent}(e, \text{Thief}) \ \& \ \text{Theme}(e, \text{ring}) \ \& \ \text{from-the-possession}(\text{ring}, \text{Hanako})$

There are, however, passive sentences where the external arguments are neither the recipient nor the source of the direct object as in example (16).

(16) Kana-ga Takashi-ni hoho-o but-are-ta
Kana-Nom Takashi-Dat cheek-Acc hit-Pass-Past
‘Kana was affected by Takashi’s hitting her cheek.’

The external argument, *Kana* is neither the recipient nor the source of the direct object ‘cheek’ even though these two NPs have a possessor relationship. For this reason, Pylkkänen’s argument

that the indirect passive has a low applicative construction when the two objects have a possessor relation becomes problematic.

Finally, the analysis of low applicative constructions is problematic as it does not realise the relation between an external argument and the event structure of a verb (Larson, 2010). I argue that a subject as the added argument always has the role of an affectee of an event described in VP, and therefore it needs to be linked to the event. In sentence (8), for instance, *Hanako* has a malfactive role in the event of the thief stealing her ring. We need a structure to recognise the relation of an external argument (*Hanako*) and an event (the thief stealing her ring), which the structure proposed by Pylkkänen fails to do. The low applicative construction also does not introduce an agent at all, or it does not recognise the agent as an affectee of the event of stealing a ring in structure (13).

In order to solve these two problems, I propose that the high applicative construction underlies all types of indirect passive. The high applicative structure does not require movement and it explicitly relates the external argument to the event.

2.3.2 Applicative approach to the affected passives

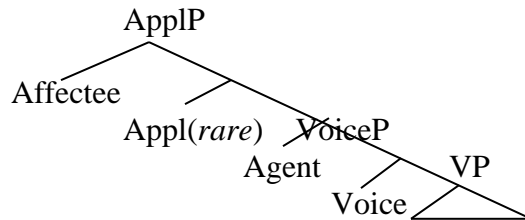
Pylkkänen's high applicative structure further applies to all affective passives, including the *ni*-direct passive²², in which agents are marked with the dative case *ni*.

In my analysis, the morpheme *rare* in affective passives introduces the subject of a sentence as an affectee relative to the event caused by an agent. The structure of all types of affective passives (i.e. *ni*-direct and indirect passives) is illustrated in (17). This structure differs from the

²² The terms '*ni*-direct passive' and 'indirect passive' are still used to refer to one of them specifically out of all the affective passives.

high applicative structure proposed by Pyllkkänen in (10b) with regard to the applicative head being merged over *VoiceP*.

(17)



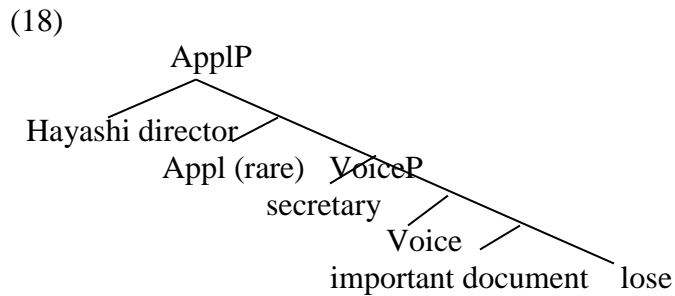
In this structure, the passive morpheme *rare* is an applicative head. The morpheme has a number of roles including: 1) introducing an affectee as an external argument; 2) assigning nominative case;²³ and 3) relating the external argument to the event described in *VoiceP*.

Within *VoiceP*, the head introduces an external argument (Marantz, 1984) as an agent of the action described in VP and assigns the dative case²⁴ to the agent. This follows Kratzer's argument (1996) that *Voice* comes with a base-generated external argument as an agent which can also assign case. While the external argument introduced by *Voice* is an agent, an argument introduced by the applicative is not (Kim, 2012b).

Following the proposed structure, the sentence in (9b) is constructed in a tree as in (18):

²³ The case assigned by the applicative morpheme is either the nominative case *ga* or the topical case *wa* (in the case of topicalization). According to Kuroda's linear case marking hypothesis (1979a), the first NP in a sentence is marked with *ga* and the next NP with *o*. The structure here follows this rule as nominative case is assigned to the affectee, the first NP of the sentence, by the morpheme. Kuroda also claims that an agent in the affective passive receives the dative case *ni* as a result of 'Subject *ni*-Raising' in which a matrix verb assigns the dative case to the subject of an embedded clause.

²⁴ Ikegami (1986) proposes an interesting argument about the dative case *ni* in passives. He claims that the passives in Japanese have a sense of receiving or supremacy, which is often associated with *ni*. Naruse-Shima (1995) adapts this theory saying that NPs marked with *ni* control the subject marked with the nominative case. This explanation seems plausible to account for why an agent is marked with the dative case.

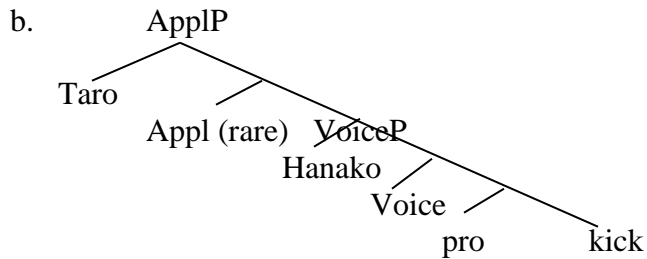


The subject *Hayashi buchoo* is introduced and assigned nominative case by the morpheme *rare*. The introduced subject is related to the event described by *VoiceP* as an affectee. Within *VoiceP*, the external argument ‘secretary’ is introduced as an agent and it receives the dative case.

The same construction is applied to sentence in (11), for which Pylkkänen proposes a different structure. As high applicative structures relate an individual to an event, the external argument *Hanako* is added by the passive morpheme *rare* and is related to the event ‘the thief stole the ring’. *Hanako* is also assigned a malfactive role from the morpheme. This analysis allows what Pylkkänen calls the low adversity passives to give an ‘adversity’ meaning to an added argument. Nominative case is also assigned by the morpheme *rare*. Then the morpheme links the external argument to its sister *VoiceP* and *Voice* introduces an external argument, the agent *doroboo*, which receives the dative case.

The structure in (15) also applies to the direct *ni*-passive which has null arguments in VP, as well as the following features: 1) the subject is in a theta position; and 2) the subject is an affectee of an event caused by an agent. This is shown in structure (19) by illustrating the previous example (5c).

- (19) a. Taroo-ga Hanako-ni Ke-rare-ta.
 Taro-Nom Hanako-Dat kick-Appl-Past (=5c)



In (19), *Taroo* is added by the applicative morpheme as an external argument in the structure and is related to the event (*VoiceP*) as an affectee. Within *VoiceP*, agent Hanako is introduced by *Voice* and is assigned the dative case. As for the internal argument of the verb, the base-generated null pronoun *pro*, which is bound by the subject, occupies the position as it becomes phonologically null when the added external argument is identical (Kitagawa & Kuroda, 1992; Kuroda, 1979b).

Kuroda (1979b) argues that the internal argument of VP may become *pro* when it is identical to the nominative-marked subject of the sentence as in (20a). Notice that this does not happen in (20b) due to the direct object not being identical to the nominative-marked subject.

(20)

- | | | |
|----|--|--|
| | ┌───────────┐ | |
| | └───────────┘ | |
| a. | Saburoo-ga sensei-ni Saburo-o (<i>pro</i>) home-rare-ta | |
| | Saburo-Nom teacher-Dat Saburo-Acc praise-Appl-Past | |
| | ‘Saburo was affected by the teacher praising Saburo.’ | |
| b. | Saburoo-ga sensei-ni ronbun-o home-rare-ta | |
| | Saburo-Nom teacher-Dat thesis-Acc praise-Appl-Past | |
| | ‘Saburo was affected by the teacher praising his thesis.’ | |

The object deletion in (20a) is not a peculiar phenomenon. For example, Lasnik and Fiengo (1974) argue that sentence (21) in English also involves object deletion.

(21) John is easy to please.

The object of the verb ‘please’ is John, which is base-generated and gets deleted because it is identical to the subject.

To test the plausibility of this deletion rule under coreference between a subject and an internal object it is compared to another case of NP deletion which occurs in possessed noun phrases. The examples in (22a) and (22b) show that the possessive pronoun ‘one’s own’ is usually unpronounced when the parts of the body being referred to belong to the subject.

- (22) a. Tomomi-ga hone-o ot-ta.
Tomomi-Nom bone-Acc break-Past
‘Tomomi broke (her) bone.’
- b. Tomomi-ga Ken-no hone-o ot-ta.
Tomomi-Nom Ken-Gen bone-Acc break-Past
‘Tomomi broke Ken’s bone.’

Example (22a) does not overtly specify whose bone *Tomomi* broke, yet it is interpreted as *Tomomi* broke her own bone. If we would like to emphasize that Tomomi broke her own bone, a reflexive *zibun* would be inserted, as in (23).

- (23) Tomomi-ga zibun-no hone-o ot-ta.
Tomomi-Nom self-Gen bone-Acc break-Past
‘Tomomi broke self’s bone.’

The same emphasis can occur in passives, as illustrated in (24).

- (24) Michiko-ga sensei-ni (Jun-dewa-naku) zibun-o homer-are-ta.
Michiko-Nom teacher-Dat Jun-Cop-Neg self-Acc praise-Appl-Past
‘Michiko was affected by the teacher’s praising (not Jun but) herself.’

Even though the internal argument is usually deleted in the *ni*-direct passive when it is identical to the subject, as shown above, *zibun* ‘self’ could be inserted into the internal argument position when a speaker wants to emphasize the argument.

Considering cases such as in the examples above, I contend that the internal argument of VP in *ni* affective passives is a null pronoun *pro* which is bound by the subject.

2.3.3 Agent is a subject of *VoiceP*

Although Pylkkänen (2002) assumes that it is *Voice* that introduces agents, her claims are not convincing for two reasons: the first is that the structure goes against cross-linguistic examples of *Voice* merging above the applicative and the second is that she has doubts regarding agents holding subjecthood. The purpose of this sub-section is to prove that *Voice* indeed introduces the agent noun phrase. In order to do this, we first need to discuss subjecthood.

It has been argued that the embedded external argument (i.e. agent phrase) in the indirect passive behaves like a subject, unlike in the direct passive (Fukuda, 2006; Kuno, 1973; McCawley, 1972). The binding behaviour of the subject-oriented anaphor *zibun* is a favoured diagnostic test to assess this. In the indirect passive sentence (25), both *Taroo*, the subject of the sentence, and *Hanako*, an agent, can be antecedents of the anaphor which illustrates that *Hanako* behaves as a subject. *Hanako* in the direct passive sentence in (26), on the other hand, cannot be an antecedent of *zibun*, since it does not act as a subject.

- (25) Taroo_i-ga Hanako_j-ni zibun_{i/j}-no heya-de nak-are-ta
 Taro-Nom Hanako-Dat self-Gen room-in cry-Appl-Past
 ‘Taro_i was affected by Hanako_j crying in self_{i/j}’s room.’

- (26) Taroo_i-ga Hanako_j-ni/niyotte zibun_{i/*j}-no heya-de tatak-are-ta
 Taro-Nom Hanako-Dat/by self-Gen room-in hit-Appl-Past
 ‘Taro_i was hit by Hanako_j in self_{i/*j}’s room’

There are, however, other cases where a NP with dative case in the direct passive construction can be an antecedent of *zibun*, as shown in (27).

- (27) a. Taroo_i-ga Hanako_j-o zibun_{i/j}-no heya-de mat-ta.
 Taro-Nom Hanako-Acc self-Gen room-in wait-Past
 ‘Taro_i waited for Hanako_j in self_{i/j}’s room.’ (Active)
- b. Hanako_i-ga Taroo_j-ni zibun_{i/j}-Gen heya-de mat-are-ta
 Hanako-Nom Taro_j-Dat self-Gen room-in wait-Appl-Past
 ‘Hanako_i was waited for by Taro_j in self_{i/j}’s room.’ (Passive)

In (27b) *Hanako* could have been waited for by *Taroo* either in her own room or in *Taroo*’s room, even though the dative NP is not supposed to be an antecedent of the anaphor according to the generalization. There are other examples such as this one, where the antecedent of *zibun* is ambiguous (Kuno, 1973).

Furthermore, Kuroda (1979b) provides examples where a dative NP is not an antecedent of *zibun* in the indirect passive, in which both subjects and agents are supposed to be able to be antecedents of the anaphor as shown in (28).

- (28) Hanako_i-ga Taroo_j-ni zibun_{i/*j}-no nikki-o yom-are-ta
 Hanako-Nom Taro-Dat self-Gen journal-Acc read-Appl-Past
 ‘Hanako_i was affected by Taro_j reading self_{i/*j}’s journal.’

In the indirect passive in (28), *Taroo* is an agent that is supposed to be bounded by *zibun* according to the diagnostic test. However, this is not the case. Considering these counterexamples, we cannot make a clear distinction between dative NPs of the indirect passive

and those of the direct passives in terms of *zibun*-bindings. Thus, the subjecthood of the dative NPs cannot be determined only by *zibun*-binding behaviour.

The compatibility with a subject-oriented adverbial phrase such as *wazato*²⁵ ('on purpose') shows the subjecthood of dative NPs (Huang, 1999; Kuroda, 1979b).

- (29) a. Hanako-ga wazato Taroo-o oshi-ta.
 Hanako-Nom deliberately Taro-Acc push-Past
 'Hanako pushed Taro deliberately.' (Active voice)
- b. Taroo-ga wazato Hanako-ni os-are-ta
 Taro-Nom deliberately Hanako-Dat push-Pass-Past
 'Taro was deliberately pushed by Hanako.'
 (Passive with the adverb after nominative NP)
- c. Taroo-ga Hanako-ni wazato os-are-ta
 Taro-Nom Hanako-Dat deliberately push-Pass Past
 'Taro was pushed by Hanako deliberately.'
 (Passive with the adverb after dative NP)

The subject *Hanako* in the active sentence (29a) is clearly the one who acted deliberately. In the passive sentences, however, it could be either *Hanako* or *Taroo* who acted deliberately depending on the position of the adverb. It is ambiguous in the sentence (29b) who acted deliberately. It could be either the affectee *Taroo* or the agent *Hanako* or it could even mean that *Taroo* deliberately sought to get pushed. In contrast, in (29c) the person who acted deliberately was clearly *Hanako*. The ability to host subjecthood adverbs attests that the dative NPs indeed

²⁵ Pylkkänen provides an example which she claims ungrammatical but I would judge, as a native speaker of Japanese, to be grammatical.

(v) Taroo-ga Hanako-ni wazato waraw-are-ta.
 Taro-Nom Hanako-Dat deliberately laugh-Pass Past
 'Taro was affected by Hanako laughing on purpose' (Pylkkänen, 2002: 67)

In this sentence, *Hanako* as well as *Taroo* can host the adverbial phrase *wazato*.

hold subjecthood and this removes Pylkkänen's doubt about whether the external arguments are introduced by *Voice*.

2.4 Previous research with movement

In the syntactic analysis of the *ni*-passives, the movement approach has received mainstream recognition (Fukuda, 2006; Hoshi, 1991, 1994, 1999; Kubo, 1990, 1992; Miyagawa, 1989; Saito, 1982). There are, however, debates regarding how the movement is triggered and how the passive morpheme should be treated (i.e. whether *rare* is an individual verb or an affix attached to a verb). As mentioned above, I argue that both the *ni*-direct and indirect passives should be analysed in the same manner, and that the *ni*-direct passive does not involve Move.

In this subsection, I review one of the most innovative analyses of passives with movement put forth by Fukuda (2006). He proposes that there is only one passive morpheme that is used in all three types of passives and his approach is somewhat similar to my proposal in that no case absorption or argument suppression occurs in passives. The difference is that his analysis involves movement in the direct passive. Therefore, the following section develops arguments against a movement approach to passives. Specifically, I will show that the diagnostic tests for movement – such as the floating numeral quantifiers (FNQ) – are not that reliable.

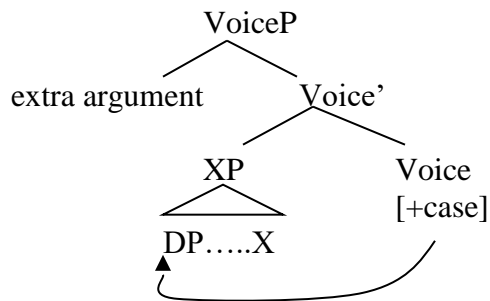
2.4.1 The passive morpheme *rare* as a functional head (Fukuda, 2006)

Fukuda (2006) puts forth an innovative approach to passives. He dismisses the traditional analysis of Japanese passives within Principles and Parameters – namely external argument suppression and case absorption – since these two features apply only to the *niyotte* passive, and

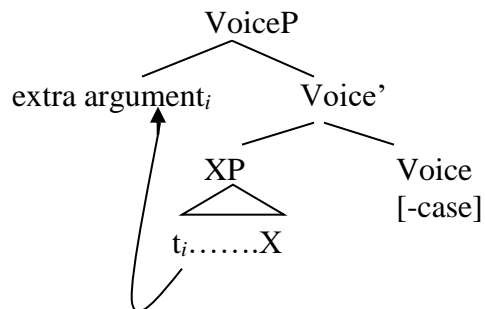
proposes that the passive morpheme *rare* is a functional head *Voice* that licenses external arguments and structural case.

In order to analyse the differences between indirect and direct passives, Fukuda distinguishes two types of *Voice*, following Kratzer (1994, 1996). One type of *Voice* holds an external argument and a structural case while the other type does not. The former *Voice* assigns an accusative case to its complement and the external argument is base-generated, as shown in (30a). The latter *Voice*, shown in (30b), does not assign a case to the complement which therefore triggers movement of DP to the specifier position of *Voice*P. Thus, an external argument is derived.

(30) a. Passive with case:



b. Passive without case:



Fukuda argues that the morpheme *rare* in the indirect passive uses the former type of *Voice*, that of a base-generated external argument, while the *Voice* used in the direct passive is of the latter type, that of a derived external argument.

Both the *ni*-direct and *niyotte* passives involve movement of an internal argument of a verb. Because the *Voice* that is used in these passives fails to assign case to the internal argument of a verb, it is forced to move to the Specifier position of *Voice* to seek case assignment. How

they move differs depending on the properties of the external argument. The external arguments of the *ni*-passives are thematic subjects of *Voice*, whereas those in the *niyotte* passive are not. Fukuda, then, employs Hornstein's (1999, 2003) analysis which further divides NP movements into two types: movement to a thematic position and movement to a non-thematic position. Hornstein calls the former 'control' and the latter 'raising'. Fukuda claims that the movement of the *ni*-direct passive is control and that of the *niyotte* passive is raising.

Even though Fukuda's analysis is brilliant and persuasive to some extent, I still doubt that NP movement is involved at all in the *ni*-direct passive. I argue that the external argument of the sentence is base-generated and there is no need for movement. The following section shows why previous analyses of NP movement cannot account for the *ni*-direct passive.

2.4.2 Against movement

In this subsection, I expand on my argument against the movement approach²⁶ by showing that diagnostic tests for movement such as the floating numeral quantifiers²⁷ (FNQ) are not that consistent.

²⁶ Boškovič and Takahashi (1998) put forth a theory against movement in their analysis of scrambling, which is widely analysed as a result of movement. They advocate that scrambling is a base-generated structure and that the availability of FNQ in scrambled sentences is, for example, due to weak theta roles in Japanese. As discussed in this subsection, I argue that it is the hierarchy of case that accounts for the availability of the floating quantifier and not the weakness of the theta role. It is, however, interesting to see other researchers' assessment of the availability of FNQ being an unreliable diagnostic test for movement.

²⁷ A numeral quantifier, as a rule, mutually c-commands its host NPs. However, they may 'float' when it is apart from the host NP due to syntactic derivation.

2.4.2.1 Floating Numeral Quantifiers

Miyagawa (1989) claims that the availability of FNQs is evidence that subjects of the direct passives are derived by NP movement. Numeral quantifiers (NQ) are associated with NPs, which precede the quantifier. Japanese has many number quantifiers depending on the nature of nouns; among them is *nin*, which is a quantifier to count people. The NQ *3-nin* in (31) has the possibility of referring to either *otoko* ‘man’ or *kodomo* ‘child’, both of which require *nin* as their classifiers. In (31a), however, *3-nin* refers only to *otoko* because that NP is the one that precedes the NQ. On the other hand, *kodomo* in (31b) is referred to by the quantifier since the NQ follows directly after the NP. This restriction of co-preferentiality between NPs and NQs is called ‘mutual c-commanding’ (Miyagawa, 1989).

- (31) a. *Otoko_i-ga 3-nin_{i/j}* heya kara kodomo_j-o turesat-ta*
man-Nom CL room from child-Acc snatch-Past
‘Men_i, three of them_i, took the children away from the room_j.’
- b. *Otoko_i-ga haya kara kodomo_j-o 3-nin*_{i/j} turesat-ta*
man-Nom room from child-Acc CL snatch-Past
‘A man_i took children_j, three of them_j, away from the room.’

The NQ, *3-nin*, and *otoko* in (31a) mutually c-command each other and co-refer, while in (31b) *kodomo* and the NQ mutually c-command each other and thus these two co-refer.

Now let us examine the passive sentences with the NQ in (32). The NQ *3-nin* follows *kodomo* in (32a) and the NQ and NP co-refer to satisfy the mutual c-commanding requirement.

The NQ in (32b), on the other hand, cannot co-refer with *otoko*, which precedes *3-nin*.

- (32) a. *Kodomo_i-ga 3-nin_{i/j}* otoko_j-ni yuukais-are-ta*
child-Nom CL man-Dat kidnap-Appl-Past
‘Children_i, three of them_i, were kidnapped by a man_j.’

- b. Kodomo_i-ga otoko_j-ni 3-nin_{i/j}* yuukais-are-ta
 child-Nom man-Dat CL kidnap-Appl-Past
 ‘Children_i, three of them_i, were kidnapped by a man_j.’

The NQ *3-nin* in (32b), which should be associated with the dative-marked NP *otoko* according to the mutual c-commanding requirement, is actually associated with the subject *kodomo*, and the NQ is apart from the associated NP. Miyagawa (1989) argues that the availability of this FNQ is because there is a trace in the object position, which is in a mutual c-command relation with the NQ (Fukuda, 1995; Kubo, 1992; among others). Therefore, the availability of FNQs is an indication of movement.

I follow Ariji (2006), who challenges this account and argues that the availability of FNQs is not evidence of movement, and I propose that this is due to the hierarchy of cases of the accompanying nouns which precede the NQ. My proposal is, referring to Shibatani (1977) whose examples are given below, that nominative and accusative cases have stronger associations with NQs than dative or other oblique cases as in (33).

(33) Hierarchy of cases associating NQ

Structural case > Oblique case

Following the hierarchy, we see in example (32) that *3-nin* chooses to co-refer with *kodomo*, which has a nominative case marking, rather than with the dative-marked *otoko*, since the nominative case has a stronger association with the NQ than the dative case.

Shibatani (1977) demonstrates that case is relevant to the availability of FNQs and shows the hierarchy of the associations of case with examples (34)-(37):

- (34) a. 3-nin-no kodomo-ga kinoo ki-ta
 CL-Gen children-Nom yesterday come-Past
 ‘Three children came yesterday.’
- b. Kodomo-ga kinoo 3-nin kita. (FNQ from SU)
- (35) a. Boku-ga 3-nin-no kodomo-o kinoo sikat-ta
 I-Nom CL-Gen children-Acc yesterday scold-Past
 ‘I scolded three children yesterday.’
- b. Boku-ga kodomo-o kinoo 3-nin sikat-ta. (FNQ from DO)
- (36) a. Boku-ga 3-nin no kodomo ni kinoo hon-o yat-ta
 I-Nom CL-Gen children-Dat yesterday book-Acc give-Past
 ‘I gave books to three children.’
- b. *Boku-ga kodomo-ni kinoo 3-nin no hon-o yat-ta. (FNQ from IO)
- (37) a. Boku-ga 3-nin-no kodomo-kara kinoo hon-o mora-tta
 I-Nom CL-Gen children-from yesterday book-Acc receive-Past
 ‘I received books from three children yesterday.’
- b. *Boku-ga kodomo kara kinoo 3-nin hon o moratta.
- (Shibatani, 1997:798)

The NQs in the (b) sentences are considered to be floating given the presence of the adverb *kinoo* ‘yesterday’ between them and the NP. FNQs are available only in (34b) and (35b) where NPs with nominative and accusative cases are strongly associated with the NQs. The NQ in (36) associates with a NP with dative case, and in (37) the NQ associate with a NP followed by the postposition *kara* (‘from’). The position of the adverb *kinoo* shows that FNQs are not possible in (36b) and (37b) due to the weak association between oblique case and its associated NPs. FNQs may be associated with c-commanding NPs as long as they are in the structural case.

The fact that FNQs cannot be associated with the dative NP, even if they c-command, can be seen in (38):

- (38) a. *Kyoozyu_i-ga 3-nin_i gakusei-ni kateikyoosi-o okut-ta*
 Professor-Nom CL student-Dat tutor-Acc send-Past
 ‘The professors, three of them, sent tutors to the student.’
- b. *Kyoozyu-ga gakusei_i-ni 3-nin*_{i/j} kateikyoosi_j-o okut-ta*
 Professor-Nom student CL tutor-Acc send-Past
 ‘The professor sent tutors, three of them, to the student.’

The NQ *3-nin* in (38a) is in the position of mutually c-commanding *kyoozyu* and it refers to the NP. The NQ in (38b), however, associates with *kateikyoosi* rather than *gakusei*, which comes directly before the NQ. Thus, the strong association with nominative and accusative cases of NQs leads to the pattern of co-reference shown in (38).

Furthermore, Ariji (2006) claims that the mutual c-command requirement itself does not necessarily hold in all instances.

- (39) a. **Gakusei-ga syukudai-o 3-nin teisyutu-si-ta*
 Student-Nom assignment-Acc 3-CL submit-do-Past
 ‘The students, three of them, submitted their assignment.’
- b. *Gakusei-ga syukudai-o 3-nin teisyutu-si-wasure-ta*
 student-Nom assignment-Acc 3-CL submit-do-forget-Past
 ‘The students, three of them, forgot to submit their assignment.’

(Ariji, 2006:408)

The NQ and the nominative noun *gakusei* do not mutually c-command in either sentence in (39), violating the requirement. This should result in the ungrammaticality of the sentences, however, the sentence in (39b), which has a different verbal ending than in (39a), is acceptable. Thus the

requirement does not apply in such a case since one cannot plausibly argue that there is a trace in (39b) that is not in (39a).

If the mutually c-commanding requirement is not firm then Miyagawa's claim that FNQs are stranded by movement also becomes unreliable. Consequently, we can conclude that the availability of floating NQs in the passive sentences is not a valid test for movement.

Ariji (2006) further illustrates how FNQs do not result from movement by showing that the indirect passive, which is generally agreed to consist of dual clauses with no movement involved, may host the FNQs:

- (40) a. Tozankyaku_i-ga goou-ni hur-are-ta
Climber-Nom downpour rain-passive-Past
'Climbers got caught in a downpour.'
- b. Tozankyaku_i-ga goou-ni **4-nin**_i-mo hur-are-te, gezan deki-nai-de-iru-rashii
Climber-Nom downpour 4-CL-EMP rain-pass-Past-Conj go down can-Neg-Conj-Prog-
seem
'Climbers, four of them, got caught in a downpour, and it seems that they cannot go
down the mountain.'

(Ariji, 2006:409 with modifications)

If FNQs can be hosted in a sentence where an external argument of a sentence is base-generated and co-refers with the NQ, it may be questionable that the availability of FNQs in the direct passive is evidence of movement. As shown in (40), the availability of FNQs is due to the association between a case and the NQ, not movement²⁸.

²⁸ Movement as an explanation of FQs has been challenged more generally by Bolalick (2003).

2.4.2.2 Interpretation of the quantified argument

Kitagawa and Kuroda (1992) contend that the interpretation of quantified arguments is a diagnostic test as to whether or not movement occurs. The sentences in (41b) and (42b) are the scrambled equivalent of the in-situ counterparts illustrated in (41a) and (42a). While the (a) sentences hold a wide scope reading, the interpretation of the quantifier scope is ambiguous in the (b) examples. This fact is often used to assert that scrambling involves A-movement since A-movement is assumed to induce scope ambiguity of quantified arguments.²⁹

- (41) a. (kono ie no) **dareka ga** (kono heya no) **subete no hon o** yon-da
 this house-Gen someone-Nom this room-Gen all-Gen book-Acc read-Past
 ‘Someone (in this house) read all the books (in this room).’
 ($\exists > \forall^{30}/?*\forall > \exists$)
- b. (tana ni aru hon no) **doreka o** (kono heya-no) **daremo ga** yon-da
 shelf on exist book-Gen someone-Acc this room-Gen everyone-Nom read-Past
 ‘Everyone (in this room) read some book (on the shelf).’
 (Clearly ambiguous)
- (42) a. [John **ka** Mary] ga **dono-hito-mo** syootaisi-ta (rasii)
 John or Mary-Nom which-person-also invite-Past (seem)
 ‘(It seems that) John or Mary invited everyone.’
 (OR > $\forall/?*\forall > \text{OR}$)
- b. [John **ka** Mary] o **dono-hito-mo** syootaisita (rasii)
 John or Mary-Acc which-person-also invite-Past (seem)
 (Clearly ambiguous) (Kitagawa & Kuroda, 1992:9)

If the subjects of the *ni*-direct passive are derived by movement, scope ambiguity should be observed. The examples of the *ni*-direct passive in (43) illustrate the possible interpretations:

²⁹ I refer the reader to Hoji (1985) for more details on scope quantifiers and their interpretation when there is scrambling.

³⁰ $\exists > \forall$, indicates that an existential quantifier has scope wider than that of a universal quantifier.

(43) a. Direct Passive:
dareka1 ga **daremo**-ni [e]1 homer-are-ta
 someone-Nom everyone-Dat praise-Appl-Past
 ‘Someone was praised by everyone.’
 ($\exists > \forall / ?^* \exists > \forall$)

b. Indirect Passive:
dareka-ga [**daremo**-ni miuti-o homer]-are-ta
 someone-Nom everyone-Dat family-Acc praise-Appl-Past
 ‘Someone had his/her family member praised by everyone.’
 ($\forall > \forall / \forall^* \exists > \forall$)

The sentences in (43) allow only a wide-scope reading for the subject. Therefore, these examples offer yet another type of evidence that movement is not involved in *ni*-passive sentences.

Since we do not find irrefutable evidence in favour of movement occurring in passives, and given that we have additional evidence that does not support the movement analysis, we can eliminate movement from analysis of the Japanese *ni*-direct passive. Thus, the applicative approach to passives, which does not involve any movement, becomes a valid alternative to the movement analysis.

2.5 Frequency

As in many languages, the use of passives is less frequent than that of actives. Yoshida (1996) recorded a 19-hour long oral conversation among three families, and a combined total of only 243 passive utterances were found. Table 2 shows the quantity of each type of passive found in the data.

Table 4: Distribution of each type of passive (Yoshida, 1996)

Passive type	<i>Niyotte</i> passive	<i>Ni</i> -direct passive	Indirect passive	Others ³¹
Total	0	168 (69%) ³²	29 (12%)	46 (19%)

In Yosida’s (1996) analysis, the *ni*-passive was used more frequently than the indirect passive, which is contrary to what was previously expected (Sasaki, 1994). Not a single instances of the *niyotte* passive was found in the conversational data, which is consistent with the prediction that the *niyotte* passive is used mainly in formal speech and written text. Toyota’s (2011) study – which included 200 samples collected from both spoken and written formats – found a few instances of the *niyotte* passive, but the frequency of use was lower than the other types of passives. Table 5 summarises the number of instances of each type of passive in Toyota’s data. It is relevant to note that the instances of the *niyotte* passive are most likely due to the fact that they collected samples from written as well as spoken language.

Table 5: Distribution of each type of passive (Toyota, 2011)

Passive type	<i>Niyotte</i> passive	<i>Ni</i> -direct passive	Indirect passive	Others
Total	4	12	2	10

The differences in the frequency of the passives may be expected to influence their acquisition. If JHSs receive limited input via oral communication, low frequency of the *niyotte* passives hinders their acquisition of this type of passive.

³¹ ‘Others’ includes lexical passives and instances in which *kara* ‘from’ and *de* ‘with’ were used as agent markers instead of *ni* or *niyotte*.

³² A total of 172 direct passives were found, among which 4 of them had agent markers other than *ni*. Many of these instances of passives found in the data did not include an agent, and only 23 instances had explicit *ni*.

It is also noteworthy that only a few complete passive sentences with both a patient and an agent are usually produced. According to Yoshida (1996), only 3% of the passives used in her data included an agent and a patient, whereas 66% omitted both of these. Similar data was found in Toyota's study, and as much as 83.8% of the agent phrases were absent from the passive sentences. When an agent is omitted in conversation, there is not enough input for speakers to learn the difference between the *ni* and *niyotte* phrases and each of their syntactic, semantic and pragmatic characteristics. This also influences the acquisition of the different types of passive.

2.6 Summary

This chapter has provided an analysis of Japanese passives. I argue that Japanese passives are divided into two types based on their syntactic derivations: pure passive (*niyotte* passive) and affective passive (*ni*-direct and indirect passive). The subject in a pure passive is promoted from the internal argument position of a verb by the derivation of Move. The subject of an affective passive is introduced by the applicative morpheme *rare* as an affectee of the event described in *VoiceP* where an agent is introduced as an external argument. Within VP, the internal argument is *pro* in the *ni*-direct passive, whereas NP occupies the internal argument position in the indirect passive as a direct object. In order to develop this analysis, I argued that no movement is involved in the affective passives, and demonstrated that the diagnostic tests that are commonly used for Move are not tenable.

Various levels of difficulty, i.e. syntactic derivation and the syntax-semantic-pragmatic interface, influence the acquisition of passives in different ways. If the syntactic representation is what underlies the non-convergence between monolingual native speakers and bilingual speakers, the affective passives are easier to acquire. However, if the external interface with pragmatics is

more problematic for the bilinguals, the affective passives are more difficult to acquire. Furthermore, differences in frequency can also affect the acquisition of passives. The *niyotte* passive, whose use is usually limited to formal conversations or written texts, may be difficult for the JHSs who generally receive only limited oral input. Table 6 summarises the expected difficulties with respect to a series of factors.

Table 6: Prediction of difficulties

	<i>Niyotte</i> passive	Affective passives
Interface with pragmatics	Easy	Difficult
A-dependencies	Difficult	Easy
Frequency	Difficult	Easy
L1 transfer	Easy	Difficult

As the syntactic operation of the *niyotte* passive is identical to that of the passives in the participants' dominant languages, it is expected that it is easier for the bilinguals in the study to acquire and process the *niyotte* passive than the affective passives.

Chapter 3. Review of the Literature on the Acquisition and Processing of Japanese Passives

3.1 Introduction

Extensive cross-linguistic research has been conducted on the acquisition of passives in both the L1 and the L2. Passives have been reported as late-learned structures in many languages³³. The following have been discussed as plausible accounts for the delay: 1) low frequency; 2) complex syntactic derivation; and 3) the representation of the syntax-semantics/syntax-semantics-pragmatics interface. Each of these are discussed in what follows.

First, it has been reported that children whose L1 exhibits a less frequent use of passives acquire them later in language development, whereas children whose L1 makes use of passives more often acquire passives early (e.g. Inuktitut studied by Allen & Crago, 1996; Sesotho studied by Demuth, 1989). Thus it can be said that the frequency of use in the language affects the development of passives.

Second, passives are generally derived from their active counterparts through Move. Borer and Wexler (1987, 1992) argue that this derivation is problematic for children because they are not capable of identifying the A(argument)-chain which is found between the underlying subject and object positions. This is known as the A-Chain Deficit Hypothesis (ACDH).

Finally, passives are a syntax-semantic interface phenomenon given that theta roles in passives are transferred from active counterparts, and children have difficulty transferring theta roles (Fox & Grodzinsky, 1998). The difficulties with theta role transmission have been also revealed in children's online processing of the passive (Contemori & Marinis, 2014; Marinis, 2007; Marinis & Saddy, 2013). Moreover, it is argued that even though children show evidence

³³ Recently, more studies reveal that children, in fact, acquire passives earlier than previously discussed (see Ud Deen (2011) for a summary).

of acquiring grammatical structures, they often fail to understand pragmatic conditions. In a study by Chien and Wexler (1990), for example, children competently understand the syntactic locality condition of reflexive bindings by the age of 6, but do not show competence with the long distance binding of pronouns. The authors explain that children fail to understanding that pronouns cannot be locally bound due to not only a lack of acquisition of binding principles but also due to their problems with pragmatic principles.

Bearing in mind these discussions on the cross-linguistic acquisition of passives, this chapter reports previous research on the acquisition of Japanese passives in both the L1 and the L2 as well as the processing of passives in Japanese. First, previous studies on the L1 acquisition of Japanese passives will be introduced. The findings in L1 acquisition are important to this study as the JHSs acquire Japanese as their L1 and thus the age at which L1 children comprehend and produce passives is a fundamental issue that relates to incomplete acquisition. If passives are learned after six years of age when formal schooling begins, the JHSs may never fully attain the linguistic properties of passives as a monolingual native speaker would. Next, previous studies of the L2 acquisition of passives will be presented. There are a few studies which have investigated the syntactic, semantic, and pragmatic acquisition of the different types of passives. These studies offer insights into which linguistic aspects of passives are problematic for JFL learners. Finally, existing studies investigating the processing of Japanese passives will be discussed.

3.2 L1 Acquisition of Japanese Passives

As discussed in the previous chapter, Japanese passives are syntactically, semantically, and pragmatically complex. It has been reported that their complexity affects L1 acquisition, and, in

fact, Okabe and Okubo (2005) reported that children at age 7 still have difficulties comprehending passives (as discussed further on).

A number of studies have been conducted to investigate the L1 acquisition of Japanese passives (Harada & Furuta, 1998; Minai, 2000; Murasugi & Kawamura, 2005; Okabe, 2005; Okabe & Okubo, 2005; Sano & Okabe, 2002; Sugisaki, 1991). The focus of most of these studies pertains to ACDH and the results are inconsistent, since some support ACDH (Minai, 2000; Murasugi & Kawamura, 2005; Sugisaki, 1991) while others reject it and propose the delay of the acquisition of passives as an alternative explanation (Okabe, 2005; Okabe & Okubo, 2005; Sano & Okabe, 2002). There are also a few studies focusing on pragmatics that claim that pragmatics plays a key role in the delay of the acquisition of passives (Otsu, 2000; Suzuki, 2002). This section summarises the studies that have investigated the acquisition of Japanese passives by L1 Japanese children from different perspectives.

3.2.1 Studies supporting the ACDH

Sugisaki (1999) examined the acquisition of the *ni*-direct and indirect passives by Japanese monolingual children within the ACDH framework. He tested 3- to 5-year-old children using a two-picture identification task, analysing the data according to the number of children who passed or failed at choosing the correct pictures. Children who chose more than three out of four correct pictures were considered to have met the criteria and passed the task. The results from the 17 children are presented in Table 7.

Table 7: Results of a picture identification task in Sugisaki's study

	<i>Ni</i> -direct	Indirect
Pass	7	10
Fail	10	7

(Adapted from Sugisaki, 1999:150)

As shown in Table 7 above, more children successfully chose correct pictures describing indirect passive sentences than *ni*-direct passive sentences. The results support the ACDH; namely, that children acquire indirect passives which do not involve Movement earlier than the *ni*-direct passive which he assumed was derived from an active counterpart. However, his experiment is limited in that he used only intransitive verbs and did not include any transitive verbs. It may be easier for children to comprehend intransitive verbs than transitive verbs in indirect passives as intransitive verbs do not appear to have extra arguments on the surface as transitive verbs do. Sugisaki (1999) also did not group participants by age and therefore he fails to address maturation effects.

Minai (2000) tested 35 monolingual Japanese children between 3 and 6 years of age following the same methodology (two-choice picture selection task) as Sugisaki (1999). In this task, children listened to a narrative sentence and then chose the picture that accurately depicted the sentence. She divided the passives into four types: *ni*-direct, possessive, indirect passive with transitive verbs, and indirect passive with intransitive verbs. Table 8 summarises the results of the task, including the active sentences.

Table 8: Correct responses in a picture selection task in Minai's study³⁴ (%)

	Age 3	Age 4	Age 5	Age 6
Active	60.42	75.00	89.58	98.46
<i>Ni</i> -direct	54.17	60.42	60.42	69.70
Indirect ³⁵	62.50	72.38	75.00	75.00

(Adapted from Minai, 2000:344)

The children performed better with the indirect passive than the *ni*-direct passive regardless of age, which is consistent with Sugisaki's results and supports the ACDH. Minai claims that case assignment, namely the change from accusative to nominative case, confuses the children and this, in addition to the complexity of A-chain movement, causes in the delay in the acquisition of *ni*-direct passives.

While the results of the studies by Sugisaki (1999) and Minai (2000) showed that children acquire indirect passives before the *ni*-direct passive, other researchers have reported different results. For instance, Harada and Furuta (1998) tested 81 children aged 3;6 to 6;5 to investigate their acquisition of *ni*-direct, indirect, and possessive passives. The results from a production and two comprehension tasks showed that children acquire *ni*-direct passives earlier than indirect passives, which contradicts the results of the studies discussed above that support the ACDH.

Murasugi and Kawamura's (2005) research also supports the ACDH. These authors studied the acquisition of passives in relation to scrambling. They found that while children acquire scrambling as early as 2 years old, the acquisition of passives is significantly delayed. This indicates that children acquire the syntactic properties of A'-movement at an early age, but

³⁴ As in my analysis, the possessive passive is included in the indirect passive and thus the result is not presented separately here.

³⁵ The results of the indirect passive with both transitive and intransitive verbs are combined here.

they don't acquire A-movement until much later; as late as 6 years old, which these authors claim accounts for the delay in the acquisition of *ni*-direct passives.

3.2.2 Studies opposing the ACDH

Okabe and Okubo (2005) and Okabe (2005) do not support the claim that the ACDH can account for the delayed acquisition of passives but rather postulate that the delay is caused by difficulties when shifting semantic roles.

Okabe and Okubo (2005) investigated the acquisition of passives and benefactives, which include a benefactive marked by the dative case *ni*. They tested three participants aged 5 to 7 using a truth value judgment task. In this task, an experimenter acted out a short scenario using stuffed animals, and then the other experimenter presented a sentence and asked the children to judge whether or not the statement matched the scenario. They included passive sentences with *kara* ('from') as an agent phrase in order to compare these with passives with the dative case *ni*. Their results showed that children performed very poorly in the passives with *ni*-phrases and thus the children still did not comprehend the passives even at the age of 7. They claimed that the children failed to comprehend the agent *ni*-phrases because they performed better with passive sentences when the *ni*-phrase was replaced by the postposition *kara* ('from'). They conclude that young children have difficulty assigning the theta role to *ni*-phrases, as previously discussed by Okabe and Sano (2002). The limit of their study is that it only included three participants, which is too small a sample to provide a strong argument supported by a robust statistical analysis.

These limitations led Okabe (2005) to conduct a further experiment using the same task but including 20 participants aged 4 to 6. Table 9 summarises the percentage of correct responses with the active and passive sentences.

Table 9: Correct responses in a truth value judgment task in Okabe’s study (%)

	Age 4	Age 5	Age 6
Active	100	100	100
Passive with <i>ni</i>	16.7	75.0	75.0
Passive with <i>kara</i>	50.0	87.5	75.0

(Adapted from Okabe, 2005:445)

The results indicate that children at age 4 barely comprehend passives, especially when an agent is marked with the dative case *ni*. These results confirmed the claim made by Okabe and Okubo (2005) that young children find it difficult to assign the theta role to *ni*-phrases.

3.2.3 Studies focused on pragmatics

A few studies focus on the pragmatic perspective of passives in acquisition. Otsu (2000, cited in Sugisaki & Otsu, 2011) tested 3- and 4-year-old Japanese monolingual children to investigate whether pragmatics, that is the affectedness of a patient in *ni* passives, is the source of children’s difficulty in comprehending Japanese passives. Otsu (2000) hypothesised that it is difficult for children to understand that the subject of a sentence is adversely affected unless it is relevant to them. Based on this hypothesis, he employed a truth value judgment task with sentences in two conditions: A) the subject in 3rd person; and B) the subject as the participant himself/herself. The children performed better in when they were the subject (A) than when the subject was in 3rd person (B) with both *ni*-direct and indirect passives (as shown in Table 10).

Table 10: Correct responses in a truth values judgment task in Otsu’s study (%)

		3 years old	4 years old
Condition A	<i>Ni</i> -direct	43	61
	Indirect	61	68
Condition B	<i>Ni</i> -direct	80	89
	Indirect	87	91

(Sugisaki & Otsu, 2011:314)

Otsu argues that since children can connect their own ‘mind’ to the sentences in condition B, they are easier for them to comprehend. The general delay in the acquisition of *ni* passives is due to the fact that young children fail to detect the existence of someone else’s ‘mind’ and connect it to the sentence.

Suzuki (2002) tested children’s difficulties in the comprehension of *ni*-direct passives along the same lines as Otsu (2000). To do so, he ran act-out sentence comprehension tasks in which one condition (Type I) used participants’ toys with their actual names³⁶ as a patient (i.e. the subject of a passive sentence) while the other did not (Type II). The results showed that children performed better the former condition than in the latter as shown in Table 11.

Table 11: Correct responses in a sentence comprehension task in Suzuki’s study (%)

	Type I	Type II
Young (mean age 4;3)	68.2	34.1
Older (mean age 5;8)	84.7	48.6

(Adapted from Suzuki, 2002: 139)

Based on the results, Suzuki (2002) concluded that difficulties lie in the children’s ability to adjust their perspective. Children perform better in Type I as they do not have to shift the perspective since it matches their own, while the Type II passives require them to adjust their

³⁶ For example, if the participant’s name was Jun and his stuffed dog was used, the test sentence was ‘Jun’s dog was pushed by a cat’.

perspective to that of another subject. He argues that even 6-year-olds do not fully comprehend passives that require them to shift perspectives.

Izutani (2001) also observed the role of pragmatics in addition to that of syntax and semantics in the acquisition of *ni* passives. She conducted three experiments to investigate both the comprehension and production of passives by Japanese monolingual children. Based on the results of the experiments, Izutani argues that Japanese children learn passives as early as 3 years old, which is earlier than previously reported. The acquisition, however, occurs step by step: first, the children identify the syntactic property, then they recognise semantic function, and finally they learn the semantic and pragmatic features by the age of 5. These results contradict the claim of the ACDH, which predicts that children cannot comprehend or produce passives until age 5.

While her results showed that children actually acquire *ni*-passives earlier than previously reported, Izutani argues that passives are still hard to acquire due to not only to the linguistic features but also to the lack of input.

3.2.4 Summary of the L1 acquisition of Japanese passives

As discussed above, there are no consensus as to the age at which Japanese monolingual children acquire passives or what causes the difficulties in acquisition. As argued from a cross-linguistic perspective, the complexity of the syntax, the semantic representation, and the syntax-semantic-pragmatic interface all seem to underlie these difficulties. Low frequency may also be a factor.

It is important to note for the present study that JHSs who acquire Japanese as the L1 will encounter the same difficulties as monolingual children, no matter what the difficulty can be attributed to. If it is true that children do not acquire passives until the age of 7, as some of the

studies show, the JHSs may not have mastered passives before the majority language in the society becomes their dominant language, resulting in ‘incomplete acquisition’.

Note also that all of the claims made in the studies discussed in this section were made under the assumption that *ni*-direct passives are derived via Move. As discussed in the previous chapter, I propose that *ni*-direct passives are base-generated, and this will be my assumption in this study. Thus, these previous claims need to be re-examined in order to test the ACDH and the other claims explaining the delay in the acquisition of passives.

3.3 Acquisition of Japanese Passives by JFL learners

Very few studies have been conducted to investigate the acquisition of Japanese passives by JFL learners in relation to the number that have examined L1 child acquisition. The few existing studies focus on different linguistic areas of passives: some have investigated the syntactic and semantic knowledge of JFL learners (Hara, 2002, 2007), while others have investigated the usage of passives by learners (Tanaka, 1992, 1993; Watabe, Brown & Ueda, 1991). In this section, both of these studies are reviewed.

3.3.1 Hara (2002)

Hara investigated the knowledge of three types of Japanese passives – *niyotte*, *ni*-direct and indirect – by L1 English learners of Japanese. He used a grammaticality judgment task that consisted of 84 sentences (62 passive and 22 distractor sentences) in order to find out whether the learners had mastered the syntactic and semantic properties of each passive. The data was collected from intermediate, and low-advanced and highly-advanced learners as well as from a control group of native Japanese speakers.

Syntactically, the study revealed that learners at all levels had better structural knowledge of the *ni*-direct passive than either the *niyotte* or indirect passive. They judged the grammaticality of *ni*-direct passives as expected according to the theory, but their judgment of the *niyotte* and indirect passives was not as expected, as shown in the Table 12 (illustrating the mean grammaticality rating on a scale of +2 (grammatical) to -2 (ungrammatical)).

Table 12: Mean ratings for three syntactic types of passives in a grammaticality judgment task in Hara's study

		<i>Niyotte</i> passive	<i>Ni</i> -direct passive	Indirect passive
Grammatical	Native speakers	1.21	1.85	1.85
	Highly-advanced	.80	1.66	.98
	Low-advanced	.17	1.43	.39
	Intermediate	.15	.83	.25
Ungrammatical	Native speakers	-1.34	-1.90	-1.92
	Highly-advanced	-.56	-1.44	-1.60
	Low-advanced	.24	-.60	-.64
	Intermediate	.50	-.33	.05

(Adapted from Hara, 2002)

Hara argues that *ni*-direct passives are expected to be learned first by the JFL learners because the structure is similar to English passives and also because the learners receive more input than with the other types of passives. He attributes the low ratings of the grammatical *niyotte* passives to a lack of input, as its usage is restricted to formal speech or written documents with an objective perspective. Thus, this implies that frequency affects the L2 learners' mastering of the passives.

The results further indicate that indirect passives are also difficult for L1 English learners, which is most likely due to the fact that their syntactic structure is different from that of the English passive. Even highly-advanced learners failed to reject the ungrammatical indirect passive sentences. While they successfully accepted grammatical indirect passive sentences such

as (44b), they failed to reject ungrammatical sentences as in (44a), in which an incorrect particle was used.

- (44) a. *John-wa sensei-ni kodomo-ga sika-rare-ta
 John-Top teacher-Dat child-Nom scold-PASS-Pas
 b. John-wa sensei-ni kodomo-o sika-rare-ta
 John-Top teacher-Dat child-Acc scold-PASS-Past
 ‘John was affected by the teacher scolding his child.’

(Hara, 2002:192)

The internal argument of VP *kodomo* in (44) has to be marked with the accusative case *o* as in (44b), but the NP is marked with the nominative case *ga* in (44a). Hara explains that even highly-advanced learners failed to reject the ungrammaticality of (44a) as they applied the same syntactic operation as in the *ni*-direct passives to the indirect passives, and they assumed accusative absorption is optional in the indirect passive. Their assumption, however, does not take into account the low frequency of the passive and they also cannot establish the syntactic representation of indirect passives in the interlanguage of the learners.

Semantically, only the highly-advanced learners had the knowledge required to distinguish the different subjects in the *ni*-direct and *niyotte* passives (Table 13).

Table 13: Mean ratings for the adversity reading of three types of passives in a grammaticality judgment task in Hara’s study (range: +2 to -2)

	<i>Niyotte</i> passive*	<i>Ni</i> -direct passive	Indirect (intransitive)	Indirect (transitive)
Native speakers	-.42	1.84	1.23	1.50
High-advanced	.24	1.52	1.46	1.34
Low-advanced	.67	1.39	.13	.31
Intermediate	.65	.65	.58	.25

(Adapted from Hara, 2002)

The results suggest that the learners are aware that the subjects of the *ni*-direct passive hold a theta role as an affectee whereas those of *niyotte* do not. Highly-advanced learners accepted the adverse meaning of the *ni*-direct and indirect passives such as in (45a). However, they also accepted *niyotte* passives with an adverse interpretation even though these passives do not carry this connotation (45b).

(45) a. Jane-ga mukasi-no kare-ni nijikan-mo mat-are-te komat-ta
Jane-Nom ex-Gen boyfriend-Dat two hours-as many as wait-Pass-Conj annoy-Past

b. *Jane-ga mukasi-no kare-niyotte nijikan-mo mat-are-te komat-ta
Jane-Nom ex-Gen boyfriend-by two hours-as many as wait-Pass-Conj annoy-Past
'Jane was annoyed by being adversely affected by having been waited for by her
ex-boyfriend for as many as two hours.'

(Hara, 2002:87)

Because of the verb 'annoy', it is clear that the sentences in (45) carry a negative connotation, and therefore only the *ni*-affective passive as in (45a) is grammatical.

Low-advanced learners showed a tendency to understand the adverse meaning of the *ni*-affective passives but they did not accept it consistently and the intermediate learners did not indicate any difference in meaning among the three types of passives. Thus, the low-advanced and intermediate learners did not have a clear knowledge of the difference between *ni* and *niyotte* marked agents.

In sum, the results of the study suggest: 1) JFL learners learn *ni*-passives earlier than indirect and *niyotte* passives; and 2) learners acquire the semantic feature responsible for the adversity role of subjects later in their acquisition. The difficulty in learning the syntactic and semantic features can be attributed to the low frequency of input.

3.3.2 Hara (2007)

Hara further investigated the acquisition of the *ni*-direct and *niyotte* passives by L1 English and L1 Chinese learners of Japanese. The purpose of this study was to examine the influence of input, namely whether learners acquire the poverty of the stimulus (POS) (Chomsky, 1980) features in comparison to the triggering features. The triggering features are absent in the learners' L1 but they are accessible through the L2 input, most likely via classroom instruction. The POS features are neither available in the learners' L1 nor input of the L2.

The semantic feature of *ni*-passives, namely the affectivity of subjects, is the triggering feature for English speakers as it is absent in the L1 but available in the Japanese L2 input. The fact that the inanimate subjects are not compatible in a past and progressive reading is the POS, and it is not available in the input³⁷. It should be noted that these features affect Chinese speakers differently, since Chinese has affectivity reading passives, and consequently the feature of affectivity is available in the L1 of these learners of L2 Japanese.

Hara employed a grammaticality judgment task to examine English and Chinese learners' knowledge of Japanese passives at intermediate, advanced, and highly-advanced levels. Minimal pairs of *ni*-direct and *niyotte* passives in four conditions were used – as shown in (46) – to compare the acquisition of adversity meaning and the in/compatibilities of inanimate subjects.

- (46) a. Simple past
Kaigi-ga gityoo-*ni/ niyotte hazime-rare-ta
meeting-Nom chairperson-Dat/ by start-Pass-Past
'A meeting was started by the chairperson.'

³⁷ Hara claims that the affectivity of subjects is explained explicitly in textbooks whereas no major textbooks used in JFL classes mention the incompatibility of inanimate subjects. It is likely that the incompatibility is not explained at all in class and this is why it is a POS property.

b. Progressive

Kono atarasii konpuutaa-no puroguram-wa Paul-*ni/ niyotte tukur-are-te-iru
this new computer-Gen program-Top Paul-Dat/ by make-Pass-Conj-Prog
'This new computer program is being made by Paul.'

c. Perfective with past particle *ta*

Bosunia-no mati-ga NATO-gun-ni/ niyotte koogekis-are-ta
Bosnia-Gen town-Gen Nato-army-Dat/ by attack-Pass-Past
'A town in Bosnia is under the state affected by having been attacked by NATO.'

d. Perfective with progressive suffix *iru*

Mondai-no zyuuyoosee-wa kokumin-ni/ niyotte yoku rikais-are-te-iru.
issue-Gen importance-Top citizens-Dat/ by well understand-Pass-Conj-Prog
'The importance of the issue is under the state affected by having been fully understood
by the people.'

(Adapted from Hara, 2007)

There is no affectivity reading in the *niyotte* passives and the compatibility of inanimate subjects with the past and progressive is also available in the L2 input.

The results showed that the English learners' knowledge of triggering and the POS features in *ni*-direct passives correlated to the expected order: -triggering, -POS (*niyotte* passive) < +triggering, -POS (*ni*-direct with perfect reading) < +triggering, +POS (*ni*-direct passive with simple past/progressive reading), and also to the learners' proficiency level. Such a correlation was not observed in the results of the Chinese learners of Japanese whose L1 has passives with the adversity meaning. The English learners of Japanese with a higher level of proficiency demonstrated their knowledge of the POS conditions of passives, namely the incompatibility of inanimate subjects with the past and progressive readings in the *ni*-direct passive. Hara (2006) argues that once the learners master the triggering feature, they apply the knowledge of the triggering feature to identify the POS features. Based on the results, Hara concluded that input that allows learners to acquire the triggering features plays an important role in L2 acquisition.

3.3.3 Tanaka (1992, 1993)

Tanaka (1992, 1993) focused on L1 influence in the acquisition of the Japanese passives, and examined the use of the passives by JFL learners who were studying at a Japanese university.³⁸

In order to find out whether there was interference from the L1 in the use of passives, Tanaka carried out an error analysis of written compositions. The analysis revealed that the learners made mistakes with all three types of the passives. Most mistakes were due to learners' incorrect interpretations of *shiten*, the speaker's marker of empathy. Misuse of the active voice when the passive voice should have been used – as in example (47) – was found in 31.3% of the upper intermediate and 11.4% of the advanced learner groups.

(47) a. *Tomodati-ga izime-nai yooni ohuro-ni hairu mae karada-o aria-nasai
Friend-Nom tease-Neg so that bath-to enter before body-Acc wash-IMP

b. Tomodati-**ni** izime-**rare**-nai yooni ohuro-ni hairu mae karada-o aria-nasai
Friend-Dat tease-PASS-Neg so that bath-to enter before body-Acc wash-IMP
'Wash your body before getting into bath so that you won't get teased.'

(Adapted from Tanaka, 1993)

Example (47a) is ungrammatical as the main clause is an imperative whose covert subject is supposed to be identical to the subject of the subordinate clause with the expression *yooni* ('so that'). The subject of the subordinate clause *tomodati* in (47a) is not identical to the null subject implying 'you' in the main clause. The subject of the subordinate clause has to be 'you' and the passive voice, not the active voice, must be used in this structure (as shown in (47b)). Using the active voice in sentence (47a) is not only syntactically incorrect but also pragmatically inadequate from the perspective of the speaker. The *ni*-direct passive in (47b) indicates the speaker's potential fear that the interlocutor may be teased, and is therefore more appropriate in

³⁸ Even though the participants had different language backgrounds, the majority of them were L1 English speakers.

the context. This syntactic mistake may be due to the learner's L1. The English translation of the sentence in (47a), 'Wash your body before getting into the bath so that your friends won't tease you', is completely grammatical and is allowed to have different subjects in the two clauses. The learner also may not have been aware of the adversity connotation of the *ni*-direct passives, or when to apply it in production even if s/he had the pragmatic knowledge of the passive. Tanaka found from the overall usage of passives that as learner's proficiency increases, the correct usage of the empathy perspective also increases.

Tanaka (1992, 1993) demonstrated that the *ni*-direct and *niyotte* passives are hard to produce correctly in writing for high-intermediate and even for advanced learners. In her first study, Tanaka (1992) identified 311 passives in learners' written texts, out of which 181 were used correctly and 130 incorrectly. Only 4 out of 311 instances of passives were the indirect passive, half of which were produced incorrectly. She also found the incorrect use of *ni* as an agent phrase with inanimate subjects where *niyotte* should be used, indicating that the learners had not learned the semantic difference between the two agent markers. This illustrates that the production of passives is syntactically, semantically, and pragmatically difficult for JFL learners.

3.3.4 Watabe, Brown & Ueta (1991)

Watabe et al. (1991) contrasted advanced learners' usage of passives in writing to that of native speakers of Japanese. The participants wrote two compositions on two different topics: i) a newspaper account of a fire; and ii) a most unfortunate event in his/her life. The authors found that few *ni*-direct and indirect passives were used by the learners while native Japanese speakers tended to use these types of passives to indicate adversity interpretations, especially when they reported a personal account. Table 14 summarises the results.

Table 14: Use of passives: average number of productions per participant in Watabe et al.'s study

	Newspaper account of a fire	Unfortunate event in life
Native speakers	.556	1.389
English-speaking learners	1.986	0.347

(Adapted from Watabe, Brown, Uedo, 1991)

In contrast to the description of an unfortunate event, the learners used passives much more frequently in the newspaper account. Watabe et al. argue that the learners transferred the pragmatic functions of the English passives with a neutral connotation in their writing. They did not produce as many passive sentences in the personal account because the adversative reading of the *ni*-direct and indirect passives does not exist in English and thus they may not have learned this meaning. Though they may have known the adversity connotation of the *ni* passives, they failed to apply this knowledge in production.

3.3.5 Summary of the acquisition of Japanese passives by JFL learners

This section introduced four studies on the acquisition of Japanese passives by JFL learners. The first two employed perception tasks, while the last two used production tasks. The results examining learners' knowledge and production of the passives show that: 1) syntactically, learners have less knowledge of the indirect passives than the other types; 2) semantic distinction between *ni* and *niyotte* as an agent phrase is difficult to acquire; and 3) learners make mistakes in passives not only syntactically but also semantically and pragmatically. The difficulties may be attributable to the unavailability of certain features in the learners' L1, such as the syntactic representation of indirect passive, the affective role of the subject in *ni*-passives, and the

adversity connotation in *ni*-passives, as well as to the low frequency of the *niyotte* and indirect passives in the input. In fact, input may significantly affect L2 acquisition as Hara (2007) argues.

3.4. Japanese passive processing

To the best of my knowledge, no study has been conducted to investigate the processing of Japanese passives by JHSs or JFL learners. There are, however, some studies examining the processing patterns of Japanese passives by Japanese native speakers from a neurolinguistic perspective (Hirotani et al., 2011; Yokoyama et al., 2006; Yokoyama et al., 2007). This subsection summarises these L1 Japanese processing studies.

First, Yokoyama et al. (2006) investigated monolingual Japanese speakers' processing of nouns, morphologically uninflected active verbs, and inflected passive verbs. A lexical decision task was employed in which participants were asked to judge whether or not a presented lexical item was a real word while their brain activity was observed using fMRI (functional magnetic resonance imaging). The authors found that while similar brain regions (i.e. cortical regions) were activated in all three lexical conditions, the degree of activation varied, suggesting that the difference corresponded to the cognitive demands involved in lexical semantic processing. They also discuss that this difference in the degree of activation of the left inferior frontal cortex between active and passive verbs (i.e. greater activation for passive verbs than active verbs) can be attributed to morphological complexity.

Yokoyama et al. (2007) further compared Japanese native speakers' brain activity during the processing of Japanese active and *ni*-direct passive sentences to the processing of English active and passive sentences, to investigate whether bilinguals process syntactically complex structures similarly in L1 and L2. The participants judged the semantic plausibility of active and

passive sentences in Japanese and English. The results of their experiments showed that the Japanese native speakers activate similar brain areas (i.e. cortical regions) during processing both in the L1 and the L2. Different activation patterns in the L1 and L2 were, however, found in during the processing of passives. The authors argue that the results indicate that different brain activation occurs when comprehending structurally complicated sentences in the L1 vs. the L2, while similar activation occurs in both languages during the processing of simple sentences. If their claim is correct, the JFL learners would show different brain activation than the JHSs, and the learners may have a disadvantage in processing passives because of this difference.

Another study using fMRI was conducted by Hirotani et al. (2011) in which they compared active, passive, and causative sentences. These authors claim that the comparison of these sentences reveals monolingual Japanese speakers' thematic and syntactic analyses in the course of processing since the thematic and syntactic reanalysis requirements are different in each of these conditions. Active requires neither thematic nor syntactic reanalyses, while passive requires both. Causative requires thematic but not syntactic reanalysis. The participants listened to sentences and answered comprehension questions (following approximately 20% of the sentences) while fMRI captured neuroimages of their brain activity. The results of the fMRI showed more activation in certain regions (i.e. the left inferior frontal gyrus (LIFG) expanding into the dorsal premotor cortex and in the left middle and posterior temporal cortex) with the passive and causative sentences than the active ones, indicating more processing load in the passive and causative conditions. The comparison of the passive and causative sentences showed no difference in activation. However, prolonged activation was found in the LIFG for the passives, a region that the authors argue supports syntactic reanalysis. It should be noted that the passive sentences they used in the study were the indirect type, which does not involve Move,

contrary to the authors' analysis. Thus, the prolonged activation of the LIFG for passives compared to causatives may be due to their morphological complexity as Yokoyama et al (2006) argue, rather than their syntactic complexity.

The current study does not include neural analyses, but these studies illustrate the greater processing load of Japanese passives compared to other structures. If processing the passives is costly for native Japanese speakers, the cost is even greater for the bilinguals who are assumed to process less effectively due to 'executive control limitations in handling two languages in real time' (Sorace & Serratrice, 2009: 199).

3.5 Summary

This chapter summarised existing studies on the L1 and L2 acquisition of Japanese passives as well as the processing of passives by Japanese native speakers. Studies on the L1 acquisition of passives offer conflicting results in terms of which type of passive is acquired first, or what underlies a delay in acquisition. Studies on the L2 acquisition of passives, in contrast, coincide in that the results show that L2 learners have difficulties learning features that are not present in their L1, although appropriate and sufficient input may facilitate overcoming these difficulties.

To the best of my knowledge, no study has investigated the acquisition of Japanese passives by JHSs, or compared the acquisition of JHSs and JFL learners. Furthermore, no study has examined the non-convergence of bilinguals' and monolinguals' use of passives by employing online tasks. This dissertation will therefore contribute to the literature on different aspects of the acquisition and processing of passives in Japanese.

Chapter 4. Predictions and Methodology

4.1 Introduction

As previously stated, this study examines the knowledge and processing of Japanese passives, which are intersected at different linguistic levels, by Japanese heritage speakers (JHSs) and learners of Japanese as a foreign language (JFL) whose dominant or first language is either English or French. The JHSs acquired Japanese as L1 in Canada where either English or French is spoken as a majority language in society. The JFL learners whose L1 is either English or French began learning Japanese after puberty in a classroom setting. The comparison of results between the JHSs and the JFL learners will provide insights into how age and manner of acquisition influence the way bilinguals develop their knowledge and processing of the Japanese language.

The bilinguals of both groups in this study have an advanced level of proficiency of Japanese. Previous research has shown that advanced level bilinguals face difficulties in interpreting complex structures, especially structures involving the discourse-pragmatic interface (Laleko, 2010; Laleko & Polinsky; 2013). Examining three different types of passives allows us to explore what plays a crucial role in the development of heritage language (HL) and L2; the pragmatic related interface or the syntactic representation, respectively.

Two experiments were conducted in order to examine structural knowledge and processing of Japanese passives by JHSs and JFL learners: an offline acceptability judgment task (AJT) and an online self-paced listening task (SPL). The former tests grammatical knowledge of the passives and the latter examines how bilinguals process complex structures of different linguistic levels.

This chapter first presents the predictions of the study within the framework of the theories discussed in Chapter 1. There are four factors that are relevant to the acquisition and development of Japanese passives: (i) the complexity of the syntactic derivation; (ii) the syntax-discourse interface; (iii) frequency; and (iv) manner of input. These factors predict different outcomes of bilinguals' performance and different development order of each type of Japanese passive. The hierarchies of development are discussed as being crucial to answer what plays a role in bilinguals' non-divergence on monolinguals. Second, the research questions of the study followed by the related hypotheses are presented. The last section of this chapter presents an overview of the experiments and procedures of this study.

4.2 Predictions

4.2.1 Hierarchies of bilinguals' development of Japanese passives

As described in Chapter 2, Japanese passives can be divided into two types based on their syntactic and semantic features: pure passive (*niyotte*) as in (48) and affective passives (*ni*-direct and indirect passives) as in (49). The *niyotte* passive is derived by Move, and the subject of the sentence is a theme that is promoted from the internal argument position of VP in an active counterpart. The demoted agent is marked with *niyotte*. The operations involved in this type of passive are strictly syntactic. In contrast, the subject of affective passives is introduced by an applicative morpheme, receiving an affectee role. Due to this affectee role of a subject, the use of this passive is more restricted to indicate the speaker's empathy. Thus, affective passives are licensed at the syntax-discourse interface.

(48) *Niyotte* passive

Taroo_i-ga Hanako-**niyotte** *t_i* ke-rare-ta
Taro-Nom Hanako-by kick-Pass-Past
'Taro was kicked by Hanako'

(49) Affective passive

- a. Taroo-ga Hanako-**ni** ke-rare-ta
Taro-Nom Hanako-Dat kick-Appl-Past
'Taro was affected by Hanako kicking him'
- b. Jiroo-ga akachan-**ni** yoku nak-are-ru.
Jiro-Nom baby-Dat often cry-Appl-Pres
'Jiro is affected by (his) baby crying'.

The syntactic derivation of the *niyotte* passive is more complicated than that of affective passives owing to the involvement of Move. If the complexity of syntactic representation poses difficulties in bilinguals, it is predicted that affective passives will be more accessible and easier for learners to attain native-like knowledge than the *niyotte* passive. Affective passives will also be more resilient to issues such as attrition. If this prediction is correct, the hierarchy of the development of Japanese passives would be the one depicted in (50).

(50) Affective passives < *niyotte* passive

This hierarchy predicts that affective passives are acquired before the *niyotte* passive, and that they are more resilient to influence from the bilinguals' dominant (non-Japanese) language.

The hierarchy in (50) further predicts that bilinguals process affective passives more effectively than *niyotte* passive, as syntactic complexity of the latter imposes processing cost. It is expected that extra processing load is needed in order to comprehend more syntactically

complex structures than less complex ones, which implies that more effort is needed to process *niyotte* passive than affected passives.

Within the affective passives, the indirect passive type is syntactically unique in that it holds an extra argument with a transitive verb in a structure, as in the example (49) in Chapter 2, repeated in (51).

- (51) Hayashi butyoo-ga hisyo-ni daizina syorui-o nakus-are-ta
Hayashi director-Top secretary-Dat important document-Acc lose-Appl-Past
'Director Hayashi was affected by his secretary losing an important document'

Crosslinguistically, the internal argument of VP of a passive voice sentence is an empty category which is identical to a subject promoted by the operation Move. However, in the indirect passive, the position is occupied by an NP (*daizina syorui* in the above example). An intransitive verb can also appear with a morpheme (*are* as in (49b)). As this kind of syntactic structure is absent in this study's participants' dominant languages (English or French), the JFL learners may attain the syntactic structure of the indirect passive³⁹ later than the *ni*-direct passive type on account of an L1 effect. The indirect passive type may also be more sensitive to attrition in case of the JHSs. If this is the case, the hierarchy in (50) which is formulated based on syntactic consideration can be further developed as in (52).

- (52) *ni*-direct passive < indirect passive < *niyotte* passive

³⁹ For the sake of distinguishing structural differences within affective passives, the traditional terms of *ni*-direct and indirect passives are used.

This hierarchy implies that bilinguals in this study have a better knowledge of the *ni*-direct passive type than indirect passive, and that their knowledge of *niyotte* passive is not as deep as the other two types.

Contrary to the predictions made by the hierarchies in (50) and (52), the Interface Hypothesis (IH) predicts that bilinguals encounter more difficulties in processing syntactic structures that intersect with discourse-related information. Thus, according to the IH, the *niyotte* passive, which involves only syntactic operations, will be more tenable to the bilinguals than the affective passives that happen to be associated with pragmatic information. This view creates a development hierarchy of the passives as in (53), which is contradictory to the hierarchy in (50) and (52) which were derived from the rationalization that syntactic representations are more difficult to process than those which also include pragmatic information.

(53) *niyotte* passive < affective passives

The above hierarchy predicts that bilinguals in the study have better knowledge of *niyotte* passives than affective passives, as *niyotte* passives do not require or include discourse information, and are therefore more accessible to bilinguals and consequently learned first. The hierarchy in (53) also predicts that the bilinguals process *niyotte* passives with less effort than affective passives, for pragmatic/discourse-related structures are more costly in processing than the ones requiring only syntactic computation.

Hence, different considerations of what underlies bilinguals' non-convergence with monolinguals, namely syntactic representation or computation, create a conflicting development hierarchy of the Japanese passives. This study will examine which hierarchy applies to the

knowledge and processing of the bilinguals, and will try to determine what is more problematic for them.

4.2.2 Frequency

It should be noted that frequency of use is also a potential factor that affects bilinguals' knowledge and processing of Japanese passives. As noted in Chapter 3, it has been reported that children with L1s whose passive voice is used frequently acquire the passive voice at an earlier stage of language development. Hara (2002) also claims that the input frequency of Japanese passives affects L2 learners' knowledge as described in the previous chapter. Frequency of use among the two types of passives themselves largely varies. The frequency of the *niyotte* passive is much less than that of affective passives, and its usage is usually restricted to formal speech and written texts as described in section 3.4 in Chapter 3. Within the affective passives, the *ni*-direct passive is more frequent in conversation than the indirect passive. If frequency plays a relevant role in the development of Japanese passives for the bilinguals, the hierarchy of acquisition is expected to be as in (54), which is identical to the hierarchy proposed based on complexity of syntactic representation as shown in (52).

(54) *ni*-direct passive < indirect passive < *niyotte* passive

Ellis (2002) claims that input frequency influences processing of all levels of linguistic components (e.g. phonology, lexis, morphosyntax, syntax, reading, sentence production).

However, it is not possible to claim that frequency is the only factor affecting acquisition. While it has been reported that some structures of more frequent use are acquired at a later stage of

acquisition of a given language, Gass and Mackey (2002) claim that the order of acquisition does not necessarily correspond to frequency of input. No matter how frequently a syntactically complex structure may be used in a particular language, children acquiring the language as L1 or adult L2 learners would not learn the syntactically complex structure earlier than a simpler one.

One such example is the case of English passives. It has been reported that L1 English children comprehend and produce the *get*-passive earlier than the *be*-passive (Harris & Flora, 1982) despite a lower frequency of use of the *get*-passive compared to *be*-passive⁴⁰ (Mair & Leech, 2006). Since the subject of the *get*-passive is base-generated⁴¹, this passive is syntactically less complex than the *be*-passive which is derived by Move. The base-generated subject in *get*-passive receives a theta role (Hoshi, 1999) and that subject is an affectee of an event (Chapelle, 1980) as in the example (55).

- (55) a. Tom was fired by his employer.
b. Tom got fired by his employer.

In (55b), the base-generated subject *Tom* receives a role as an affectee of the event of being fired, while *Tom* in (55a) does not hold such a role. These features are parallel to those of affective passives in Japanese.

In contrast, a subject of the English *be*-passive is promoted from the internal argument of the VP via Move, similarly to the Japanese *niyotte* passive. In English, syntactic complexity of the *be*-passive may affect the acquisition of the L1 English passives more than frequency as

⁴⁰Mair and Leech (2006) found from corpora that the frequency of the *get*-passive is increasing, however, it is still much lower than the *be*-passive.

⁴¹ There is controversy over a base-generated subject of the *get*-passive; however, I will follow Hoshi's analysis which is in line with a more recent analysis by Hallman (2013) and Huang (2013).

suggested by Harris & Flora (1982). In the case of Japanese passives, the affected passives, which occur more frequently in utterances than *niyotte* passive, may be acquired first not only due to their frequency but also to their simpler syntactic representation and therefore have the same hierarchy of acquisition. Therefore, if the JHSs and JFL learners in the study perform better with affective passives over *niyotte* passive, it will be hard to tear apart the two factors (frequency or syntactic representation, respectively). If the bilinguals perform better with the low frequency *niyotte* passive, it will provide evidence that the discourse related interface plays a crucial role in acquisition, and frequency does not have as much influence on the acquisition.

With respect to processing, it has been argued that the difficulty in processing the passive voice in comparison to its active counterpart is not caused by lack of frequency but by its structure; namely the patient-agent order (Ferreira, 2003). Ferreira measured reaction time (RT) and accuracy to identify thematic roles of active, passive and subject-cleft sentences⁴² after participants heard each experimental sentence. The results showed that participants had a longer RT and lower accuracy with passives than with actives or subject-clefts. Ferreira argues that the longer RT and lower accuracy found with passives compared to subject-clefts, both of which are lower in frequency and discourse-constrained compared to actives, are due to the fact that subject-clefts have an ‘typical agent-theme order’ while passives do not.

⁴² A cleft sentence is derived from one simple sentence by dividing it into two clauses in order to put one constituent of the original sentence into focus. Subject cleft is used when the subject NP receives focus via being placed after a pseudo subject ‘it’ followed by ‘to be’ as in (vb).

- (v) a. Mary gave the book to John.
 b. It was Mary who gave the book to John.

Even though the structures of the (va) and (vb) are different, the order of the agent (Mary) and the theme (John) are the same in both sentences.

Thus, while frequency of input is an undeniable factor affecting language acquisition and processing, it is not feasible to single it out as ‘the factor’ as frequency relates to different layers of linguistic components. While examining the bilinguals’ performance in Japanese passives, frequency will be considered as one of the factors, especially because of the limited frequency of the *niyotte* passive.

4.2.3 Manner of input

HSs acquire a target language as the L1 as a child in a naturalistic and implicit manner, whereas adult L2 learners usually acquire a target language after puberty in a formal and explicit manner. Acquisition of child L1 and adult L2 are fundamentally different in terms of their pathways and endnotes (Bley-Vroman, 1989, 1990, 2009). L1 acquisition is, according to Bley-Vroman (2009), reliable and convergent, while L2 acquisition is non-reliable and non-convergent. Children who receive efficient input succeed in reaching an ultimate level of learning the language automatically and implicitly. Their attainment of adult native-like grammar is reliable. In contrast, adult L2 learners, whose L1 interferes with acquisition, encounter challenges to attain target-like competence, and the success of L2 acquisition is unreliable.

When Bley-Vroman first proposed the Fundamental Difference Hypothesis (1989, 1990), it was argued that what underlies the difference between child L1 and adult L2 acquisitions is un/availability of Universal Grammar (UG) (Chomsky, 1986). According to this original proposal, children acquire a language by activating their innate linguistic ability through language experience (i.e., input), and UG constrains L1 grammar. In contrast, adults, who lose access to UG⁴³ as they mature, learn the L2 by relying on their L1 knowledge and explicit input.

⁴³ There is a claim that the access to UG still remains for adult L2 learners, and L2 grammar is also constrained by UG (White, 2003, among others).

Adopting the Minimalist framework (Chomsky, 1995, 2001, 2005), which diminished the concept of the UG, Bley-Vroman (2009) reforms the hypothesis and proposes fundamental similarities as well as differences between child L1 acquisition and adult L2/foreign language acquisition as follows:

- a. Foreign language grammars make central use of patches, which are also seen as peripheral phenomena in native languages;
- b. Non-domain-specific processes are used in foreign language acquisition, but that these are also employed—although more effectively because they are integrated into the language system—by native language development;
- c. Foreign language online processing relies heavily on the use of shallow parses, but these are also available in native language processing, although less crucially.

(Bley-Vroman, 2009:175)

L1 and L2 acquisitions share the same mechanisms in different ways and to different degrees, which underlies non-convergence of adult L2 grammar with that of native speakers.

Note that although the JHSs acquire Japanese as L1, their trajectory of acquisition is not compatible to that of L1 Japanese children in Japan due to quantity and quality of input. Input of Japanese that the JHSs receive is limited and it may be different from input that children in Japan are exposed to (Rothman, 2007; Liceras & Senn, 2009). Thus, heritage language acquisition is not reliable or convergent in a similar manner to L2 acquisition. The JHSs, however, may have established language processing in a similar manner as L1 Japanese children in Japan due to their early exposure to the language.

Processing of child L1 and adult L2 also differs due to age and manner of acquisition (Dekeyser, 2001, 2007; Paradis, 2004). Paradis (2004) explains the differences with regards to

two types of knowledge: procedural and declarative knowledge (Ullman, 2001), which are stored differently. Knowledge built upon an implicit input is stored in procedural memory, and knowledge developed explicitly is stored in declarative memory⁴⁴. The access to procedural memory, which is available for ‘automatic use’ (Paradis, 2004, p60), decreases with age. Consequently, explicit learning, using declarative memory, becomes more efficient for the adult L2 learners. If Paradis’s hypothesis is correct, in a similar line with Montrul (2009) discussed in section 1.5.3 in Chapter 1, the JHSs, who developed their processing when procedural memory was accessible, may process the language more efficiently than the JFL learners who developed the language relying on declarative memory.

HSs receive implicit input in contextual environments, where they do not learn each linguistic feature *per se*. Adult L2 learners in institutional settings, by contrast, receive explicit linguistic instructions in classroom. The difference of manner of input, thus, influences the bilinguals’ knowledge and processing. The JFL learners in this study receive an explicit instruction of syntactic and semantic features of passives, and therefore they may be more sensitive of the affective connotation of the *ni* passives than the JHSs. Many Japanese language textbooks, indeed, include extensive explanations of the adverse aspect of the affective passives. They, however, fail to provide any semantic and pragmatic explanation of the *niyotte* passives (Yoshida, 1991). For instance, a Japanese textbook widely used in the post-secondary institutions, *Genki* (Bunno, et.al., 2011) introduces the use of passive as follows: “When you are inconvenienced by something somebody else has done, you can express your dissatisfaction using the passive sentence” (p. 212), and it further explains a theme as ‘victim’ and an agent as ‘villan’, marking an agent with ‘*ni*’. Only the affected passives are introduced in the textbook,

⁴⁴ See also Ullman (2001, 2005) for his discussion on the role of procedural/declarative memory in second language acquisition.

and no reference to *niyotte* passive is included. Consequently, JFL learners may not have received enough formal input about *niyotte* passive to learn its syntactic and semantic structure or its neutral semantic sense of the passive unless these are introduced later in a textbook for more advanced learners and/or receive explicit instruction about this passive. Nevertheless, the JFL learners should be familiar enough with affective passives to express sympathy.

The JHSs may recognize and acquire semantic and discourse aspects of passives in the contexts where the passives are used in actual conversations. They may learn when to use the affective passives to express speakers' empathy to the subject of a sentence. As they do not receive formal instruction on the syntactic and semantic features of the passives, their knowledge of these features may be limited compared to the JFL learners. Low frequency in the use of passives, especially the *niyotte* passive that is not used much in daily casual conversations, may also hinder mastering those features.

The different manner of input, thus, predicts that the JHSs have an advantage when it comes to acquiring the pragmatic/discourse features of affective passives compared to the JFL learners, while the latter learners may be more attentive to their syntactic and semantic structures. Both types of bilinguals may not have acquired the linguistic features of *niyotte* passive due to its low frequency of input. If the JFL learners have received explicit instruction of the *niyotte* passive, and they have read Japanese written texts such as newspaper articles, they may have established knowledge of the different types of passives and their syntactic, semantic and pragmatic features.

4.3 Research questions and hypotheses

The main objectives of this study are to determine: 1) whether HSs have an advantage over L2 learners in the acquisition of complex structures; 2) the nature of bilinguals' non-

convergence with monolinguals. The following sub-questions in A-C below are formulated with respect to these objectives, and they are investigated by comparing knowledge and processing of different types of Japanese passives by the JHSs and the JFL learners in two experiments: an offline acceptability judgment task (AJT) and an online self-paced listening task (SPL).

- A. Do the JHSs have an advantage over the JFL learners when mastering the three types of Japanese passives? Do the JHSs have better knowledge of the passives than the JFL learners, and do they judge acceptability of passives in similar manner as Japanese native speakers than learners in the AJT?
- B. Do JHSs process each type of passive in a similar manner as Japanese native speakers compared to JFL learners in the SPL task?
- C. What plays a more relevant role in the acquisition of Japanese passives, the syntax-pragmatic interface or the complex syntactic representation? Is the former more problematic for the bilinguals? Which hierarchy of the development of passives applies to the bilinguals?

The hypotheses that relate to each question are as follows:

- A. According to Montrul (2012), who summarised results from previous studies, syntax is one of the two linguistic areas where HSs generally have an advantage over L2 learners as shown in Table 1-1 in Chapter 1. If this generalization applies to Japanese syntax, the JHSs

will have an advantage over the JFL learners. However, it has been reported that HSs have difficulties in acquiring complex structures such as passives (Benmamoun, et.al, 2013).

Passives are late-learned structures, and if children do not learn passives fully until as late as 7 years old (Okabe and Okubo, 2005) when they already start formal schooling in their dominant language, the acquisition of passives may be a case of ‘incomplete acquisition’ for the JHSs, and they may not have an advantage after all.

Moreover, L2 learners outperform HSs in written tasks while heritage speakers outperform L2 learners in oral tasks owing to different manners and contexts of acquisition of the two populations (Montrul, 2010). Thus, since AJT is a written task, the L2 learners may have an advantage over the HSs

Finally, the JFL learners receive explicit instruction on the syntactic and semantic features of the passives in class, which may, in fact, be an advantage for them over the JHSs who do not receive such explicit instruction, although they may have better knowledge of the pragmatic perspectives of the affective passives.

On the basis of these findings, it is hypothesized that the JHSs will not have an advantage over the JFL learners, and that the JHS and the JFL learners will perform equally in the offline task.

- B. It is a controversial issue whether L2 learners attain native-like processing strategies in sentence processing as reviewed in section 1.5.2 in Chapter 1. L2 learners rely on metalinguistic knowledge while processing a sentence (Brien, 2013; Montrul, 2009), and their processing strategies are influenced by their L1. HSs, in contrast, have similar processing strategies to native speakers, although they may require more time to process

compared to monolingual native speakers (Montrul, 2009). Based on Montrul's (2009) claim, it is hypothesized that the JHSs will perform similarly to native monolingual Japanese speakers than the JFL learners in the SPL.

In Hara's (2002) study comparing JFL learners' knowledge of the three types of passives, it was found that L2 learners have a better knowledge of the *ni*-direct passive than of indirect or *niyotte* passives, something that is likely due to the high frequency of the *ni*-direct passive compared to the other two types of passives. Even though the JFL learners encounter difficulties in learning the semantic aspects of the affected subjects in the affective passives (Hara, 2002) and in comprehending their pragmatic point of view (Tanaka, 1992, 1993; Watabe, Brown & Ueta, 1991), the learners' knowledge of this type was deeper than that of the *niyotte* passive. In fact, their knowledge of the latter type of passive was very limited although its operation is strictly syntactic. The results of the study are consistent with the hierarchy in (52), which was established on the basis of the syntactic representation of passives. It is hypothesized, then, that the complexity of the syntactic representation is more problematic for the bilinguals, and that the hierarchy in (52), which is based on syntax, will actually have a more relevant role in the development of the L2 Japanese passives than the hierarchy in (53), which was proposed on the basis of the claims made by the IH.

However, the hierarchy in (52) also parallels the hierarchy of frequency in (54). Manner of input along with frequency supports the hierarchy in (52). Low frequency of the *niyotte* passive in daily conversation interferes with the JHSs' acquisition of the passive, and the tendency of Japanese language textbooks to focus on affective passives also hinders the JFL learners to learn the *niyotte* passive. Based on these results and factors, it is

expected that both the JHSs and the JFL learners will be more familiar with the affective passives than the *niyotte* passives, resulting in better performance in the affective passives. It is therefore hypothesized that the frequency of input will have the most relative effects on the acquisition of the passives than the syntactic representations or pragmatic related interface, and consequently, hierarchy (54) will best reflect the bilinguals' performance.

- C. Even though no study has been conducted to compare the processing of different types of Japanese passives, I predict that it will take bilinguals longer to process the *niyotte* passives than the *ni* passives, based on the hypothesis that knowledge representation and processing are interrelated and influence each other. Hierarchy (52) and (54) present the same order in terms of processing costs. Hierarchy (52) predicts that it will take longer to process the *niyotte* passives than affective passives based on the hypothesis that the complexity of syntactic representation has a greater effect on bilinguals' processing than the syntax-discourse interface, which implies that syntactically more complex structures require longer processing time than simpler structures. Hierarchy (54) predicts that the *niyotte* passives require longer processing times than affective passives as processing unfamiliar words/structures requires more processing load (Ferreira, et.al., 1996; Henderson and Ferreira 1990, among others).

4.4 Overall experimental design and procedures

4.4.1 Overview of experiments

In order to answer the research questions listed above and to test the various hypotheses that have been formulated, I have conducted two experiments: 1) an offline acceptability judgment

task; 2) an online self-paced listening task. It has been debated whether the developmental issues that the bilinguals encounter are representational or computational (Sorace 2005, 2011). Recent studies found the issues are more computational than representational, especially when the bilinguals deal with the linguistic external interface (Hopp 2007, Wilson, 2009). The offline task of this study focuses on the representational problem, and examines JHSs and JFL learners' knowledge of each type of Japanese passive. The online task tests computational problems, and finds out whether the JHSs and JFL learners face difficulties in processing different types of passives. The online task will also allow for an investigation into whether passives that involve the external interface are harder for bilinguals to process. A comparison of the offline and online data will indicate what causes difficulties with Japanese passives for bilinguals, and whether the JHSs and JFL learners have similar patterns of knowledge and processing manner of the passives despite their different acquisition background of the language.

The experimental tasks were administered to two experimental groups: the JHSs and JFL learners, and to two control groups: monolingual Japanese speakers living in Japan and Japanese immigrants to Canada. The immigrant group was included for the purpose of examining the influence of immigrants' use of language on the JHSs group. The immigrants' native Japanese may have been impacted by some knowledge of a foreign language which may possibly have resulted in some L1 attrition. It is also plausible that their use of Japanese differs from that of Japanese monolingual speakers in Japan. The register and type of input of language that HSs are exposed to are limited to those used by their family and community members who are usually first generation immigrants. Consequently, their language use affects their acquisition of linguistic properties (Rothman, 2007; Liceras & Senn, 2009). The IH states that the discourse-related interface is more vulnerable to attrition than within linguistic interfaces. Among Japanese

passives, the affective passives are interfaced at the pragmatic/discourse level, and Japanese immigrants' use of the types of passives may differ further than the *niyotte* passives as compared to Japanese monolingual speakers. JHSs are predicted to show attrition, and the affective passives may show the greatest vulnerability. Thus, it is important to compare performances of the HSs and the first generation immigrants as well (Montrul, 2013).

4.4.2 Method

4.4.2.1 Participants

The participants in the four groups listed in (56) took part in the two experiments for this study.

(56) Groups of participants

- i) JHSs
- ii) JFL learners
- iii) Monolingual Japanese in Japan
- iv) First generation Japanese immigrants to Canada

Participants in both experimental groups were recruited at Carleton University, University of Ottawa, University of British Columbia, Ottawa Japanese Language School, and Ottawa Japanese Cultural Centre. The common criteria for the recruitment of the experimental groups was; 1) aged between 16 and 35; 2) Japanese proficiency level is equivalent to Japanese Language Proficiency Test (JLPT)⁴⁵ level 3 (N3⁴⁶) and higher. The last criterion was set to make sure that the participants' proficiency level is high enough to have knowledge of the passives.

The following sections summarise the participants in each group.

⁴⁵ Japanese Language Proficiency Test (JLPT) is created by the Japan Foundation and Japan Educational Exchanges and Services.

⁴⁶ According to the JLPT website (<https://www.jlpt.jp/e/about/levelsummary.html>), N3 requires the linguistic 'ability to understand Japanese used in everyday situations to a certain degree'.

4.4.2.1.1 Heritage speakers of Japanese

A total of 12 JHSs took part in the experiments, and one of them was eliminated from the analyses as she turned out to not be a simultaneous bilingual. The JHSs were born and raised in Canada, or immigrated to Canada by the age of three⁴⁷ before Junior Kindergarten started. All of the JHSs in the analysis are simultaneous bilinguals, raised in the environment where one of their parents spoke Japanese to them from birth while the other spoke either English or French. They acquired the Japanese language spontaneously in an environment where a majority language is English or French. As all of them received formal education in English or French schools, their dominant language at the time of participation in the study was English and/or French. The following table summarises each participant and their current language use.

Table 15: Summary of language use by JHSs

	Gen der	Age	Japanese use (%)			Proficiency measurement score (out of 24)	Self-rating oral proficiency ⁴⁸	Most comfortable language	Other language(s)
			at home	at school	with friends				
1	M	19	40	20	10	17	3.36	English	French/Thai
2	F	18	50	0	10	18	2.59	French	English/Span
3	F	16	50	0	0	19	1.31	French	English
4	F	16	40	0	0	21	3.50	English	French
5	F	18	75	10	0	23	3.31	English	French
6	M	26	25	0	0	21	6.00	English	French/Slavak
7	M	23	45	0	0	22	2.18	English	French
8	M	25	45	20	0	21	1.22	English /Japanese	Mandarin
9	F	22	85	0	0	23	1.90	English	French
10	F	20	50	0	20	23	2.18	English	N/A
11	F	25	45	10	10	15	3.13	English/ French	N/A

⁴⁷ Two of the participants belong to the latter category. Even though they were not born in Canada, they are simultaneous bilinguals as one of their parents talked to them in Japanese while other parent spoke English from birth.

⁴⁸ The participants evaluated the difficulties of activities using Japanese in each skill on 9 point scales; 9 being very difficult and 1 very easy. See Appendix B for the evaluation form.

As shown in the table, current use of Japanese for the JHSs is relatively limited even at home, and they hardly speak Japanese outside home. All JHSs feel that English and/or French are the most comfortable languages to use, and only one of them reported that he is comfortable with Japanese as much as English. As all of them had experience attending a Japanese language school offered on Saturday at an elementary school age, they have knowledge of Japanese orthography⁴⁹ to a certain extent, and their results of Japanese proficiency measurements confirm their ability to comprehend Japanese sentences used in the experiments.

4.4.2.1.2 Learners of Japanese as a foreign language

The JFL learners received formal language instruction at the post-secondary level. The majority of them were still taking a course at the time of participation in the study, while a few of them had completed course work and were studying on their own. A total of 17 JFL learners completed all the tasks; however, seven of them were eliminated as their scores in the proficiency measurements were too low to be comparable to the JHS group. The following table presents JFL learner's age of acquisition of Japanese and their current language use. Their mean age when they began studying Japanese was 16.7, and they all learned the language after puberty.

⁴⁹ The Japanese language has three types of characters: Hiragana, Katakana and Kanji. The former two are syllabic and the latter is logographic. Both hiragana and katakana are formally introduced in Grade 1, although many children learn them before attending schools. They are relatively simple to learn, and all the participants in the study could read and write all hiragana and katakana, and some basic kanji, although the amount of knowledge of kanji largely varied among participants.

Table 16: Summary of language use by JFL learners

	Gender	Age	Age of exposure	Japanese use (%)		Proficiency measurement (out of 24)	Self-rating oral proficiency	L1	Other language
				at school	outside of school				
1	F	24	14	40	10	15	3.09	English	French/Cambodian
2	F	20	17	10	0	19	4.09	English	Arabic
3	M	22	20	10	0	15	5.00	English	French
4	F	21	17	30	10	15	2.40	English	Tagalog
5	F	20	18	30	40	18	2.95	English	Korean
6	M	22	14	20	10	21	2.22	English	Cantonese
7	F	20	15	20	10	22	2.45	English	Tagalog
8	F	22	13	10	50	21	4.72	English	N/A
9	M	26	21	20	15	17	4.22	English	Spanish
10	F	34	16	10	0	22	4.90	English	French

The JFL learners' use of Japanese with friends is relatively higher than the JHSs. It is probably because the learners tend to belong to Japanese related associations at schools, and make friends with Japanese exchange students to find opportunities to practice the language.

4.4.2.1.3 Compatibility between JHS and JFL learner groups

In order to compare the two experimental groups, proficiency level was controlled. Both scores of proficiency measurements and self assessment of language skills were used to be compatible between the groups. Table 17 presents the two groups' mean age and scores of proficiency measurement and Japanese language skills reported in self-assessment questionnaires. The self-assessment questionnaires included four linguistic skills: oral comprehension, oral production, reading and writing. The participants evaluated the difficulties of activities using Japanese in each skill on 9 point scales; 9 being very difficult and 1 very easy.

Table 17: Mean scores of proficiency measurement and self assessed language skills

	Age	Score of proficiency measurement (out of 24)	Average Japanese use (%) ⁵⁰	Self assessment (scale 1-9)			
				Oral comprehension	Oral production	Reading	Writing
JHSs (N=11)	20.0	20.27	20.00	2.65	2.87	4.57	4.92
JFL learners (N=10)	23.1	18.50	17.25	3.61	3.60	5.26	5.56

The mean scores of the proficiency test was comparable between the experimental groups, supported by the result of pair-wise t-tests of independent samples which demonstrated that there was no statistically significant difference ($p=.163$). The same result was found by self-assessed language scores (Comprehension: $p= .108$; Oral production: $p= .108$; Reading: $p= .563$; Writing: $p= .656$). These results indicate that overall proficiency will have little influence in accounting for differences in the results if there are any in the experiments.

4.4.2.1.4 Monolingual Japanese speakers

Monolingual Japanese speakers were recruited at the University of Shizuoka in Japan. The recruitment criteria for this group stipulated that the participant has always been living in Japan, and has never stayed in a foreign country for more than one month. The mean age was 20.0, and all of the participants were majoring in engineering at the university.

This group is the most homogeneous group in terms of language use compared to the bilingual groups. As they all started learning English at the age of 13 when English was a mandatory subject to learn throughout junior high school and high school, they had some knowledge of English grammar. However, before the time of testing, they had never been

⁵⁰ The Japanese use for JHS includes with family and friends both inside and outside of school while the JFL learners use excludes Japanese use with family. Thus, the JHSs use Japanese slightly more daily.

exposed to an environment where English or other languages were spoken, or applied their schooled-based knowledge in real life, resulting in their English conversation skills being very limited. Little influence from English is, thus, expected in the experiments. The following table presents participants' age and gender of the monolingual Japanese group.

Table 18: Summary of the monolingual Japanese group

	Age	Gender
1	22	F
2	23	F
3	21	M
4	20	M
5	19	M
6	21	M
7	22	M
8	23	M
9	20	M
10	19	M
11	19	F
12	18	F
13	19	M
14	19	M
15	18	M
16	18	M

4.4.2.1.5 Japanese immigrants to Canada

The last group consisted of 14 native speakers of Japanese who immigrated to Canada as adults and have lived there for over a decade. The mean number of years in Canada was 20.9, and the mean age was 51.0. As they immigrated to Canada after puberty, they had developed solid Japanese language skills at the time of their immigration. All of the participants were considered bilingual at the time of testing and speak English and/or French on a regular basis. The following table summarises the Japanese language use of the immigrants.

Table 19: Summary of language use by immigrants

	age	Gender	Years in Canada	Japanese use at home (%)	Japanese use outside of home (%)	Overall English use (%)	Overall French use (%)	City of residence
1	49	F	14	50	80	35	0	Ottawa
2	45	F	13	0	50	50	0	Ottawa
3	42	F	24	55	25	52.5	0	Ottawa
4	53	F	14	100	10	55	0	Ottawa
5	50	F	19	50	50	50	0	Ottawa
6	47	F	23	0	5	95	0	Ottawa
7	54	F	15	100	25	45	0	Ottawa
8	51	F	18	100	85	5	0	Vancouver
9	63	F	33	65	40	45	0	Ottawa
10	48	F	22	50	75	45	0	Ottawa
11	50	F	21	100	20	65	0	Ottawa
12	59	F	28	20	25	60	10	Ottawa
13	48	F	22	45	55	50	0	Ottawa
14	56	F	24	40	45	30	35	Gatineau

The use of Japanese varies among participants, where some use it almost all the time inside and outside of home, while others speak much less. Immigrants who have jobs use more English/French and less Japanese overall. The immigrants, as with the monolingual Japanese, started formal English education as late as age 13, which is perhaps the reason why all of them reported Japanese as However, despite their daily use of Japanese, avoiding any influence of majority languages is not easy when living in a society where Japanese is not commonly spoken, and some influence of English or French is expected in their Japanese.

4.4.2.2 Overall procedures

All of the participants were asked to fill out a language background questionnaire (Appendix A) and a self-assessment questionnaire (Appendix B). The former was important to make sure that the participants share similar language backgrounds, i.e. JHSs acquired Japanese as L1 and their dominant language is either English or French; JFL learners' L1 is English or French. The latter

questionnaire was used to assess their language skills in a subjective way. It plays an essential role for participants who are bilingual from childhood to clarify which language they feel more comfortable with, as well as which one may influence their behaviour when learning a foreign language. JHSs and JFL learners also wrote a Japanese proficiency measurement to verify their proficiency levels as discussed above. The test is a cloze test based on the JLPT (Appendix C).

Each session was formatted as follows: 1) signing a consent form; 2) completing the language background questionnaire; 3) administration of the first experiment; 4) completing the self-assessment questionnaire; 5) completing the proficiency test for a participant of the target groups; 6) administration of the second experiment. Participants filled out the questionnaire as well as a proficiency measurement in between two experiments in order to have a break from the first experiment to prevent it from influencing the subsequent experiment as much as possible. Half of the participants completed the acceptability judgment task first and the other half completed the self-paced listening task first. The participants were tested individually and each session lasted approximately 1.5 hours for the experimental groups and 1 hour for the control groups. All participants received some compensation (\$10 for the experimental groups, \$5 for the control groups) upon completion of all tasks.

The precise procedures for the two experiments will be presented in the following chapters: the procedures for the offline acceptability judgment task will be presented in the next chapter, Chapter 5, and the procedures for the online self-paced listening task will be presented in Chapter 6.

Chapter 5. Experiment 1

5.1 Acceptability Judgment Task

To examine the JHSs and JFL learners' syntactic, semantic, and pragmatic knowledge of Japanese passives, an acceptability judgment task (AJT) was employed. In this task, participants were asked to read a sentence in Japanese and judge whether or not the sentence was grammatically acceptable. Comparing the experimental groups' judgments with those of the control groups allows for investigation of the degree to which the JHSs and JFL learners have attained a native-like the knowledge of the grammatical representation of passives, and whether there are any differences in the bilinguals' knowledge depending on the type of passive.

5.2 Method

5.2.1 Participants

Eleven JHSs, 10 JFL learners, 16 monolingual Japanese speakers, and 14 Japanese immigrants participated in the experiment. For details regarding individual participants and groups, please refer back to section 4.4.2.

5.2.2 Experimental design

Neurobehavioural Systems' *Presentation* software was used to administer the AJT. A Japanese sentence appeared on the screen of a laptop, and participants were asked to read it and rate the acceptability of each sentence on a 5-point scale⁵¹ as presented in (57), and then to type the corresponding number on the laptop.

⁵¹ Likert scales often use odd number scales. This is, however, a matter of debate. On one hand, the downside of having a middle option is that it is sometimes difficult to tell what exactly the middle option indicates,; whether it means the structure has intermediate acceptability, or that the participant does not know. On the other hand, even number scales where participants are forced to choose one side (acceptable) over the other (unacceptable) may not be very accurate because this choice is forced. An odd number scale was used in this study in order to identify any problematic sentences or participants. If certain numbers of participants chose the middle number for a particular sentence, the sentence would be removed from the analysis. If one

- (57) 1 = completely unacceptable, sounds strange
 3 = relatively unacceptable, but not completely
 5 = uncertain, cannot decide
 7 = relatively acceptable, but not as good as 9
 9 = completely acceptable, sounds natural

Once participants had typed a number, they could not go back to the previous screen to change their response. Even though the software provided the opportunity to measure the reaction times of the participants, this function was not used as the purpose of this task was strictly to examine the participants' knowledge of the passives.

5.2.3 Materials

The minimal pairs of passives, in which an agent was marked with *ni* or *niyotte*, were presented to compare the participants' knowledge of each type of passives. Depending on the type, an agent requires either *ni* or *niyotte* as an appropriate phrase. Each of the three types of passives was included as in examples (58)-(60).

(58) Indirect passive

- a. *Hayashi-san-wa basu-no-naka-de akatyan-niyotte nak-are-ta
 Hayashi-Ms.-Top bus-Gen-inside-at baby-by cry-Pass-Past
- b. Hayashi-san-wa basu-no-naka-de akatyan-ni nak-are-ta
 Hayashi-Ms.-Top bus-Gen-inside-at baby-Dat cry-Pass-Past
 'Ms. Hayashi was affected by her baby crying in the bus.'

participant selected the middle option too many times, it would be assumed that the participant did not have an appropriate level of proficiency or that s/he selected numbers randomly, and thus s/he would be removed from analysis. Neither case was actually found in the study.

(59) Animate subject (*ni*-direct passive)

- a. *?Kinodokuni Sumisu-san-wa kinzyo-no inu-niyotte kam-are-ta
feel pity Smith-Mr.-Top neighbour-Gen dog-by bite-Pass-Past
- b. Kinodokuni Sumisu-san-wa kinzyo-no inu-ni kam-are-ta
feel pity Smith-Mr.-Top neighbour-Gen- dog-Date bite-Pass-Past
'I feel sorry that Mr. Smith was bit by his neighbour's dog.'

(60) Inanimate subject (*niyotte* passive)

- a. Kaigi-wa gityoo-niyotte hazimer-are-ta
Meeting-Top chair-by begin-Pass-Past
- b. *Kaigi-wa gityoo-ni hazimer-are-ta
Meeting-Top chair-Dat begin-Pass-Past
'The meeting was begun by a chair.'

The first type of sentences consisted of the structure of indirect passives. The indirect passive is syntactically unique in that an intransitive verb can appear with the morpheme (*r*)*are*, as in example (58), and an internal object position is occupied with a transitive verb, as the subject of a sentence is introduced by an applicative morpheme. The indirect passive always carries an affective meaning and only allows the *ni*-phrase to mark an agent as in (58a), such that the *niyotte*-phrase in (58b) is ungrammatical.

The second type contained animate subjects. This type was created to represent the *ni*-direct passives. All of the sentences with animate subjects began with an adverbial phrase meaning 'I'm sorry that' such as *kinodokuni* or *kawaisooni* to indicate the speaker's empathy towards the subject of the sentence. Due to the inclusion of the adverbial phrase, the *ni*-phrase in (59b) is more appropriate as an agent phrase than the *niyotte* phrase because of the semantic role of the subject provided by the *ni*-phrase, which carries an affectee role. The passive in which the agent is marked with the *niyotte* as in (59a) is, however, not completely unacceptable. It is grammatically correct, though not as pragmatically appropriate as the *ni* agent phrase.

The third type of target sentences included inanimate subjects. The subject ‘meeting’ in (60) is inanimate and only the *niyotte* phrase as shown in (60a) is grammatical as an agent given that the *ni*-phrase in (60b) is restricted to animate subjects in the simple past that licence an adverse connotation. This type of sentences serves as the *niyotte* passive, which requires a preceding Move transformation for its derivation and is therefore syntactically different from the other two types.

It is expected that the Japanese monolingual speakers’ acceptance of the target sentences will depend on the grammaticality of the agent phrase; namely the phrase marked with either *ni* or *niyotte*. The AJT consisted of a total of 66 sentences (30 targets, 31 distractors⁵², 5 practice). The distribution of the target sentences is outlined in Table 20. An asterisk indicates ungrammaticality, and a question mark indicates that an animate subject with the *niyotte* agent phrase is not syntactically incorrect, though pragmatically it is not as appropriate.

Table 20: Number of target sentences for each passive type

	<i>Ni</i> phrase	<i>Niyotte</i> phrase
Indirect passive ⁵³	5	5*
Animate subject with adverbial phrase (<i>Ni</i> -direct passive)	5	5?
Inanimate subject (<i>Niyotte</i> passive)	5*	5

The sentences were randomized, and each sentence appeared in the same part of the laptop screen with the same font and font size.

⁵² Some distractors are ungrammatical sentences. See Appendix D for all the test sentences.

⁵³ There were three sentences with transitive verbs and two with intransitive verbs.

5.3 Results

This section presents the results of the AJT. First, the results of each group are analysed, and then a group comparison is presented. Finally, it summarises the results of the AJT.

5.3.1 Control groups

As presented above, the control groups consist of two groups: 16 L1 Japanese monolingual speakers in Japan and 14 L1 Japanese immigrants to Canada who are bilingual. We will first consider the results of the two L1 Japanese groups separately and then compare them to examine whether immigrants accept the types of passives differently than the monolingual Japanese speakers due to their exposure to foreign languages. A similar effect may be found in the results of the JHSs as most of the Japanese input that the JHSs receive is likely provided by the immigrants.

5.3.1.1 Monolingual Japanese speakers

Table 21 presents the monolingual Japanese group's mean ratings from the AJT on a scale between 9 (acceptable) and 1 (unacceptable).

Table 21: Mean ratings of the Japanese monolingual speakers (N=16)

	Condition	Mean (SD)
1	Indirect with <i>ni</i>	6.40 (1.35)
2	*Indirect with <i>niyotte</i>	4.97 (1.59)
3	Animate subject with <i>ni</i>	7.85 (2.13)
4	?Animate subject with <i>niyotte</i>	6.87 (2.54)
5	Inanimate subject with <i>niyotte</i>	8.27 (1.86)
6	*Inanimate subject with <i>ni</i>	7.00 (2.34)

Note: SD = standard deviation.

At first glance, the monolingual Japanese speakers surprisingly rated theoretically unacceptable passive sentences higher than expected, especially for inanimate subjects with the *ni*-phrase (Condition 6). Furthermore, as discussed above, an animate subject with the *niyotte* phrase as an agent (Condition 4) is not ungrammatical and thus a high rating in this case was not so surprising. The adverbial phrase *kawaisooni* ‘I feel sorry that’ gives a negative connotation to the sentence, and the native speakers rated the *ni*-marked agent phrase (Condition 3) higher than the *niyotte* phrase (Condition 4), as predicted. Contrary to expectations, the monolingual Japanese did not reject (i.e. rate lower than 5) inanimate subjects with the *ni* phrase (Condition 6), even though the agent phrase is theoretically restricted to use with an animate subject in the simple past due to its affective connotation (Kuroda, 1979).

A statistically significant main effect was found for the acceptability condition (i.e. acceptable or unacceptable) ($F(1, 15) = 25.373, p < .001$), suggesting that the participants, in fact, made a distinction between the theoretically acceptable and unacceptable passive sentences, and also differentiated between *ni* and *niyotte* agent phrases according to the passive type.

To further analyse the data, a two-way ANOVA was first performed on the acceptability of *ni* and *niyotte* agent phrases (acceptable vs. unacceptable) and the 3 types of conditions (indirect vs. animate subject vs. inanimate subject). In addition to the effect of acceptability presented above, type was also a main effect ($F(2, 30) = 9.035, p = .004$), and pairwise comparisons (*Bonferroni* adjustment) showed that there were significant differences in the judgments of the indirect passive and both animate subjects ($p = .033$) and inanimate subjects ($p = .012$), but not between animate and inanimate subjects ($p = 1.000$). The monolingual Japanese speakers rated indirect types of passives significantly lower than the other types. There was no interaction effect found between acceptability and type ($F(2, 30) = .428, p = .656$), which

confirms that ratings of the un/acceptability conditions were similar irrespective of the type of passive. To investigate whether or not a main effect of acceptability could be found for all three passive types, a one-way ANOVA was run for each type. The results indeed showed that acceptability was a significant effect for all three types: indirect between *ni* and *niyotte* ($F(1, 15) = 15.861, p = .001$); animate subject between *ni* and *niyotte* ($F(1, 15) = 8.014, p = .0163$); and inanimate subject between *ni* and *niyotte* ($F(1, 15) = 9.221, p = .006$).

In sum, the monolingual Japanese speakers rated the acceptability of the passive sentences as predicted by the theory, and they rated the acceptable conditions significantly higher than the unacceptable ones, though the rating for the indirect passive sentences was comparatively lower, even for the acceptable agent phrase, than the other conditions.

5.3.1.2 Japanese immigrants to Canada

Table 22 presents the mean ratings of the immigrant group. The immigrants accepted passive sentences as expected by the theory in general, and rated the theoretically acceptable ones much higher than the unacceptable ones, except sentences containing inanimate subjects with the *ni* agent phrase (Condition 6).

Table 22: Mean ratings of the Japanese immigrants (N=14)

	Condition	Mean (SD)
1	Indirect with <i>ni</i>	7.75 (1.23)
2	*Indirect with <i>niyotte</i>	4.60 (2.79)
3	Animate subject with <i>ni</i>	8.88 (0.24)
4	?Animate subject with <i>niyotte</i>	5.45 (2.79)
5	Inanimate subject with <i>niyotte</i>	8.17 (0.94)
6	*Inanimate subject with <i>ni</i>	6.71 (1.42)

The results of the two-way ANOVA revealed significant main effects for both acceptability ($F(1, 13) = 40.651, p < .001$) and passive type ($F(2, 26) = 7.063, p = .004$). Pairwise comparisons (Bonferroni adjustment) revealed similar results to the Japanese monolingual group as there were significant differences in the ratings between indirect passives and both animate subjects ($p = .001$) and inanimate subjects ($p = .025$), but not between the animate and inanimate subject conditions ($p = 1.000$). Immigrants rated the indirect passive significantly lower than the other types.

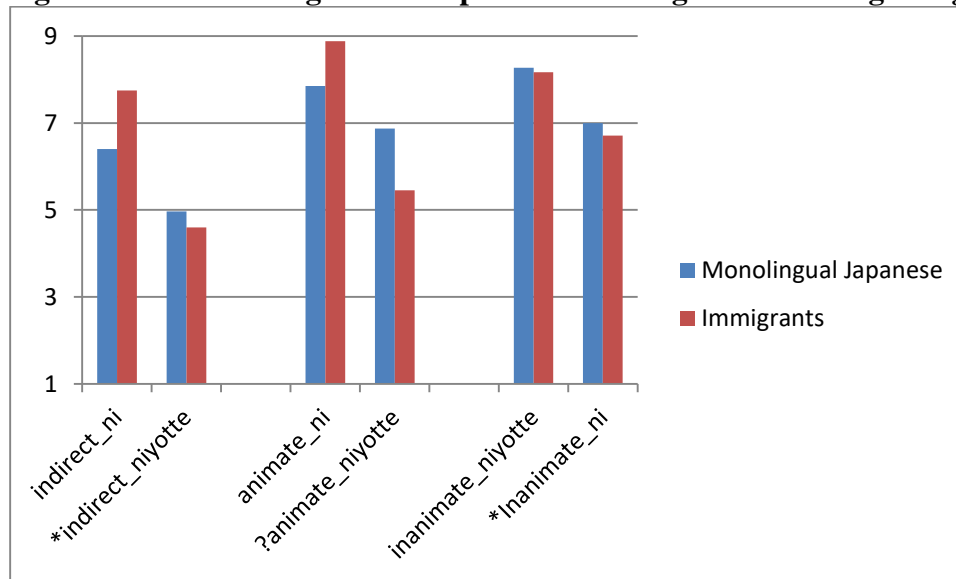
No interaction effect between acceptability and conditions was found ($F(2, 26) = 3.586, p = .068$). In order to examine whether the participants rated the acceptability of all types in a similar manner, a one-way ANOVA tested the acceptability of each passive type. The results indeed attested that the immigrants rated the theoretically acceptable agent phrases significantly higher than the unacceptable phrases for all types (indirect condition ($F(1, 13) = 19.455, p = .001$), animate subjects ($F(1, 13) = 82.286, p < .001$), inanimate subjects ($F(1, 13) = 14.619, p = .002$)), and this confirmed that they perceive agent phrases differently depending on the type of passive sentence.

Although not found to be statistically significant, it should be noted that the immigrants rated sentences containing ungrammatical inanimate subjects with *ni* higher than syntactically correct animate subjects with *niyotte*. They may have paid more attention to the pragmatic interpretations of the latter brought out by the adverbial phrase *kawaisooni*, realising that the adversity should not be addressed with the *niyotte* agent phrase, and rating such sentences low accordingly.

5.3.1.3 Comparison between Japanese monolinguals and immigrants

Let us now compare the results of the two control groups to find out whether there is any difference in their acceptability ratings of the passives due to the immigrants' exposure to a foreign language. Figure 1 presents the mean ratings of both groups.

Figure 1: Means ratings of the Japanese monolingual and immigrant groups



A three-way mixed-design ANOVA was performed on the condition of acceptability (acceptable vs. unacceptable) and the 3 types of passives as within subject variables, and group as a between subjects variable. Main effects were found for both acceptability ($F(1, 28) = 68.781, p < .001$) and type ($F(2, 56) = 15.081, p < .001$). A pairwise comparison showed significant differences between the indirect and both animate subject ($p = .001$) and inanimate subject ($p < .001$) types but not between animate and inanimate subjects ($p = .801$).

An effect of interaction was also found between acceptability and group ($F(1, 28) = 9.557, p = .004$), though no interaction was found between type and group ($F(2, 56) = .795, p = .438$). As these results suggest that there is a significant difference in each group's rating of

the un/acceptable sentences, an ANOVA on acceptability for each type was run to identify if one type was driving the effects between groups. The results showed an interaction with group for indirect ($F(1, 28) = 5.058, p = .033$) and inanimate subject types ($F(1, 28) = 10.386, p = .003$). In these types, both the monolingual Japanese speakers and the immigrants rated sentences with the acceptable *ni*-agent phrase significantly higher than unacceptable ones with a *niyotte* marked agent phrase. However, the difference in means between the acceptable and unacceptable conditions with these passive types was significantly larger for the immigrants than for the monolingual Japanese speakers. The immigrants distinguished more clearly between acceptable and unacceptable agent phrases. No such group interaction effect was found with the inanimate type ($F(1, 28) = .101, p = .753$), and thus both groups rated this type of passive similarly.

The overall results indicate that while the monolinguals and immigrants display a similar trend when judging passives: they rate acceptable passive sentences significantly higher than unacceptable ones. The immigrants, however, made more significant distinctions between un/acceptable conditions and their ratings were closer to the predictions. This suggests that there was no sign of attrition in the immigrants' use of Japanese passives at the time of testing.

With the purpose of examining the Japanese monolinguals' low ratings of acceptable *ni*-marked indirect passives, a one-way ANOVA on ratings of the 5 indirect passive sentences with a *ni* agent phrase was performed to discern whether any particular sentence was rated lower than the others⁵⁴. The results showed no significant difference between the sentences ($F(4, 60) = .399, p = .747$), and that the Japanese monolinguals rated all 5 sentences relatively low regardless of verb type (i.e. intransitive or transitive) as shown in Table 23.

⁵⁴ This would allow the particular sentence that received an extreme rating to be eliminated from the analysis.

Table 23: Mean ratings of the indirect passive with a *ni* phrase by the monolingual Japanese speakers (N=16)

	Mean
Sentence 1	5.875
Sentence 2	6.750
Sentence 3	6.750
Sentence 4	6.875
Sentence 5	5.750

The low mean ratings may reflect lower usage of the indirect passives compared to the other types. However, as described above, the difference between the *ni* and *niyotte* phrases of the indirect passive is significant, suggesting that the monolingual Japanese speakers do distinguish the acceptable agent phrases from the unacceptable ones.

The high mean ratings of the inanimate subjects with the *ni* phrase for the both monolingual and immigrant groups were expected to some extent, as these sentences are not ungrammatical despite the addition of adverbial phrases such as *kawaisoouni* ‘feel sorry’ that indicate an adversity connotation. Yet, the difference in ratings between the *ni* and *niyotte* phrases by both groups is significant, meaning that they prefer *ni* as an agent phrase with animate subjects.

Although there was a significant difference between the acceptable *niyotte* and unacceptable *ni* phrases with inanimate subjects, the Japanese monolinguals and the immigrants did not quite reject the unacceptable *ni* phrase, which was unexpected. This may reflect the fact that the use of *ni* as an agent phrase is becoming more common as the phrase is appearing more frequently, and the semantic difference between *ni* and *niyotte* may have become less distinctive. I will discuss this further in Chapter 7.

5.3.2 Heritage speakers of Japanese

Table 24 shows the mean ratings of each passive condition by the JHSs.

Table 24: Mean ratings of the JHSs (N=11)

	Condition	Mean (SD)
1	Indirect with <i>ni</i>	6.13 (1.58)
2	*Indirect with <i>niyotte</i>	5.50 (2.05)
3	Animate subject with <i>ni</i>	8.38 (0.70)
4	?Animate subject with <i>niyotte</i>	7.14 (1.86)
5	Inanimate subject with <i>niyotte</i>	7.43 (1.63)
6	*Inanimate subject with <i>ni</i>	7.72 (0.92)

A two-way ANOVA investigating acceptability (x2) and type (x3) found a significant effect of type ($F(2, 20) = 16.600, p < .001$), and a trend towards an effect of acceptability ($F(1, 10) = 4.536, p = .059$). A pairwise comparison found significant differences between indirect passives and both sentences containing animate ($p = .004$) and inanimate subjects ($p = .005$), but not between animate and inanimate subjects ($p = 1.000$). The JHSs rated the indirect type significantly lower than the animate or inanimate subject conditions. No significant interaction was found between acceptability and type ($F(2, 20) = 1.646, p = .218$), although there was a different rating tendency between the indirect, animate, and inanimate types. The JHSs rated the acceptable conditions higher than the unacceptable ones with the indirect and animate subject types, but they rated the unacceptable conditions higher with inanimate subjects.

A one-way ANOVA investigating the acceptability of each type was further performed. The result found a significant difference with animate subjects ($F(1, 10) = 5.030, p = .049$), but not for the indirect ($F(1, 10) = 1.426, p = .260$), or inanimate subject types ($F(1, 10) = .277, p = .610$). The JHSs distinguished the acceptability of passive sentences according to the agent phrases only with the animate subject type, rated acceptable animate subjects with *ni* agent

phrases significantly higher than unacceptable *niyotte* agent phrases. This suggests that they recognise the semantic and pragmatic features inherent in *ni* affective passives. They significantly preferred the *ni* agent phrase to the one with *niyotte* when the adverbial phrase *kawaisooni* ‘I feel sorry that’ appeared in the passive sentences.

Overall, the JHSs rated *ni* agent phrases as more acceptable in all conditions, even for the unacceptable *ni*-marked inanimate subject sentences compared to the grammatical *niyotte* phrases. These results indicate that they are not aware of the semantic properties of the *niyotte* passive though they recognise the affective connotation derived by *ni*. They may not be familiar with the *niyotte* phrase at all, as the frequency and use of the *niyotte* passive in daily conversation are restricted, and they may not have enough exposure to acquire its linguistic properties. Lower ratings for the indirect passives, even in the acceptable condition, may also be attributed to lower frequency of input and use.

5.3.3 Learners of Japanese as a foreign language

The JFL learners rated all conditions higher than the JHSs, and they did not reject any of the unacceptable passive sentences, as presented in the Table 25.

Table 25: Mean ratings of the JFL learners (N=10)

	Condition	Mean (SD)
1	Indirect with <i>ni</i>	7.84 (1.04)
2	*Indirect with <i>niyotte</i>	6.36 (1.19)
3	Animate subject with <i>ni</i>	7.76 (0.98)
4	?Animate subject with <i>niyotte</i>	6.88 (1.52)
5	Inanimate subject with <i>niyotte</i>	7.66 (1.32)
6	*Inanimate subject with <i>ni</i>	7.48 (1.27)

The same two-way ANOVA as discussed previously investigating acceptability (x2) and passive type (x3) found a main effect of acceptability ($F(1, 9) = 16.722, p = .003$), but not type ($F(1, 18) = .792, p = .450$). There was also no interaction effect found between acceptability and type ($F(2, 18) = 1.152, p = .326$). The results indicate that acceptable sentences were rated higher than unacceptable ones for all types.

In order to further examine the data, the acceptability for each type was examined using a one-way ANOVA. A significant effect of acceptability was found for the indirect passive type, ($F(1, 9) = 6.220, p = .034$), and a trend of an effect for animate subjects ($F(1, 9) = 4.205, p = .071$) but not for inanimate subjects ($F(1, 9) = .099, p = .760$). The JFL learners made a clear distinction between acceptable *ni* agent phrases and *niyotte* only in indirect passives, suggesting that they know that the agent should be marked with *ni* in indirect passives. They may also have some knowledge of un/acceptability with the animate subject type as the *p*-value for this condition was less than .100, indicating a trend. This knowledge may have developed from classroom instruction as the JFL learners receive explicit explanations of the syntactic structure of affective passives with *ni* as an agent phrase. Specifically, since the indirect passive has a syntactically salient difference – it contains an extra argument – it may be simple to link the particular structure with the *ni*-agent phrase which is taught in class.

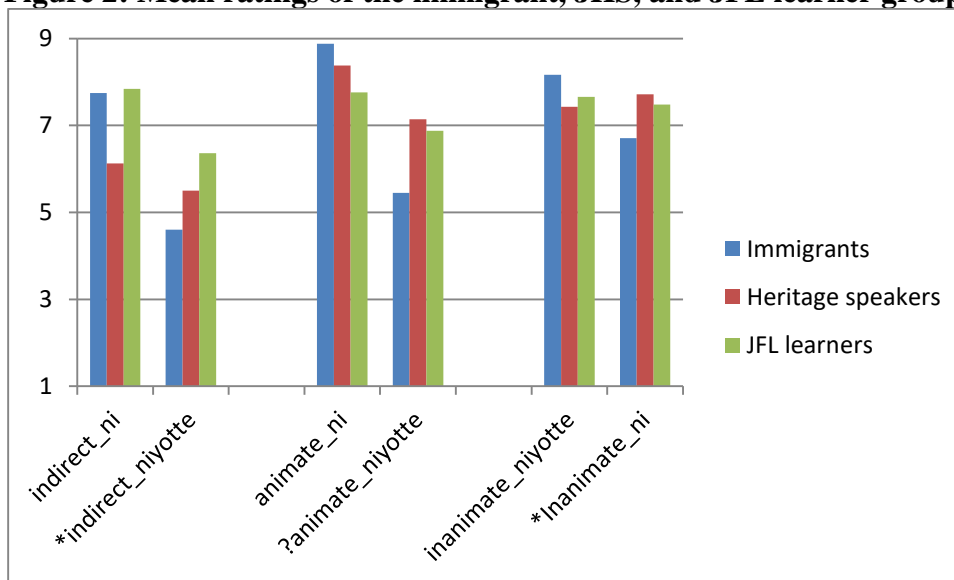
The results of this study contradict the results of Hara's (2002) study that suggested that JFL learners have a better knowledge of *ni*-direct passives than indirect passives. In this study, the JFL learners demonstrated a better knowledge of the indirect passives than the *ni*-direct passives. The learners had a tendency to prefer *ni* agent phrases to *niyotte* with animate subject types, and they may have certain knowledge of the semantic features of affective passives in

general, including the *ni*-direct passive, while it does not appear that they have any knowledge of such features of the *niyotte* passive.

5.3.4 Comparison among the bilingual groups

Figure 2 presents the mean ratings of all bilingual groups, comparing the experimental groups to the immigrant control group. The immigrant group was selected as the only control group in the comparison as they are considered bilinguals and therefore have a language background more similar to the participants in the experimental groups. The bilinguals may be more cautious about language behaviour than the monolinguals, and indeed, the immigrant group judged the passive sentences more in line with the theoretical predictions compared to the monolingual Japanese speakers.

Figure 2: Mean ratings of the immigrant, JHS, and JFL learner groups



In order to examine whether one of the experimental groups judged the passive sentences more similarly to the L1 Japanese immigrants than the other, a two-way mixed-design ANOVA was performed on acceptability (x2) and type of condition (x3) as within subject variables, and group (x3) as a between subjects variable. Main effects were found for both acceptability ($F(1, 32) = 46.852, p < .001$) and type ($F(2, 64) = 17.481, p < .001$). An interaction effect was found between acceptability and group ($F(2, 32) = 12.693, p < .001$), as well as between type and group ($F(4, 64) = 2.652, p = .045$). Although there was an interaction among the groups, post hoc tests (using the *Bonferroni* adjustment) confirmed no significant differences among them.

To further investigate the main effect of acceptability, a one-way ANOVA was performed on each type to discern whether the bilinguals made a distinction between un/acceptability in all three types of passives. The indirect type yielded a main effect of acceptability ($F(1, 32) = 21.613, p < .001$). An interaction effect between acceptability and group was also found ($F(2, 32) = 4.146, p = .025$), though a post hoc test did not find significant differences among the groups (JHS and JFL learners ($p = .159$); JHSs and immigrants ($p = 1.000$); JFL learners and immigrants ($p = .395$)). Similar results were obtained for the animate subject type, a main effect of acceptability was found ($F(1, 32) = 28.280, p < .001$). An interaction between acceptability and group was also observed ($F(2, 32) = 5.328, p = .025$), but a similar post hoc test showed no significant differences among groups (JHS and JFL learners ($p = 1.000$); JHSs and immigrants ($p = .749$); JFL learners and immigrants ($p = 1.000$)). An ANOVA for inanimate subject type did not reveal a main effect of acceptability ($F(1, 32) = 2.469, p = .126$), though an interaction effect between acceptability and group was found ($F(2, 32) = 3.693, p = .036$). A similar post hoc test, however, showed no significant differences among groups (JHS and JFL learners ($p = 1.000$); JHSs and immigrants ($p = 1.000$); JFL learners and immigrants ($p = 1.000$)). The

results indicate that the bilinguals distinguished the un/acceptability of the agent phrases in the indirect and animate subject types of passives, but not in the inanimate subject type. The bilinguals rated all types of passives in a similar manner with regard to acceptability.

To further investigate whether all groups rated all three types of passives in both the acceptable and unacceptable conditions in a similar manner, a one-way ANOVA was performed on each type of passive in the theoretically acceptable and unacceptable conditions. For the acceptable conditions, a significant main effect of type was found ($F(2, 64) = 9.258, p = .001$), and an interaction effect was found between type and group ($F(4, 64) = 3.252, p = .026$). A post hoc test revealed a significant difference between the JHSs and immigrants ($p = .010$), but no difference was significant (JHSs and JFL learners: $p = .592$; JFL learners and immigrants $p = .302$), indicating that the JFL learners rated acceptable passive sentences similarly to the immigrant control group. The ANOVA on type in each of the unacceptable conditions yielded a main effect of type ($F(2, 64) = 11.163, p = .001$), but found no interaction effect between type and group ($F(4, 64) = .608, p = .599$).

The JFL learner group judged the passives in certain conditions more similarly to the immigrant group than the JHSs did. However, we cannot conclude that the JFL learners have better knowledge of the passives overall. As discussed in the previous sections, there are a few differences in the results between the JHSs and JFL learners. While the JFL learners have better knowledge of the indirect passives than the JHSs, the JHSs seemed to recognise the pragmatic connotation of the *ni*-phrases which JFL learners failed to do. Neither group showed a clear knowledge of the *niyotte* agent phrase. All of these results seem to be related to the manner of input, which I will discuss further in Chapter 7.

5.3.5 Summary of results of the AJT

Table 26 summarises the type of the passives for which each group clearly distinguished between acceptable and unacceptable agent phrases.

Table 26: Acceptability of the types of passives in the AJT

	Indirect passive	Animate subject	Inanimate subject
Monolinguals	✓	✓	✓
Immigrants	✓	✓	✓
JHSs		✓	
JFL learners	✓		

Both the L1 Japanese control groups judged the passives as predicted by linguistic theory for all passive types, although the immigrants showed in a clearer distinction in their ratings for the acceptable and unacceptable conditions than the monolingual Japanese speakers. An advantage for the JHSs over the JFL learners was not observed in the overall results of the offline task, as each group recognised the un/acceptability in the different types, which seems to be largely due to the manner of input. Neither experimental group showed knowledge of *niyotte* as an agent phrase in passive sentences, suggesting that they acquire the affective passives earlier than *niyotte* passive.

Chapter 6. Experiment 2

6.1. Self-paced listening task

A self-paced listening task (SPL) was run to examine the online processing strategies of the JHSs and the JFL learners. In this task, the participants listened to sentences presented in phrasal segments by pressing a button. The time it took for each participant to continue to the next segment was measured. In this task, it was expected that participants would show a longer listening time at regions that are difficult to process, such as ungrammatical phrases or unexpected phrases (Just, Carpenter & Wooley, 1982, cited in Marinis, 2010). A listening task was used for this study rather than a reading task which tends to be used more frequently in similar online processing research. A reading task was not chosen because Japanese orthography is different from the orthography of many of the participants' dominant languages which may prove to be problematic, and furthermore it is highly likely that each JHS and JFL learner has a different level of reading proficiency, which may affect the reaction times in a reading task. Consequently, a listening task was chosen as the best possible method to fulfill the goals of the current study as it is able to measure online sentence processing without being affected by these other factors.

6.2 Method

6.2.1 Participants

The same participants who took part in experiment 1 (11 JHSs, 10 JFL learners, 16 monolingual Japanese speakers, and 14 Japanese immigrants) completed this experiment. For details regarding individual participants and groups, please refer back to section 4.4.2.

6.2.2 Experimental design

All of the test sentences were digitally recorded by the researcher who is a native speaker of Japanese, and were subsequently segmented using the *Praat* program (<http://www.fon.hum.uva.nl/praat/>). The task was performed using Neurobehavioural Systems *Presentation* software on the researcher's laptop. The sentences were pseudo-randomized in order to avoid the same conditions appearing consecutively and thereby creating a familiarisation effect. The participants listened to sentence fragments segmented phrase-by-phrase by pressing the 'enter' button. All the target sentences consisted of 5 phrases which include one noun, one noun with marked case or one predicate as in example (61).

(61)	a. <u>Subject (theme)</u>	<u>Time</u>	<u>Location</u>	<u>Agent</u>	<u>Verb</u>
	Region 1	Region 2	Region 3	Region 4	Region 5
	b. Taroo-wa	kinoo	gakkoo-de	sensei-ni	sikar-are-ta
	Taro-Top	yesterday	school-at	teacher-Dat	scold-Pass-Past

Regions 4 and 5 are the regions of most interest, as region 4 contains the agent phrase with either *ni* or *niyotte*, and region 5 is used to examine the effect of processing region 4⁵⁵. The task analyses: 1) the comparison within the minimal pairs to discern whether the incorrect agent phrases (i.e. *ni* or *niyotte*) in each condition will result in longer listening times than the correct ones; and 2) the comparison among types to investigate whether any of the passive types results in longer listening times than the others. The results of the former comparison are expected to reveal whether the JHSs and JFL learners distinguish the un/acceptability of the agent phrases. Longer listening times are expected in ungrammatical sentences. The results of the latter comparison are expected to indicate whether one type of passive requires longer listening times

⁵⁵ As region 5 is the end of the sentence, it is predicted to have a 'wrap up' effect from processing the whole sentences as well as the region (as discussed later).

than the others, suggesting one is more costly to process than the other. This comparison will also lead to further discussion of the role of the interface at the pragmatic level and the complexity of syntactic derivation in processing.

A statement such as (62) appeared on the screen at the end of some of the sentences, and the participants pressed the ‘y’ key for ‘yes’ if the statement matched the sentence they had just heard, and the ‘n’ key for ‘no’ if it did not.

(62) Taroo-wa okaasan-ni sikar-are-ta
 Taro-Top mother-Dat scold-Pass-Past
 ‘Taro was scolded by (his) mother.’

This task was added to ensure that participants were paying attention and were not simply pressing the ‘enter’ key randomly.

6.2.3 Materials

Minimal pairs of *ni* and *niyotte* passives, similar to those in the AJT, were tested as in Table 27.

A total of 84 sentences (30 target, 51 distractors and 3 practice) were included.

Table 27: Numbers of target sentences in each type

Condition	<i>Ni</i> phrase	<i>Niyotte</i> phrase
Inanimate subject (<i>Niyotte</i> passive)	6*	6
Animate subject (<i>Ni</i> -direct passive)	6	6
Indirect passive ⁵⁶	3	3*

⁵⁶ Only intransitive verbs were included as transitive verbs take an extra argument and the number of regions would differ across conditions. Indirect passives with transitive verbs were initially included, having a region containing an object and a predicate as one phrase. However, as it turned out that many participants pressed the ‘enter’ key after hearing an object without completing the region, the sentences with transitive verbs were eliminated from the experimental sentences.

Animate subjects did not have the adverbial phrase ‘*kawaisooni*’ (which was included in the AJT) so that all sentences had the same number of regions. Consequently, the passive sentences with an animate subject can in general contain either *ni* or *niyotte* as an agent phrase, although the sentences differ syntactically, semantically, and pragmatically depending on the phrase.

6.3 Results

This section examines the results of the SPL task. First, the results of each group are presented and analysed, and then a comparison of the groups is presented. A summary of the results of the all groups is discussed in the last subsection.

To control for the length of each segment, the average listening time per length (listening time/recording time) of each region was calculated and analysed.

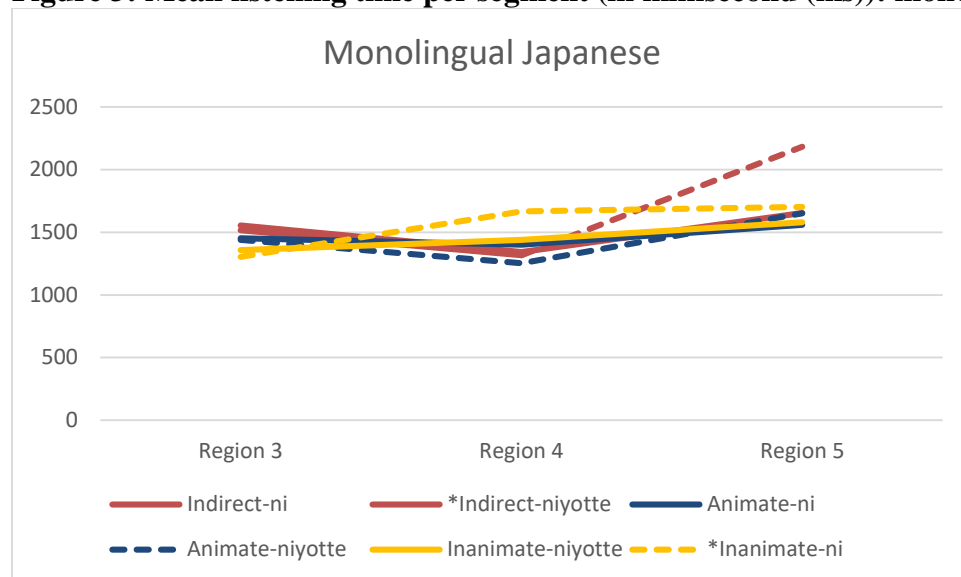
6.3.1 Monolingual Japanese Speakers

Data from one of the 16 participants was eliminated from the analyses as an outlier due to the fact that that participant’s average reaction time for all segments was over 1,000 milliseconds slower than the other participants. All listening times that resulted in a negative⁵⁷ average were eliminated first (approximately 16.2% of the data), then extreme values and outliers defined on the basis of SPSS boxplots were trimmed from the data (approximately an additional 0.5% of the data).

Figure 3 illustrates the mean listening times per segment for regions 3 to 5.

⁵⁷ The negative average listening time indicates a shorter listening time than the length of the recording, which occurs when participants press the ‘enter’ key before completing the entire phrase.

Figure 3: Mean listening time per segment (in millisecond (ms)): monolingual Japanese



At first glance, Figure 3 shows that the mean listening time increased from region 4 to region 5 with all types and conditions, except in sentences containing an inanimate subject with a *ni*-phrase. It was anticipated that region 5 would require a longer time to process as it is the end of the sentence and could conceivably create a wrap-up effect. The wrap-up effect is known to produce an increased processing load at the end of a sentence for semantic and syntactic reanalysis (Just et al., 1982). In addition, as Japanese is a head-final language, a critical phrase is located in the last region – region 5 in the experimental sentences – and thus it was also predicted that listening time would increase between regions 4 and 5. Notice that the monolingual Japanese speakers took longer to process region 4 than region 5 with inanimate subject types containing a *ni* agent phrase. This indicates that they were expecting to hear a *niyotte* phrase with inanimate subjects and that they reacted early to the unacceptability, resulting in longer listening time due to a reanalysis of the phrase.

An initial statistical analysis was conducted to examine the listening time, focusing on regions 4 and 5. Region 4 contains an agent phrase, so it is expected that region 5 would be

affected by an analysis of region 4 as a carry over effect. Thus, these two critical regions were combined for further statistical analysis. Table 28 presents the average listening times for regions 4 and 5 together.

Table 28: Mean listening time (in ms) for regions 4 and 5: monolingual Japanese

	Condition	Mean (SD)
1	Indirect with <i>ni</i>	2997.36 (284.06)
2	*Indirect with <i>niyotte</i>	3499.22 (792.53)
3	Animate subject with <i>ni</i>	2962.19 (310.33)
4	Animate subject with <i>niyotte</i>	2903.99 (269.90)
5	Inanimate subject with <i>niyotte</i>	3020.13 (352.53)
6	*Inanimate subject with <i>ni</i>	3369.79 (256.34)

A two-way ANOVA found significant main effects for both type ($F(2, 28) = 8.980, p = .006$) and acceptability ($F(1, 14) = 24.058, p < .01$), and there was also an interaction effect found between type and acceptability ($F(2, 28) = 5.492, p = .029$). A pairwise comparison for type found significant differences between the indirect passive and animate subjects ($p = .006$) and between animate and inanimate subjects ($p < .01$) but not between the indirect passive and inanimate subjects ($p = .576$), indicating the monolingual Japanese speakers took significantly longer to process the indirect passive and inanimate subject conditions than the animate subject condition. However, notice that sentences containing animate subjects are not pragmatically constrained as no phrase indicating adversity was included in the SPL task (unlike the AJT). In addition, both the *ni* and *niyotte* agent phrases are grammatical, and little difference in processing was expected between these two conditions. Therefore, the difference found may be due to longer processing times for only the unacceptable indirect and inanimate subject conditions with the *ni* agent phrase. In fact, a one-way ANOVA conducted only on the acceptable conditions of those two

types indicated no significant difference between them ($F(2, 28) = .557, p = .553$), while the results for the unacceptable conditions yielded a significant effect ($F(2, 28) = 7.876, p = .011$).

In order to examine whether the monolingual Japanese speakers took longer to listen to the unacceptable conditions for all types of passives, a one-way ANOVA was run on acceptability. The indirect ($F(1, 14) = 7.551, p = .016$) and inanimate subject types ($F(1, 28) = 32.679, p < .01$) yielded significant main effects, but there was no effect with the animate subjects ($F(1, 14) = 1.566, p = .231$). These results indicate that the monolingual Japanese speakers indeed required a longer processing time for unacceptable sentences than acceptable ones.

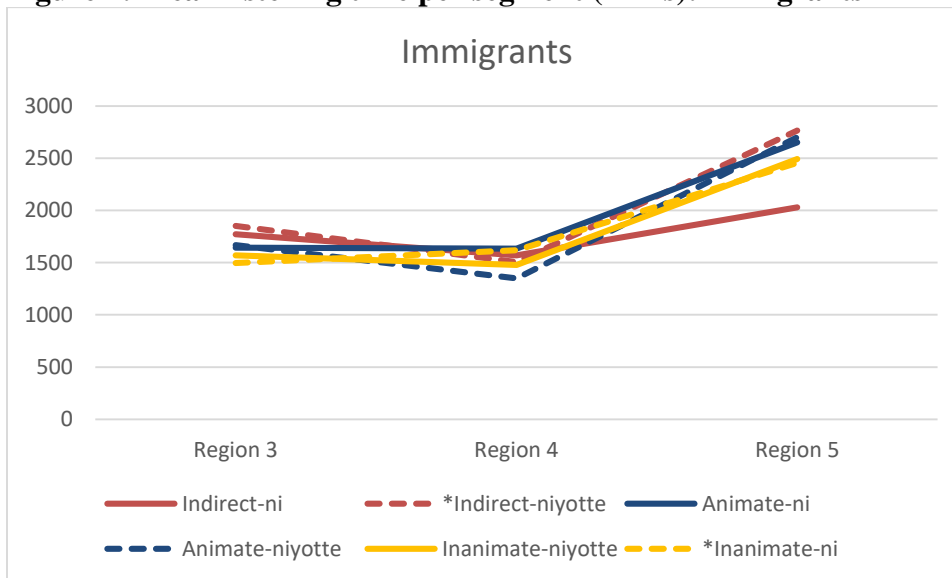
Next, a two-way ANOVA for each region was performed to investigate interactions between types and acceptability in each region. Significant main effects were found for both type ($F(2, 28) = 18.568, p < .001$) and acceptability ($F(1, 14) = 4.302, p = .057$) in region 4 as well as interaction effects between type and acceptability ($F(2, 28) = 12.654, p = .002$). A pairwise comparison (*Bonferroni* adjustment) for types revealed significant differences between inanimate subjects and both the indirect type ($p = .001$) and animate subjects ($p = .002$), but not between indirect and animate subjects ($p = 1.000$). It took significantly longer for the Japanese monolinguals to listen to the *niyotte* passive type than the other types in region 4. The results of a two-way ANOVA for region 5 revealed only a trend of type ($F(2, 28) = 3.632, p = .073$), and no significant effect or trend of acceptability ($F(1, 14) = 1.469, p = .246$) or interaction between type and acceptability ($F(2, 28) = 1.420, p = .257$), indicating that the monolingual Japanese speakers distinguished between the acceptable and unacceptable agent phrases rather early in the critical region.

6.3.2 Japanese immigrants to Canada

The same data trimming process described for the monolingual group was used on the results of the immigrants. First, all negative average RTs were eliminated (8.9% of the data), and second, extreme values and outliers defined on the basis of SPSS boxplots were eliminated (an additional 0.5% of the data).

Figure 4 presents mean listening times per region from regions 3 to 5. Following the data trimming, most of the data from two participants in the indirect sentences with an unacceptable *niyotte* agent phrase condition was removed⁵⁸.

Figure 4: Mean listening time per segment (in ms): immigrants



A two-way ANOVA for regions 4 and 5 combined was run on acceptability and type. Table 29 shows the combined mean listening time (in ms) for regions 4 and 5.

⁵⁸ It is plausible that the two immigrants were expecting to hear *ni* not *niyotte* as an agent phrase, and once they heard the first part of the latter phrase, they pressed the ‘enter’ key to move onto the next phrase.

Table 29: Mean listening time (in ms) for regions 4 and 5: immigrants

	Condition	Mean (SD)
1	Indirect with <i>ni</i>	3598.06 (527.83)
2	*Indirect with <i>niyotte</i>	4272.15 (889.30)
3	Animate subject with <i>ni</i>	4286.34 (1755.83)
4	Animate subject with <i>niyotte</i>	4050.26 (907.69)
5	Inanimate subject with <i>niyotte</i>	3971.71 (699.21)
6	*Inanimate subject with <i>ni</i>	4076.08 (715.44)

The results of the ANOVA showed a significant main effect for acceptability ($F(1, 11) = 9.380$, $p = .011$), but not for type ($F(1, 22) = 1.042$, $p = .346$) and an interaction effect was found between type and acceptability ($F(2, 22) = 7.488$, $p = .006$). A one-way ANOVA was performed on acceptability for each type to observe which passives had significantly different processing times with respect to the agent phrases. A significant difference was found only with the indirect passive type ($F(1, 11) = 11.465$, $p = .006$), while a trend was found with inanimate subjects ($F(1, 13) = 3.159$, $p = .099$) and no difference with animate subjects ($F(1, 13) = 1.010$, $p = .333$). This indicates that the immigrants took significantly longer to process unacceptable indirect passives with *niyotte* agent phrases (Condition 2) than acceptable sentences with *ni* agent phrases (Condition 1). The listening time for unacceptable inanimate subjects with a *ni* agent phrase (Condition 6) was also longer than acceptable inanimate subjects with *niyotte* (Condition 5).

When a two-way ANOVA for each region was performed to examine interactions between the variables in region 4 and region 5, the results were similar to those of the ANOVA for those regions combined. The results for region 4 revealed a main effect for acceptability ($F(1, 13) = 4.653$, $p = .054$) but not for type ($F(2, 26) = 1.226$, $p = .304$). An interaction effect was also found between type and acceptability ($F(2, 26) = 11.325$, $p = .002$). The ANOVA for region 5 revealed results similar to those of region 4, showing a main effect for acceptability ($F(1, 13) =$

24.752, $p < .001$) but not type ($F(2, 22) = .635, p = .491$). An interaction effect was also found between type and acceptability ($F(2, 26) = 7.895, p = .003$) which indicates that the immigrants' ability to distinguish between acceptable and unacceptable sentences depended on the type of passive. Further investigation into the acceptability of each type in each region revealed that while the immigrants took significantly longer to listen to unacceptable indirect passives with a *niyotte* agent phrase (Condition 2) than to an acceptable *ni* agent phrase (Condition 1) in region 5 ($F(1, 13) = 16.555, p = .001$), there was no such difference in region 4 ($F(1, 11) = .722, p = .414$). In contrast, a significant difference in terms of the acceptability of inanimate subjects (Conditions 5 and 6) was found in region 4 ($F(1, 13) = 9.080, p = .011$) but not in region 5 ($F(1, 13) = .264, p = .616$), suggesting that the immigrants detected the unacceptability of a *ni*-agent phrase with an inanimate subject early in region 4 as the monolingual Japanese did, while it required more time for the immigrants to analyse an unacceptable *niyotte*-agent phrase in the indirect passives and thus this effect was seen in region 5.

6.3.3 Heritage speakers of Japanese

Before analysing the data, all negative average listening time (approximately 9.7% of the data) as well as the extreme values and outliers defined on the basis of SPSS boxplots (an additional 0.5% of the data) were eliminated.

Figure 5 presents the average listening times from regions 3 to 5 for the JHSs.

Figure 5: Mean listening time per segment (in ms): JHSs

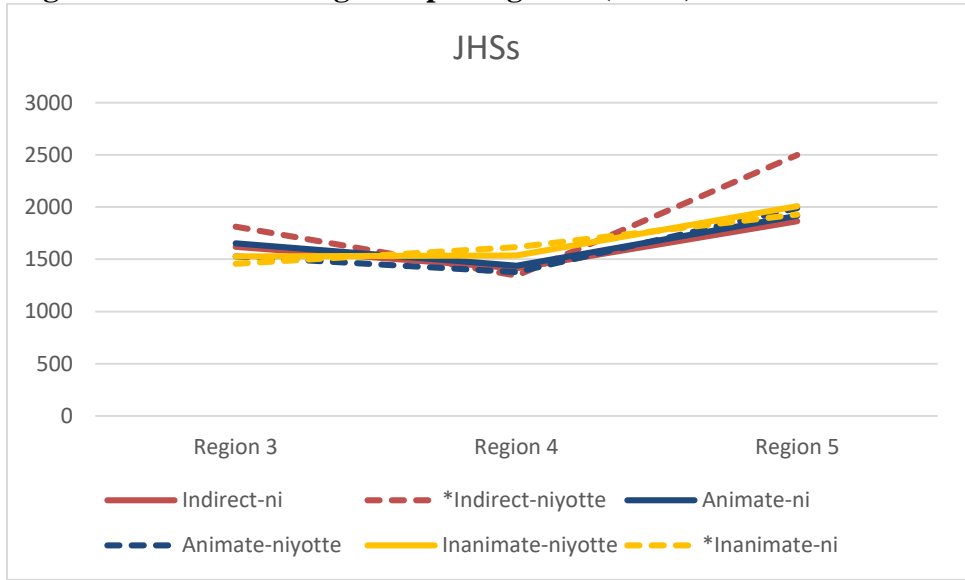


Table 30 presents the mean listening times for regions 4 and 5.

Table 30: Mean listening time (in ms) for regions 4 and 5: JHSs

	Condition	Mean (SD)
1	Indirect with <i>ni</i>	3281.32 (345.65)
2	*Indirect with <i>niyotte</i>	3845.08 (377.68)
3	Animate subject with <i>ni</i>	3353.26 (373.14)
4	Animate subject with <i>niyotte</i>	3367.03 (389.02)
5	Inanimate subject with <i>niyotte</i>	3546.08 (498.24)
6	*Inanimate subject with <i>ni</i>	3546.70 (380.21)

A two-way ANOVA for combined regions 4 and 5 investigating acceptability and type showed a main effect for acceptability ($F(1, 10) = 23.501, p = .001$) though not for type ($F(2, 20) = 2.098, p = .159$). An interaction effect was also found between type and acceptability ($F(2, 20) = 5.117, p = .020$).

A one-way ANOVA was performed for each type to observe which passives had significantly different processing times with respect to their acceptability. This difference was

found only with the indirect type ($F(1, 10) = 13.944, p = .004$), and not with sentences involving animate subjects ($F(1, 10) = 0.18, p = .897$) or inanimate subjects ($F(1, 10) = .000, p = .995$). The JHSs took significantly longer to listen to unacceptable *niyotte* phrases (Condition 2) than *ni* agent phrases (Condition 1), indicating that they perceived their un/acceptability even though they did not make a clear distinction in their AJT⁵⁹. This lack of difference in processing sentences containing animate subjects may highlight their pragmatic knowledge in affective passives, a fact that was evidenced in the AJT. In fact, they made a clear distinction between *ni* and *niyotte* in the acceptability judgment task where the adverbial phrase indicating affectedness was introduced.

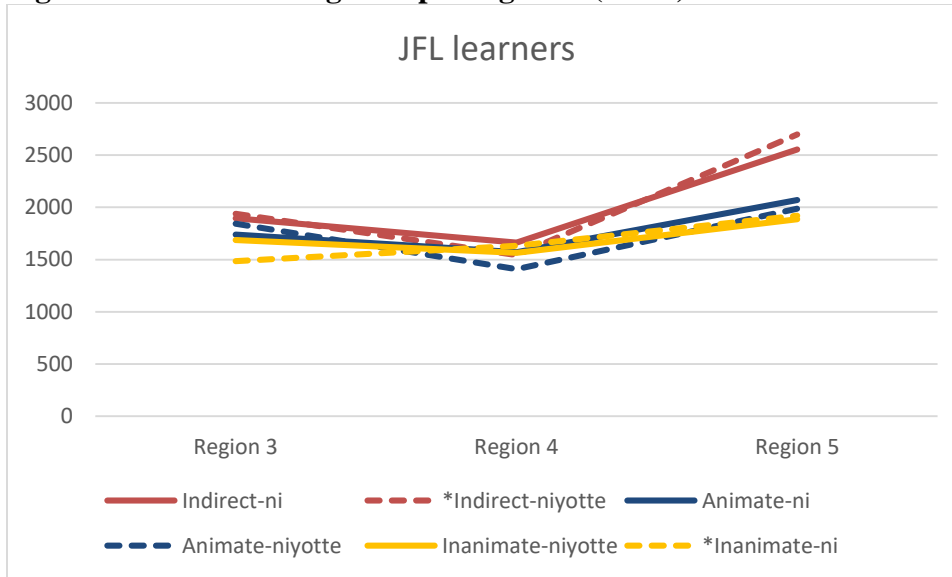
A two-way ANOVA investigating type (x3) and acceptability (x2) in region 4 revealed a main effect of type ($F(2, 20) = 18.643, p < .01$) but not acceptability ($F(1, 10) = .641, p = .442$). No interaction effect was found between type and acceptability ($F(2, 20) = 1.938, p = .173$). A pairwise comparison of the types revealed a significant difference for between inanimate subjects and both indirect passives ($p < .001$) and animate subjects ($p = .009$), but not between the indirect passives and animate subjects ($p = 1.000$). The JHSs took significantly longer to listen to sentences containing inanimate subjects than other types of passives in region 4. The ANOVA for region 5 found a main effect for acceptability ($F(1, 10) = 42.742, p < .001$) with type as a trend ($F(2, 20) = 3.653, p = .065$). An interaction effect between type and acceptability was also found ($F(2, 20) = 8.255, p = .004$). A one-way ANOVA run on acceptability for the indirect passive type revealed a significant effect ($F(1, 10) = 18.393, p = .002$), indicating that the JHSs took some time to analyse the ungrammatical *niyotte* agent phrase and therefore the effect of acceptability was only significant in region 5, similarly to the immigrants.

⁵⁹ The result was not statistically significant, but they did show a trend towards rating acceptable *ni*-agent phrases higher than unacceptable *niyotte* phrases in the indirect passives.

6.3.4 Learners of Japanese as a foreign language

In the same manner as the other groups, all negative average listening times (approximately 6.6% of the data) as well as the extreme values and outliers defined on the basis of SPSS boxplots (an additional 5.1% of the data) were eliminated from the data prior to the analysis. Figure 6 presents the mean listening times per segment for the JFL learners.

Figure 6: Mean listening time per segment (in ms): JFL learners



First, an analysis combining regions 4 and 5 was conducted. Table 31 shows the mean listening times for these two regions.

Table 31: Mean listening time (in ms) for regions 4 and 5: JFL learners

	Condition	Mean (SD)
1	Indirect with <i>ni</i>	4215.43 (992.19)
2	*Indirect with <i>niyotte</i>	4243.50 (585.88)
3	Animate subject with <i>ni</i>	3640.77(546.42)
4	Animate subject with <i>niyotte</i>	3394.17 (583.34)
5	Inanimate subject with <i>niyotte</i>	3451.58 (563.97)
6	*Inanimate subject with <i>ni</i>	3553.38 (359.80)

A two-way ANOVA examining type and acceptability revealed a main effect of type ($F(2, 18) = 16.792, p = .01$), but not acceptability ($F(1, 9) = 0.89, p = .772$). A pairwise comparison of type showed significant differences between the indirect passives and both animate ($p < .001$) and inanimate subjects ($p = .010$) but not between animate and inanimate subjects ($p = 1.000$). The JFL learners took significantly longer to process the indirect passives than the other types. Even though they listened to the animate subject types significantly more slowly than the inanimate subjects in all regions, the difference in the listening time in the last two regions was minimal.

An interaction effect was not found between type and acceptability ($F(2, 18) = .758, p = .441$), and the JFL learners did not show any differences in listening time in terms of acceptability with any of the types. Though the JFL learners distinguished between acceptable and unacceptable sentences with the indirect passives in the AJT, this distinction was not evident in the listening task.

A two-way ANOVA investigating type (x3) and acceptability (x2) in region 4 found no main effects for type ($F(2, 18) = 1.341, p = .286$) or for acceptability ($F(1, 9) = 3.291, p = .103$). There was also no interaction effect ($F(2, 18) = 1.341, p = .286$). In contrast, the ANOVA for region 5 revealed type as a main effect ($F(2, 18) = 24.038, p < .001$), but there was no effect for acceptability ($F(1, 9) = .049, p = .803$). There was also no interaction effect between the two variables ($F(2, 18) = .859, p = .422$). A pairwise comparison of type revealed a significant difference between the indirect passives and both animate subjects ($p = .001$) and inanimate subjects ($p = .001$), but not between animate and inanimate subjects ($p = .210$). The JFL learners took significantly longer to listen to indirect passives than *ni*-direct or *niyotte* passives at the end of the sentence.

6.3.5 Group comparison

A comparison among groups was carried out for regions 4 and 5 combined. A two-way mixed-design ANOVA was first performed with type (x3) and acceptability (x2) as within subject variables and group (x4) as a between subjects variable. The results showed main effects for both type ($F(2, 88) = 5.004, p = .18$) and acceptability ($F(1, 44) = 6.803, p = .012$). Interaction effects between groups were found for type ($F(6, 88) = 3.844, p = .05$) but not for acceptability ($F(3, 44) = 1.240, p = .307$). A pairwise comparison of the types revealed a significant difference only between the indirect passive and inanimate subjects ($p = .038$), but between the other conditions (indirect passive and animate subject ($p = .054$), animate and inanimate subjects ($p = .909$)).

As an interaction effect was found between type and acceptability ($F(2, 88) = 8.609, p < .01$), a one-way ANOVA examining the acceptability for each type was carried out. The results showed significant effects for the acceptability of indirect passives ($F(1, 44) = 15.606, p < .001$) and inanimate subjects ($F(1, 46) = 7.330, p = .09$), but not for animate subjects ($F(1, 46) = 1.289, p = .262$).

A post hoc comparison (*Bonferroni* adjustment) revealed differences in average listening time between the JFL learners and the Japanese monolinguals ($p = .010$), and between the immigrants and both the monolinguals ($p < .001$) and the JHSs ($p = .034$). The average listening time of the immigrants was significantly slower than that of the JHSs and in general, the results indicate that the JHSs process the sentences more similarly to the monolingual control group than the JFL learners do. A few factors may be responsible for the slower processing of the immigrant group. First, the immigrants may have been more careful with their use of Japanese, listening to each segment more cautiously so as not to misunderstand the sentence and in order to

be able to respond correctly to the comprehensive questions. Second, the slower processing may be due L1 attrition. It is expected that bilinguals whose L1 use is limited have less efficient access to an appropriate linguistic knowledge (Ko, 2014), resulting in slower processing speeds. Finally, age may be a relevant factor, since it has been reported that as age increases in adulthood, processing speed – especially in processing complex structures – decreases (Caplan et al., 2011). The mean age of the immigrants is considerably higher than the mean age of the other groups as shown in Table 32.

Table 32: Mean age for all groups

	JHSs	JFL learners	Monolingual Japanese	Immigrants
Mean age	20.0	23.1	20.7	51.0

It has been reported that general cognitive processing, not limited to language processing, is also expected to be affected by age (Hakuta et al., 2003).

It is noteworthy that all groups had a trend towards reacting early to the unacceptable *ni* agent phrase with inanimate subjects (Condition 6), and as a result took longer to listen to region 4. Though the monolingual group reacted the most significantly to the unacceptable condition, they did not show such a reaction with the unacceptable *niyotte* agent phrase with indirect passives (Condition 2). This may be due to the low frequency of inanimate subjects with *ni* coupled with the fact that the participants expected to hear *niyotte* with inanimate subjects, though it is possible for the *niyotte* phrase to occur with animate subjects (i.e. *ni*-direct passive).

Another interesting finding is the results from a mixed design one-way ANOVA run on the types in all 5 regions combined revealed that all the participant groups displayed the hierarchy in listening time for all regions as follows: inanimate subject < animate subject < indirect passive. This hierarchy indicates that pragmatic factors may play a more crucial role in

sentence processing than syntactic derivation or frequency as the indirect passive is always licensed at the syntactic-semantic-pragmatic interface, and the listening times were longest for this type of passive. Comparatively, with animate subjects, when there is no indication of adversity in a sentence and both agent phrases are possible, the sentences with the *niyotte* agent phrase (i.e. *niyotte* passive) were processed faster than those with the *ni* phrase (i.e. *ni*-direct/affective passive). I will further discuss this in section 6.4.6.2.

6.3.6 Summary of the results of the SPL

The overall comparison among groups indicated that the JHSs process passive sentences in a similar manner to the Japanese monolinguals in terms of speed, but the JFL learners do not. In this subsection, the results are summarised with respect to acceptability and type.

6.3.6.1 Acceptability

In this subsection, I analyse the results with respect to the acceptability conditions, focusing on regions 4 and 5 (the most critical regions in this study) in order to address the question of whether the bilinguals made a distinction between acceptable and unacceptable agent phrases in each type of passive. Table 33 summarises whether or not each group distinguished between acceptable and unacceptable agent phrases with each type of passive.

Table 33: Acceptability of the types of passives in the SPL

	Indirect passive	Animate subject	Inanimate subject
Monolinguals	✓		✓
Immigrants	✓		✓
JHSs	✓		
JFL learners			

As shown in Table 33, none of the groups differed according to the acceptability of the animate subject type because no pragmatic restriction was incorporated and thereby an agent can be marked by either *ni* or *niyotte*. Similar to the L1 Japanese groups, the JHSs showed significantly longer listening times for unacceptable sentences with *niyotte* marked agent phrases than for acceptable *ni* phrases in indirect passives. The JFL learners, in contrast, did not show any differences. Only the control groups showed a clear distinction according to the acceptability of the inanimate subject sentences. Though the participants in all groups reacted to the unacceptable *ni*-phrase agent phrase coupled with an inanimate subject, the difference in listening between the acceptable *niyotte* and the unacceptable *ni* was only significant in the monolingual group (trend was shown for the immigrant group).

Overall, the JHSs performed similarly to the native speakers with the affective passives, which are more frequently used, than the JFL learners did. They recognised the unacceptability of the *niyotte*-phrases in the indirect passives, while the JFL learners did not show any distinction in listening with respect to the un/acceptability of the agent phrases.

6.3.6.2 Type

In order to discern whether any particular type of passive is more difficult for the bilinguals to process, the acceptable conditions of three types of sentence were compared. First, a one-way ANOVA on type in all 5 regions⁶⁰ was performed within each group, and then another ANOVA was run investigating only regions 4 and 5. The results from each group are as follows:

⁶⁰ All 5 regions were analysed as the animacy of a subject may affect processing, and it may also affect the rest of the regions.

1) Monolingual Japanese

An ANOVA run on all 5 regions revealed a main effect for type ($F(2, 28) = 46.365, p < .001$), and pairwise comparisons revealed significant differences for all pairs (indirect passive and animate subject: $p < .001$; indirect passive and inanimate subject: $p < .001$; animate and inanimate subject: $p = .007$). The monolinguals took significantly longer to listen to the indirect passives than to the animate subjects, and to the animate subjects than to the inanimate subjects. These differences between the types were not found in an ANOVA investigating only regions 4 and 5 ($F(2, 28) = .557, p = .553$). Pairwise comparisons did not show any differences between any of the types (indirect passive and both animate and inanimate subjects: $p = 1.000$; animate and inanimate subjects: $p = .596$).

2) Immigrants

First, an ANOVA examining all 5 regions showed a main effect for type ($F(2, 26) = 9.056, p = .004$), and pairwise comparisons further showed significant differences between inanimate subjects and indirect passives ($p < .001$) as well as animate subjects ($p < .049$), but not between indirect passives and animate subjects ($p = 1.000$). These results indicate that the immigrants required shorter listening times for the inanimate subject types than both the indirect passive and animate subject types. Similar to the monolinguals, no difference was found in an ANOVA investigating only regions 4 and 5 ($F(2, 26) = 1.627, p = .225$). Pairwise comparisons likewise did not show any significant differences between any of the types (indirect passive and animate subject: $p = .535$; indirect passive and inanimate subject: $p = .089$; animate and inanimate subjects: $p = 1.000$).

3) JHSs

In an ANOVA investigating all 5 regions, type yielded a main effect ($F(2, 20) = 18.563, p < .001$), and pairwise comparisons revealed significant differences between inanimate subjects and both indirect passives ($p = .001$) and animate subjects ($p = .001$), but no differences between indirect passives and animate subjects ($p = .077$). This indicated that the JHSs required a significantly shorter listening time for inanimate subject types than both indirect passives and animate subjects. Similar to the control groups, no difference was found in an ANOVA investigating regions 4 and 5 in terms of type ($F(2, 20) = 1.259, p = .300$). Likewise, pairwise comparisons did not show any differences between any of the types (indirect passive and animate subject: $p = 1.000$; indirect passive and inanimate subject: $p = .664$; animate and inanimate subjects: $p = .302$).

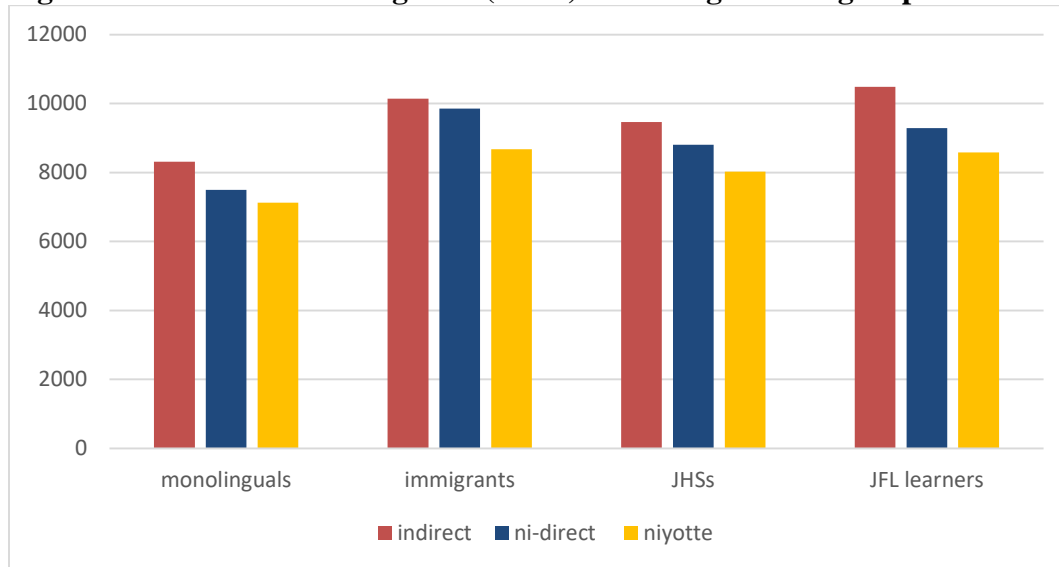
4) JFL learners

An ANOVA investigating all 5 regions found a main effect of type ($F(2, 18) = 18.531, p < .01$), and pairwise comparisons showed significant differences between all types (indirect passive and animate subject: $p = 0.45$; indirect passive and inanimate subject: $p = 0.22$; animate and inanimate subjects: $p = .007$). The JFL learners took significantly longer to listen to the indirect passives than to animate subjects, and to animate subjects than to inanimate subjects. Similar differences between types were found for regions 4 and 5 ($F(2, 18) = 5.399, p = .039$). Pairwise comparisons did not show any differences between any of the types (indirect passive and animate subject: $p = .151$; indirect passive and inanimate subject: $p = .116$; animate and inanimate subjects: $p = .328$).

5) Comparison of the groups

Figure 7 illustrates the mean listening times in each acceptable condition⁶¹.

Figure 7: Combined listening time (in ms) for all regions: all groups



A mixed design one-way ANOVA investigating type as within subjects variable and group as the between subjects variable was run to compare the results among the groups. Type yielded a main effect ($F(2, 92) = 58.774, p < .001$) and pairwise comparisons found significant differences for all types (indirect passive and animate subject: $p < .001$; indirect passive and inanimate subject: $p < .001$; animate and inanimate subjects: $p = .001$). There was no significant interaction effect between type and group ($F(2, 92) = 1.524, p = .187$). Even though pairwise comparisons for group revealed a significant difference between the monolingual Japanese speakers and the JFL learners ($p = .001$) as well as between the monolingual and immigrant ($p = .001$) groups, this is due to the fact that the average listening time of the JFL learners and the immigrants was

⁶¹ Each bar presents a combined average listening time of all five regions.

significantly longer than that of the monolinguals, and it is clear that all groups displayed the same overall pattern of results as shown in (63).

(63) Pattern of listening time by type

inanimate subject < animate subject < indirect passive

The same hierarchy was evident when comparing the groups' listening time for both the acceptable and unacceptable conditions.

A one-way ANOVA investigating type for regions 4 and 5 as a within subjects variable, and group as the between subjects variable did not find a main effect of type ($F(2, 92) = .073$, $p = .890$), and pairwise comparisons did not show any differences between types (indirect passive and animate subject: $p = 1.000$; indirect passive and inanimate subject: $p = .455$; animate and inanimate subjects: $p = .302$). There was an interaction effect found between type and group ($F(2, 92) = 3.216$, $p = .012$) which indicates that the differences in average listening times among groups varied depending on the type of passive.

All groups shared the hierarchy of processing passives as in (63), which suggests that processing difficulties apply to both native and non-native speakers alike. If a pragmatically dependent structure causes more processing cost even for monolinguals, it is plausible that bilinguals encounter even more difficulty with processing those structures as they have to handle two languages.

6.3.7 Comparison of the results of the offline and online tasks

The offline and online tasks revealed contrastive results. Table 34 summarises whether each group was able to distinguish between acceptable and unacceptable sentences with each type of passive.

Table 34: Acceptability of the types of passives in the AJT and the SPL

	Indirect passive		Animate subject		Inanimate subject	
	Offline	Online	Offline	Online	Offline	Online
Monolinguals	✓	✓	✓		✓	✓
Immigrants	✓	✓	✓		✓	✓ ⁶²
JHSs		⊗ ⁶²	✓			
JFL learners	⊗					

An interesting difference between the results of the offline task and the online task is that the JHSs did not distinguish between acceptable and unacceptable agent phrases in indirect passives in the offline task, but they recognised the difference in the online task. In contrast, the JFL learners did not recognise the un/acceptability in the online task, though they distinguished between the agent phrases in the offline task. These results are in line with previous findings which suggest that HSs generally perform better in aural tasks than in written tasks, whereas L2 learners perform better in written tasks (Montrul, 2012). The JHSs are accustomed to oral implicit input, and they detected the unacceptability of the *niyotte* agent phrase in indirect passives implicitly in the SPL. The JFL learners are conceivably more familiar with written texts, and they could apply metalinguistic knowledge in the offline task which allowed them to identify the un/acceptability of the passives more effectively. I will discuss the performance of the JHSs

62 Circles indicate significantly different results between the online and off-line tasks.

and the JFL learners in the online and offline tasks further with respect to age of acquisition and manner of input in the next chapter.

Although the bilinguals showed little knowledge of the *niyotte* passives in the offline task, they processed this type of passive faster than the other types. One plausible account for this is the fact that the bilinguals were able to transfer processing from their dominant language (English or French) to the *niyotte* passive, as the *niyotte* passive and the passives in their dominant languages share the following features: 1) inanimate subjects are more often associated with passives than animate subjects (Toyota, 2011); and 2) a syntactic representation where the theme is promoted to the subject position of a sentence while the agent is demoted to an optional ‘by’ phrase; thus the thematic role of theme and agent remain the same (unlike the affective passive whose subject has a different theme as an affectee). If this is true, we can conclude that structural and semantic similarities between the L1 and the L2 (or between the HL and the dominant language for HSs) influence L2 (or HL) processing, and thus, a positive syntactic and semantic transfer from the dominant language occurs in the bilinguals’ processing.

Chapter 7. Discussion

7.1 Introduction

In this dissertation I have investigated the acquisition and processing of Japanese passives by JHSs and JFL learners in order to answer the following questions:

- Do HSs have advantages over L2 learners due to their early exposure to the language as well to receiving input in an immersed, natural setting?
- What is the source of the difficulties in the acquisition of Japanese passives? Are the structures that are licensed at the syntax-pragmatics interface more problematic than those that have a more complex syntactic representation?

In this chapter, I summarise the findings of the two experiments presented in Chapters 5 and 6 and discuss their implications. First, I will discuss these in relation to the three sub-research questions regarding the age and manner of acquisition and the source of the difficulties in the acquisition of Japanese passives (presented in Chapter 4). Second, important issues which arose from the findings, namely age of acquisition, manner of input, frequency of input, and variation in HSs are addressed. The following section considers the implications of the findings from the results of the native speakers, specifically, a generalization of the semantic meaning of the agent phrases. Finally, the limitations of the study and directions for future research are discussed.

One of the limitations of the study is small number of participants. Due to the complex nature of the investigated structures, only bilinguals whose proficiency level was equivalent to N3 of the JLPT (Japanese Language Proficiency Test) or higher were recruited, and few students at colleges met this proficiency requirement. The number of participants in each group is,

however, sufficient to provide valid results and claims based on the findings. That being said, more participants will be recruited in the future to verify the results along with the claims.

7.2 Advantage of the JHSs over the JFL learners

Two of the three research questions focused on the advantages of the JHSs over the JFL learners as shown in (64).

- (64) A. Do the JHSs have an advantage over the JFL learners when mastering the three types of Japanese passives? Do the JHSs have a better knowledge of the passives than the JFL learners, and do they judge the acceptability of passives more like the Japanese native speakers than the learners do in the AJT?
- B. Do the JHSs process each type of passive more like the Japanese native speakers compared to the JFL learners in the SPL task?

The assumption regarding the advantages of the JHSs were based on their early exposure to the Japanese language as well as the fact that they received their input in immersed natural environments. This is in contrast to the JFL learners, who started learning the language after puberty when they already have a solid knowledge of their L1 and when language acquisition is assumed to become more challenging due to mechanisms such as L1 interference (Schwartz & Sprouse, 1996, for example) and the limitation of cognitive resources (DeKeyser, 2000; Paradis, 2004). Furthermore, input they receive is usually limited to formal instruction in classrooms

while the JHSs receive more intensive input in context. Keeping these differences in mind, the next two subsections address the above questions regarding the assumed advantages of the JHSs.

7.2.1 Lack of advantage for JHSs over JFL learners in the AJT

The results of the AJT were consistent with the hypothesis that there is no advantage for JHSs over JFL learners in an offline task where knowledge of the structural representation of passives is measured. In fact, there was a condition where the JFL learners' judgments were more like those of the immigrant control group than those of the JHSs (namely, judging the acceptable conditions of the passives).

The JHSs and the JFL learners demonstrated a deeper knowledge with different types of affective passives. While the JHSs differentiated between acceptable and unacceptable agent phrases in the *ni*-direct type (with animate subjects) as in (65), the JFL learners failed to do so. In contrast, the JFL learners successfully made the distinction between un/acceptable agent phrases in the indirect passive type as in (66), whereas the JHSs did not.

(65) *Kawaisooni, Mika-wa sakki kooen-de Makoto-ni/*[?]niyotte ke-rare-ta*
 Unfortunately, Mika-Top a little while ago park-at Makoto-Dat/by kick-Pass-Past
 'I feel sorry that Mika was kicked by Makoto at the park.'

(66) *Hiroshi-wa tomodati-ni/*[?]niyotte booru-o butsuker-are-ta*
 Hiroshi-Top friend-Dat/by ball-Acc hit-Pass-Past
 'Hiroshi was affected by his friend's hitting a ball on him.'

It is assumed that the better performance of the JHSs in the *ni*-direct type of passive is due to the fact that this type included the adverbial phrase *kawaisooni* 'feel sorry', conveying the speaker's sympathy towards the subject of the passive sentence. When a speaker intends to indicate her/his

empathy towards the subject or the event itself, the *ni*-direct type rather than the *niyotte* passive, is more appropriate (Kuroda, 1979b). The JHSs preferred the *ni* agent phrase to *niyotte* with the adverbial phrase, suggesting that they are aware of such semantic and pragmatic features of the *ni*-direct type. As the JHSs generally receive input in context, they acquire syntactic structures along with pragmatic/discourse concepts. Accordingly, they recognise that the affective passives are used to express the empathy of a speaker. The indirect passive type, another affective passive, did not include the phrase to indicate adversity, and it is assumed that the affectedness was not as salient for the JHSs to distinguish between the agent phrases.

The JFL learners, in contrast, failed to make the distinction between the agent phrases with the *ni*-direct type, suggesting that they were not sensitive to the pragmatic function of the *ni* agent phrase. They, however, successfully made the distinction with the indirect passive type, another affective passive, and significantly preferred the acceptable *ni* over the unacceptable *niyotte* as an agent phrase. As the indirect passive always carries an affective connotation, the JFL learners may have explicitly learned its unique syntactic structure together with the affectedness in class. Specifically, they display knowledge of: 1) the morpheme *rare* is attached to the verb; 2) the topic/subject of the sentence is marked with *wa/ga*; 3) an agent is marked with *ni*; 4) the subject is an affectee; and 5) passives are usually used to describe ‘unwelcome’ actions (AJALT, 2007). All of the JFL learners who participated in the study used the textbook *Genki* (Banno et al., 2011) in which an affective connotation of passives is emphasised, and the examples given in the textbook to explain the adverse meaning are all indirect passives (p.213-214). Thus, the JFL learners may have developed the knowledge of the form of the indirect passive with a negative connotation through explicit instruction.

Even though there was a statically significant difference in the JHSs' judgments between the *ni* and *niyotte* agent phrases with the *ni*-direct type, they did not completely reject the unacceptable *niyotte* agent phrase (mean score: 7.14). The same phenomenon was observed in the JFL learners' judgments with the indirect passive type, and they did not completely reject the unacceptable *niyotte* agent phrase (mean score: 6.36) either, though there was a statistically significant difference in their ratings of the *ni* and *niyotte* phrases. Furthermore, neither group rejected the unacceptable *ni*-agent phrase nor distinguished between the two agent phrases in the *niyotte* passives (with an inanimate subject as in (67)).

- (67) Hamuertto-wa Sheekusupia-niyotte/*ni kak-are-ta
 Hamlet-Top Shakespeare-by/Dat write-Pass-Past
 'Hamlet was written by Shakespeare.'

These results suggest that while both groups understand the function of the *ni* agent phrase, they have little knowledge of the *niyotte* phrase, whose frequency of input is generally very limited in oral conversations.

A potential account for the lack of evidence of an advantage for the JHSs in terms of the grammatical representation is that Japanese passives are late-learned structures, which may not have been learned before formal schooling began at which point input from the dominant language increases considerably. This may have resulted in the incomplete acquisition of this structure. The advantage HSs have over L2 learners with respect to grammatical representations is generally limited to early-acquired structures (e.g. Benmamoun et al., 2013; Montrul, 2008, 2012, 2015), which are acquired more solidly and are thus less susceptible to attrition. In contrast, the late-learned structures are usually more syntactically complex (Jakubowicz, 2002) and

pragmatic/discourse related (e.g. Chien & Wexler, 1990). If the HSs acquire those structures before schooling, it is likely that the knowledge of the structures does not further develop due to insufficient input, and consequently they may also become vulnerable to attrition.

The following summarises the results of the AJT with respect to the lack of advantage for the JHSs:

- The JHSs do not have any advantage over the JFL learners with regard to the knowledge of the grammatical representation of the Japanese passives. A possible account for the lack of an advantage is that the passives are late-learned structures, and an insufficient amount of input may lead to their **incomplete acquisition**.
- The different knowledge of the affective passives between the JHSs and the JFL learners is due to the different **manner of input** (contextual versus non-contextual).
- The bilinguals' little knowledge of the *niyotte* passive is due to its low **frequency in the input**.

7.2.2 Advantage for JHSs over JFL learners in the SPL

The results of the SPL were also in accordance with the hypothesis that the JHSs perform more similarly to the native monolingual Japanese than the JFL learners do. The JHSs were similar to the monolingual speakers in terms of processing speed as well as in the distinction between agent phrases in the indirect passive type. The listening time of the JHSs was comparable to that of the monolingual Japanese speakers, and there was no statistically significant difference in speed between the two groups. The longer listening time of the JHSs to judge the unacceptable *niyotte* agent phrase compared to the acceptable *ni* phrase in the indirect passive type indicates their

difficulty in processing the unacceptable agent phrase (Marinis, 2010), suggesting that they implicitly distinguished the un/acceptability of the agent phrases. The JHSs failed to make such a distinction in the indirect passives in the AJT, which confirms that the JHSs perform better in online tasks than offline tasks (e.g. Montrul, 2008, 2009, 2012). The JFL learners, in contrast, did not make a distinction in the un/acceptability of the indirect passives in the online task, though they successfully did so in the offline task. The JFL learners performed better overall in the offline task than online task.

These results support the hypothesis that HSs usually outperform L2 learners in tasks where only implicit knowledge is required (i.e. online tasks), but not in the tasks where explicit attention to forms or metalinguistic knowledge are used (i.e. offline tasks) (e.g., Montrul, 2008, 2009, 2012). The JHSs outperform the JFL learners in the SPL where they relied on implicit knowledge, but not in the AJT where metalinguistic and explicit knowledge played a role.

Another factor that accounts for the advantage of the JHSs in online processing is that they established the processing mechanisms of Japanese as an L1, and their processing appears to be more efficient than that of the JFL learners (Montrul, 2009), whose processing of Japanese may be influenced/interfered with by their L1 processing (MacWhinney, 1987; Montrul, 2009, 2012; Sabourin & Stowe, 2008; Tokowicz & MacWhinney, 2005).

Furthermore, the different age at which they developed the language processing mechanism may account for the bilinguals' online processing performance, which I will discuss in detail in the next subsection.

The following is a summary of the results of the SPL and their implications with respect to the advantages for the JHSs over the JFL learners.

- The JHSs have an advantage over the JFL learners in the online processing task.
- The advantage for the JHSs in the online task is due to the fact that 1) they generally perform better in online tasks than offline tasks (vice-versa for the JFL learners; and 2) they perform better in aural tasks than written tasks (vice-versa for the JFL learners).
- The above results are attributable to the early **age of acquisition** of the JHSs and the **manner of input** (implicit versus explicit).

The two experiments employed in this study revealed that the differences in the age of acquisition and the manner of input indeed appear to affect language acquisition.

7.2.3 Age of acquisition

An advantage of the JHSs over the JFL learners in the online processing task may be attributable to their early exposure to the Japanese language. The advantage of an early age of acquisition is not to be denied no matter what hypothesis applies or whether a critical period (Lenneberg, 1967) exists or not (Bialystok & Hakuta, 1999; Hakuta, Bialystok & Wiley, 2003). It is predicted that there is a decline in language learning abilities throughout life due to changes in the cognitive mechanisms (Bialystok & Hakuta, 1999; Hakuta, Bialystok & Wiley, 2003), and for this reason it is extremely challenging for adult L2 learners' to attain a native-like L2.

Cognitive mechanisms are one of the important factors associated with age. Adult L2 learners encounter difficulties when learning a new language due to their limited cognitive resources, as the capacity of working memory as a processing ability decrease with age (Paradis, 2004). DeKeyser (2000) claims that: "...between the ages of 6-7 and 16-17, everybody loses the mental equipment required for the implicit induction of the abstract patterns underlying a human

language...” (p.518). Thus, the cognitive mechanisms of young children allow them to incidentally and automatically acquire a language, but changes to the mechanisms that occur throughout the lifespan can make language learning increasingly difficult. These fundamental differences underlie the processing differences found between the JHSs and the JFL learners in this study. The JHSs developed the processing mechanism as the L1 from birth, when all the cognitive resources were fully available, and they maintained this developed mechanism. The JFL learners, in contrast, were already equipped with their L1 processing mechanism, and developing the processing mechanism of Japanese as an adult was more challenging due to more a restricted cognitive capacity.

Paradis (2004) further states that even when adult L2 learners are capable of attaining a native-like competence of structures, it does not mean that their cognitive processing appears native-like.

“even if their second language production and comprehension were observably identical to those of L1 speakers, the fact that they use speeded-up control rather than automatic processing would be evidence that, after a certain age, one has to resort to an altogether different processing mechanism because the acquisition of implicit competence is no longer possible (or extremely time-consuming and difficult). Various differences between the processing and/or representation of L1 and L2 have been reported even the L2 is acquired at a very early age” (p60)

This claim is consistent with the performance of the JFL learners in the online and offline tasks in this study. While the JFL learners showed knowledge of a certain passive type, namely the indirect passive, their online processing did not reflect that knowledge.

The non-nativelike processing mechanism of L2 learners has been widely observed, while HSs’ processing mechanism is predicted to be similar to that of native monolingual speakers, as discussed in Chapter 1. Thus, the general advantage of HSs over L2 learners in

online processing is due to the fact that the former acquire and develop their HL processing mechanism using all the available cognitive resources (Montrul, 2009).

The HSs in studies by Montrul (2009) as well as Sekerina and Trueswell (2011) demonstrated a delay in speed of processing compared to monolingual native speakers. Montrul argues that this delay was due to a lack of input, and not due to different processing mechanisms. The JHSs in this study did not show much delay in processing, and in fact, their listening times were comparable to those of the monolingual Japanese speakers. All the JHSs in the study still use the language daily, though to a limited extent, and their mechanism of processing the language may be still active⁶³. The JFL learners' processing delay is likely due to their inefficient acquisition of the processing mechanism of the language.

Further evidence of an age effect was also found in the representational domain. As noted above, HSs are expected to have an advantage over L2 learners for early-learned structures, but not late-learned ones (e.g. Montrul, 2008). The structures acquired later in language development, usually later than 6 years of age⁶⁴, are a possible case of incomplete HL acquisition, due to decreased amount of input (Benmamoun et al., 2013; Montrul, 2015). Japanese monolingual children do not fully acquire the passives until later in language development, as discussed in Chapter 3, and it is expected that the JHSs had not acquired the passives fully before schooling,

⁶³ One of the examiners of this dissertation pointed out that the alternate reason that the JHSs did not show much delay in processing compared to the monolingual Japanese speakers could be because the test sentences were not complex enough to reveal processing differences between the two groups. This is a possible explanation and it could be examined by having passives in more complex structures such as within embedded clauses. However, the passives are already complex structures and having more complex sentences could cause other issues. Thus, different types of structures – such as long distance dependencies – are better targets to investigate the processing of HSs and monolingual speakers.

⁶⁴ See Goodluck & Birch (1988) for details of the late-learned rules, namely, phenomena for which adult native-like ability is not attained by children until the age of 6 or older.

at which point they did not receive enough input to develop further. L2 learners are expected to encounter learnability issues such as L1 transfer and fossilization and HSs encounter similar issues to L2 learners, due to the reduced level of input and use of the HL. These issues also influenced the lack of advantage for JHSs over JFL learners in distinguishing syntactic representations.

It should be noted that while a younger age is predicted to have an advantage in language acquisition, as in the case of child L1 acquisition of versus adult L2 acquisition, it has also been reported that older learners have an advantage in L2 L2 acquisition (Krashen et al., 1979; Johnson & Newport, 1989; Muñoz, 2008). Older learners who have established cognitive functions have an advantage over young learners in short-term instructed settings.

Age of acquisition, thus, influences the development of language and its processing mechanism. Yet age alone does not explain the advantage for the JHSs over the JFL learners in processing. The quality (natural and contextual) and quantity (ample) of input that young children receive makes the difference between the two populations, as discussed in the next subsection.

7.2.4 Manner of input

In the AJT, the JHSs outperformed the JFL learners with the *ni*-direct passive containing animate subjects in that they were more sensitive to the pragmatic contexts in which the affective passives are used. The JFL learners outperformed the JHSs with the indirect passive, as they preferred the acceptable *ni* over the unacceptable *niyotte* as agent phrases. This difference in the bilinguals' performance confirms the existence of an input effect. The JHSs appear to have developed implicit and automatic knowledge of the language, whereas the JFL learners mostly

relied on explicit knowledge. The JHSs implicitly recognised the adversative connotation and preferred the agent phrase *ni*, whereas the JFL learners had an explicit knowledge of the *ni* agent phrase with the indirect passive type.

According to Bley-Vroman's Fundamental Difference Hypothesis (1989, 1990), children acquire a language implicitly by accessing UG while adults learn a language explicitly using problem-solving skills with their L1 as a tool. The dichotomy of L1 and L2 acquisition may not be as clear as claimed by the Fundamental Difference Hypothesis, but the results of this study showed that the JHSs who acquired Japanese implicitly and automatically performed well in the task where implicit knowledge was required, while the JFL learners who learned through explicit instruction performed well in the task where metalinguistic and problem-solving skills could be applied.

Implicit and explicit learning and their effects have been discussed extensively in the field of L2 acquisition and learning. There are some arguments that L2 learners are, in fact, learning more implicitly than explicitly (Ellis, 2002, 2007, 2015; DeKeyser, 2007), although they learn faster with explicit instruction (Ellis, 2002, 2015). The faster learning with explicit input may be due to the learners' developed cognitive mechanism, which has less access to procedural memory that relates to incidental and implicit learning, but more access to declarative memory (Paradis, 2004), as noted in section 4.3.2. The benefit of implicit learning has been also reported from a neural-cognitive aspect. L2 learners who are only exposed to explicit learning can reach a higher level of proficiency but do not show any effects in neural-cognitive processing. In contrast, learners who receive learn implicitly exhibit the processing effect along with high proficiency (Morgan-Short et al., 2015).

However, implicit input alone provides a limited mapping of the syntactic forms onto the semantic and pragmatic concepts (Sorace, 2011). It is, then, effective to incorporate both explicit and implicit input as described by MacWhinney (1997a) who maintains that “(s)tudents who receive explicit instruction, as well as implicit exposure to forms, would seem to have the best of both worlds. They can use explicit instruction to allocate attention to specific types of input..., narrow their hypothesis space..., tune the weights in their neural networks..., or consolidate their memory traces. From the viewpoint of psycholinguistic theory, providing learners with explicit instruction along with standard implicit exposure would seem to be a no-lose proposition.” (p.278; cited in Ellis, 2002, p.175). Thus, it is important to provide L2 learners with explicit instruction along with sufficient usage in appropriate contexts to help them to map a syntactic form onto a function.

The integration of both implicit and explicit input is also effective for HSs. It has been reported that explicit instruction indeed helps HSs to learn certain structures (Montrul & Bowles, 2010; Potowski, Jegerski & Morgan-Short, 2009). It is especially beneficial to provide explicit explanations of late-learned structures to allow HSs to acquire those structures completely and solidly since they tend to acquire them incompletely, as was the case in this study.

Different manners of input significantly influence the outcome of bilingual acquisition. It is beneficial for both the JHSs and the JFL learners to receive both implicit and explicit input in order to acquire all types of Japanese passives. The quantity of input is also crucial for their acquisition. As neither of the bilingual groups received sufficient input of the *niyotte* passive, they exhibited little knowledge of this passive construction. It is therefore important to explain explicitly and provide sufficient input for them to acquire such low frequency structures.

7.3 Source of difficulty

The third research subquestion refers to the source of difficulties in acquiring Japanese passives as stated in (67).

- (67) C. What plays a more relevant role in the acquisition of Japanese passives, the syntax-pragmatic interface or the complex syntactic representation? Is the former more problematic for the bilinguals? Which hierarchy of the development of passives applies to the bilinguals?

Both the JHSs and the JFL learners demonstrated a certain convergence with the monolinguals in the representation of the affective passives, whose syntactic structure is located at the interface with pragmatic information, but not of the *niyotte* passives whose syntactic derivation is more complex. Both bilingual groups, in fact, exhibited little knowledge of the *niyotte* passive. These results, however, do not conclude that the pragmatic related interface is less problematic to bilinguals compared to syntactically more complex structures.

The results in this study are, instead, attributable to the frequency of input considering the participants' little knowledge of the *niyotte* agent phrases; they failed to reject them in the affective passives, and they also accepted both *niyotte* and *ni* as an agent phrase in the *niyotte* passives. As noted, the use of the *niyotte* passives is generally restricted to formal conversation and written texts, which the JHSs are expected to have little exposure to. The JFL learners may not have learned the *niyotte* passives due to lack of instruction as well as insufficient input related to their proficiency level. While some Japanese language textbooks provide explanations of both the affective and the *niyotte* passives (e.g. *Japanese for Busy People*, AJALT, 2007),

others exclude the the *niyotte* passives (e.g. *Genki*, Bunno, 2001). Also, the higher the proficiency level the JFL learners reach, the more opportunity they have to read formal texts such as newspapers, where the *niyotte* passive is expected to be used. The proficiency of most of the JFL learners who participated in the study was not advanced enough to read formal written texts frequently, and all of the participants used *Genki* as the main textbook in their Japanese classes which also contributes to the likelihood that the JFL learners did not receive much input of the *niyotte* passive. Thus, neither the JHSs nor the JFL learners received sufficient input of the passives to acquire a structural knowledge of the *niyotte* passives.

The results of this study further suggest that both JHSs and JFL learners are capable of attaining a native-like use of the affected passives, which are pragmatically dependent structures in terms of their representation, so long as they receive sufficient input with the proper contexts. Their performance with the affective passives did not yield native-like proficiency with both affective passives; however, their representational knowledge of one type of the passives exhibited native-like comprehension. Different manners of input affected different outcomes, and if the bilinguals had received a sufficient amount of both implicit and explicit input, it is plausible that they could master both types of affective passives.

The results of the AJT indicate that pragmatic dependent structures are attainable representations for bilinguals, though we cannot confirm that they are more accessible than complex syntactic structures. The performance of the bilinguals with the syntactic representations simply reflects differences in frequency of input between the structures at the pragmatic interface (affective passives) and those which display syntactic complexity (*niyotte* passive).

The results of the SPL attested that all groups processed the *niyotte* passive faster than the affective passives, suggesting that the processing of structures at the pragmatic/discourse interface is indeed more costly than structures at linguistic internal interfaces (Pillkaanen & McElree, 2006; Reuland, 2001; Sorace, 2011). When processing the former type of structure, a listener has to integrate the pragmatic information into the structure (Omura & Utsuo, 1981), which requires more processing time. Computation of pragmatic dependent structures is more costly than syntactically complex ones, irrespective of the knowledge of their structural representation. While both the JHSs and JFL learners showed little knowledge of the *niyotte* passive in representational task, their listening time for the *niyotte* passive was faster than the affective passives.

The results may suggest that the knowledge of L2 grammatical representations in the bilinguals' weak language is not reflected in their processing of the language⁶⁵. Rather, the processing mechanism of their dominant language may influence their processing. (Sabourin & Stowe, 2006). This explains the bilinguals' shorter listening time for the *niyotte* passive in spite of their little representational knowledge, as the thematic and syntactic analysis of the *niyotte* passive during processing is expected to be comparable to the passives in the bilinguals' dominant language (English/French).

The following summarises the results that shed light on the source of the bilinguals' non-convergence.

⁶⁵ See Roberts (2016) for a review of the unavailability of grammatical knowledge in L2 online processing.

- The bilinguals performed better with the pragmatic dependent affective passives than with the syntactically more complex *niyotte* passives due to a difference in **frequency of input**.
- The source of non-convergence in the syntactic representations in the case of Japanese passives is **frequency of input**, although the complexity of the syntactic derivataion may have had some influence. Consequently, the development hierarchies created based on frequency and syntactic derivation apply in the case of acquiring the knowledge of Japanese passives.
- In contrast, a structure located at the interface with pragmatics is more costly to process than a syntactically complex structure even for native speakers, and it may be more problematic for bilinguals to process pragmatically dependent structures than syntactically more complex structures.

7.3.1. Frequency

The results of this study highlight the importance of the frequency of input for bilinguals' language acquisition and development. As discussed in Chapter 4, frequency is not the only factor affecting acquisition and development, and other factors such as the influence of the bilingual's dominant language as well as syntactic complexity may also play a role in the development of a language as well as its processing. Ellis (2002) states the importance of frequency both for acquisition and processing as follows: "to the extent that language processing is based on frequency and probabilistic knowledge, language learning is implicit learning" (p.145). He elaborates that "the knowledge underlying fluent use of language is not grammar in

the sense of abstract rules or structure but a huge collection of memories of previously experienced utterances” (p.166).

Sufficient frequency of input of both types of Japanese passives allows the JHSs and the JFL learners to store the input in their brains and to learn not only the linguistic features of each type of passive but also to compare their features, and thus recognise the appropriate context of use for each one.

7.4 Variation among heritage speakers

It should be noted that the JHSs in the current study are not representative of the JHS population that has had no formal instruction since all of the JHS participants in this study attended Saturday Japanese language schools at an elementary school age where they learned literacy, though it was very limited compared to their monolingual counterparts in Japan. Furthermore, two of the participants were taking a Japanese course at the University of British Columbia at the time of testing. Their proficiency level was, therefore, expected to be more advanced than other JHSs. A condition for participating in the study was to have achieved an advanced level of Japanese due to the nature of the structures examined in this study, and the task itself which involved understanding written texts.

This study did not include a questionnaire to inquire about participants’ attitudes toward Japan and its culture, but through conversations with the participants, I was under the impression that all the JHSs had very positive attitudes towards the Japanese language and culture, and this probably increased their motivation for learning and maintaining the language. Laleko and Polinsky (2013), who compared the knowledge of nominative/topic case markers between JHSs and JFL learners as well as Korean HSs (KHS) and L2 Korean learners, found that overall the

JHSs performed like the JFL learners in the AJT while the KHSs outperformed their L2 counterparts, and their accuracy was similar to that of the Korean native speakers. The authors postulate that the differences in performance is due to sociolinguistic factors as well as to the varying degree of integration into their communities. The KHSs were more encouraged to learn the language and be involved in their community than the JHSs. The linguistic performance of HSs is therefore also affected by linguistic external factors.

Even with their positive experiences of the language, the JHSs did not have an advantage over the JFL learners in the study in terms of the knowledge of the representation of the passives. One plausible account is that passives are acquired later than the case system in L1 acquisition, and the quantity of passives in the input was not as sufficient as the case system input for the JHSs to acquire them fully. It has been reported that L1 Japanese children acquire case-marking relatively early (Clancy, 1985; Morikawa, 1989). Thus, the advantage of HSs for syntactic representations appears to be influenced by their complexity.

7.5 Semantic generalization of the agent phrases

It is not the aim of this dissertation to point out native speakers' language use, however, it is noteworthy that as discussed in the literature, the distinction between the *ni* and *niyotte* agent phrases is becoming less clear. The native speakers of Japanese in the current study did not reject the unacceptable *ni* phrase in *niyotte* passive type as in (68), and the mean rating of these passives by the monolinguals was 7.00, and that of immigrants was 6.71, though their preference for *niyotte* as an agent phrase was statistically significant.

- (68) *Sono kaigi-wa kesa zimusyoo-de butyoo-ni hazimer-are-ta.
 That meeting-Top this morning office-at division chief-Dat start-Pass-Past
 ‘The meeting was started by the division chief in the office this morning.’

A similar tendency was found in Hara’s (2002) study. His L1 Japanese participants did not reject the unacceptable *niyotte* agent phrase in the indirect passives with transitive verbs such as the one in example (69), which is restricted to *ni* as an agent phrase.

- (69) Huyu-no samui hi-no asa, Mary-wa Jane-ni/*niyotte sinsitu-no
 winter-Gen cold day-Gen morning Mary-Top Jane-Dat/by bedroom-Gen
 mado-o aker-are-ta
 window-Acc Open- Pass-Past
 ‘Mary was adversely affected by Jane opening the bedroom window on a cold winter morning.’

(Hara, 2002: 206)

Hara proposes that one of the reasons for this trend towards the acceptance of the ungrammatical *niyotte* passive was due to certain cases of acceptable indirect passives with the *niyotte* agent phrase such as the following example provided by Kuroda (1979).

- (70) John-ga kokumusyoo-niyotte ryoken-o toriager-are-ta
 John-Nom State department-by passport-Acc take away-Pass-Past
 ‘John had his passport revoked by the state department.’

(Kuroda, 1979, p.339, cited in Hara, 2002, p.206)

The structure of sentence in (70) is the indirect passive as it holds an internal argument of the verb. The agent *kokumusyoo* can be marked with either *ni* or *niyotte* in the sentence, although it is usually unacceptable to mark the agent with *niyotte* in indirect passives. Hara proposes two possible reasons for the grammaticality of sentence (70). One is its involvement of Move, considering that the underlying structure of the sentence is a double accusative construction, and

the other involves the weakening semantic meanings between *ni* and *niyotte*. The former explanation is not convincing due to the fact that two accusatives are not allowed in Japanese. The latter seems more plausible reason for the grammaticality of sentences (69) as well as (70).

Languages evolve over time and changes may involve grammaticalization. Hopper & Traugott (2003) state that "...the combination of forms that occur more frequently tend to be automatized...Because the content of these automatized combinations is predictable, they are uttered more quickly. (A)t the same time, their semantic and functional content becomes vaguer, that is, they can be used in a wider variety of contexts" (p.127).

In the case of Japanese passives, the dative case *ni* is produced more frequently as an agent phrase than *niyotte*, and it may become more automatically used to mark an agent irrespective of any semantic difference. Because speakers have come to use the two agent phrases more interchangeably, occurrences of *ni* with inanimate subjects and of *niyotte* with animate subjects are increasing, resulting in an acceptance of both as agents.

The immigrants in this study made a clearer distinction between the two agent phrases compared to the monolingual Japanese living in Japan. The immigrants' Japanese is expected to have remained such as it was in Japan due to the immigrants' limited contact with the variation and evolution of the language. The average length of residence in Canada was over 20 years, and it is possible that the semantic meaning of the agent phrases has progressively become lost over the last 20 years.

If this is true and the dative case *ni* is used more frequently – sometimes replacing *niyotte* – irrespective of their semantic and pragmatic meanings, it may be easier for the bilinguals to produce all types of passives, especially the *niyotte* passive with *ni* as an agent phrase as they can

use the *ni*-marked passives (for which they receive more frequent input) to describe both adverse and neutral events.

Conclusion

The two main aims of this dissertation were to investigate the effects of age and the manner of input in language acquisition and to determine the source of difficulties in the acquisition of complex structures by examining the knowledge and processing of Japanese passives by JHSs and JFL learners.

Recent analyses of Japanese passives divide them into two types: *niyotte* passives and affective passives. These two types of passives are difficult to acquire for different reasons: the former is syntactically more complex than the latter but simpler in that it is pragmatically independent, and the latter is syntactically simpler but complex due to its pragmatic dependence.

Two tasks were employed to examine the knowledge and processing of Japanese passives by JHSs and JFL learners: an offline acceptability judgment task and an online self-paced listening task. While the results of the offline task did not indicate any effect of age, they did reveal an input effect. The JHSs whose exposure to the language was earlier than the JFL learners did not show any advantage over their counterparts. While neither group demonstrated knowledge of the *niyotte* passives, each group showed deeper knowledge with different types of affective passives. The JHSs outperformed the JFL learners with the affective passive with pragmatic cues while the JFL learners outperformed the JHSs learners with the indirect type of the affective passives. I propose that this difference is due to the different manner of input that these two groups received. The JHSs who received input in context had acquired the pragmatic aspects of affective passives, but they had not mastered the syntactic features involved. In contrast, the JFL learners who received explicit explanations of the syntactic and semantic features of affective passives had successfully learned these features yet were not aware of the pragmatic aspects. Thus, the different manner of input influences the acquisition of passives. The

results of the AJT did not speak to the source of the difficulty with Japanese passives. The little knowledge of the *niyotte* passive was not due to the complexity of the syntactic derivation, but rather to its low frequency of use. It is extremely challenging to acquire lower frequency structures, and therefore it is crucial to provide sufficient and contextual input for learners.

The results of the online task showed effects of both age and manner of input. The JHSs outperformed the JFL learners, and their processing was more similar to that of the monolingual native Japanese speakers than the JFL learners' processing was. The results also suggested that pragmatic dependent structures are more costly to process than pragmatic independent structures, and all participant groups, including the Japanese native speakers, took longer to process the affective passives than the *niyotte* passives. It is likely that there are two layers (steps) to process a sentence structure: 1) the analysis of the syntactic structure; and 2) the incorporation of the pragmatic components, which require extra time to process. For the JFL learners, who performed better in the offline task than the online one, the difficulty in the acquisition of the Japanese passives seems computational not representational and the difficulty with computation may be attribute to their limited cognitive resources (Hopp, 2009).

In sum, the study found that (i) early exposure to a language is an advantage in computation (Montrul, 2009) but not in representation; (ii) the manner of acquisition affects both representation and computation; and (iii) discourse/pragmatic dependent structures require extra processing load (though this study did not reveal if they are more problematic to acquire). Moreover, the overall results suggested that even though pragmatic dependent structures require extra processing, it is possible to acquire their syntactic representations with sufficient and valuable input.

The results of this dissertation not only offered additional evidence of the effects of early age of acquisition and manner and quantity of input to existing body of language acquisition research, but also contributed to a better understanding of bilingual education in a wider scope.

Even though the contributions of this study are rather clear, as is always the case there are a few limitations. First, as noted in the previous chapter, the number of participants in each group is relatively small. More participants will be recruited in the near future to verify the results and further support the claims.

Second, the average proficiency level of the JFL learners may not be advanced enough to have learned the *niyotte* passive. Due to their little knowledge of the passive, one of the aims of the study was to examine the source of the non-convergence of the bilinguals with monolingual Japanese speakers: specifically, whether a pragmatic dependent structure is more problematic for the bilinguals to acquire and process than a syntactically complex structure, which was not successfully accomplished. Comparing the knowledge and processing of Japanese passives by bilinguals with higher level of proficiency is needed to examine the source of the non-convergence which will further contribute to the study of HL and L2 acquisition and processing of complex structures.

Third, the online SPL task provided insights into bilinguals' sentence processing, and the advantage of early exposure to a language. The different results between the two experiments, the online SPL task and offline AJT, indicate that an offline task alone does not provide satisfactory evidence of bilinguals' processing, which is critical to the Interface Hypothesis (IH). The IH postulates that a structure located at the pragmatic/discourse level is more problematic for bilinguals than those located within the linguistic interfaces as they have to incorporate information from different cognitive modules, and thus, these structures are more costly to

process (Hopp, 2009; Sorace, 2001). The bilinguals are presupposed to process structures located at the discourse interfaces less efficiently than native monolingual speakers due to their limited cognitive resources (Sorace & Serratrice, 2009). Much of the research that has been conducted within the IH framework, especially the earlier studies, employed only offline tasks that failed to test online processing difficulties of the bilinguals. It is important to use tasks that measure online processing in order to investigate the underlying issues in bilinguals' processing. Further research using neural measurements, such as ERPs, will give more insights into how bilinguals process their languages.

Finally, the SPL task revealed different processing patterns between the affective passive and the *niyotte* passive. These results support the syntactic analysis of the *ni*-direct passive discussed in Chapter 2, namely, the subject of the *ni*-direct passive is base-generated and introduced by an applicative morpheme, and no movement is involved. Future research using experimental methods to investigate this will further contribute to the theoretical discussion of the syntactic structures of Japanese passives

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Appendix A: Language Background Questionnaire

UNIVERSITY OF OTTAWA • DEPARTMENT OF MODERN LANGUAGES AND LITERATURES
LANGUAGE ACQUISITION RESEARCH LAB (LAR-LAB)

Course:

Date:

1. Name: _____

2. Gender: F [] M []

3. Age: _____

4. Place of birth: _____

5. Mother tongue: _____

6. Mother's dominant language: _____

7. Father's dominant language: _____

8. Language(s) spoken at home as a child:

9. Language(s) you spoke during the first five years of your life:

10. Language(s) studied in (please include Japanese):

•Primary school: _____

•Secondary (high) school: _____

•University: _____

•Other institutions: _____

11. Languages you use:

•At home: _____

•At school: _____

•At work: _____

•When you dream: _____

12. Other languages you can:

•Read: _____

•Speak: _____

•Write: _____

13. What language do you feel most comfortable with at this time?

14. What program are you in at the university?

15. Year at the university:

16. Are you presently studying Japanese at the university level? If so, please give us university name and course number.

17. Why have you chosen to learn Japanese?

18. Contact with Japanese outside classroom:

Present contact:

•Approximate hours/week:

•Context: (e.g. friends, family, clubs, etc.):

Previous contact:

•Have you ever visited Japan? YES [] NO []

IF, YES

•When?

•For how long?

Appendix B: Self-Assessment Questionnaire

UNIVERSITY OF OTTAWA • DEPARTMENT OF MODERN LANGUAGES AND LITERATURES
 LANGUAGE ACQUISITION RESEARCH LAB (LAR-LAB)

**FLUENCY ASSESSMENT QUESTIONNAIRE
 FOR BILINGUALS AND POLYGLOTS**

**Section 1
 General information**

Please indicate:

Your name _____

Your country of origin _____

When applicable, indicate at what age you have started to:

	In English	In French	In Japanese	In another language: specify
Speak				
Read				
Write				

Please indicate your language(s) of instruction through primary and secondary school by grades.

	KG	1	2	3	4	5	6	7 Se1	8 Se2	9 Se3	10 Se4	11 Se5	12 C1	13 C2
English														
French														
Japanese														
Other: Specify														

Section 2
Use of English, French, Japanese and other languages

We now ask you to partition, in percentages, the time you spend using English, French, Japanese or other languages in various contexts. Please make sure the sum of the percentages you report add up to 100%. Specify the other languages you use.

When you talk with your mother

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
English											
French											
Japanese											
Other											

When you talk with your father

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
English											
French											
Japanese											
Other											

When you talk with your friends at the university

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
English											
French											
Japanese											
Other											

When you talk with your friends outside the university

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
English											
French											
Japanese											
Other											

When you talk with your colleagues at work (if applicable)

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
English											
French											
Japanese											
Other											

Section 3
Effort required to carry out different activities
in English, French or Japanese

We now ask you to evaluate, on a 9-point scale, the level of difficulty you would experience if you were to carry out various activities in English, French or Japanese. On this scale, 1 means that the use of the specified language in the specified activity would be very easy for you. At the other end of the scale, 9 means that the use of the specified language in the specified activity would be very difficult for you. The values 2 through 8 indicate intermediate levels of difficulty. In the use of this scale the sum of the two values for English, French and Japanese for an activity can vary between 3 and 27.

Research on bilingualism shows that people seldom have the exact same level of fluency in their two or more languages. Usually, one language is dominant relative to the others. Moreover, the dominant language may sometimes differ for different activities. Please use the 9-point scale carefully so as to represent as accurately as you can the level of difficulty you would experience if you were to carry out the following activities in English, French or Japanese. Please indicate your assessment in the provided spaces

Very easy	1	2	3	4	5	6	7	8	9	Very difficult
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Activity	In English	In French	In Japanese
Oral Comprehension			
1. Tell the difference between a question and a request			
2. Tell what the weather will be after listening to a weather forecast on the radio			
3. Identify the topic of a casual conversation between two persons at the bus stop or in a store			
4. Follow a casual conversation perfectly between two persons at a bus stop or in a store			
5. Understanding spoken instructions on how to get to the train station			
6. Understand a news report on the radio			
7. Understanding the dialogues in a film without Subtitles			
8. Understanding jokes and word games			
Oral Production			
9. Count rapidly from 1 to 20			
10. Recite the alphabet quickly from A to Z			
11. Introduce yourself to someone			
12. Give the time to someone on the street			

13. Order a meal in a restaurant			
14. Ask someone on the street for information			
15. Tell someone what you did during your summer Vacation			
16. Initiate a casual conversation with someone at a bus stop or in a store			
17. Participate actively in a casual discussion at the dinner table or at the cafeteria			
18. Express your opinions on current issues			
19. Get through a job interview			
20. Make jokes or puns			
21. Do a 20-minute oral presentation in front of a group of 15 persons			
22. Report the details of an accident over the telephone to a 911 attendant.			
Reading Comprehension			
23. Understanding the menu in an ordinary restaurant			
24. Follow a recipe in the preparation of a dish			
25. Understanding an advertisement in a magazine			
26. Understanding the text of a comic strip in a Newspaper			
27. Understanding a film review in a newspaper			
28. Understanding a front page article in a newspaper			
29. Understanding the content of an introductory textbook at the university (e.g., sociology)			
30. Understanding the content of a novel			
Writing			
31. Writing a postcard to a friend			
32. Writing a note for someone			
33. Writing a 2-page paper (double spaced) on your favorite Hobby			
34. Writing a 4-page personal letter			
35. Writing a letter to the editor of a newspaper to express your opinion on a current social or political issue			
36. Writing a 25-page term paper (double spaced) for a course			

Thank you for your collaboration!

Appendix C: Japanese Language Proficiency Measurement

Proficiency measurement

Name _____

1. Choose the most appropriate words in parentheses to complete the sentence in a way that makes sense in the context.

1) 加藤さんが、会社を()してくれました。

a. 案内

b. 安全

c. 挨拶

d. 安心

2) 強風で、木が()。

a. 壊れました

b. 倒れました

c. 落ちました

d. 割れました。

3) 1時間散歩をしたので、のどが()。

a. すきました

b. かわきました

c. ぬれました

d. かけました。

4) 庭に木を()。

a. 建てました

b. 入れました

c. つけました

d. 植えました

5) 試験が今、おわりました！()一緒にビールを飲みに行きましょう!

a. これから

b. それから

c. あれから

d. そこから

6) 毎朝、ジョギングをするのが、私の()です。

a. 習慣

b. 経験

c. 興味

d. 感情

7) 韓国出身の歌手の歌が、今全国で()している。

a. ランク

b. トップ

c. ヒット

d. セール

8) 鈴木先生は、千葉県()だそうだ。

a. 出世

b. 出身

c. 出発

d. 出家

9) 友だちに教えてもらったレストランに()行ってみた。

1. とたんに

b. まもなく

c. さっそく

d. きっと

10) 新聞の()から、記事の内容を推測する。

a. 見出し

b. 見かけ

c. 見本

d. 見方

2. Choose the most appropriate words in parentheses to complete the sentence in a way that makes sense in the context.

1. 家に帰ると、窓が全部()。

1) 開いてあった

2) 開いておいた

3) 開けていた

4) 開いていた

そして電気が、()ままになっていた。

1) つけて

2) つける

3) つけた

4) つけている

2. 母親は、テレビ()見ていた子供をしかった。

1) かぎり

2) ばかり

3) しか

4) さえ

3. レシピに書いてある()作ったが、あまりおいしくなかった。

1) とおりに

2) かぎりに

3) かわりに

4) しいに

4. 日本語の試験に合格できる()ががんばって勉強します。

- 1) ために
- 2) ように
- 3) とたんに
- 4) ことに

5. 教授が教室に入った()学生は話をやめて、静かになった。

- 1) たびに
- 2) あいだに
- 3) とたんに
- 4) さらに

6. その計画は、予算がない以上、()ような気がする。

- 1) どうにもなる
- 2) どうにもならない
- 3) なんとかしたい
- 4) なんとかなる

7. 「朝がくる」()歌、ぜんぜん聞いたことがありません！

- 1) なんて
- 2) などど
- 3) っの
- 4) どの

8. 私は3年間、日本に住んで、やっと日本人の習慣がよく()。

- 1) わかっています
- 2) わかってきました
- 3) わかったそうです
- 4) わかってくるはずです。

9. いつその会議が行なわれるか、明日()わかるはずです。

- 1) までに
- 2) までには
- 3) までも
- 4) までにも

10. 佐藤君は、いろいろ悩んだ(^{さとうくん} ^{なや})、東京の大学に行くことを決めた。

- 1) さきに 2) すえに 3) とおりに 4) ところに

11. その歌手は、国内より(^{かしゅ} ^{こくない})、海外で人気がある。

- 1) おしろ 2) かりに 3) さきに 4) すえに

12. 体に悪いと(^{からだ} ^{わる})、たばこがやめられない人は多い。

- 1) 知って 2) 知ったので 3) 知りながら 4) 知るから

13. いつ地震が来ても、あわてる(^{じしん} ^き)、必要なものを準備しておく。

- 1) ことのないだけに 2) はずがないだけに
3) ことのないように 4) はずがないように

14. 店が(^{みせ})、早く買い物にいきましょう。

- 1) 混まない間に 2) 混まないうちに
3) 混んでしまううちに 4) 混んでしまう間に

Appendix D: Acceptability Judgment Task Stimuli

Type 1: Indirect passive

1. a. 山下さんは 隣（となり）の人に たばこを 吸（す）われた
Yamasita-san-wa tonari-no hito-ni tabako-o suw-are-ta
Yamasita-Ms.-Top next to-Gen person-Dat cigarette-Acc smoke-Pass-Past
b. *山下さんは 隣（となり）の人によって たばこを 吸（す）われた
*Yamashita-san-wa tonari-no hito-niyotte tabako-o suw-are-ta
Yamashita-Ms.-Top next to-Gen person-by cigarette-Acc smoke-Pass-Past
'Ms. Yamashita was affected by the person next to her smoking a cigarette.'
2. a. ひろしは 友（とも）だちに ボールを ぶつけられた
Hiroshi-wa tomodati-ni booru-o butuker-are-ta
Hiroshi-Top friend-by ball-Acc hit-Pass-Past
b. *ひろしは 友（とも）だちによって ボールを ぶつけられた
Hiroshi-wa tomodati-ni booru-o butuker-are-ta
Hiroshi-Top friend-by ball-Acc hit-Pass-Past
'Hiroshi was affected by his friend hitting a ball on him.'
3. a. たかしは だれかに パスワードを 盗（ぬす）まれた
Takashi-wa dareka-ni pasuwaado-o nusum-are-ta
Takashi-Top someone-Dat password-Acc steal-Pass-Past
b. *たかしは だれかによって パスワードを 盗（ぬす）まれた
*Takashi-wa dareka-niyotte pasuwaado-o nusum-are-ta
Takashi-Top someone-by password-Acc steal-Pass-Past
'Takeshi was affected by someone stealing his password.'
4. a. 林さんは バスの中で 赤ちゃんに 泣（な）かれた
Hayashi-san-wa basu-no naka-de akatyan-ni nak-are-ta
Hayashi-Ms.-Top bus-Gen inside-at baby-Dat cry-Pass-Past
b. *林さんは バスの中で 赤ちゃんによって 泣（な）かれた
*Hayashi-san-wa basu-no naka-de akatyan-niyotte nak-are-ta
Hayashi-Ms.-Top bus-Gen inside-at baby-by cry-Pass-Past
'Ms. Hayashi was affected by her baby crying on the bus.'
5. a. えみは 友（とも）だちに 朝（あさ）早（はや）く 来（こ）られた
Emi-wa tomodati-ni asa hayaku kor-are-ta
Emi-Top friend-Dat morning early come-Pass-Past
b. *えみは 友（とも）だちによって朝（あさ）早（はや）く 来（こ）られた
Emi-wa tomodati-niyotte asa hayaku kor-are-ta
Emi-Top friend-by morning early come-Pass-Past
'Emi was affected by her friend coming to her place early in the morning.'

Type 2: Animate subjects (minimal pairs)

6. a. 気の毒（どく）に、スミスさんは あの家の犬に かまれた
Kinodoku-ni sumisu-san-wa ano ie-no inu-ni kam-are-ta
Unfortunately Smith-Mr-Top that house-Gen dog-Dat bite-Pass-Past
b. *気の毒（どく）に、スミスさんは あの家の犬によって かまれた
*Kinodoku-ni sumisu-san-wa ano ie-no inu-niyotte kam-are-ta
Unfortunately Smith-Mr-Top that house-Gen dog-by bite-Pass-Past
'I feel pity that Mr. Smith was bitten by the dog of the house.'
7. a. かわいそうに、サラは トムに いじめられた
Kwaisoni Sara-wa Tomu-ni izimer-are-ta
Unfortunately Sara-Top Tom-Dat bully-Pass-Past
b. *かわいそうに、サラは トムによって いじめられた
*Kwaisoni Sara-wa Tomu-niyotte izimer-are-ta
Unfortunately Sara-Top Tom-by bully-Pass-Past
'I feel sorry that Sara was bullied by Tom.'
8. a. かわいそうに、息子（むすこ）は 先生に しかられた
Kwaisoni musuko-wa sensei-ni sikar-are-ta
Unfortunately son-Top teacher-Dat scold-Pass-Past
b. *かわいそうに、息子（むすこ）は 先生によって しかられた
*Kwaisoni musuko-wa sensei-niyotte sikar-are-ta
Unfortunately son-Top teacher-by scold-Pass-Past
'I feel sorry that my son was scolded by the teacher.'
9. a. 気の毒（どく）に、田中さんは 多くの人に ばかにされた
Kinodokuni Tanakasan-wa ooku-no hito-ni bakanis-are-ta
Unfortunately Tanaka-Ms-Top many-Gen people-Dat tease-Pass-Past
b. *気の毒（どく）に、田中さんは 多くの人によって ばかにされた
*Kinodokuni Tanakasan-wa ooku-no hito-niyotte bakanis-are-ta
Unfortunately Tanaka-Ms-Top many-Gen people-by tease-Pass-Past
'I feel pity that Ms. Tanaka was teased by many people.'
10. a. かわいそうに ビルは ミカに ふられた
Kawaisooni Biru-wa Mika-ni hur-are-ta
Unfortunately Bill-Top Mika-Dat break up-Pass-Past
b. *かわいそうに ビルは ミカによって ふられた
*Kawaisooni Biru-wa Mika-niyotte hur-are-ta
Unfortunately Bill-Top Mika-by break up-Pass-Past
'I feel bad that Bill was broken up with by Mika.'

Type 3: inanimate subjects (minimal pairs)

11. a. そのイベントは 有名（ゆうめい）なデザイナーによって 企画（きかく）
された
Sono ibento-wa yuumeina dezainaa niyotte kikakus-are-ta
That event-Top famous designer by organize-Pass-Past

- b. *そのイベントは 有名 (ゆうめい) なデザイナー 企画 (きかく) された
 Sono ibento-wa yuumeina dezainaa ni kikakus-are-ta.
 that event-Top famous designer Dat organize-Pass-Past
 ‘The event was organized by a famous designer.’
12. a. 車の窓 (まど) が 近所 (きんじょ) の男の子によって 割 (わ) られた
 Kuruma-no mado-ga kinjo-no otokonoko-niyotte war-are-ta
 car-Gen window-Nom neighbour-Gen boy-by break-Pass-Past
- b. *車の窓 (まど) が 近所 (きんじょ) の男の子に 割 (わ) られた
 *Kuruma-no mado-ga kinzyo-no otokonoko-ni war-are-ta
 car-Gen window-Nom neighbour-Gen boy-Dat break-Pass-Past
 ‘The car window was broken by the boy in the neighbourhood.’
13. a. 「ハムレット」は シェークスピアによって 書かれた
 Hamuretto-wa Sheekusupia-niyotte kak-are-ta
 Hamlet-Top Shakespeare-by write-Pass-Past
- b. *「ハムレット」は シェークスピアに 書かれた
 *Hamuretto-wa Sheekusupia-ni kak-are-ta
 Hamlet-Top Shakespeare-Dat write-Pass-Past
 ‘Hamlet was written by Shakespeare.’
14. a. その試験 (しけん) は 森教授 (きょうじゅ) によって採点 (さいてん) される
 Sono siken-wa Mori-kyoozyu-niyotte saitens-are-ru
 that exam-Top Mori-professor-by mark-Pass-Pres
- b. *その試験 (しけん) は 森教授 (きょうじゅ) に 採点 (さいてん) される
 *Sono siken-wa Mori-kyoozyu-ni saitens-are-ru
 that exam-Top Mori-professor-Dat mark-Pass-Pres
 ‘The exam will be marked by Professor Mori.’
15. a. その記事 (きじ) は 多くの人によって 読 (よ) まれた
 Sono kizi-wa ookuno hito-niotte yom-are-ta
 that article-Top many people-by read-Pass-Past
- b. その記事 (きじ) は 多くの人に 読 (よ) まれた
 Sono kizi-wa ookuno hito-ni yom-are-ta
 that article-Top many people-Dat read-Pass-Past
 ‘The article was read by many people.’

Distractors

16. 私の国で 鍋料理 (なべりょうり) は とても めずらしい
 Watasi-no kuni-de naberyoori-wa totemo mezurasii
 I-Gen country-in casserole-Top very rare
 ‘Casseroles are very rare in my country.’
17. 毎朝 (まいあさ) 、ラッシュの時間に 電車 (でんしゃ) に 乗 (の) らなくて
 はならない
 Maiasa rassyu-no zikan-ni densya-ni nor-anakutewanaranai
 every morning rush-Gen time-at train-Dat ride-must
 ‘I have to ride a train at rush hour every morning.’

18. 子供 (こども) に お母さんは 本を 読 (よ) んでいる
 Kodomo-ni okaasan-wa hon-o yond-ei-ru
 Child-Dat mother-Top book-Acc read-Prog-Pres
 ‘The mother is reading a book to her child.’
19. 父が 病気 (びょうき) になったので、実家 (じっか) に 帰 (かえ) った
 Titi-ga byooki-ni nat-ta node, zikka-ni kaet-ta
 Father-Nom sick-Dat become-Past because parents’ place-Dat return-Past
 ‘Because my father got sick, I returned my parents’ place.’
20. *北海道 (ほっかいどう) より 沖縄 (おきなわ) より どちらが 暖 (あたたか) いですか
 *Hokkaidoo-yori Okinawa-yori dotira-ga atataakai desu ka.
 Hokkaido-than Okinawa-than which-Nom warm Cop Ques
 ‘Which is warmer, Hokkaido or Okinawa?’ (Lit.)
21. 大学を 卒業 (そつぎょう) するまで 日本に 住 (す) む つもりだ
 Daigaku-o sotugyoo-suru made nihon-ni sumu tumori-da
 college-Acc graduate until Japan-Dat live intend-Cop
 ‘I intend to live in Japan until I graduate from the college.’
22. *私は ルームメイトに 宿題 (しゅくだい) を 手伝い (てつだい) たい
 *Watasi-wa ruumumeeto-ni syukudai-o tetudai-tai
 I-Top roommate-Dat homework-Acc help-want
 ‘I want my roommate to help me with homework.’ (Lit.)
23. キムは ホストファミリーに 英語 (えいご) で 話さないでほしい
 Kimu-wa hosuto famirii-ni eigo-de hanas-anaide hosii
 Kim-Top host family-Dat English-with speak-Neg want
 ‘Kim does not want her host family to speak to her in English.’
24. *毎日 (まいにち) ラジオに ニュースを 聞 (き) くようにしている
 *Mainiti razio-ni nyuusu-o kiku yooni sit-ei-ru
 Everyday radio-Dat news-Acc listen try do-Prog-Pres
 ‘I am making an effort to listen to the news on the radio’ (Lit.)
25. *京都 (きょうと) で 竹 (たけ) で 作 (つく) った お土産 (みやげ) を 買 (か) おう
 *Kyooto-de take-de tukut-ta omiyage-o ka-oo
 Kyoto-in bamboo-with make-Past souvenir-Acc buy-Vol
 ‘Let’s buy a souvenir made with bamboo.’ (Lit.)
26. 田中さんは 親切 (しんせつ) なのに、山田さんは 田中さんが きらいです。
 Tanaka-san-wa sinsetuna noni Yamada-san-wa Tanaka-san-ga kirai de-su.
 Tanaka-Ms.-Top kind although Yamada-Ms.-Top Tanaka-Ms.-Nom dislike- Cop-
 Pres
 ‘Although Ms. Tanaka is kind, Ms. Yamada dislikes her.’
27. *日本語 (ご) が 少 (すこ) し 難 (むずか) しいのに、これを 読 (よ) んで
 ください。
 *Nihongo-ga sukosi muzukasii noni kore-o yonde-kudasai
 Japanese-Nom a little difficult although this-Acc read-please
 ‘Although the Japanese is a little difficult, please read this.’ (Lit.)
- 28.

29. あの人(ひと)は 壊(こわ)れた レコード(レコーど)のように 同(おな)じことを 繰(く)り返(かえ)して言う。
 Ano hito-wa kow-are-ta recoodo-no yooni onazi-koto-o kurikarsi i-u
 That person-Top break-Pass-Past record-Gen like same-thing-Acc repeatedly say-Pres
 ‘The person says the same thing over and over like a broken record.’
30. 私は 神戸(こうべ)のような 町(まち)が 好き(すき)だ
 Watasi-wa Koobe-no youna mati-ga suki-da
 I-Top Kobe-Gen like town-Nom like-Cop
 ‘I like a city like Kobe.’
31. *それが どんな 映画(えいが) かどうか 知(し)らない
 *Sore-ga donna eiga-ka douka sir-ana-i
 That-Nom what kind of movie-Q whether know-Ngg-Pres
 ‘I don’t know which kind of movie it is’ (Lit.)
32. *レポート(レポート)を 出(だ)さなかつたので 先生(せんせい)が 叱(し)かつた
 *Repooto-o das-anakat-ta node sensei-ga sikat-ta
 Report-Acc submit-Neg-Past because teacher-Nom scold-past
 ‘Because I did not submit a report, the teacher scolded (me).’
33. ホワイト(ホワイト)さんは 子供(こども)に ピアノ(ピアノ)を 習(なら)わせている
 White-san-wa kodomo-ni piano-o naraw-ase-tei-ru
 White-Mr.-Top child-Dat piano-Acc learn-Caus-Prog-Pres
 ‘Mr. White let his child learn piano.’
34. 部長(ぶちょう)に 早(はや)く 帰(かえ)らせて もら(もら)った
 Butyoo-ni hayaku kaer-ase-te morat-ta
 Director-Dat early go home-Caus receive-Past
 ‘The director let me go home early.’
35. 朝(あさ) 早(はや)く 友(とも)だちに 起(お)こされてしまった
 Asa hayaku tomodati-ni okos-are-te simat-ta
 Morning early friend-Dat wake-Pass-Conj regret-Past
 ‘I regret that my friend woke me up in the early morning.’
36. さとし(さとし)は ガールフレンド(ガールフレンド)と デート(デート)しているのを 母(はは)親(おや)に 見(み)ら
 れた
 Satoshi-wa gaaruhurendo-to deetos-i-tei-ru-no-o hahaoya-ni mir-are-ta
 Satoshi-Top girlfriend-with date-Prog-Pres-Gen-Acc mother-Dat see-Pass-Past
 ‘Satoshi was affected by his mother seeing him having a date with his girlfriend.’
37. ようこ(ようこ)は 誕生日(たんじょうび)に 鞆(かばん)を くれ(くれ)た
 Yooko-wa tanzyoobi-ni kaban-o kure-ta
 Yoko-Top birthday-Dat bag-Acc gave-Past
 ‘Yoko gave me a bag for my birthday.’
38. *リサ(リサ)は 両親(りょうしん)を 離婚(りこん)さ(さ)れるらしい
 *Risa-wa ryoosin-o rikons-are-ru rasii
 Lisa-Top parents-Acc divorce-Pass-Pres seem
 ‘It seems that Lisa will be affected by her parents’ getting a divorce.’ (Lit.)

39. *えみは 友だちを 朝 (あさ) 早 (はや) く 来 (こ) られた
 *Emi-wa tomodati-o asa hayaku kor-are-ta
 Emi-Top friend-Acc morning early come-Pass-past
 ‘Emi was affected by her friend coming to her home early in the morning.’
40. 佐々木 (ささき) さんは 一日中 コンピューターを 使 (つか) っている
 Sasaki-san-wa itiniti-zyuu konpyuutaa-o tukat-tei-ru
 Sasaki-Mr.-Top oneday-during computer-Acc use-Prog-Pres
 ‘Mr. Sasaki has been using a computer all day long.’
41. 友だちから 借 (か) りた カメラを 壊 (こわ) して しまった
 Tomodati-kara kari-ta kamera-o kowasi-te simat-ta
 Friend-from borrow-Past camera-Acc break-Conj regret-Past
 ‘I regret that I broke the camera that I borrowed from my friend.’
42. ブラウンさんは あまり 日本料理 (りょうり) が 食べられない
 Braun-san-wa amari nihon ryoorhi-ga taber-are-na-i
 Brown-Ms.-Top rarely Japan cousin-Nom eat-Poten-Neg-Pres
 ‘Ms. Brown cannot eat much Japanese food.’
43. *くみは 両親 (りょうしん) が 一人暮らし (ひとりぐらし) を させてくれない
 *Kumi-wa ryoosin-ga hitorigurasi-o sasete kur-ena-i
 Kumi-Top parents-Nom single life-Acc do-Caus give-Neg-Pres
 ‘Kumi’s parents do not let Kumi to live alone.’ (Lit.)
44. *みかは 先生が いっしょに クラスに いらっしやった
 *Mika-wa sensei-ga issyoni kurasu-ni irasyat-ta
 Mika-Top teacher-Nom together class-Dat come(honorific)-Past
 ‘Mika came to class with the teacher.’ (Lit.)
45. *先生と みかが いっしょに クラスに いらっしやった
 *Sensei-to Mika-ga issyoni kurasu-ni irassyat-ta
 Teacher-with Mika-Nom together class-Dat come(honorific)-Past
 ‘The teacher and Mika came to class together.’
46. 太朗 (たろう) は 次郎 (じろう) と 先生を 見かけた
 Taroo-wa Jiroo-to sensei-o mikake-ta
 Taro-Top Jiro-and teacher-Acc see-Past
 ‘Taro saw Jiro and the teacher.’
47. 私は ハナと 先生から 贈り物 (おくりもの) を いただいた
 Watasi-wa Hana-to sensei-kara okurimono-o itadai-ta
 I-Top Hana-and teacher-from present-Acc receive (humble)
 ‘I received a gift from Hana and the teacher.’
48. 私は 先生から 贈り物 (おくりもの) を いただいた
 Watasi-wa sensei-kara okurimono-o itadai-ta
 I-Top teacher-from present-Acc receive (humble)
 ‘I received a gift from the teacher.’

Appendix E: Self-Paced Listening Stimuli

Type 1: Indirect passive with intransitive verbs (minimal pairs)

1. a. John-wa kinoo eigakan-de ookii hito-ni mae-ni suwar-are-ta.
John-Top yesterday movie theatre-at big person-Dat front-Dat sit-Pass-Past
b. *John-wa kinoo eigakan-de ookii hito-niyotte mae-ni suwar-are-ta.
John-Top yesterday movie theatre-at big person-by front-Dat sit-Pass-Past
'John was affected by a big person sitting in front of him at the movie theatre yesterday.'
2. a. Kaori-wa kesa basu-de akatyan-ni naka-are-ta.
Kaori-Top this morning bus-in baby-Dat cry-Pass-Past
b. *Kaori-wa kesa basu-de akatyan-niyotte naka-are-ta.
Kaori-Top this morning bus-in baby-by cry-Pass-Past
'Kaori was affected by her baby's crying on the bus this morning.'
3. a. Kimura-san-wa kyonen amerika-de wakai musuko-ni sin-are-ta.
Kimura-Mrs.-Top last year America-at young son-Dat die-Pass-Past
b. *Kimura-san-wa kyonen amerika-de wakai musuko-niyotte sin-are-ta.
Kimura-Mrs.-Top last year America-at young son-by die-Pass-Past
'Mrs Kimura was affected by her young son's having died in America last year.'

Type 2: Animate subjects (minimal pairs)

4. a. Sono kyoozyu-wa kinoo ie-no mae-de gakusei-ni mat-are-ta.
That professor-Top yesterday house-Gen front-at student-Dat wait-Pass-Past
b. [?]Sono kyoozyu-wa kinoo ie-no mae-de gakusei-niyotte mat-are-ta.
That professor-Top yesterday house-Gen front-at student-by wait-Pass-Past
'The professor was waited for by a student in front of his house yesterday.'
5. a. Musuko-wa sensyuu minna-no mae-de sensei-ni sikar-are-ta.
son-Top last week everyone-Gen front-at teacher-Dat scold-Pass-Past
b. [?]Musuko-wa sensyuu minna-no mae-de sensei-niyotte sikar-are-ta.
son-Top last week everyone-Gen front at teacher-by scold-Pass-Past
'My son was scolded in front of everyone by the teacher last week.'
6. a. Tomita-san-wa kinoo miti-de kinzyo-no inu-ni kam-are-ta.
Tomita-Mr-Top yesterday street-at neighbour-Gen dog-Dat bite-Pass-Past
b. [?]Tomita-san-wa kinoo miti-de kinzyo-no inu-niyotte kam-are-ta.
Tomita-Mr-Top yesterday street-at neighbour-Gen dog-by bite-Pass-Past
'Mr. Tomita was bit by his neighbour's dog on the street yesterday.'
7. a. Sono giin-wa sensyuu kokkai-de ooku-no hito-ni semer-are-ta.
That lawmaker-Top last week Diet-at many-Gen people-Det accused-Pass-Past
b. [?]Sono giin-wa sensyuu kokkai-de ooku-no hito-niyotte semer-are-ta.
that lawmaker-Top last week Diet-at many-Gen people-by accuse-Pass-Past

- ‘The lawmaker was accused by many people at the Diet last week.’
8. a. Kenji-wa yoku gakkoo-de tomodati-ni izimer-are-ta.
Kenji-Top often school-at friend-Dat bully-Pass-Past
- b. ? Kenji-wa yoku gakkoo-de tomodati-niyotte izimer-are-ta.
Kenji-Top often school-at friend-by bully-Pass-Past
‘Kenji was often bullied at school by his friends.’
9. a. Kawaisooni, Mika-wa sakki kooen-de Makoto-ni ke-rare-ta
Unfortunately, Mika-Top a little while ago park-at Makoto-Dat kick-Pass-Past
- b. ? Kawaisooni, Mika-wa sakki kooen-de Makoto-niyotte ke-rare-ta
Unfortunately, Mika-Top a little while ago park-at Makoto-by kick-Pass-Past
‘Mika was kicked by Makoto at the park.’

Type 3: Inanimate subjects (minimal pairs)

10. a. Sono ronbun-wa sengetu intaanetto-de aru kenkyuusya-niyotte hihans-are-ta.
That article-Top last month internet-on one researcher-by criticise-Pass-Past
- b. *Sono ronbun-wa sengetu intaanetto-de aru kenkyuusya-ni hihans-are-ta.
That article-Top last month internet-on one researcher-Dat criticise-Pass-Past
‘The article was criticised by one researcher on the internet last month.’
11. a. Sono zoo-wa 10-nen mae Itaria-de yuumeina geizyutuka-niyotte tukur-are-ta.
The statue-Top 10-year before Italy-at famous artist-by create-Pass-Past
- b. *Sono zoo-wa 10-nen mae Itaria-de yuumeina geizyutuka-ni tukur-are-ta.
The statue-Top 10-year before Italy-at famous artist-Dat create-Pass-Past
‘The statue was created by a famous artist in Italy 10 years ago.’
12. a. Sono kaigi-wa kesa zimusyo-de butyoo-niyotte hazimer-are-ta.
That meeting-Top this morning office-at division chief-by start-Pass-Past
- b. *Sono kaigi-wa kesa zimusyo-de butyoo-ni hazimer-are-ta.
That meeting-Top this morning office-at division chief-Dat start-Pass-Past
‘The meeting was started by the division chief in the office this morning.’
13. a. Atarasii hooan-wa sensyuu kokkai-de syusyoo-niyotte happyoos-areta.
New bill-Top last week Diet-at Prime Minister-by present-Pass-Past
- b. *Atarasii hooan-wa sensyuu kokkai-de syusyoo-ni happyoos-areta.
New bill-Top last week Diet-at Prime Minister-Dat present-Pass-Past
‘The new bill was presented by the Prime Minister at the Diet last week.’
14. a. Kono komento-wa sennsyuu intaanetto-de ooku-no dokusya-niyotte yom-are-ta
this comment-Top last week internet-on many-Gen reader-by read-Pass-Past
- b. *Kono komento-wa sennsyuu intaanetto-de ooku-no dokusya-ni yom-are-ta
this comment-Top last week internet-on many-Gen reader-Dat read-Pass-Past
‘This comment was read by many readers on the internet last month.’

15. a. Bocchan-wa Meiji-zidai-ni tookyoo-de Natsume Sooseki-niyotte kak-are-ta.
 Bocchan-Top Meiji-period-Dat Tokyo-in Natsume Sooseki-by write-Pass-Past
 b. *Bocchan-wa Meiji-zidai-ni tookyoo-de Natsume Sooseki-ni kak-are-ta.
 Bocchan-Top Meiji-period-Dat Tokyo-in Natsume Sooseki-Dat write-Pass-Past
 ‘Bocchan was written by Soseki Natsume in the Meiji-period in Tokyo.’

Distractors

16. Atarasii konpyuutaa-o Taroo-wa kinoo-kara tukat-tei-ru
 new computer-Acc Taro-Top yesterday-from use- Prog-Pres
 ‘Taroo has been using the new computer since yesterday.’
17. Sasaki-san-wa kongetu-no-owari-ni ie-de paatii-o suru-tumori-da
 Sasaki-Ms.-Top this month-Gen-end-at home-at party-Acc do-intend-Cop
 ‘Ms. Sasaki intends to have a party at home at the end of this month.’
18. Sono akatyan-wa asa osoku-made net-ei-ta
 The baby-Top morning late-until sleep-Prog-Past
 ‘The baby was sleeping until late this morning.’
19. Ano sakka-wa nagano-no besso-de sono syoosetu-o kai-ta
 that-author-Top Nagano-gen-cottage-at the novel-Acc write-Past
 ‘The author wrote the novel at his cottage in Nagano.’
20. Taihuu-ga kuru node, kyuushuu-de-wa asita ame-ga huru-rasii
 Typhoon-Nom come because Kyuushuu-at-Top tomorrow rain-Nom fall-seem
 ‘It seems that it will rain in Kyushu tomorrow because a typhoon is coming.’
21. 2020-nen-ni tokyoo-de orinpikku-ga hirak-are-ru
 2020-year-in Tokyo-at Olympics-Nom hold-Pass-Pres
 ‘The Olympics will be held in Tokyo in 2020.’
22. Syusyoo-wa kinoo asa 8zi-ni kokkai-de enzetu-o si-ta
 prime minister-Top yesterday morning 8-o’clock-at Diet-at speech-Acc do-Past
 ‘The prime minister gave a speech at the Diet at 8 in the morning yesterday.’
23. Butyoo-wa sennsyuu Satoo-san-o katyoo-ni syoosin s-ase-ta.
 Division-chief-Top last week Sato-Mr.-Acc section-chief-to promotion do-Caus-Past
 ‘The division chief promoted Mr. Sato to section chief last week.’
24. Hahaoya-wa itumo resutoran-de kodomo-ni kiraina mono-o tabes-ase-ta
 Mother-Top always restaurant-at child-to dislike food-Acc eat-Caus-Past
 ‘The mother always has her child eat what she does not like at restaurants.’
25. Intaanetto-wa kinnen sekaizyuu-de ninki-ga a-ru
 Internet-Top recently world-in popularity-Nom exist-Pres
 ‘The internet is recently popular in the world.’
26. Sono yuumeina kentikuka-wa kyonen-kara sono biru-o kensetusit-ei-ru
 The famous architect-Top last year-from the building-Acc build-Prog-Pres
 ‘The famous architect has been constructing the building since last year.’
27. Sara-wa kinoo heya-de ruumumeeto-ni nikki-o yomar-are-ta
 Sara-Top yesterday room-at roommate-Dat diary-Acc read-Pass-Past
 ‘Sara was affected by her roommate’s reading her diary in her room.’

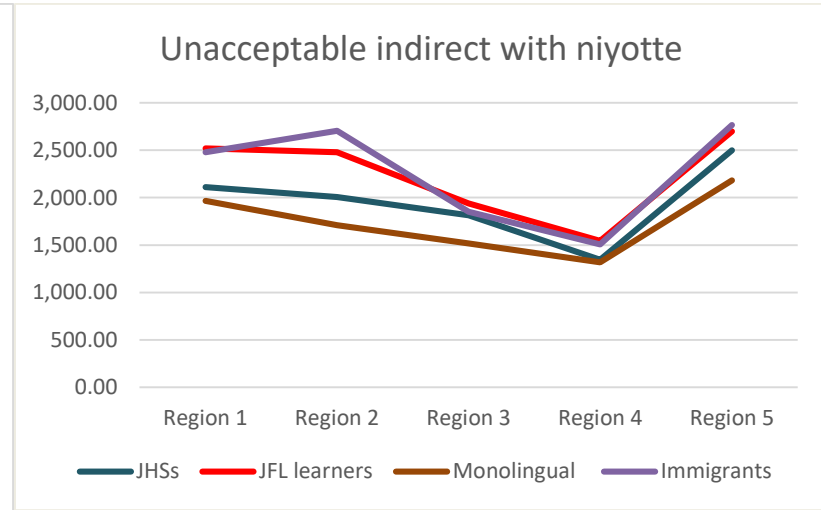
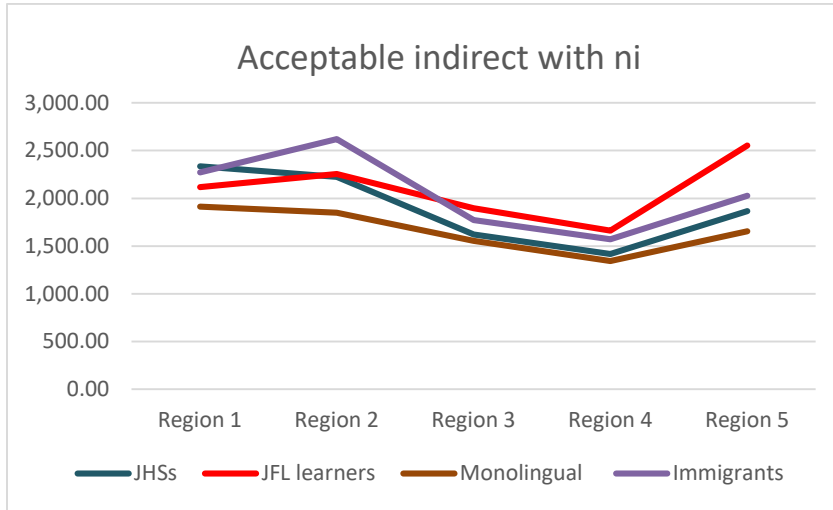
28. Kurak-atta node, Samu-wa kaaten-o sime, denki-o take-ta
Dark-past because Sam-Top curtain-Acc close light-Acc turn on-Past
'Sam closed the curtain and turn on the light as it was dark.'
29. Tanaka-san-wa kanzyo-ni 3 zikan-go-ni denwa suru-to it-ta
Tanaka-Mr.-Top girlfriend-to 3 hours-after-at phone do-Comp say-Past
'Mr. Tanaka told his girlfriend that he will call her in three hours.'
30. Basu-no naka-de tisai akatyan-ga nait-ei-ru
Bus-gen-inside-at small baby-Nom cry-Prog-Pres
'A small baby is crying on the bus.'
31. Sensei-wa kyoo jyugyoo-tyuu-ni huzaket-ei-ta seito-o sikat-ta
Teacher-Acc today class-during-at act-up-Prog-past student-Acc scold-Past
'The teacher scolded the student who was acting up during class.'
32. Kawai-san-wa densya-no-naka-ni nimotu-o okiwasureteki-ta
Kawai-Ms.-Top train-Gen-inside-at luggage-Acc leave-Past
'Ms. Kawai left her luggage on the train.'
33. Doobutuen-de ninkida-ta saru-ga sinde-simat-ta
Zoo-at popularity-past monkey-Nom die-regret-Past
'The popular monkey at the zoo died.'
34. Ano kata-wa yoku ryotei-de yuusyoku-o omesiagarinina-ru
That person-Top often Japanese restaurant-at dinner-Acc eat (honorific)-Pres
'That person often eats dinner at Japanese restaurants.'
35. Tanaka-kyoozyu-wa kyonen sono gakkai-de ronnbun-o happyoo s-are-ta
Tanaka-professir-Top last year the conference-at article-Acc present do-Caus-Past
'Prof. Tanaka presented his article at the conference last year.'
36. Hayashi-san-wa kesa kaisya-de hisyo-niyotte daizina syorui-o
Hayashi-Mrs-Top this morning office-at secretary-by important document-Acc
nakus-are-ta.
lose-Pass-Past
'Mrs. Hayashi was affected by her secretary's losing the important document.'
37. Kawai-sooni, sono otokonoko-wa arerugii-no tame piinattu-ga taber-are-na-i
unfortunately, the boy-Top allergy-Gen-cause peanuts-Nom eat-Pass-Neg-Pres
'I feel sorry that the boy cannot eat peanuts because of his allergy.'
38. Hukuzatuna node, ooku-no tyuugakusei-wa sono kanzi-ga yom-e-na-i
Complicated-because manu-Gen junior-high students-Top the Kanji-Nom read-Poten-n
'Many junior high school students cannot read the Kanji due to its complexity.'
39. Sara-wa kinoo heya-de rूमumeeto-niyotte nikki-o yomar-are-ta
Sara-Top yesterday room-at roommate-by diary-Acc read-Pass-Past
'Sara was affected by her roommate's reading her diary in her room.'
40. Kanzya-wa isya-ni syoozyoo-o kuwasiku setumee si-ta
Patient-Top doctor-to symptom-Acc in detail explanation do-Past
'The patient explained his symptoms in detail to the doctor.'
41. Kawai-soo-ni Kyoko-no booihurendo-wa tooku-ni hikkosa-nakerebanarana-i
Unfortunately Kyoko-Gen boyfriend-Top far-to move-must-Pres
'Unfortunately, Kyoko's boyfriend has to move far.'
42. Kongestu-no owari-ni paathii-o Sasaki-san-wa ie-de suru tumori-da
This month-Gen end-at party-Acc Sasaki-Ms.-Top home-at do-intend-Cop

- ‘Ms. Sasaki intends to have a party at home at the end of the month.’
43. Uresiikotoni, Kato-san-wa sensyuu katyoo-ni syoosin si-ta
Happily, Kato-Mr.-Top last week section chief-to promotion do-Past
‘To his delight, Mr. Kato was promoted to section chief last week.’
44. Kodomo-wa kyoo gakko-de sensei-ni ooku-no syukudai-o das-are-ta.
Children-Top today school-at teacher-Dat many-Gen homework-Acc give-Pass-
Past
‘The children were affected by their teacher’s giving a lot of homework.’
45. Tomu-wa tomodati-no burogu-ni takusan komento-o tookoo si-ta
Tom-Top friend-Gen blog-to many comment-Acc post do-Past
‘Tom posted a lot of comments on his friend’s blog’
46. Asa osoku-made sono akachan-wa net-ei-ta
Morning late-until the baby-Top sleep-Prog-Past
‘The baby was sleeping until late in the morning.’
47. Sensei-wa seito-ni hitori-zutu sakubun-o happyoo s-ase-ta
Teacher-Top student-Dat one person-by composition-Acc presentation do-Caus-Past
‘The teacher had each student present their composition.’
48. Wiriam-oziga kotosi hazimete nihon-o hoomons-are-ru
William-prince-Nom this tear first time Japan-Acc visit-Hon-Pres.
‘Prince William will visit Japan this year for the first time.’
49. Kawaisooni, arerugii-notame sono otokonoko-wa piinattu-ga taber-are-nai
Unfortunately, allergy-because that boy-Top peanut-Nom eat-Poten-neg-Pres
‘I feel sorry that the boy cannot eat peanuts because of his allergy.’
50. Sono syoosetu-o sakka-wa tokyoo-no zittaku-de kai-ta
that novel-Acc writer-Top Tokyo-Gen one’s home-at write-Past
‘The writer wrote the novel at his own home in Tokyo.’
51. Taihoo-wa asita kyuushuu-ni zyoorikusuru rasii
Typhoon-Top tomorrow Kyushu-at reach seem
‘It seems that the typhoon will reach Kyushu tomorrow.’
52. Kodomo-wa itumo kiraina-mono-o tabe-tak-unai to i-u
Child-Top always dislike-thing-Acc eat-want-Neg Comp say-Pres
‘My child always says that s/he does not want to eat what s/he dislikes.’
53. Zyugyoo-tyuu daizina-koto-o nooto-ni kakitome-ta
class-during important-thing-Acc note-in write down-past
‘I wrote down important things in my notebook during the class.’
54. Kinodokuni, sono kyoozyu-wa kyonen gakkai-de ooku-no kenkyuusya-
niyotte hihans-are-ta
Unfortunately, that professor-Top last year conference-at many-Gen researchers-by
criticise-Pass-Past
‘I feel bad that the professor was criticized by many researchers at the conference last year.’
55. Hukuzatuna-node sono kanzi-o ooku-no tyuugakusei-ga yom-e-na-i
Complicated-because that Kanji-Acc many-Gen junior high student-Nom read-Poten-n
‘Many junior high school students cannot read the Kanji because it is complicated.’
56. Kawaisooni sono onnanoko-wa kiniitt-ei-ta ningyoo-o nakusi-te-simat-ta
Unfortunately that girl-Top favorite-Prog-Past doll-Acc lose-Conj-regret-Past
‘I feel bad that the girl lost her favourite doll.’

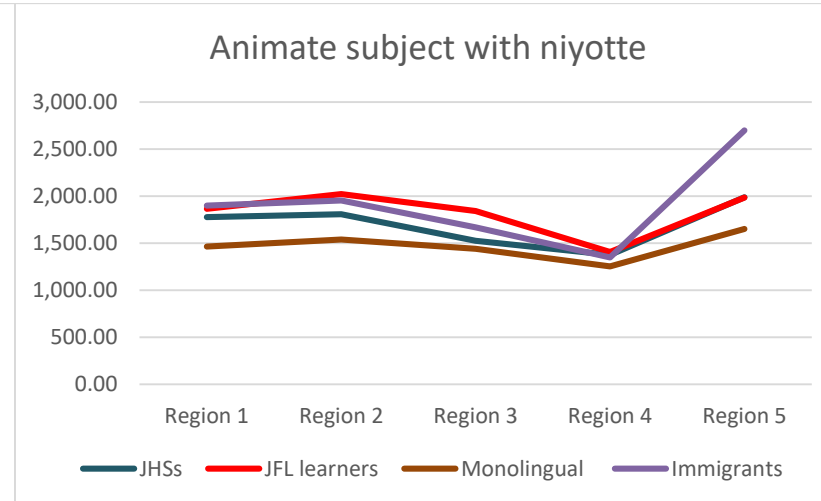
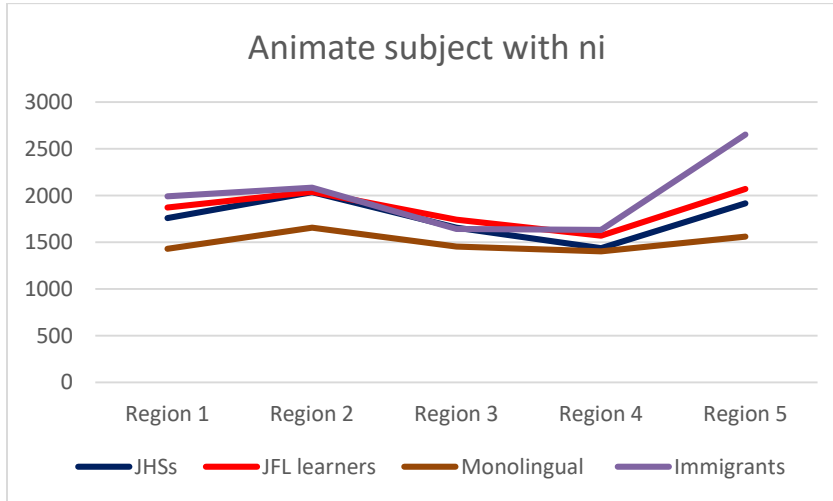
57. Huzaketa seito-o sensei-wa kyoo jyughoo-tyuu-ni sikat-ta
 Antic student-Acc teacher-Top today class-during at scold-Past
 ‘The teacher scolded the antic student in during class today.’
58. Hayashi-san-wa kesa kaisya-de hisyo-ni daizina syorii-o
 Hayashi-Mrs-Top this morning office-at secretary-Dat important document-Acc
 nakus-are-ta.
 lose-Pass-Past
 ‘Mrs. Hayashi was affected by her secretary’s losing an important document.’
59. Orinpikku-ga tookyoo-de 2020-nen-ni hirak-are-ru
 Olympics-Nom Tokyo-in 2020-year-in hold-pass-Pres
 ‘The Olympics will be held in Tokyo in 2020.’
60. Kyonen-kara atarasii koosobiru-o sono yuumeina kentikuka-wa
 Last year-from new high-rise building-Acc that famous architect-Top
 sekkeisi-tei-ru
 design-Prog-Pres
 ‘The famous architect has been designing the new high-rise building since last year.’
61. Syusyoo-wa kinoo asa 8-zi-ni kokkai-de enzetu-o si-ta
 Prime minister-Top yesterday morning 8’oclock-at Diet-at speech-Acc do-Past
 ‘The Prime Minsiter made a speech at 8 o’clock yesterday morning.’
62. Sono mise-de mezurasii kudamono-o takusan ka-e-ru
 That stode-at rare fruit-Acc many buy-Poten-Pres
 ‘You can buy many types of rare fruits at the store.’
63. Kodomo-wa kyoo gakko-de sensei-niyotte ookuno syukudai-o das-are-ta.
 Child-Top today school-at teacher-by many homework-Acc give-Pass-Past
 ‘My child was given a lot of homework from his/her teacher today.’
64. Tiisai akatyan-ga basu-no-naka-de nait-ei-ru
 Small baby-Nom bus-gen-inside-at cry-Prog-Pres
 ‘A small baby is crying on the bus.’
65. Sono gakkai-de Tanaka-koozyu-wa kyonen ronbun-o hapyoos-are-ta
 That conference-at Tanaka-professor-Top last year thesis-Acc present-Hor-Past
 ‘Prof. Tanaka presented his thesis at the conference last year.’
66. Ano ryotei-de ano kata-wa yoku yuusyoku-o omesiagarinina-ru
 That restaurant-at that person-Top often dinner-Acc eat (Hon)-Pres
 ‘That person often eats dinner at the restaurant.’
67. Tom-wa tomodati-no burogu-ni takusan komento-o tookoosi-ta
 Tom-Top friend-Gen blog-to many comment-Acc post-Past
 ‘Tom posted a lot of comments on his friend’s blog.’
68. Ryuugaku sentaa-no syokuin-wa Bill-ni siryo-o okutte-kure-ta
 International office-Gen staff-Top Bill-to document-Acc send-give-Past
 ‘A staff member from the international office sent documents to Bill.’
69. Samazamana zizyoo-de sono tatemono-no kensetu-ni 3nen-hodo kakat-ta
 various reason-because that building-Gen construction-Dat 3 year-about take-Past
 ‘Due to various reasons, it took almost three years to build the building.’

Appendix F: Average Listening Times (in ms) Across Regions

1) Indirect



2) Animate subject



3) Inanimate subject

