Production, Management and Auditory Brain Perception of Japanese Accentuation by Non-native Speakers of Japanese

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LIST OF ABBREVIATIONS

AN: accent nucleus

ANOVA: analysis of variance

EEG: electroencephalogram

EP-1: Experiment 1

EP-2: Experiment 2

ERP: event related potential

FUI: follow-up interview

H: high pitched mora

IBS: Ibaraki dialect speaker

IDS: interdialect strategy

ILS: interlanguage strategy

L: low pitched mora

L1: first language

L2: second language

LHH: unaccented pitch pattern, L, H and H

LHL: mid-mora accented pitch pattern, L, Hand H

MMN: mismatch negativity

NNS: non-native speaker

NS: native speaker

PA: pure anarthria

PSU: perceptual sense unit

SLA: second language acquisition

TL: target language

UP: universal property

ABSTRACT

This study reports on Japanese accentuation by non-native speakers (NNSs) of Japanese from the viewpoints of second language acquisition and implicit brain perception. The major focus was on the interlanguage strategies in their production of accentuation, their style-shifting of accentuation in comparison with that of Ibaraki dialect speakers (IBSs) of Japanese, their language management study of accentuation and the automatic brain perception of auditory accent patterns.

The study used two major methods. One involved analyses of each participant's accentuation in natural discourse data, which is different from the general research on accentuation which focuses on the distinct use of an individual word. The second method involved examination of participants' brainwaves as measured without participants' attention to the stimulus sound of accent patterns, after which the mismatch negativity component (MMN) was analysed. The MMN provides the possibility of examining automatic brain responses to the auditory pitch patterns of accentuation.

First, NNS participants' production of accentuation in discourse was investigated. Three types of interlanguage strategies (ILSs) of accentuation appeared to be produced on the basis of L2 norms, showing three developmental stages as well as free variations without conscious attention to the accentuation. On the other hand, participants also demonstrated the application of antepenultimate accent strategies and compound accent strategies, which appeared to be produced on the basis of universal norms. Thus, the accentuation of the same participants in the same discourse showed overlapping strategies on the basis of both the L2 and universal norms. Second, the style-shifting of accentuation between formal and informal situations is analysed and compared with that of the IBSs, who produce interdialect strategies (IDSs) showing strong resemblance to

ILSs by NNSs of Japanese. It was found that both the NNSs and the Ibaraki dialect speakers showed systematic style-shifting of accentuation without explicit attention, although their style-shifting showed distinctly different characteristics. Third, since language management involves explicit conscious processes, the question of whether NNSs manage their accentuation in discourse is analysed on the basis of follow-up interviews. The following finding was observed: two of 11 participants managed their accentuation explicitly, although most of their management did not proceed to the implementation stage, and therefore, it was considered to be 'weak management'. It is presumed that they began to manage their accentuation, then stopped during the process and finally subconsciously produced ILSs. Lastly, the implicit processing of the two types of accentual pitch patterns in the brains of both NNS and NS participants was investigated by means of brainwave measurement, and the MMN was analysed. The results revealed the implication that both the NNSs and NSs implicitly noted accent patterns, and the unaccented pattern LHH was likely to be responded to as unnatural by both NNSs and NSs, presumably due to the influence of the pitch downtrend phenomenon observed in many languages.

The results of this study, particularly the participants' implicit observations and the distinction of accent patterns in their brains, provide theoretical implications for studies on Japanese accentuation in SLA and neuronal correlates of pitch patterns in neuroscience, for example, the levelling of accent like 'specialists' accentuation' appears to be caused by the brain response to the feature of 'unnaturalness' of unaccented pattern. The discourse analyses also suggest new findings related to the influence of universal norms on the production of strategies for second language acquisition. The application of the findings to the teaching of accentuation in Japanese language education is also discussed.

STATEMENT

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other institution. To the best of my knowledge, the thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

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CHAPTER 1

INTRODUCTION

1.1 Overview of Japanese Accentuation by Learners

An accent can generally be described as the aggregation of three elements: pitch, stress and timing. However, the Japanese accent is a pitch accent, in which stress is only used to express emphasis (Sugito 1972, 1973). The Japanese accentuation produced by non-native speakers (NNSs), therefore, is likely to be rich in features which are significant to the acquisition research on phonology. The second language acquisition (SLA) research, which is broad and presents various aspects, is surmised to be a cross-sectional study area that combines, for example, applied linguistics with linguistics, sociology, psychology or anthropology. The Japanese accent has been one of the most active research fields in Japanese linguistics and dialectologies since the 1890s. These studies have been providing indispensable basic research on accentuation in the field of applied linguistics for acquisition studies. In particular, extensive research has been conducted during the past decades on NNSs' Japanese accentuation on the basis of these linguistic studies.

Concerning the acquisition research on accentuation, many contrastive studies investigated accentuation on the basis of learners' mother tongue norms. For example, Horiguchi (1973) analysed Japanese language learners' accentuation and found that they pronounced Japanese words with excessive stress because of the influence of their mother tongue, English. Ayusawa (1998) examined the listening competence of NNS participants regarding the Tokyo accent pitch patterns (standard Japanese language) and concluded that the NNSs' difficulties in recognizing the pitch pattern are dependent on the difference between each participant's mother tongue and the target Tokyo dialect

accentuation.

Turning now to the features of the learners' accentuation, language learners tend to create their own accent system or 'interlanguage' (Selinker 1972), to compensate for the target accent rules. This is usually done subconsciously. Since this system is composed of more general and broader categories than the target accent rules, it is more appropriate to use the term 'strategies' than 'rules' to describe it (Neustupný 1989a); thus the term interlanguage strategies (ILSs) will be used here. Sukegawa (1999) investigated accent patterns produced by Brazilian learners and found that it is difficult to distinguish L1 transfer from interlanguage which is found in neither the L1 nor L2. Nakato (2001) also investigated Japanese accentuation by learners who are NSs of Korean and found that they tend to place the accent nucleus (AN) on the heavy syllable which contains two morae. The hypotheses of the ILS system of accentuation were proposed by Yamada through the analyses of learners' production of accentuation by advanced level (1992a, 1994a, 1994b) as well as elementary level (1999) learners. In these studies, Yamada systematically investigated learners' accentuation in terms of ILSs and the resulting hypotheses made it possible to explain the 'interlanguage' of Japanese accentuation, which has not been successfully interpreted by other researchers.

With respect to the accentuation in conversational discourse, NNSs as well as NSs generally pay no explicit attention to their accentuation or consciously adjust it, with the exception of those who would like to improve this aspect of their language skills (e.g. Yamada 2003b). Generally, NNSs seem to pay more explicit attention to speech features such as the duration of heavy syllables (e.g. long vowels, double consonants or syllabic nasals), the content of their messages or structural features (e.g. sentence structure) than to their accent. Evidence suggests, however, that despite their lack of overt focus on the accent, Japanese learners' competence in producing accentuation gradually improves

with their overall language progress, especially in the early stages. It is also suggested that NNSs note and adjust their Japanese accentuation automatically (that is, without explicit attention), in their discourse (Yamada 1999). Thus, it is presumed that two types of noting are used: explicit and implicit noting. Research also suggests that NNSs are more likely to use the latter.

Explicit noting can be examined by means of introspective methodologies, such as follow-up interviews (FUIs), also referred to as stimulated recall interviews, which allow active reflection on the topic (Neustupný 1994). It is far more difficult to examine implicit noting, with introspective methods being unlikely to yield useful findings. However, neurological research may be applicable here. Particularly, the study of the mismatch negativity (MMN) component of brainwaves (Näätänen et al. 1978) can be used for examining implicit brain responses to auditory pitch patterns. This is an eminently useful tool for investigating automatic processing of prosodic speech sounds in the human brain. Although neuronal correlates of prosodic perception, particularly of pitch or stress patterns, have not been studied in detail, some research studies of MMN on Japanese accentuation have been reported (Inouchi et al. 2003; Yamada et al. 2009). In addition, neuropsychologists have found that the brain has two systems for learning (Petri and Mishkin 1994), implicit learning and explicit learning, both of which learners can use when learning one item. It is also suggested that the two learning systems have two different mechanisms but also consistency within the human brain. This may provide some explanation for implicit and explicit noting of accentuation.

The role of noting deviations from norms is significant in the process of language acquisition, this being one stage in the framework of language management, as enumerated by Neustupný (cf. 1985a). In this theory of language management, five stages are considered: deviation from the norms, noting of the deviation, evaluation of

the noted deviation, selection of an adjustment and implementation of the adjustment (Neustupný 1985a; Jernudd and Neustupný 1987). Language management research on sociolinguistics and sociocultural behaviour has been significant and productive (Ozaki 1993; Fan 1999; Fairbrother 2000; Marriot 2000, 2003; Miyazaki 2001; Miyazoe-Wong 2003), while research on linguistics has been very limited. To the best of my knowledge, the investigation of learners' accentuation management is limited to Yamada (2003b). In the case of NNSs' accentuation, it is predicted that only those learners who are concerned about their pronunciation manage their accentuation.

As far as the systematic variations of accentuation are concerned, Yamada (2003a, 2007) studied the Ibaraki dialect speakers' accentuation and showed systematic style-shifting in both formal and informal situations. These speakers produce their own accent system, interdialect strategies (IDSs) of accentuation (Trudgill 1986), which strongly resemble the ILSs produced by NNSs of Japanese. The Ibaraki dialect accentuation is different from the Tokyo dialect accentuation and is considered to be at one stage of ongoing language change towards that of the Tokyo dialect which is the Japanese standard language and also the target language (TL) of Japanese language learners. It is then possible to hypothesize that NNS Japanese learners may show accent style-shifting in both formal and informal situations in a same way as the Ibaraki dialect speakers.

As far as the teaching of Japanese language is concerned, recent communicative approaches in second or foreign language teaching appear to exclude the explicit teaching of phonological speech sounds such as accent, although the central emphasis continues to be on grammar. However, a slight interlanguage accentuation may display a speaker's 'foreignness' regardless of the speaker's language competence, although learners still seem to be able to interact or communicate their message, even if they apply

ILSs of accentuation. Foreignness due to interlanguage accentuation can lead NSs to apply foreigner talk, which may be a major cause of acquisition problems (Neustupný 1985a).

Years ago, Japanese language teachers were urged to teach not only grammar, vocabulary and pronunciation but also communication. However, Neustupný (2002) claimed that the problems learners face arise not merely from communication, but in many cases, from their interactions with Japanese speakers. Hence, he suggested that Japanese language learners need to learn the rules of interaction in contact situations where learners act with the Japanese and experience problems. Furthermore, he defined interactive competence as consisting of three types: linguistic, sociolinguistic and sociocultural competence (Neustupný 1981, 1985a, 1989b, 1997b). However, according to Neustupný, we do not learn languages in order to merely communicate. Communication is only a tool which enables us to achieve other goals; our aim in cross-cultural situations is to interact economically, socially or in daily life and other situations (Neustupný 1997b). Hence, the sociocultural competence for interaction in contact situations is a very important issue in second or foreign language teaching and learning. The research on interaction has been actively reported. For example, 'interculture' by Marriott (1993a) covers the acquisition of interaction and empirical studies on socioculture were implemented by Yamada (1992b), Marriott (1993b), Muraoka (2000) and Miyazaki (2002). Hence, today, research tends to deal with sociolinguistics or sociocultural aspects much more than it did previously. Nevertheless, it is not difficult to find Japanese language teaching programs that do not include sociocultural activities (Neustupný 2002), although some ideal models have been introduced, such as Ozaki and Neustupný (1986) and Neustupný et al. (1992). Furthermore, although many Japanese language teachers still seem to believe that

grammar is the most important object of their ideal language teaching, as Neustupný (1997b) described, they also find it difficult to add interactive or communicative activities to their tightly scheduled courses, even if they understand the importance of the communicative or interactive approaches rather than grammar-centred language classes. Hence, language teachers need to determine a way to convert their research results into classroom practices, as Ozaki (2003) claims.

Learning speech sounds, particularly Japanese accent, does not seem to be interesting to learners in general. Although many learners report that they would like to speak with appropriate pronunciation and accentuation, they do not seem to pay attention to accentuation in their discourse. They also often state that they have been able to successfully communicate and interact with the Japanese regardless of the appropriateness of their accentuation.

Although some learners of Japanese can speak the language fluently, many have problems with pronunciation, even at the intermediate or advanced level. However, in many Japanese language education programs, teaching the phonological speech sounds of the second language in a particular prosody such as accent does not seem to be regarded as important, with the exception of some language courses, which have a systematic curriculum for accentuation. The latter programs are conducted both overseas and at Japanese institutions and use systematic and new approaches, such as those seen in Lee (1997), Arai (2003), Matsuzaki (2009), Ogawara (2009) or Toda (2009). However, many courses still do not spend enough time on teaching pronunciation, particularly at the elementary level, although it is a crucial stage in determining learners' later speech competence (Kashima 1995). Such a teaching attitude appears to be based on the belief that classroom practices or lectures on Japanese speech sounds are not fully effective and that the acquisition of Japanese accent is difficult (Ayusawa 1998), adding to the

grammar-centred teaching attitude mentioned above.

Contrary to these attitudes, learners do not appear satisfied with the classroom practices such as teachers' corrections of their accentuation. Learners reported that teachers' corrections are not clearly understood. For example, they did not understand what aspect was being corrected or what the correct answer was. Although implicit teaching, which does not focus on the form of language, appears to be widely used, better teaching methods need to be developed. Kashima (1995), Kushida et al. (1995), Matsuzaki (1999, 2009), Ogawara (1997, 2009) and Toda (2009), among others, present constructive trials responding to the learners' needs. It appears to be true that learners would like to acquire accentuation to the best of their abilities even if they do not pay conscious attention to their accentuation.

1.2 Justification

This thesis takes a cross-sectional, specifically, an interdisciplinary approach to the implicit noting of accentual pitch patterns by drawing upon applied linguistics and neuroscience. This is a revolutionary new attempt and is expected to produce reliable results.

The thesis is furthermore unique as it intends to explore the essential features of learners' accentuation, such as their implicit production of ILS accentuation in discourse in contact situations, and brain responses to implicit noting of accentual pitch patterns. To date, much of the previous research has not taken these features into account, with little research haing explored them in detail so far.

Regarding ILSs of accentuation, Yamada (1999, 2007) identified three types of ILSs implicitly created by learners. These appear as L2 overgeneralizations which provide three developmental stages as well as the characteristic of free variation whereby

learners' accentuation fluctuates. Despite Yamada's previous studies, which made it possible to account for 'interlanguage', the purpose here is to explore further the strategies used by learners to determine accent patterns, other than using erroneous L2 norms. In particular, this study attempts to clarify whether learners use universal norms through using their L1 norms, both of which they possessed before they started learning Japanese, in order to create their own strategies. Corder (1994: 29) claims that previous knowledge and skills are intimately involved in the acquisition of new knowledge. Furthermore, both universal principles and the learner's L1 are involved in the process of acquiring L2, and how these work and interact is of crucial importance for understanding L2 acquisition (Ellis 1994: 115). Therefore, this examination can be expected to reach to a higher degree of understanding of the interlanguage within accentuation. Identification of the strategies based on the universal norms within L1 norms, in addition to ILSs using L2 norms, allows an expansion of the theoretical framework of learner-created accentuation. The research on Japanese accentuation seems to make this a core component of the wider Japanese language acquisition, so this may be a useful addition.

It is a novel approach to compare the accentuation by applying Labov's methodology (1970, 1972), specifically, the style-shifting by Ibaraki dialect speakers who are NSs of Japanese and NNS learners of Japanese in both formal and informal situations. The Ibaraki dialect within Japanese has been gradually changing towards the standard Tokyo dialect. The current accentuation in the Ibaraki dialect is different from that in the Tokyo dialect; it is rather similar to the ILSs of NNSs. This study aims to confirm whether participants implicitly adjust their accentuation in respect to different situations in which people pay different degrees of attention to their language use. This examination is also expected to reveal some similarities and differences other than the resemblances between ILSs and IDSs. The previous research on the Ibaraki dialect speakers'

style-shifting (Yamada 2003a, 2007), which accorded with Labov's model, studied accentuation in a formal rather than informal situation, where accentuation was more appropriate. However, Tarone's studies (1982, 1983, 1985) on NNSs' style-shifting were not necessarily consistent with Labov's model. The present study investigates NNSs' style-shifting separately by ILS use and appropriateness in different situations. It is predicted that the two types of style-shifting differ in nature. This assumption is unique and different from Labov's notion and Tarone's studies. It will shed further light on implicit production of accentuation.

The examination of learners' management of accentuation in all five stages will help clarify whether learners explicitly manage their accentuation and how implicit accent teaching (e.g., correction without explicit explanation) influences their management in discourse. This investigation will demonstrate each participant's degree of consciousness and knowledge of accentuation. Moreover, the analyses will make it possible to infer how learners produce accent patterns when they stop the management process before reaching the implementation stage. Thus, the study of learners' management of accentuation may provide examples of two kinds of learning (Petri and Mishkin 1994) regarding explicit and implicit knowledge of accentuation. Previous research on this subject is limited, with the exception of Yamada (2003b). The present study is expected to present more specific insights.

Finally, implicit noting of accentuation will be explored via a neurological examination of the MMN component of brainwaves. Since it involves the direct examination of electrical brain activities, reliable results can be obtained as long as the experiment procedure is appropriate. Moreover, the brain responses of NSs and NNSs to the different accent patterns—unaccented (LHH) and mid-syllable accented (LHL)—are expected to define the fundamental nature of each pattern and the listeners' preference of

pitch patterns. The brainwave responses may also reveal a cross-linguistic difference between NNSs and NSs and provide some clues to finding some features in the pitch patterns. Therefore, these responses will be important not only for implicit noting but also for the cross-linguistic difference of auditory pitch patterns. The only other studies to have explored accent in such detail seem to be Inouchi et al. (2003) and Yamada et al. (2009).

1. 3 Research Questions

As noted above, much of the previous work on the acquisition of Japanese accentuation is focused on learners' L1 transference or borrowing. The ILS system, including the developmental process of learners' accentual competence, free variation, overlapping of the application of strategies and L2 overgeneralization has been covered only by my previous research, to the best of my knowledge. This study intends to advance myrevious findings in terms of learners' implicit noting of Japanese accentuation, specifically with the following research questions:

(1) What accent strategies do Japanese language learners produce, particularly for ILSs using L2 norms and for natural strategies using universal norms which overlapg with other strategies, and how do these two types of strategies interact with each other?

(2) How does Japanese language learners' accentuation in speech styles which are utilized in formal and informal discourse differ from that of NSs of the Ibaraki dialect of Japanese?

(3) How do Japanese language learners explicitly manage their accentuation in discourse during contact situations and what characteristics of management do they utilise?

(4) In what ways do the brains of Japanese language learners implicitly note changes in the auditory accent patterns of Japanese? Do NSs of the Tokyo dialect exhibit similar

patterns?

1.4 The Structure of the Thesis

This study comprises eight chapters, each of which deals with aspects of Japanese language accentuation and implicit noting of accentuation by Japanese language learners. Chapter 1 introduces the background of this study. Chapter 2 provides a literature review exploring previous theoretical and empirical studies of Japanese accentuation. It also includes a short history of the study of accentuation, characteristics of Japanese accentuation, acquisition of accentuation and implicit brain perception of Japanese accentuation. Chapter 3 provides the theoretical framework and methodology utilized in this study. Chapter 4 explores the accentuation produced by learners, from the viewpoint of ILSs, target accent norms, mother tongue accent norms, pidginization and universal norms, and the model of production processes of learners' accentuation. Chapter 5 compares style-shifting of Japanese accentuation by Japanese language learners and Ibaraki dialect speakers. Chapter 6 investigates the management processes of Japanese accentuation by Japanese language learners. In Chapter 7, the neurological bases of implicit noting of accent patterns by NNSs and NSs are investigated and discussed. Finally, iIn Chapter 8, the research questions are summarized and implications for future studies are described.

CHAPTER 2

LITERATURE REVIEW OF JAPANESE ACCENTUATION STUDIES

2.1 Introduction

Researchers, both in linguistics and the dialectology of the Japanese language, have been actively studying Japanese accentuation since the work of Bimyoo Yamada (1893). These studies have provided the indispensable basic research on accentuation applicable to acquisition studies. In addition, recent joint research on accentuation involving different fields, such as engineering and linguistics, or neuroscience and linguistics, has made it possible to examine factors such as *Onsei no butsuriteki seishitsu* 'physical character of speech sound' which had previously seemed impossible (Fujisaki and Sugito 1977). This chapter summarizes the history of research on Japanese accentuation, and explores the characteristics and acquisition of this, as well as the brain's perception of Japanese accentuation.

2.2 A Short History of the Study of Japanese Accentuation

The history of Japanese accentuation studies began in the *Edo* era (1603–1868) and earlier. Two works from this era, although not exactly studies of Japanese accentuation, are important for research on accentuation. Motoori (1771) and Fujitani (1778) deal with the classification of parts of speech, particularly the distinction between independent (content) words *shi* and dependent (function) words *ji*, such as *te, ni, o* and *wa*. This system of classification is important for accentuation, as the content words *shi* and the function words *ji* are constituents of accent units. *Bunsetsu* as they were called later, and no more than one content word *shi* can be a constituent of such a unit.

It was at the onset of the *Meiji* era (1868–1912) that Japanese accentuation became

an academic research field. We can categorise the work to date into four periods, as explained in the following sub-sections.

2.2.1. The first period (*Meiji* and *Taishoo* eras: 1868–1920s)

As mentioned above, the study of Japanese accentuation started with Bimyoo Yamada, who published *Nihon Daijisho* (Yamada B. 1893), the first Japanese dictionary with accent marks for each vocabulary entry. Its supplement, *Nihon Onchooron* (Yamada B. 1893), was an excellent study of Japanese accentuation.

The Russian linguist Polivanoff came to Japan and investigated the accentuation of Tokyo and other dialects by means of experimental phonetics in 1914–1915 (Polivanoff 1915, 1976). Under the influence of Polivanoff, Sakuma and Jimbo made remarkable progress in the study of Japanese accentuation (Jimbo 1915; Sakuma 1929). In this period, researchers claimed that the accentuation in the Tokyo dialect is a pitch accent, and they actively discussed issues such as the nature of the accentuation, accent forms, and pitch patterns (including that of derivatives and compounds).

2.2.2. The second period (beginning of *Shoowa* era: 1920s–1945)

The study of Japanese accentuation in the first period had been limited to contemporary accentuation in the Tokyo dialect. However, during the second period, it was expanded to cover the accentuation of various contemporary national dialects as well as that of dialects from previous time periods.

Hattori (1931–1933) clarified that the fact that accentuations in dialects have systematic structures and are diachronically related to one another. Following this, Kindaichi (1937) reassessed the historical changes in Japanese accentuation, expanding upon Hattori's work (Tokugawa 1980). Fieldwork on accentuation in various dialects

became more active in this period, and around 1940 the distribution of accentuation in Japanese dialects was clarified, mainly by Kindaichi and Hirayama (Haga 1961).

The theoretical study of Japanese accentuation and the study of the nature of the term 'accent nucleus' (AN) were well developed during this period. For example, Miyata (1928) accounted for the Japanese AN using the term *akusento-no taki* 'accentual waterfall' instead of *akusento-no yama* 'accentual mountain', which had been used until then. According to Miyata, in Japanese accentuation, only the place where the pitch falls – that is, *taki* – is important and not both the rise and fall – that is, *yama*. Hence, Miyata proposed that Japanese accentuation could be described by high and low pitches, with the AN thus being a type of 'waterfall'. He also claimed that an accent unit is present in the case of a noun with a particle or a noun without a particle, and that this seems to lead to the concept of the *bunsetsu* (cf. Arisaka 1941).

In this period, much discussion also took place about the number of tone levels that Japanese accentuation displays, that is, whether there are two or three levels of pitch (Haga 1961). For example, Jimbo (1925) and Sakuma (1929) claimed that Japanese accentuation has three levels of pitch.

The understanding of the nature of accentuation from a phonological viewpoint rapidly increased among researchers in this period. For example, Arisaka (1941) introduced the concept of 'syntagma', which was originally coined by Roman Jakobson (1949) and corresponds to the Japanese concept of *bunsetsu,* an accent unit. Furthermore, Arisaka claimed that the tonal pattern of the first mora being low (L) and the second mora being high (H) is important because this indicates the beginning of a *bunsetsu*. In addition, Arisaka considered the integrative function by which the peak of the pitch integrates the *bunsetsu*. There must be only one peak in a *bunsetsu*.

2.2.3. The third period (after World War II: 1945-)

In Europe and America, structural linguistics prospered at this time, and structural analysis also became essential to the study of accentuation. Quite a few developments occurred in Japan during this period as well (Sato 1977).

Hattori (1954) considered the differences between phonology and phonetics, claiming that only the distinctive features of accent patterns are important and that the central feature of the accentuation is the AN (i.e., that an H precedes an L). He also criticized the three-level tone theory of Sakuma and others as being a matter of phonetics and stated that two levels of tone were sufficient from the phonological viewpoint. Moreover, he introduced the idea of 'prosodeme' as an attempt to extend the traditional notion of an accent pattern. Prosodeme is defined as the sum of accent features such as pitch, stress and length (timing) that integrates the succession of syllables into an accent unit.

Sibata (1955) compared the Japanese dialects synchronically and proposed the existence of a 'rising AN' for some dialects in addition to the typical falling AN. This is consistent with that of Hattori mentioned above. Kindaichi (1957) also proposed that in the case of the Tokyo dialect, the morae, which are found by means of an analysis of sound sequences pronounced in a careful style, be named 'toneme', in contrast to 'phoneme'. He concluded that the accentuation could be described as a succession of tonemes.

2.2.4. Recent experimental studies

Experimental phonetic studies of accent began with Polivanoff and Sakuma. Following them, in the 1960s, Neustupný (1965, 1966a, 1966b) published papers presenting experimental data in which he suggested the necessity of conducting experiments to

clarify the nature of the Japanese accent (e.g., whether it is actually a pitch accent). More recently, experimental studies have been developed by Sugito (1972), Fujisaki and Sudo (1971), Fujisaki and Sugito (1977), Pierrehumbert and Beckman (1988) and Kubozono (1993). Pierrehumbert and Beckman, as well as Kubozono, discuss prosodic processes and the phenomena of tone, accentuation and intonation in the Japanese language. They consider the theoretical implications of, for example, the interaction between phonology and other components of linguistics.

The most recent studies are experiments investigating brain activities during the processing of auditory accent patterns by measuring brainwaves, as introduced in Chapter 1 above. For instance, Jôo (1996) investigated brain responses to various accent patterns by native speakers (NSs) of Japanese. Inouchi et al. (2003) examined brainwaves associated with implicit noting of the pitch and duration of vowel changes in Japanese synthesized words. Furthermore, Yamada et al. (2009) examined implicit brain responses to accent patterns by NSs and NNSs of Japanese and suggested that the responses were influenced by the phenomenon of 'pitch downtrend'.

2.3 Japanese Accent

2.3.1 Japanese accent unit and accent patterns

The Japanese accent is a 'word accent' (Hattori 1947; Neustupný 1978: 116; Kubozono 1995), where the 'word' should be understood as a *bunsetsu,* as mentioned previously. Hashimoto (1934, 1978) described the *bunsetsu* as the smallest unit and the main element in constructing a sentence, consisting of one independent (content) word with or without one or more dependent (function) words. *Bunsetsu* was characterized by Hashimoto, from the phonetic viewpoint, as follows: (1) a *bunsetsu* must be pronounced in one breath without a pause, (2) the accent of a *bunsetsu* is fixed, (3) it is possible to pronounce

individual *bunsetsu* separately, and (4) the first or the last sound of a *bunsetsu* is sometimes constrained, such as the /g/ sound which is pronounced only at the beginning of a *bunsetsu*, while the nasal /ŋ/ sound does not appear at the beginning of a *bunsetsu.* No consonants, except /n/, are pronounced at the end of the *bunsestsu.*

According to Arisaka (1941), the term 'syntagma', used by Roman Jakobson, has basically the same meaning as has *bunsestsu* and is an accentual phrase[1] or a word with only one accent peak. Hattori (1947, 1960) suggested that the term 'phonetic word' (*mot phonétique*), as used by Vendryes, is also a concept similar to *bunsestsu.* However, recently it was pointed out that *bunsetsu,* as the smallest syntactic unit, is not necessarily equivalent to the smallest prosodic unit. This is because the syntactic structure of a sentence is essentially a different phenomenon from its prosodic structure (for example, Fujisaki 1989).

Regarding accent pattern, Yamada B (1893), followed by Jimbo (1925) and Sakuma (1929), claimed that each unit of the accentuation represents a certain type of accent pattern composed of high and low vowels (later referred to as morae). It has been considered essential that an accent pattern is differentiated by whether or not an AN is present and, if it is, then where it is located (Hattori 1954, 1960). Thus, it is now widely accepted that the number of possible varieties of patterns of an n-mora accent unit is n+1.

The Japanese term *akusento* means 'accentuation of a word', and includes the distribution of high and low-pitched morae, for example that of *nihonji'n desu* 'they are Japanese people', which is LHHHL LL. On the other hand, in English, Russian and other languages, only the AN is called accent. In a dialect, the distribution of high and low pitched morae is fixed for each word and does not normally vary within the same dialect.

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[1] The term 'accentual phrase' is used with a different meaning by some researchers, such as Fujisaki (1989), Fujisaki and Sudo (1971) or Maekawa (1998).

In other words, the Japanese language, particularly the Tokyo dialect, displays numerous patterns of high- and low-pitched morae, depending on the specific words (*bunsetsu*). The Japanese accent is therefore called a 'free accent' (Neustupný 1978: 116; Sibata 1955, 1961; among others). Moreover, the AN in Japanese for the same lexical unit can change its place, such as in the conjugation of verbs or adjectives, just as in Russian (Neustupný 1978: 116).

In the examples given in this study, the accent mark (') indicates the AN in the target Tokyo Japanese, while underlining shows the AN as placed by learners; L represents a low-pitched and H a high-pitched mora.

2.3.2 Accent nucleus (AN)

When a high-pitched mora is followed by a low-pitched mora (i.e. HL), the high-pitched mora is called the AN. The Tokyo dialect has two types of words or accentual phrases: accented words with an AN and unaccented words without an AN. As mentioned above, research prior to Hattori did not study the concept of the AN and instead used the term *akusento no yama* 'accentual mountain', which is similar to the 'peak of a word' in English and most other European languages.

2.3.3 Functions of the accent

Since the Japanese accent is a word accent, it has the function of segmenting an utterance into words to clarify their boundaries. Japanese NS use two accentual segmentations to indicate an accent unit in an utterance: (1) placing one AN to integrate a word, and (2) raising the pitch between the first and the second mora of a word to indicate the head of the unit (Arisaka 1941; Neustupný 1965, 1978: 117; Kawakami 1973; among others). Thus, from the phonological viewpoint, since only one AN can be placed in a unit, it has

a 'culminative' function (Kubozono 1995), forming the peak of a unit (Arisaka 1941).

In addition, the Japanese accent semantically distinguishes words. This function enables homophones to be distinguished, such as *hana de'su* 'it is a nose' and *hana' desu* 'it is a flower' (Sibata 1961, 1980: 10; Neustupný1978: 116). However, according to Sibata and Sibata (1990), the probability of the accent performing this distinctive function – semantically distinguishing the words – is only 14 per cent.

2.3.4 Pitch accent

As noted in Chapter 1, it is widely accepted that the Japanese accent is a pitch accent, although the characteristics of prosodic features can be described from the physical perspective as three elements: frequency, intensity and time, which correspond to the three attributes of sensation, voice-pitch, voice-loudness and subjective duration (Jakobson and Halle 1956).

As already stated, Yamada B (1893) was the first to describe the Japanese accentuation in terms of high and low tonal levels. When the Russian linguist Polivanoff came to Japan, he praised Yamada B's two-level tone theory (Polivanoff 1915, 1976). However, Jimbo (1925) and Sakuma (1929) later claimed that Japanese accentuation has three levels. This perspective was later discounted when the two-level tone theory was reinforced in the works of Arisaka (1941), Hattori (1954) and Kindaichi (1957). As discussed earlier, Hattori (1954) claimed that the two-level tone theory is phonological, whereas the three-level tone theory has no phonological significance; it is merely a matter of phonetics.

Added to these, Neustupný (1966b) pointed out the necessity of a closer examination as to whether the Japanese accent is truly a pitch accent. This was proven for the first time by Sugito (1972), whose experimental study found that Japanese is, indeed,

a pitch-accent language. Experimental research became active thereafter, for example Pierrehumbert and Beckman (1988) and Kubozono (1993), both of which examined the pitch downtrend patterns within accented and unaccented words of various lengths in the Tokyo dialect.

2.3.5 Syllable and mora

Japanese is regarded as a mora-counting syllable language (Hattori 1954; McCawley 1968; Sugito 1989), in which the AN is to be placed on the syllable. However, when the accented syllable consists of two or more morae, (such as a long vowel, a diphthong, double consonants, or the /n/ sound), the AN is placed on the first mora. One example is *de pa' a to* 'department store' (LHLL). Hence, the accent pattern of a number of loan words can be described by stating that the accent is placed on the syllable containing the antepenultimate mora, or the third mora from the end of the word (McCawley 1968; Kubozono 2006a, 2006b).

2.3.6 Rules of Japanese accentuation

Since the Japanese accent is a 'word accent', an accentual phrase has only one AN. Each accentual phrase represents a certain type of accent pattern, which is fixed for a dialect and may not be arbitrarily changed by speakers. Thus, each accent pattern is governed by accent rules.

Clearly, Japanese NSs possess and employ certain accent rules. The Japanese accent unit, the accentual phrase, consists of one content word with or without one or more function words. A content word can be a complex word with a suffix, such as *daigaku'-kan* 'interuniversity', which is accented on the mora preceding the boundary between the content word and the suffix. A content word can also be a compound word

(one content word combined with another to form one word), such as *tokyoo-da'igaku* 'Tokyo University', which is accented on the first mora of the second component. The accent rules for these two types of complex words are different from those for simplex words without a suffix, such as *daigaku* 'university' which is unaccented. The accentuation of the first two types are governed by the 'compound word accent rules', which are defined by many researchers, such as Akinaga (1958, 1985, 2001), Sato (1989), Kubozono (1993, 1995) and Uwano (1997). The latter type of the content word is not modified by any accent rules (Kubozono 1993) even if it is qualified by an adjective and so on, such as *furu'i+daigaku* 'old university'. Thus, the accentuation of these three examples of *daigaku* is different depending on the type of rules.

Kubozono (2006a, 2006b), on the other hand, introduced the rule that accented nouns follow the antepenultimate rule to put an accent on the syllable containing the antepenultimate mora, or the third mora from the end of the word, and that this has effects similar to the rules for compound words, adjectives and verbs. However, accented nouns showing patterns other than the antepenultimate ones are lexically marked with an accent location. Moreover, the antepenultimate rule in Japanese is strikingly similar to the Latin accent rule. Thus, the accentuation of not only Japanese simplex nouns, compound nouns, adjectives and verbs but also that of Latin is governed by the following principles, which can be considered to be universal:

- An accent is not placed on the final syllable of a word.
- An accent is not placed on the syllable far from the end of a word.
- An accent tends to be placed on the heavy syllable which includes two or more morae rather than a light syllable which includes only one mora.

Accordingly, the antepenultimate rule in Japanese can be attributed to such 'universal principles'. Accentuation in Japanese following the antepenultimate rule is called a

'fundamental accent' by Terakawa (1944). McCawley (1968) has pointed out that most loan words follow this accent rule, and other researchers such as Wada (1951), Akinaga (1985) and Yamada (1992, 1994a) have also noted its importance. However, Kubozono was the first to describe it from the perspective of universal principles.

2.3.7 Rules and strategies of accentuation

Neustupný (1981, 1987a, 1989a) proposed the theory of typologies, suggesting that the type should be considered a set of interrelated features generated by principles with varying degrees of generality. He suggested the following categories for a scale comparing the levels of generality: determinants, maxims, strategies, ordinary rules and listing rules. The determinants are the most general principles, followed by the maxims, strategies and ordinary rules, with listing rules as the most specific. The top three levels – strategies, ordinary rules and listing rules – can account for the accentual system.

2.3.8 Production and perception of accentuation

In general, when speakers intend to phonologically express some linguistic information, such as accentuations of LHH and LHL, they actually produce it phonetically in the form of a pitch contour which shows an objective physical quantity. However, listeners appear to phonologically perceive the accentuation as a subjective accent pattern, such as LHH and LHL.

Fujisaki and Sudo (1971), Fujisaki and Hirose (1984) and Fujisaki (1989) proposed models for the production of pitch contours. Fujisaki and Sudo proposed a widely accepted model that considered the production of pitch contours as binary commands consisting of an accent command and phrase command. The pitch contours of words and sentences are generally characterized by a gradual declination from the onset towards the

end of an utterance, superimposed by local humps corresponding to a word accent as well as those corresponding to such intonational factors as interrogation and emphasis (Fujisaki and Hirose). Thus the model for the production of pitch contours elucidates the pitch downtrend phenomenon shown in an utterance, including a one-word sentence produced by speakers. Fujisaki (1988, 1989) accounted for the production of pitch contours consisting of binary components by the notion that it is caused by speakers' physiological and physical mechanisms.

The perception of accentuation does not always appear to be identical to the actual pitch contours produced by the speakers. Sugito (1972, 1997) conducted experiments to examine the '*ososagari* phenomenon' in which the actual pitch level of the accented mora is lower than that of the following mora, but the low pitch is perceived to be accented by the listeners. She concluded that the decisive factor of accent pattern recognition is that when a mora shows the movement of pitch falling within it, the preceding mora is accented even if its pitch level is lower than that of the following mora. Added to this, Sugito (1973) performed experiments examining the categorical perception of accent patterns using synthesized speech sound. Results were consistent with the '*ososagari* phenomenon' obtained in her previous experiments (Sugito 1972). She also found that even a slight difference of pitch level in a vowel can cause a different recognition of an accent pattern. Furthermore, she noted that the stress on the accented mora did not appear to be an important element of accentuation, which was contrary to some previous studies such as those of Hattori (1954) and Neustupný (1966b).

2.4 Acquisition of Japanese Accentuation

According to Ellis (1994: 48), in the early 1970s error analysis took the place of contrastive analysis and became a recognised part of applied linguistics. Corder (1981)

made a substantial theoretical contribution to this development. He argued that second language learners seem to create their own system, which is different from that of both their mother tongue and their TL. Corder (1967) called this system a 'built-in-syllabus', whereas Selinker (1972) coined the term 'interlanguage'. According to Corder (1967), the learner uses a definite system of language at every stage of his/her development, and the learners' errors are evidence of this system, being themselves systematic.

Corder showed that learner errors could be significant in three ways: (1) errors inform the teacher about the learner's knowledge, (2) they provide the researcher with evidence concerning language learning or acquisition and the strategies or procedures used by the learner in his/her discovery of a language, and (3) they are indispensable to the learner as a device to discover the rules of the TL (Corder 1967). The significance of learner errors taken up here is assumed to give clues to the mechanisms of L2 acquisition. However, the method of error analysis on its own seems insufficient to describe the entirety of the learners' system.

2.4.1 Studies of the acquisition of Japanese accentuation

In one of the early studies, Horiguchi analysed the production of Japanese accentuation by native English speakers on the assumption that their accentuation is the result of interference from English (Horiguchi 1973). This is a typical example of contrastive analysis. In addition, Yoshimitsu (1981) attempted to analyse learners' accentuation on the basis of the rules of TL accentuation. She analysed the production of learners' accentuation in natural conversational discourse by noting the degree to which the correct accent was produced and the type of accent rules or parts of speech that the learners acquired. She attempted to find systematic patterns in learners' errors. Her study showed that (1) the overall rate of correct accentuation was surprisingly high, (2) individual

participants had different problems with accentuation, (3) some participants showed an inclination to 'fossilization', and (4) participants' accents were unstable. Yoshimitsu concluded that appropriate understanding and firm recognition of Japanese accentuation is necessary for the students' further progress. Her study endeavoured to determine not only the appropriateness of their accentuation but also the system developed by learnes for their accentuation. Neustupný (1997) considers that the study of Japanese SLA commenced with Yoshimitsu's study, since she analysed learners' production of accentuation in the micro-processes of discourse.

In addition to these studies, Yamada (1992) studied learners' accent strategies on the basis of data obtained from natural conversational discourse by Australian Japanese language learners. She concluded that (1) adequate segmentation is a necessary first step for the acquisition of Japanese accentuation, (2) the accentuation of words which are generally used more frequently by the participants appears to be acquired by more participants, (3) each learner appears to have acquired some rules which are applied frequently, (4) all participants produced the same seven ILSs which can be classified into two types, primitive and advanced, and (5) the participants likely developed their strategies from a primitive type which progressed to an advanced one. Yamada (1994) later reanalysed the same data and identified eight ILSs which can be categorised into the same two types. Furthermore, she found that the ILSs applied by each subject vary on occasions. In other words, they show free variation. Subsequently, using a cognitive psychology perspective, Yamada (1999) longitudinally investigated accentuation in discourse by elementary-level learners whose mother tongues varied, and proposed a hypothetical model for the generation of ILSs. According to this model, learners generate ILSs in three developmental types - primitive, prototypical and advanced - which are derived from L2 input or chosen and retrieved from memory. Upon generation, the

strategy appears to be evaluated by participants according to their competence of evaluation. Yamada hypothesized that their accentuation is generated under the influence of four types of internalized knowledge: (1) ILSs generated at that time, (2) acquired L2 accentuation, (3) L1 and other learned languages and (4) universal properties of accentuation (Yamada 1999). In these three studies, Yamada systematically investigated learners' accentuation and the resulting findings made it possible to interpret the 'interlanguage' of Japanese accentuation, which had previously lacked adequate explanation. Yamada (1995) has also examined accentuation by the speakers of the Ibaraki dialect, which is considered to be in the process of shifting towards the Tokyo dialect. She found that Ibaraki speakers produce the same strategies of accentuation as the ILSs produced by Japanese language learners, presumably because the target accentuation for both these learners and the Ibaraki dialect speakers is the same: the Tokyo dialect accentuation. Furthermore, most of the participants in the above studies by Yamada paid no conscious attention to their accentuation in the data of natural conversational discourse.

A number of additional investigations, such as those by Min (1989), Ogawara (1997), Lee et al. (1997), Ayusawa (1998) and Nakato (2001) have been carried out. Some of these studies, such as those by Nakato, have attempted to find the organizational method behind learners' use of accents. Nakato studied the accents of the Korean learners of Japanese and examined the features of the syllables on which her participants placed the AN (the author described this as 'pitch realization'). She then proposed pitch realization rules for two syllable words developed by the Korean learners of Japanese from the viewpoint of syllable structure and syllable weight. Ogawara investigated the learners' accentuation as well as other prosodic features and concluded that their conscious self-monitoring and substantial knowledge of Japanese accentuation is

indispensable for accent acquisition. (Ogawara 1997). Lee et al. (1997) investigated listening competence of Japanese accentuation by Japanese language learners who are native speakers (NSs) of the Seoul dialect in Korea. They found a correlation between participants' difficulties and characteristics of their mother tongue accent.

In Ayusawa's (1998) study of Japanese language learners' accent usage, listening competence for three, four and five mora words was tested with learners who were native speakers of different languages. The author concluded that recognition of accent patterns depended on each learner's mother tongue. In addition to the above research, Ayusawa conducted an extensive investigation on listening and production of accentuation and emphasized the importance of contrastive analysis and its application to Japanese language education for those with different L1s.

Yoshimitsu and many others analysed learners' accentuation on the basis of their production of accents. Yoshimitsu and Ogawara emphasized the importance of learners' paying conscious attention to their accentuation for the purpose of improvement of their accentual competence. It seems that further investigation is needed of both the accentuation of learners who are conscious of their accentuation and those who are not.

2.4.2 Style-shifting and second language acquisition

It is predicted that NNSs of Japanese will show style-shifting in accentuation between formal and informal situations even if they pay no attention to their accentuation. Although no research has been conducted on such style-shifting, Yamada (2003a) examined the accentuation of the Ibaraki dialect speakers' formal and informal discourses, and the results showed an unconscious, systematic style-shifting. In formal situations, the Ibaraki speakers produced more appropriate accentuation than they did in informal situations. In this case, 'style' can be interpreted as the appropriateness of accentuation

based on the Tokyo dialect of accentuation.

Crystal (1997: 66) defines the notion of 'style' multi-dimensionally. The senses of style can be classified into two broad types, the *evaluative* and the *descriptive*. In the first sense, style is considered in a critical way which implies a degree of excellence, such as 'having style' or 'without style.' The second sense simply describes the set of distinctive characteristics such as 'Shakespearean style', 'informal style', and so forth. In both senses, 'style' always involves an appreciation of *contrast*. We distinguish 'Shakespearean' from 'not Shakespearean', 'formal' from 'informal', and so on.

Furthermore, Ervin-Tripp (1972, 1986 reissued: 235) described style as 'the term normally used to refer to the co-occurrent changes at various levels of linguistic structure within one language. The vertical properties of such shifts have been pointed out by Joos' (1962[2]). Although not an empirical study, Joos (1960: 110) has listed five vertical levels of speech styles: intimate, casual, consultative, formal and frozen. According to his account, within a single discourse these styles can shift between two adjacent styles on this scale.

Labov, in his studies of phonological variation, determined the range of styles used by the speaker towards the formal end of the spectrum where more attention is given to speech. Five stylistic levels occurred within each context: casual speech, careful speech, reading, word list and minimal pairs (Labov, 1970: 49, 1972: 79–109). The following describes each of these styles.

(1) Casual speech: the everyday speech used in informal situations, where no attention is directed to language.

(2) Careful speech: the type of the speech used when the participant is

[2] Joos (1962) was not found in the reference book.

answering questions in formal interviews; this is more formal than casual conversation among friends or family members. Although it is not clear whether Labov was influenced by Joos (1960), he refers to Joos' 'consultative' style, which seems to coincide with the style of careful speech (1972: 80).

(3) Reading: reading texts aloud elicits much less formal speech than a list of isolated words.

(4) Word lists: the participant's pronunciation of words in isolation on a list is considered to be a more formal context than reading.

(5) Minimal pairs: the reading of two words or minimal pairs.

These styles of speech range along a single dimension of attention, with casual speech at one end of the continuum and minimal pairs at the other (Labov 1972: 99).

Regarding style-shifting, accommodation theory was developed primarily by Giles (Giles and Smith 1979). According to Giles et al., shifts occur within one language as well as in multilingual settings, and shifts make changes with regard to accent, speech rate and amount, pauses, and so forth. The general adjustment of a speaker's speech style is called 'accommodation', which represents a psychological phenomenon. A speaker's style-shifting towards the interlocutor is termed 'convergence', while a shift away is called 'divergence' (Beebe and Zuengler 1983).

In the field of applied linguistics, various studies of style-shifting, particularly Labov's five stylistic levels of phonological variation, were applied to the systematic variation in second language acquisition. For example, Dickerson (1975) succeeded in eliciting systematic style-shifting in the production of the English /z/ sound by 10 English language learners in three situations using Labov's model. Tarone (for example, 1982, 1983, 1985) also adapted Labov's methodology to investigate style-shifting in data

collected from three different tasks. One case resulted in the expected pattern, while the other two cases demonstrated a reverse pattern of Labov's model. Following results such as these, the Labovian paradigm has received considerable criticism (for example, Wolfson 1976; Beebe 1982). One of the main problems is Labov's use of 'attention to speech' as a causative factor in style-shifting (Ellis 1994: 124).

2.4.3 Language management

A language management theory which includes the role of correction of language problems was developed by Neustupný (1985a), Jernudd and Neustupný (1987) and others, as mentioned above. According to this theory, language behaviour needs the generation of language as well as management of language problems, both at the macro-societal level as well as in discourse (Neustupný 1985b). This theory thus covers language problems as they exist in the micro-processes of discourse, and it enumerates five universal processes.

According to Neustupný (1997a), early studies of language acquisition were not about processes but about the results of processes; in other words, they focused on the implementation in terms of this theory's model. After a few decades, the number of studies on the processes of acquisition increased; however, most research continues to consider the macro-processes of acquisition. Neustupný states that the study of language acquisition should involve analysis of the micro-processes of actual discourse. The micro-processes of acquisition are evident, for example, in contact situations in which a member of the participating group is a NNS. Neustupný applied the five-stage management processes to language acquisition processes as follows: deviation from norms, noting the deviation, evaluation of a noted deviation, adjustment selection and adjustment implementation, as mentioned above.

Most acquisition studies of Japanese accentuation introduced in this chapter are based on the learners' production of accentuation and not on the micro-processes of language acquisition. Although Neustupný claimed that both implicit and explicit notings of deviations are possible, the behavioural examination of implicit management of accentuation seems to be methodologically difficult. Hence, to the best of my knowledge, the research on the management of accentuation is limited to one study by Yamada (2003b) which explores explicit management. Yamada examined the management of accentuation by six Japanese learners, and only one participant explicitly noted some word accentuations in her 15-minute discourse. However, most of those notings did not proceed to the implementation stage. Yamada ategorized this as weak management caused by insufficient explicit knowledge of individual word accentuation.

2.5 Noting of Accentuation and Brainwaves

2.5.1 Implicit noting of accentuation in the human brain

Generally, both NSs and NNSs seem to pay more explicit attention to the content and/or formulation of their messages than to accent in their discourse, as discussed in Chapter 1. However, the role of noting of deviations from norms is significant in the process of language acquisition, which is one of the important stages of language management, as stated above. As suggested in Chapter 1, two kinds of noting exist: explicit and implicit noting. Explicit noting can be investigated with the help of introspection methods such as follow-up interviews (Neustupný 1994). On the other hand, implicit noting can be studied with the help of observable cues such as non-verbal communication (Clyne 1975) and eye movement or brainwaves (cf. Inouchi et. al 2003; Yamada et al. 2009).

Neuropsychological research supports the view that the brain has two systems for learning (Petri and Mishkin 1994). According to Petri and Mishkin, habit-based or

implicit learning can take place alongside memory-based, explicit – or cognitive – learning. The contents of the habit system, although evident in behaviour, often appear to be unavailable to conscious awareness, whereas those of the memory system are readily available to conscious awareness. What is learned may depend on how it is learned and whether the habit system or the memory system is activated during learning. Often the two systems are simultaneously active. Hence, if the learners learn accentuation without receiving explanations about accentuation and receiving only correction for mistakes, they would learn to produce accentuation implicitly without conscious knowledge, that is, by habit-based learning.

The measurement of brainwaves can facilitate direct examination of brain activities, such as implicit or explicit noting during perception of auditory speech sounds. To investigate the implicit noting of accent patterns as a brain activity, it is essential to examine mismatch negativity (MMN), a component of brainwaves identified by Näätänen et al. (1978). According to Näätänen (1978, 2000), the MMN is elicited when, for example, a tone changes in frequency or duration, and it can be measured even in the absence of attention without any task requirement.

Although neuronal correlates of prosodic perception, in particular, of pitch or stress patterns have not been studied in detail, Inouchi et al. (2003) examined brainwaves for implicit noting of pitch changes in Japanese words with one syllable and two morae. This study showed that brainwaves are sensitive to pitch falling rather than to levelling for both NSs and NNSs of Japanese who do not understand Japanese at all. However, their results did not succeed in showing brain responses to speech sounds. According to Inouchi et al., the stimulus sounds that they provided to the participants were acoustically processed without any access to semantic information, although they utilized synthesized real Japanese word stimuli. Yamada et al. (2009) investigated implicit neuronal noting by

NNSs and NSs of Japanese of two Japanese accent patterns, LHH and LHL, in meaningless pseudo words. The elicited MMN showed that the participants in both groups appeared to implicitly note the accentual pitch patterns in their brains, and that the implicit noting of accent patterns in their brains specifically involves the pitch downtrend phenomenon mentioned above, which can be observed in various languages. The MMN in brainwaves have also been found to reflect implicit processing of a stress accent. For example, in Hungarian, where the stress is obligatorily placed on the first syllable, research on brainwaves has revealed that stress-deviant Hungarian words, with the stress on the second syllable, were implicitly noted in the human brain (Honbolygó et al. 2004). Added to these studies, Joo'o (for example, 1996) investigated the brain response to auditory Japanese accent patterns. However, his experiments were restricted to the explicit noting of the stimuli. Besides, more studies have been undertaken on prosodic speech processing in the human brain although these are not only on Japanese (Klein et al. 2001; Inouchi et al. 2002; Berman et al. 2003 among others).

2.6 Summary

This chapter dealt with the literature underlying the main concepts of this thesis, along with the basic concepts which are incorporated in some studies on Japanese accentuation. The first section covered the advancement of the studies on the Japanese accent from the late 19th century to the present. The second section discussed the main characteristics of the Japanese accent from the phonological and phonetic viewpoints. The phenomenon of the pitch downtrend (for example, Fujisaki and Sudo 1971) regarding accent and intonation was also introduced. This important model supports one of the distinctive findings of this thesis. This chapter also introduced studies on Japanese accentuation and some applied linguistic theories that form the basis of this thesis, such as those of second

language acquisition, language management theory and theories of style-shifting in second language acquisition. Finally, studies of implicit noting of pitch patterns investigated from the perspective of neuroscience were introduced.

CHAPTER 3

THEORETICAL FRAMEWORK AND METHODOLOGY

3.1 Theoretical Frameworks

NNSs' accentuation shows a number of different aspects which are not necessarily the same as NSs. In general, it can be described on the basis of applied linguistic theories, but at the same time some linguistic theories are also relevant, as noted in the previous chapter.

In this study, Japanese language learners' accentuation is explored in detail, as described above. Primarily, production, management and brain perception is investigated in terms of frameworks of second language acquisition in applied linguistics. I have also undertaken a cognitive neuroscientific investigation of the MMN components of brainwaves, which enables an examination of brain activity during unconscious language processing.

3.1.1 Production of accentuation by NNSs

It is the general understanding that since second language learners' accentuation is underdeveloped and they lack acquisition of target accent rules, so strategies rather than rules are utilised. What strategies learners adopt to minimize the disabling effects of their ignorance (Corder 1981) relates to the production of accentuation and is dealt with in this study. In order to analyse and identify what accentuation participants produce and develop regarding target accentuation, the 'rules and strategies' within Neustupný's theory of typologies (1978, 1987a, 1989), discussed in the preceding chapter, is employed from the perspective of theories relevant to second language acquisition. As explained, I will focus on ILSs where learners use L2 norms and natural strategies which

reply upon universal norms.

(1) Rules and strategies of accentuation

As mentioned, accentuation of each phrase is fixed for a dialect and may not be arbitrarily changed by speakers. NSs of Japanese can place the AN appropriately even when they encounter an accentual phrase for the first time. It thus seems clear that NSs possess and employ certain rules of accentuation.

Neustupný (1978, 1987a: 301-4, 1989: 358-61) introduced the theory of rules and strategies that can be used to account for Japanese language learners' accentuation. The rules fall within one of two categories, ordinary rules and listing rules. Ordinary rules for the Japanese accentuation are the so-called accent rules, such as for a compound word accent rule, which is for words with suffixes, prefixes, particles or inflectional endings. For example, the target accent rule for the compound accent in which the second component is one or two morae such as the suffix *–jin* '–people', as in *oosutoraria'-jin* 'Australian people' or *kankoku'-jin* 'Korean people' are accented on the first mora preceding the boundary of their components. Listing rules assign accent not to a group of words but to individual items, such as cases of exceptions to ordinary rules, for example, *nihon-ji'n* 'Japanese people' and a single content (independent) word such as, *niho'n* 'Japan', where the location of AN in each word is individually fixed. According to Neustupný (1978: 121), 'the majority of morphemes possess their own basic accents, and there are rules which determine the morpheme retaining its accent in a word'. He further claims that 'this situation can be linked with the agglutinative type which is the most important one in Japanese' (Neustupný 1978: 132). The compound word accent rules thus appear to be dependent on the features of the agglutinative type or morpheme accent in Japanese language.

Strategies are wider and more general categories than rules. As Neustupný states, although 'there are more and less general rules, what linguists speak about does not usually reach the level of generality of strategies' (Neustupný 1989: 360). As discussed above, one possible example of an accent strategy is to place the AN on the preceding mora of the boundary of components of a phrase, such as *kankoku'- jin* or *chiba'-ken* 'Chiba prefecture'. Since strategies are more general category than rules, they are free from restriction such as 'the second component is one or two morae' in compound word accent rules above for *kankoku'-jin* or *chiba'-ken*. Therefore, *chiba-da'igaku* 'Chiba University', which is incorrectly accented on the mora /ba/, is possible. Another alternative strategy also possibly applies to the same phrases, for example, to place the AN on the third mora from the end of a phrase, such as *kankoku'-jin* or *chiba'-ken*. Moreover, the phrase *kirisuto-kyoo* 'Christianity' applies both strategies, because the AN is incorrectly placed on the mora /to/ which is the preceding mora of the boundary and also the third mora from the end, despite the fact that this phrase should be unaccented. Thus, one or more strategies can be simultaneously applied to the same phrase. Neustupný stated that the concept of strategies is close to the concept of 'strategies' in Brown and Levinson's 'politeness strategies' (1978), and he further claimed that strategies rather than ordinary or listing rules enable us to describe ongoing or developing processes, such as the acquisition of a second language (Neustupný 1989: 358, 377).

In this study, the typological theory proposed by Neustupný (1989) is applied in order to illustrate the accent system of Japanese produced by learners, and to investigate the accentuation of Japanese language learners on the basis of how NNSs acquire rules and produce strategies of the target Japanese accentuation, which are not necessarily appropriate.

(2) Norms

It is assumed that NNSs use norms in order to produce accentuation, and Neustupný describes this process as follows. All participants in contact situations necessarily use norms as a yardstick from which all deviations are measured, and to which evaluation of behaviour is firmly bound. Target norms used by NNSs in contact situations have at least the following four characteristics: (1) the norm may be deficient, (2) the norm is adapted (interlanguage), (3) the norm is borrowed or transferred from the speakers' native language (L1 norms) and (4) the norm is rigid, even if the TL (L2 norms) is correctly used (Neustupný 1985b). This argument appears to be expanded into the following four categories by Neustupný (1985b, 1995b, 2004), which are assumed to be used as the norms for creating strategies for the target rules in contact situations by NNSs: L2 norms, L1 norms, ILSs and pidginization. This study analyses participants' accentuation in terms of these four categories in addition to an analysis of universal norms.

(3) Interlanguage

Ellis (1994: 710) describes the concept of interlanguage as follows:

> Selinker (1972) coined the term 'interlanguage' to refer to the systematic knowledge of an L2 which is independent of both these learner's L1 and the TL. The term has come to be used with different but related meanings: (a) to refer to the series of interlocking systems which characterize acquisition, (b) to refer to the system that is observed at a single stage of development ('an interlanguage'), and (c) to refer to particular L1/L2 combinations (for example, L1 French/L2 English). Other terms that refer to the same basic idea are 'approximative system' by Nemser (1971) and 'transitional competence' by Corder (1967).

In this study, interlanguage is used in reference to the L2 learners' adapted substitute

system of their target, particularly the Japanese accent rules. Neustupný (1985b) argues that since speakers have not yet correctly acquired all rules needed, for the sake of communicative efficiency they adapt rules which they already possess and use them as substitutes (interlanguage). This means that rules alien to both the foreign and the native speakers' norms appear in contact situations.

3.1.2 Implicit noting and systematic variation through style-shifting

There is a strong likelihood that accentuation is implicitly rather than explicitly noted and produced. However, it seems to be methodologically difficult to investigate implicit noting or attention behaviourally. Labov (1970, 1972) refers to the speech style change in five situations ranging from casual towards formal as 'style-shifting', as mentioned above. According to him, the speech style used in different situations varies depending on the degree of attention speakers pay to their speech. Therefore, this study attempts to examine the shifting of accentuation mainly in formal and informal situations. It is expected that if the results show the systematic variation of style-shifting this is due to the participants paying attention to their accentuation in an implicit way.

In addition to this, the accommodation theory developed by Giles and Smith (1979) is utilized for analysing style-shifting, particularly the adjustment of participants' accentuation towards their interlocutors. Giles calls this psychological phenomenon 'convergence' and the reverse phenomenon 'divergence'.

3.1.3 Language management theory

Language management theory was introduced and developed by Neustupný (1985a), Jernudd and Neustupný (1987) and others, as noted above. According to this theory, as mentioned in the previous chapter, five stages of management may be used in the

language acquisition process (Neustupný 1997):

(1) Deviations: The use of language is usually governed by various norms. At the macro level, the state in which learners have not yet thoroughly acquired the TL can be regarded as a deviation from the norm and it is the starting point of acquisition.

(2) Noting: Learners normally note any deviation from the norm in the second stage, but they do not always do so. For example, elementary level learners who have never received instruction in accentuation may not note any deviation. However, those cases can constitute the first stage of the acquisition process, but they do not necessarily start acquisition. According to language management theory, noting is a necessary prerequisite for acquisition. However, Neustupný has claimed that noting need not be an explicit process in that it can occur subconsciously.

With reference to noting, Schmidt claims the importance of 'noticing' in second language acquisition, although he stated that subliminal learning is impossible (Schmidt 1990). Furthermore, the notion of 'comprehensible input' by Krashen (1985) is considered as input which can be noted to be acquired (Neustupný 1997). Thus, deviations may be noted explicitly or implicitly, depending on how the TL is learned or what type of input the learners have received.

(3) Evaluation: Evaluation of a noted deviation can be three-fold, positive, neutral or negative and it is the latter type that has been focused on to date. Among negatively-evaluated deviations, some are useful only for a discourse adjustment, while others lead to adjustment for the learners' system, which can be linked to acquisition.

(4) Adjustment selection: In many cases, an evaluated deviation is adjusted by a selected adjustment procedure, such as a communication strategy (cf. Tarone 1981; Færch, and Kasper 1983), negotiation of meaning, such as discourse repair (Ellis 1994: 260), learner strategy (Wenden and Rubin 1987; Oxford 1990) or foreigner talk by NSs (Skoutarides 1981). These adjustment procedures have been studied extensively by a number of researchers. Neustupný (1997: 12) has classified these into three categories: teaching procedures, learning procedures, and non-controlled procedures.

(5) Adjustment implementation: The sequence of the above four stages of language management is not always carried through to the implementation stage, but may stop at any stage. Implemented adjustment can be stored as memory, and the stored memory can be adjusted to newer versions. In other cases, only discourse is adjusted and the system is not. It is presumed that in many cases frequent implementation can be stored as memory.

This study investigates all five management processes, that is, explicit management, for 11 participants by means of follow-up interviews.

3.1.4 The MMN (mismatch negativity): automatic brain responses to changes in auditory stimulation

It is the concern of this thesis that if two types of sound are heard subconsciously in different accent patterns one after another, how the brain responds to those stimulus accent patterns. The response of the brain to stimuli can be studied by measuring the electrical activity of the brain evoked by sensory stimuli. Since this activity can be recorded using electrodes on the scalp this method can provide a non-invasive procedure for the examination of human participants. The amplitude of the spontaneous activity of

the brain when measured with scalp electrodes (electroencephalogram or EEG) is about 50 micro volts peak to peak (Cooper 1980). The EEG is usually displayed using a computer as waveforms commonly referred to as brainwaves, which are characterised by the intensity ('amplitude'), the latency and the specific locations of electrodes on the scalp to measure them.

The mismatch negativity (MMN) is an electrical brain response identified by Näätänen et al (1978), which is one of the components of brainwaves. This component is observed when participants are exposed to a repetitive train of identical 'frequent' stimuli with occasional mismatching 'infrequent' stimuli. An MMN is elicited when, for example, a tone changes in frequency, duration or intensity, or a phoneme is replaced by another phoneme. The MMN peaks usually at 100-200 milliseconds from stimulus change onset.The most important characteristic is that MMN can be elicited even when a participant does not pay attention to the stimuli (Näätänen et al. 1978, 2003).

3.2 Methodology

The methodology of this study varies according to the different research tasks outlined below. The data for this thesis comprises two sets, DATA-1 and DATA-2. DATA-1 was collected with the aim of investigating the production of accentuation by learners, style-shifting and the management of accentuation in contact situations. For DATA-1, two sets of discourse in contact situations, which were interviews in formal situations and conversations in informal situations, and the reading aloud of a word list were audio-recorded, and follow-up interviews (FUI) were carried out and audio-recorded. The recorded discourse was transcribed and analysed with an emphasis on the location of the ANs in each accentual phrase according to the accentuation in the Tokyo dialect of

Japanese. The accentuation of the recorded word list reading was also analysed in the same way as was the discourse data. Thus, the methodology used for DATA-1 involved analyses of each participant's accentuation in natural discourse data, which is different from the methodology used for much of the general research on accentuation. The traditional methodology for accentuation focuses on the distinct use of each word, not in discourse, particularly on each word being reading aloud, just like the word list reading in this study.

DATA-2 comprised brainwaves of NNSs and NSs which were automatic responses to the two different pitch patterns existing in Japanese word accentuation, and was examined for the purpose of confirming the participants' neuronal noting of accent patterns. The methodology used here is an authentic experiment as employed in the field of neuroscience.

3.2.1 DATA-1

(1) Participants and their backgrounds

The participants in the DATA-1 set were learners of the Japanese language, and were living in Japan at the time of the data collection (although they started their learning of Japanese in their own countries, where the participants had the experience of learning and practicing the Japanese accentuation). However, some participants had never lived in the area where the local people speak Japanese according to the Tokyo dialect accentuation, which is the target accent in this study.

DATA-1 comprised the discourse of 11 participants with NSs, in two different situations (formal and informal), and reading aloud from a word list. The participants were designated A1, B1, B2, B3, B4, C1, C2, C3, C4, D1 and D2. The backgrounds of the 11participants are outlined in Table 3-1.

Table 3-1: Backgrounds of participants in DATA-1

Participants	Gender	Age	Mother Tongues	Japanese Proficiency	Stay in Japan	Stay in Tokyo
*A1	F	20-30	English (USA)	Completion Elementary	7M	7M
*B1	M	30-40	Korean/ Chinese	Advanced	1Y & 4M	0
*B2	M	20-30	English (USA)	Completion Elementary	7M	7M
*B3	M	20-30	English (USA)	Intermediate	8M	8M
*B4	M	10-20	Chinese (Shandong)	Advanced	1Y & 8M	0
C1	M	30-40	Korean/ Chinese	Near Native	5Y	5Y
C2	F	20-30	Korean/ Chinese	Advanced	2M	2M
*C3	F	30-40	Korean (Jeju-do)	Near Native	6Y	6Y
C4	F	20-30	Chinese(Harbin)	Advanced	1Y & 6M	0
D1	M	30-40	Korean (Busan)	Near Native	13Y	1Y
D2	F	30-40	Korean (Busan)	Near Native	6Y & 6M	6Y & 6M

M: month(s), Y: year(s), asterisk (*): group-1 and without asterisk: group-2. Elementary: completed elementary level.

A1 is a female trainee writer at a Japanese newspaper, whose mother tongue is American English. She studied elementary level Japanese language in a nine-week intensive course at university in the USA, and after finishing the course came to Japan, and was taking a weekly Japanese course. She was implicitly trained in Japanese accentuation mostly through correction by her teacher when taking courses in the USA and in Japan. At the time of the data collection she had spent seven months in Tokyo. She mainly used English in her daily life except for when participating in the weekly Japanese class.

B1 is a male second year student at a Japanese university. His mother tongue is Korean, although he was educated in Chinese in China. He studied Japanese for six years at high school in China. After three years, he came to Japan and studied Japanese for three months at a Japanese language school. Then he entered a university in Ibaraki prefecture, where the local accentuation is different from that of the Tokyo dialect. His

practice in Japanese accentuation was predominantly guided by teachers' corrections when he was a high school student in China. He had spent 16 months in Japan at the time of the data collection.

B2 is a male trainee at the office of a Diet member in Tokyo. He had been studying Japanese language once a week at the Japanese language school where A1 was studying. He is a native American English language speaker who lived in Tokyo for seven months after finishing a nine-week elementary level intensive Japanese course in the USA (the same course studied by A1). He had implicitly practiced Japanese accentuation in the Japanese language class in the USA and in Japan. He was endeavouring to use the Japanese language as much as possible with NSs of Japanese.

B3 is a male exchange student at a Japanese university in Tokyo. His mother tongue is American English. He studied Japanese language as a foreign language subject for five months at university in the USA, and after that he took a nine-month elementary level intensive course in the USA (the same course taken by A1 and A2). He practiced Japanese accentuation in the same way as did A1 and A2 through previous Japanese courses. He had spent eight months in Tokyo at the time of the data collection.

B4 is a male first year student at a Japanese university in Ibaraki prefecture, where the local accentuation is different from that of the Tokyo dialect, as already stated. His mother tongue is Chinese (Shandon). He studied Japanese language for six years at high school in China, and for 16 months at a Japanese language school in Kyoto in Japan, where the local accentuation was again different from that of the Tokyo dialect. At the time when the data was collected he was taking some Japanese language courses at the university. He had never lived in an area where people spoke in the Tokyo dialect. He learned about Japanese accentuation, practiced word accentuation, and memorized individual word accentuation at his Chinese high school. However, when he came to

Japan and heard the accentuation of Japanese language school teachers who spoke the Tokyo dialect in Kyoto, B4 realised that what he learned in China was not exactly the same as the Tokyo accent, and he concluded that accent was not so important for communication. He became less conscious of accentuation and lost what was previously learned and memorised.

C1 is a male PhD student at a Japanese university in Tokyo. His mother tongue is Korean but he was educated in Chinese in China. He studied the Japanese language for six years at high school, one year at university in China and one year at a Japanese language school in Japan, where he experienced accentuation corrections. However, he did not study or practice Japanese accentuation in detail. He had lived in Tokyo for six years at the time the data was collected.

C2 is a female student undertaking a Master's course at a university in Tokyo. Her mother tongue is Korean but she was educated in Chinese in China. Since she studied Japanese language as her major for four years at university in China, she had adequate understanding of Japanese accentuation as well as other features of the Japanese language. She had practiced, memorized and had her Japanese accentuation corrected at university in China and she knew the accentuation of many words at the time the data was collected. She spent three months at a university in Tokyo and began not to be conscious of accentuation.

C3 is a female PhD student at a Japanese university in Tokyo. Her mother tongue is the Jeju-Do dialect of Korean, in which the pitch accentuation is not determined according to each word, unlike the target Tokyo dialect in Japanese. She learned Japanese at university in Korea, where she majored in Japanese linguistics. After she graduated from university in Korea, she studied the Japanese language at a Japanese language school in Tokyo, and then entered graduate school at a Japanese university, where she

finished a Master course. When the data was collected she was in the fourth year of her PhD course. She learned about Japanese accentuation at the Korean university but claimed to have forgotten most of it. In the Japanese language classes, although teachers corrected students' accentuation, C3 did not realize that they were indeed correcting the accentuation. When C3 was made aware that her accentuation was inappropriate at a graduate school seminar, she began to be conscious about her accentuation for the first time, and she started to manage her accentuation with the help of a NS. She has theoretical knowledge of language management, which may have influenced her to engage in such behaviour.

C4 is a female student in undertaking a Master's course at a Japanese university in Ibaraki prefecture and was taking an advanced level Japanese language class. She is a native speaker of Chinese (Harbin). She studied Japanese language, including accentuation, for six years at high school and three years at university in China. She practiced appropriate accentuation through teachers' correction and memorised accentuation with each new vocabulary item. Although she had been taking a Japanese language class, she paid less attention to her accentuation after coming to Japan. It was because teachers in Japanese language classes did not correct students' accentuation. From her experience, she realised that the accentuation is not integral to communication in Japanese.

D1 is a male teaching staff at a Japanese university. His mother tongue is Korean Eastern South (Gyeonsang-Do) dialect. He studied Japanese for six years in total: two years at high school, three years at university in Korea and one year in Tokyo. Following this, he studied for his masters and doctoral degrees at Japanese university over a period of ten years. He had lived in Japan for thirteen years by the time the data were collected, and twelve years of this was in an area where the local people speak a dialect with

different accentuation than that of the Tokyo dialect.

D2 is a female PhD student in Japanese linguistics at a university, where she had finished Master course and was teaching as a part time lecturer, in Tokyo. Her mother tongue is Eastern South (Gyeongsang-Do) dialect in Korean language, the pitch accentuation of which is fixed according to each word, similar to that of the Japanese Tokyo dialect. She had lived in Japan for six and half years by the time the data were collected. D2 studied Japanese for two years at high school and four years at university majoring Japanese literature and linguistics in Korea. Then she studied Japanese at a Japanese language school for six months in Tokyo. Although she studied Japanese accentuation in Korea and practiced it at Japanese language school in Tokyo, she did not remember what she learned at the time the data were collected.

(2) Data collection procedures for the DATA-1

The details of data collection procedures are described below.

(a) Audio-recording

The following natural discourse in formal and informal situations and the reading aloud of the word list were audio-recorded onto a cassette tape and Mini Disk without the participants being specifically informed that the purpose of the research was an examination of Japanese language learners' accentuation. This was done so that the participants would not pay deliberate, conscious attention to their accentuation.

Regarding the formal situation, the spontaneous discourse of a 10-minute interview of the participant by a NS cooperator who was a professor or a retired professor was recorded. In most of the cases this was the participant's first meeting with the cooperator and the topic for the interview was the participant's experiences in Japan and their native

country and so forth in *desu/ masu* style and in a relatively formal situation compared to the following informal conversation. With regard to the informal situation, the discourse of a 10-minute conversation between a participant and a NS co-operator who was a friend or peer of the participant was recorded. The topic of the conversation was not specified and was left to the participant and their cooperator. Each participant's reading of the word list (comprising 50 words selected from elementary level Japanese textbooks and basic words commonly used in daily life in Japan) was recorded after making sure that the participant was familiar with all the words in the list. The participant was told to read the words aloud in the manner of a Japanese language teacher modelling to students in a class. However, in the case of A1, since she did not appear to have sufficient language competence in her formal situation recording, she was requested to read a list of 25 words, which were included within the 50 word list. As a result, all participants' appropriateness of accentuation was measured for the same 25 words. Any noticeable difference in results between the 25 words and the complete 50 word list was not found. The word list was written in kana mixed with Chinese characters which have hiragana in parentheses.

(b) Transcription

The audio-recorded discourse was transcribed in the Hepburn system of Romanized Japanese. Each accent unit which is an accentual phrase was written separately and marked with accent mark " ' " following the accented mora according to the Tokyo dialect accentuation, and underlining of the accented mora according to the participant's accentuation. For example, *tosho'kan-de* 'in a library' indicates that the correct accentuation for the word *toshokan* is accented on the mora /sho/, whereas the participant accented the mora /ka/. When some part of the discourse is not understandable, that part

is placed in parentheses, such as *toshokan-ni takusan* ( ) ....When the accentuation was not clear, that word was put parentheses, e.g., *(toshokan-ni) takusan* . The particle or boundary of a compound word in an accentual phrase is followed by a hyphen such as *toshokan-ni.*

The word list for the reading task was shown in Roman letters, in which the accent mark for the Tokyo accent and for participants' accentuation were indicated by underlining of the accented mora in the same way as for the discourse data.

(c) Follow-up interviews

Follow-up interviews (FUIs) were undertaken with six participants in group 1 and were shown with asterisks in Table 3-1 above in reference to the transcriptions and audio recordings. These took place five days to one week after the audio recording of the discourse data. For the other five participants in group 2 (without an asterisk in Table 3-1), follow-up interviews were carried out immediately following the audio recording of the data and in reference to the audio recordings. All FUIs included questions to participants about their learning of accentuation, their knowledge of accentuation, their subjective account of their production of ILSs and their management of accentuation in their discourse data and their use of Japanese language in their daily lives. The FUIs were also audio-recorded. C3 only answered the interviewer's questions and did not report all of her management within the scheduled period (although she managed quite a lot of accentuations), so her account of management referring to the transcription was sent to the author by e-mail.

With regard to the effectiveness of the FUIs, it was predicted that it might be difficult for the participants to reflect upon their accentuation and their management of accentuation which took place one week earlier. However, some participants explained

that usually they do not consciously manage accentuation but they do remember their management experiences, and almost always remember their noting or adjustment by another person whenever they use a particular word. Therefore, I considered all 11 participants' FUIs to be effective. Neustupný (1981) also claims that regarding the state of mind after the communication, NNSs are strongly concerned about the appropriateness of their communication in contact situations, for example, the evaluation of a choice of words or phrasing. Their anxiety is much more serious than that of NSs. This strong and detailed reflection of their communication is one of the biggest features of contact situations. Neustupný (1994) also claimed that although a FUI which is implemented soon after the data collection is ideal, there are participants who remember their own speech a week earlier.

Therefore, it seems to be natural that NNSs remember what they managed in discourse a week ago, in this case how they managed accentuation.

(3) Data analysis procedures for the DATA-1

All accentual phrases in DATA-1 transcription both in formal and informal situations were marked for the accented morae according to the Tokyo dialect accentuation and participant's accentuation, as explained above. The underlined participant's accentuations on transcription were checked by a NS of the Tokyo dialect Japanese. Any unclear accentuations were not counted as accentual phrases. The accentuation of each participant in the formal situation in the DATA-1 was analysed in relation to their ILSs, natural strategies, style-shifting and management in reference to the transcription, the audio-recorded discourse data and the FUIs. However, accentuation in the informal situation was analysed for ILSs and style-shifting (see Chapter 5). In the case of C1, the informal situation was not used for the analysis, as it did not confirm with an informal

situation. Rather, the relationship between C1 and his interlocutor appeared to be akin to a senior and junior rather than be equivalent to peer interaction. Here, the NS interlocutor always used honorific expressions when addressing C1, and called him *senpai* 'my senior'. Therefore, the analysis of style-shifting discussed in the Chapter 5 does not include the data for C1.

3.2.2 DATA-2

(1) Participants and their backgrounds

Table 3-2: Backgrounds of NNS participants in DATA-2

Participants	Gender	Stay in Japan	Mother tongue	Age	Year at university
BC1	F	22months	Chinese	21	1st year
BC2	M	22 months	Chinese	22	1st year
BC3	M	6.5years	Chinese	26	2nd year (PG)
BC4	F	32months	Chinese	20	2nd year
BC5	F	17months	Chinese	25	2nd year (PG)
BC6	M	48months	Chinese	21	3rd year
BC7	M	29months	Chinese	28	1st year
BC8	F	41months	Chinese	28	2nd year
BC9	F	29months	Chinese	21	2nd year

F: female, M: male and PG: post graduate.

The participants for DATA-2 were nine NNSs of Japanese and nine NSs of Japanese. The NNS participants were BC1, BC2, BC3, BC4, BC5, BC6, BC7, BC8 and BC9, who were regular students of the same Japanese university; the NS participants were BJ1, BJ2, BJ3, BJ4, BJ5, BJ6, BJ7, BJ8 and BJ9, who were also regular students of the same Japanese university. The background of those 18 participants is displayed in Tables 3-2 and 3-3. All 18 participants are right-handers (to avoid any complications as a result of potential neurological differences due to handedness). All nine NNSs are native Chinese language speakers at an advanced level of Japanese language proficiency. All participants in both

groups are 19 to 28 years old, and the mean age across the two groups was not significantly different.

Table 3-3: Background of NS participants in DATA-2

Participants	Gender	Hometown	Mother tongue dialect	Age	Year at university
BJ1	M	Tokyo	Tokyo	21	3rd year
BJ2	M	Shizuoka	Tokyo	23	3rd year
BJ3	F	Chiba	Tokyo	21	3rd year
BJ4	F	Saitama	Tokyo	20	2nd year
BJ5	F	Shizuoka	Tokyo	20	3rd year
BJ6	M	Chiba	Tokyo	23	1st year (PG)
BJ7	M	Chiba	Tokyo	19	2nd year
BJ8	F	Kanagawa	Tokyo	21	2nd year
BJ9	M	Kanagawa	Tokyo	21	3rd year

F: female, M: male and PG: post graduate.

(2) Data collection procedures for DATA-2

The original data for examining the implicit noting of Japanese accentuation is an EEG (see discussion above). The EEG waveforms caused by particular cognitive activity, such as participants' implicit noting of accent patterns in this study are called 'event related potentials' (ERPs). The measurement of brainwaves and analyses of brainwaves are performed with computer assistance.

(a) EEG recording

The experiment was carried out using two kinds of meaningless pseudo-words, *papa'pa* (with a second-mora accented pattern of LHL) and *papapa* (with an unaccented pattern of LHH) pronounced as a Japanese word by a NS of the Tokyo dialect of Japanese as stimulus sounds. These stimuli were acoustically presented to participants within both

groups (NNSs and NSs). The participants were instructed to watch a silent movie and ignore the stimulus sounds in order to respond to the stimuli without attention, while sitting comfortably with an electrode cap in a soundproof chamber. While the stimuli were being presented, the electrical activity of the participant's brain was recorded from nine electrodes as EEGs.

The brainwave is not usually analysable with the observation of a single presentation of the stimulus and in order to elicit ERP, particularly MMN hundreds of presentations are necessary. For example, Experiment I (EP- I) in this study was carried out under the following two conditions:

(i) LHH-infrequent condition: LHH was infrequent and LHL was frequent

(ii) LHL-infrequent condition: LHL was infrequent and LHH was frequent.

In the both conditions, 500 repetitions of the stimuli included 20% of infrequent stimuli and 80% of frequent stimuli occurring in a randomized sequence.

(b) Averaging

The amplitude of the waveform which is a response to a particular brain function is small, whereas the amplitude of the waveform which is not a response to a particular brain function is much larger and is considered as noise. Therefore, after the EEG recording, the EEG with an amplitude exceeding 80 micro-Vs was excluded. However, even after such noise is excluded, recorded waves include brain responses other than to the stimuli. Thus, EEGs for each participant were averaged in order to remove noise arising from responses other than the particular brain function. For the ERP study, only simplified sequences of averaged brainwave data can be analysed.

(3) Data analysis procedures for DATA-2

In conditions (i) and (ii) above, the responses to the third mora of LHH and LHL were analysed. The initial two morae of LHH and LHL shared a phonologically same rising pitch, that is, LH whereas the final morae were different. The third mora of LHH was level in pitch with the preceding mora H which is high pitched, while the third mora of LHL was falling in pitch from the preceding mora.

The averaged ERPs for each participant were obtained in both conditions from 100 milliseconds before to 400 milliseconds after the onset of stimuli. For the MMN component analyses, each participant's ERP in response to the frequent stimuli was subtracted from that in response to the infrequent stimuli, and then the MMN data of all the participants were grand-averaged, which is the average value for the NNS group and the NS group under the two conditions. The grand-averaged MMN data can be analysed for the implicit noting of accentuation, the accent pattern difference under the two conditions, and cross-linguistic differences and locations of electrodes on the scalp.

Finally, the MMN data in each group, each condition, each location of electrodes and each time period divided into four was statistically examined in order to obtain the results.

3.3 Summary

In this chapter, the theoretical framework and methodology employed in this study was described. The central issue of this thesis - the implicit noting of accentuation by Japanese language learners -, was introduced, where noting is one of the five processes covered in the language management theory (Neustupný 1985a; Jernudd and Neustupný 1987). Although this subject of implicit noting is discussed throughout the thesis, detailed discussion of explicit management of accentuation of all five stages is presented in

Chapter 6. The production of ILSs and natural strategies are analysed on the basis of 'strategies' rather than rules according to Neustupný's theory of typologies (1978, 1987a, 1989) within the framework of second language acquisition. In addition to these, the brain response to the auditory accent patterns without explicit attention, which is the major issue in the present thesis, is analysed by measurement of brainwaves for the MMN component in ERP, which was identified by Näätänen et al. (1978) and can be elicited even in the absence of attention.

The methodology utilised in this study comprise two sets. DATA-1 is the audio recorded natural discourse in contact situations by 11 NNS participants in formal and informal situations. DATA-1 was transcribed and analysed from the viewpoint of the location of AN in each accentual phrase in order to identify ILSs, natural strategies and style-shifting. Follow-up interviews were also carried out to determine participants' consciousness of accentuation, their management processes and attitudes towards Japanese accentuation. DATA-2 comprises brainwave data (i.e., ERPs) of nine NNS and nine NS participants. The recorded brainwave data (i.e. EEG data) is analysed for the MMN component of ERPs in order to examine participants' implicit brain responses to two kinds of accent patterns (LHH and LHL) and cross-linguistic difference of NNSs and NSs.

CHAPTER 4

PRODUCTION OF ACCENTUATION

4. 1 Introduction

As discussed in the previous chapters, learners appear to produce accentuation not only by using ILSs, but also by transference from their mother tongues and even from TL accentuations. Furthermore, they are expected to show strategies with universal properties of accentuation in their utterances. In other words, in order to produce accentuation, learners seem to utilise norms. Although Corder (1981: 68) points out that the norms which learners implicitly accept and aim for are those of the TL, learners appear to use some other norms as well (Neustupný 1985b). With regard to the concept of the norm of a contact situation, Neustupný (1985b) claimed that a norm only includes rules that are judged by speakers to be the 'correct' rules for the particular communicative situation. He also claimed that the norms on the basis of which deviations are judged in contact situations are not identical with the norms we know from internal (native) situations.

In this chapter, I primarily suggest that learners' accentuation consists mainly of strategies based on norms which are definable under Neustupný's four categories (1985b, 2004) – TL (L2) norms, mother tongue (L1) norms, ILSs and release of control (pidginization). In addition to these, I add the category of universal norms. Secondly, I propose a production model of accentuation by learners. The data used in this chapter consists of discourses in which NNSs are interviewed by NSs in formal situations (DATA-1), as described in the previous chapter. Through the analysis of participants' production of accentuation in DATA-1, I will go on to describe the characteristics of accentuation that were found.

4.2 Interlanguage Strategies (ILSs)

It has been widely acknowledged that second language learners create their own system, or 'interlanguage' (Selinker 1972), in the process of the second language acquisition (see previous chapters). Since learners of Japanese have not yet acquired accent rules of their TL, that is, the Tokyo dialect of Japanese, it is impossible for them to appropriately apply them. Instead they tend to create their own system of the target accent rules, ILSs. In other words, learners adapt ILSs, which they already possess, to the target accentuation as a substitute. Since this adapted system is composed of much wider and more general categories than the rules of the target accentuation, this study refers to them as 'ILSs' rather than rules (Neustupný 1989a) although this distinction is not necessarily found in other studies of learner strategies, such as those conducted by Oxford (1990).

4.2.1 Creation of ILSs

Although I originally claimed that learners create two types of accent patterns (Yamada 1992a), I later revised this to suggest that they create three types; some of the additional features of accentuation I added can be found in my more recent studies (Yamada 1994a, 1999, 2007). These features can be interpreted as three types of ILSs for the production of learners' systems of accentuation. According to my research, all participants, no matter what their mother tongues are, created the same ILSs depending on their level of competence in Japanese accentuation (Yamada 1999). Unlike ordinary or listing rules, ILSs are not concerned with the exact location of AN, causing learners to easily produce incorrect accentuation as a result of using them.

I have identified the following three types of ILSs for Japanese accentuation by analysing incorrectly accented phrases (all examples are found in the data of the formal situation in DATA-1):

(1) ILS-1: To form a pattern in which more than one accent nucleus (AN) is placed on an accentual phrase. In this type of ILS, learners seem to consider a component of an accentual phrase to be one accent unit, as in the following examples: *kokusai - ka'nkee-ni* 'in international relations'. Both *kokusai* and *ka'nkee* are the components of a compound word *kokusai - ka'nkee* in which although only one AN should be placed on the mora /ka/, the participant placed one more AN on the mora /e/.

(2) ILS-2: To form a pattern in which no more than one AN is placed in an accentual phrase, as in the following examples:

[A] The first syllable that includes the first mora is accented, for example: *konshuu-wa* 'this week'. However, even a NS occasionally produces a whole syllable, which includes two morae, in high pitch: for example, *hon'bako* HHLL for 'book case'.

[B] The mora preceding the boundary of the components is accented: for example, *daigaku-kara* 'from university', *konshuu-wa* 'this week is' and *chika'ku-no* 'nearby'.

[C] The second mora from the end of a component is accented: for example, *dame'-desu-ne* 'no good', *tokidoki* 'sometimes' and *menzee-ten* 'duty-free shop'.

[D] The third or subsequent mora from the end of a component is accented: for example, *amerika-e* 'to America', *supein-go* 'Spanish language' or *purogu'ramu* 'program'.

[O] The word is not accented: for example, *roku'nin-ka* 'six people or', *tato'eba* ano... 'for example ...', and *sensee-ga* 'teacher is'. Usually, some boundary mark, such as rising or falling intonation, is indicated between accentual phrases.

In this study, the following features regarding the application of an unaccented pattern [O] were found. First, NNSs tend to apply an unaccented pattern [O] when they express hesitation. For example, in C3's utterance, *ni'nen, sannen, shi-gonen-de'suka-ne* 'two years, three years, but I wonder if it is four or five years', *ni'nen* is applied [O]

which is not accented, and the following *sannen* and *shi-gonen-de'suka-ne* are appropriately accentuated. The unaccented *ni'nen* appears to be expressing a lack of self-confidence and hesitation with the content of the utterance. Another example is C2's word, *yappa'ri* 'not surprisingly' in which the AN is not placed. In the follow-up interview, C2 explained that when she said *yappa'ri*, she was not confident in her pronunciation of /*pp*/ and was concerned whether the duration of the double consonant in /*pp*/ might not be appropriate. As a consequence, C2 did not place the AN on that word (see Chapter 6). NNSs are apt to use an unaccented pattern [O] with hesitation when they cannot confidently place the AN in addition to the normal case of them choosing [O] without hesitation.

Second, the example that seems to be influenced by unaccented 'specialists' accentuation (Inoue 1992, 1998) was not found in DATA-1. For example, *do'kutaa* 'doctor' spoken by C3, *kyooju'kai* 'faculty meeting' spoken by D1, and *do'rama* 'drama' spoken by D2, all of which young NSs tend to accentuate without AN, are accented following the original rules (Akinaga 1958, 2001). As the only example, C3 used the word *zemi* 'seminar' unaccented, which is a typical example of the specialists' accentuation among students. However, she reported that she was thinking about the pronunciation of /ze/ which was difficult for her, as for other Korean learners. Therefore, it is presumed that this was the example of a hesitation (see Chapter 6).

Thus, it seems to be that the ILS [O] is not always positively or broadly applied as an accent pattern. Moreover, although the number of unaccented words in Japanese is large, the number of applications of ILS [O] by participants is not large, as shown in the Table 4-1 and Figure 4-1 below. In Table 4-1 and Figure 4-1, 'unaccented ILS [O]' indicates the number of the application of ILS [O] and its percentage in the total number of accentual phrases. 'Accented ILSs' indicates the number of the applications of ILSs

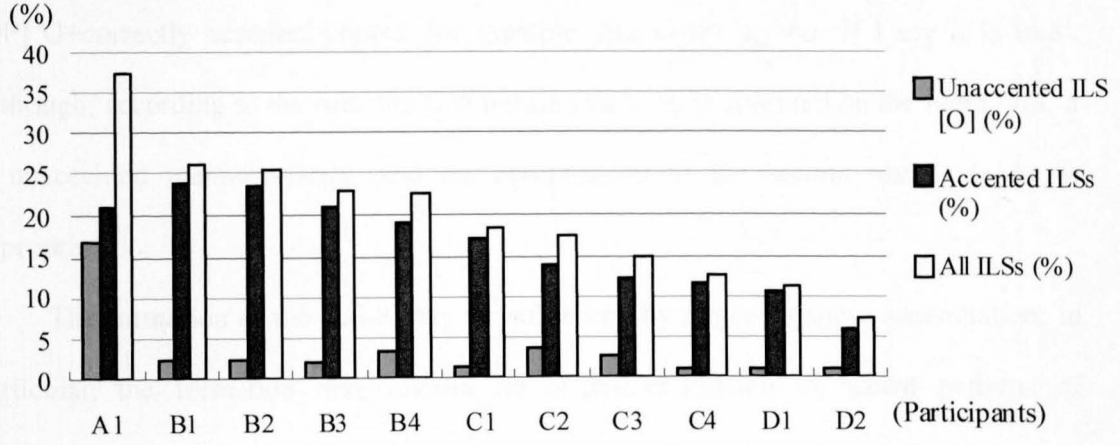
except for the ILS [O] and its percentage in the total number of accentual phrases. 'All ILSs' shows the number of applications of all ILSs and its percentage. As described above, the application of any ILS here is incorrect accentuation and any ILS-3 includes two or three accentual phrases in this study.

Table 4-1: Application of ILS-2 [O]

Participants	Unaccented ILS [O] (%)	Accented ILSs (%)	All ILSs (%)	Total number of phrases
A1	31 (16.6)	39 (20.9)	70 (37.4)	187
B1	8 (2.3)	84 (24.1)	92 (26.4)	348
B2	5 (2.1)	55 (23.5)	60 (25.6)	234
B3	5 (2.0)	53 (20.9)	58 (22.9)	253
B4	12 (3.4)	68 (19.0)	80 (22.4)	357
C1	7 (1.3)	91 (17.0)	98 (18.3)	535
C2	16 (3.7)	60 (13.8)	76 (17.4)	436
C3	9 (2.5)	44 (12.1)	53 (14.6)	363
C4	5 (1.1)	52 (11.4)	57 (12.4)	458
D1	5 (0.8)	67 (10.4)	72 (11.1)	647
D2	5 (1.0)	30 (6.1)	35 (7.2)	489

Unaccented ILS[O] + Accented ILSs = All ILSs

Fig. 4-1: Application of ILS [O]



(3) ILS-3: To form a pattern by combining more than one accentual phrase without acknowledging boundaries between the two. In this pattern, the first phrase or phrases with no AN is followed by an accented phrase. When NSs pronounce two or more phrases without pausing, the ANs of each phrase are retained. Learners, on the other hand, reported that they consider this type as one accent unit, as in the following examples:

[OA] O+A, for example, *gakusee-ni+ yotte* 'depending on the student' and *hito'koto-de+ ie-nai+ hodo* 'as much as I can hardly say in a word'. Although consistent with the rule, the first phrase *gakusee-ni* is unaccented, and the second phrase *yotte* is inappropriately accented on the first mora.

[OB] O+B, for example, *hima-ga+na'i-desu-yo-ne* 'have no free time'. According to the rule, the first phrase *hima-ga* is unaccented and the second one is accented on the first mora /na/, however, the second mora /i/ was inappropriately accented.

[OC] O+C, for example, *zenzen+ chigai-ma'su* 'completely different', and *koo+ iu+ kenkyuu-wa* 'research like this'.

[OD] O+D, for example, *watashi-no+ tomodachi-no* 'my friend's, and *kooritsu-no+ daigaku-no+ me'ritto-ga* 'advantage of state universities'.

[OP] O+correctly accented phrase, for example, *jiyu'u-tte+ ie'-ba* 'if I say it is free'. Although, according to the rule, the first phrase *jiyu'u-tte* is accented on the mora /yu/, it is unaccented inappropriately, and the accentuation of the second phrase *ie'-ba* is appropriate.

The formation of the ILS-3 may be influenced by target Japanese accentuation; in particular, the formation may involve an overgeneralization of accent patterns of compound word accent rules of the target accent, the first component of the compound words is unaccented and the second component is accented; for example, *monasshu-da'igaku* 'Monash University'. Or it may be an overgeneralization of an

intonational phrase[3] (Kubozono 1993) of the target accent, in the sequence of two or more accentual phrases, the first (and second) phrase or phrases of which is unaccented and the final phrase is accented; for example, *nihon-no+tabe'mono* 'Japanese food'.

Thus, it is presumed that the ILSs are produced largely on the basis of L2 norms as Corder claims. These ILSs show certain characteristics with regard to development and variability.

4.2.2 Development of accentual competence

It is presumed that learners gradually develop their generative competence of accentuation through experience according to the following two features.

(1) Three types of ILSs

The use of the above-mentioned three types of ILSs reflects the development of learners' accentual competence; ILS-1 seems to be comparatively primitive; ILS-2 is prototypical and ILS-3 seems to be the most advanced. Furthermore, the length of the ILS unit increases from ILS-1 to ILS-2 to ILS-3.

Table 4-2 Frequency in use of ILS types

Participant groups	ILS-1	ILS-2	ILS-3	All ILSs	Total number of phrases
A (n=1)	1 (0.5%)	66 (35.3%)	3 (1.6%)	70 (37.4%)	187
B (n=4)	3 (0.3%)	235 (19.7%)	52 (4.3%)	290 (24.3%)	1192
C (n=4)	1 (0.06%)	202 (11.3%)	81 (4.5%)	284 (15.8%)	1792
D (n=2)	0	67 (5.9%)	40 (3.5%)	107 (9.4%)	1136

Participant groups: A (A1), B (B1, B2, B3 and B4), C (C1, C2, C3 and C4), D (D1 and D2); ILS-1, ILS-2, ILS-3: the number of application and its percentage in total number of accentual phrases; All ILSs: the number of application and its percentage of ILSs-1, 2 and 3.

[3] This is called 'phrase' by Kawakami (1957) and 'accentual phrase' by Pierrehumbert and Beckman (1988), Fujisaki (1989) and Fujisaki and Sudo (1971) and so on.

In Table 4-2, Group A, whose participants produced incorrect accentuation, that is the number of ILSs, most frequently, is at the most primitive stage and Group D, whose participants produced incorrect accentuation least frequently, is at the most advanced. ILS-1 and ILS-2 are more frequently used by more primitive stage group participants, and ILS-3 is more frequently used by more advanced group participants. However, since ILSs used in this study are all incorrect accentuations, the most advanced Group D participants did not frequently use any type of ILS.

The NNSs appear to develop their accentual competence by shifting the frequency with which they use each type of ILSs. However, the use of three types of ILSs is likely to overlap with each other. Even if more advanced strategies are implemented, the strategies used until that point would continue to be employed by the same learner. Corder (1981:68) states that the learner's approximative systems merge gradually into each other rather than switch from one discrete state to the next. My data also supports this claim.

(2) Development of perceptual sense unit

Concerning the length of three types of ILSs, it becomes longer in the order of ILS-1, ILS-2 and ILS-3, which corresponds to that of the three improvement stages above. According to Kohno (1993, 1997), the perceptual sense unit (PSU), which humans can perceive at one time, and which is a unit of meaning, usually consists of 7 ± 2 or less syllables. In the case of second or foreign language learners, this unit becomes longer as the level of the subject's listening and semantic ability increases. Furthermore, this is also a unit of speech production. Therefore, the development of ILSs appears to be parallel to the development of the PSU. Thus, learners are likely to become able to produce and perceive longer phonetic units as they develop ILSs. At the same time, individual

learners' abilities of accentuation develop as they improve their overall Japanese language ability, especially semantically.

Hence, ILS-3 is the most advanced pattern, but ILS-3 which consists of three phrases, such as *kooritsu-no+daigaku-no+me'ritto-ga* 'advantage of state universities', *koo+ iu+ kenkyuu-wa* 'research like this' or *hito'koto-de+ ie-nai+ hodo* 'as much as I can hardly say in a word' introduced above in particular can be regarded as truly advanced.

4.2.3 Variability of ILSs

Accentuation by all participants is variable in relation to both free variation and systematic variation. Only free variation in using ILS is discussed in this section, and systematic variation is presented in Chapter 5. A participant may apply different ILS patterns even for a single word, depending on the occasion (Yamada 1992, 1994, 1999, 2007). For example, in this study, participant B2 used the unaccented word *amerika* 'America' four times in three different patterns in a 10-minute discourse, specifically, *amerika-de* 'in America', *amerika-no* 'American', *amerika-e* 'to America' and *amerika-demo* 'also in America'. It seems to be difficult for learners to place the AN appropriately on each word, even if they can form the possibly correct patterns, probably because they use strategies instead of rules of accentuation. In other words, although they can form the existing Japanese accent patterns, they cannot place the AN on the appropriate mora for each word. Therefore, it can be said that learners' accentuation shows free variation (Ellis 1985, 1994).

4.3 Target Accent (L2) Norms

Target accent (L2) norms used by NNSs, which constitute the base norm in contact

situations, exhibit certain characteristics of being deficient, adapted, or rigid and furthermore, there are norms borrowed from the L1 (Neustupný 1985b). On the other hand, sometimes learners' L2 norms are appropriate, and therefore they produce correct accentuation as well.

It can be assumed that learners acquire the ordinary and listing rules of target accentuation one by one after repeating the process of producing accent strategies. In the 15-minute conversation data, Yamada (1994a) confirmed that all participants who were at the advanced stage appear to have acquired some ordinary and listing rules. The acquisition in this study as well as the previous studies of Yamada thus represents 'nearly complete acquisition'. It is too difficult to define an acquisition point for each subject because of the variability of their performance. I assume that an item has been acquired if (1) the number of occurrences was reasonably high, (2) the accentuation was consistently correct, and (3) the accentuation of the item was not affected by the ILSs that the participants seem to have created, in particular ILS-3 which includes partly correct accentuation.

In DATA-1 of this study, participants seem to have acquired the accentuation of some words according to the above criteria. For example, B2 appears to have acquired the accentuation *ju'gyoo* 'class' and *ke'ezai* 'economics'. He used *ju'gyoo* five times and *ke'ezai* nine times, correctly accentuating all of the instances. C3 employed *sense'e* 'teacher' nine times accentuating it correctly each time, so that she seems to have acquired the accentuation of *sense'e.* Consequently, I presume that these participants internally possess appropriate L2 norms of accentuation for those words, probably possessing each word separately as a listing rule rather than an ordinary rule. According to the follow-up interview, learners do not usually think about accent rules or ordinary rules, while they are speaking. Even if the word is governed by an ordinary rule, learners

usually take no account of the rule, and place the AN according to a listing rule, that is to say, to accentuate each word separately. Hence, it is presumed that participants possess L2 norms and at the same time they often use those L2 norms for the forming of ILSs, most of which are overgeneralizations of L2.

4.4 Mother Tongue (L1) Norms

The norms of learners' mother tongue (L1) and other learned languages seem to be used for production of their accentuation. For example, NSs of English tend to pronounce a loanword borrowed from English with the English accent, such as *ore'nji* 'orange', or learners, whose mother tongue is a stress accent language, speak Japanese with excessive stress (Horiguchi 1973). These phenomena are considered to be a transfer or interference of learners' L1 or replacement by borrowing from their L1 (Corder 1994). Examples of 'transfer from L1' are found in Yamada (1999), such as *kanazawa-da'igaku* 'Kanazawa University', or *doboku-ko'ogaku* 'civil engineering'. In these examples, the first component of the compound word is accented as it would be in English, although in Japanese only the second component should be accented. It is presumed that NNSs only occasionally use their mother tongue accent norms when they speak the L2, particularly in ILSs since they probably subconsciously consider that their L1 accent is appropriate for L2 .

4.4.1 Some examples of L1 transfer in DATA-1

I will now show some examples of L1 transfer in DATA-1. First, I found the following examples of L1 transfer from English by three participants who are native American English speakers: A1 used the English names of places in America, such as *firaderu'fia* 'Philadelphia' with a completely American English pronunciation and accent in her

Japanese utterances, although the mora /ru/ should be accented as *firaderu'fia* or /de/ should be accented as *firade'rufia* in Japanese. B2 accented the compound word *midoruberii-da'igaku-de* 'at Middlebury University' as *midoruberii-da'igaku-de,* speaking the first component *midorube'rii* with an entirely American English pronunciation and accent, and the second component *da'igaku-de* was accented correctly on the first mora in the second component of the compound word *–da'igaku* '–University'. This resulted in inappropriate accentuation ILS-1, that is, two ANs being placed on one accent unit. Other examples of B2's accentuation are placing English accent as *amerika-no* 'American' and as *purogu'ramu-wa* 'program'. As for B3, he also used the L1 accentuation of *amerika* 'America' among some different accentuations for the word *amerika* 'America' in free variation (see 4.3.3).

Second, B1 showed L1 transfer from the Korean language to Japanese in the data. The accent system in the Korean language is varied, depending on the dialect. The Korean-Chinese participant, B1, whose mother tongue is the Yanji dialect of the Korean language that is spoken in north-east China, produced an unaccented pattern in a rising pitch on the final mora seven times; for example, *shinri'gaku-na-n-desu-kedo*↑ 'it is psychology but' and *yappa'ri*↑ 'not surprisingly'. The "↑" indicates that the final mora is spoken in a rising pitch. These examples are presumably transference from the accent patterns of that dialect in his L1: LLLLH and LLLH (Fukui 2001).

4.4.2 L1 influence on mora counting

In Japanese, as I mentioned above, the AN is placed on the first mora of a syllable when the syllable contains two morae. However, regardless of what their mother tongue is, the participants seem to have difficulties in counting morae, and in many cases they place the accent on the second mora in a syllable. For example, C2's utterance of *nihonji'n*

'Japanese people' and D2's utterance of *apa'ato-no* 'of apartment house' were found in the data. This phenomenon seems to be based on the transference of speakers' mother tongues in which they do not count morae within a syllable; specifically, they place the AN not on a particular mora in a syllable. This phenomenon of transference is seen in the utterances of almost all participants in the data.

4.4.3 L1 influence on the acquisition of accentuation

As I discussed in Chapter 3, the participants in DATA-1 have various mother tongues. However, generally speaking, from the typological view point it is presumed that participants whose mother tongues are closer to the TL more easily acquire the target accentuation. The Korean language is similar to Japanese because both are agglutinative languages. The Korean accentuations in both the Gyeongsangbuk-do and the Gyeongsangnam-do dialects, which are pitch accent languages and have distinctive features of accentuation, are more similar to the Tokyo Japanese accentuation than other dialects in the Korean language. Therefore, the fact that the accentuation by participants D1 and D2, whose mother tongue is the Gyeongsangnam-do dialect, is most appropriate in the DATA-1 is intriguing.

Regarding word accent, English is in the same category as Japanese, but from the perspective of pitch accent, both Chinese and Japanese belong to the same category. However, to confirm the hypothesis that if the accentuation of learners' L1 is closer to that of L2, it is easier to acquire L2 would require additional data indicating that the participants' background is similar and so forth. Accordingly, because the data in this study is not sufficient for discussion, I will leave the matter open.

4.5 Pidginization (release of control)

According to Neustupný (2004), in some cases L2 learners apply pidginization or the release of control as a strategy without using any rule when other strategies fail or else are not implemented. As noted above 4.2 (2), in the cases when learners express hesitation or lack of confidence, the unaccented pattern of ILS-2, that is, [O] is apt to be produced. This appears to be the case where pidginization is applied. It seems that participants could not place the AN and consequently they produced an unaccented pattern.

4.6 Natural Strategies and Universal Norms

The above-mentioned strategies were used overlapping with each other, and it is presumed that those strategies contribute to unifying a system of ILSs. However, from a different perspective, learners appear to utilise different strategies that seem to be 'natural'; some of these seem to have universal properties based on universal norms that are even possessed by non-speakers of Japanese who do not speak or understand Japanese at all. However, participants did not pay any overt attention to producing these natural strategies either.

According to Neustupný (1978), the Japanese accent matches the nature of the Japanese language, in particular, the type of grammar observed in agglutinative languages. Thus, the features of the agglutinative type are presumed to be natural for the Japanese accent. The following five strategies are considered to be natural for NNSs because of, for example, a universal property, an agglutinative feature or the nature of the word accent.

4.6.1 Integrating strategy

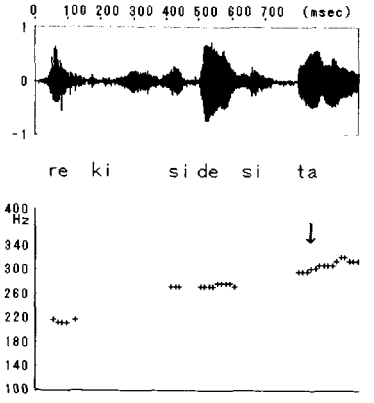
In general, an accent has a function of integrating an accentual phrase or an accent unit. It has, in other words, a function of indicating the border between phrases, which can be seen in many languages. For example, in Finnish and Czech the accent is placed on the first syllable of a word and the penultimate syllable is accented in Swahili. NSs of Japanese usually integrate an accentual phrase by placing one AN in a phrase or raising the pitch of the second mora (first mora lowering) of a phrase. NNSs of Japanese also seem to integrate a phrase by placing the AN, that is to say, by producing an accented phrase.

According to Yamada (1999), NNSs who are at early stages of learning use various endings, seemingly indicating accent units by marking the borders of each phrase in different ways than done by NSs. For example, some participants raise the pitch of an ending mora or lengthen the ending mora, whether they place the AN or not, to indicate a unit of accent.

In DATA-1, some of the participants raised the pitch of the ending mora of a phrase, which was not rising intonation for a question, without placing the AN, as in the following examples:

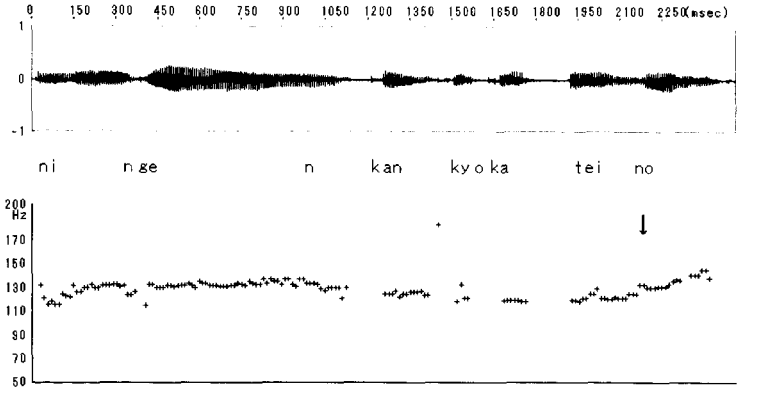
A1 did not place the AN for the accentual phrase *rekishi-de'shita* which should be accented on the mora /de/, but raised the pitch of the final mora */ta/* (indicated by an downward arrow), as shown in Figure 4-2. B1 did not place the AN for a phrase *ningen-kankyoo-ka'tee-no* which should be accented on the mora /ka/ but raised the pitch of the final mora */no/* as indicated in Figure 4-3.

Fig. 4-2: Pitch contour of '*rekishi-de'shita*' (A1)



A1: *rekishi-de'shita*↑ 'it was history...'

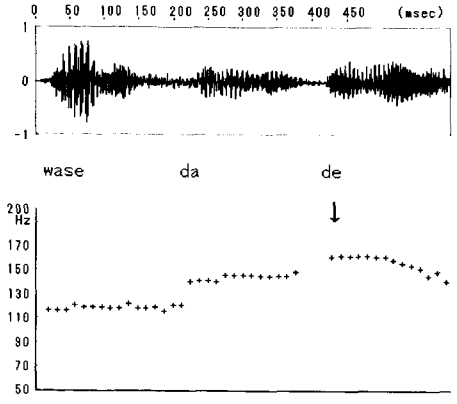
Fig. 4-3: Pitch contour of '*ningen-kankyoo-ka'tee-no*' (B1)



B1: *ningen-kankyoo-ka'tee-no*↑ 'human environmental courses'

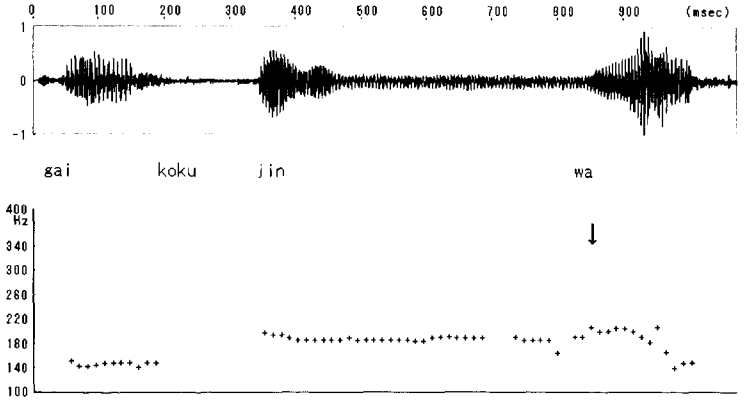
B3 and D1 raised and then lowered the pitch of the ending mora while lengthening it without placing the AN. B3 did not place the AN on any mora of the phrase *wa'seda-de*, but raised and then lowered the pitch of the ending mora */de/* while lengthening it as indicated by the arrow in Figure 4-4. D1 did not place the AN on *gaikoku'jin-wa*, but raised and lowered the pitch of the ending mora */wa/* while lengthening it as indicated by the arrow in Figure 4-5.

Fig. 4-4: Pitch contour of *'wa'seda-de'* (B3)



B3: *Wa'seda-de*↓ 'At Waseda...'

Fig. 4-5: Pitch contour of *'gaikoku'jin-wa'* (D1)



D1: *gaikoku'jin-wa*↓ 'foreign people are'

Apart from the above examples spoken by NNSs, Kohno (1993, 1997) reported the speech processing of Japanese 'pure anarthria' patients (PA patients) who have sustained brain damage. PA patients' utterances are usually slow and intermittent, and they stress every syllable. Their accentuation is also disordered. According to Kohno (1997), they raise the pitch of the PSU-final syllable. As mentioned above, the PSU (perceptual sense unit) is a unit of meaning that humans can perceive at a given time. A PSU is also a unit

of speech production, such as an accentual phrase, but in some contexts, it may be a sentence, a clause or a word.

Yamada (1995) pointed out some features of the accentuation of the speakers of the Ibaraki dialect of Japanese, such as their accentuation being quite similar to the ILSs produced by NNSs; their accentuation appears to be at one stage of their acquisition of the Tokyo accent; and they tend to raise the pitch of the final mora of a phrase when they inappropriately form an unaccented phrase. It is well-known that in the Ibaraki dialect, the accentuation is not fixed, and unaccented patterns are frequently used. Therefore, it appears to be difficult for them to appropriately place the AN.

It can be presumed from all of these examples that NNSs of Japanese who are at the early stages of acquisition or are on the way to acquiring target accent rules, the PA patients who have lost their accent patterns and the speakers of the Ibaraki dialect whose accentuation is presumably ongoing change and are at some stage in the acquisition of the Tokyo dialect accentuation, tend to integrate a word by means of indicating the accent unit in a different way than that done by NSs. It is surmised that integrating an accentual phrase is a universal property of the accent, and it may be a natural strategy based on a universal norm that exists in their mother tongue in many cases. On the other hand, it is likely that since an unaccented ILS [O] does not satisfy the function of integrating the accentual phrase through the placement of an AN, participants were not favourable to this pattern.

4.6.2 Prominence strategy

It is likely that in some cases, learners place the AN in order to emphasize the particular meaning of a component in a phrase. For example, B2 accented phrases in his speech as *de'mo daigaku'in-de...daigaku'in-de...ano ke'ezai-o benkyoo shimashita* 'but at

post-graduate school,...at post-graduate school, I studied economics'. It is presumed that he implicitly intended to emphasize the meaning of the word *daigakuin* 'post-graduate school' and therefore, he changed the accentuation and placed the AN on the syllable /dai / for the second *daigakuin*, although NSs do not place the AN in this way, where the mora /ku/ should be accented, even for emphasis. Japanese accentuation is basically fixed, as mentioned above, no matter how strongly the speaker intends to emphasize the meaning. The emphasis is expressed by raising the pitch of the whole morae in a word through intonation, which is a feature called 'prominence'. In the case of B2's words *daigakuin-de*, the pitch of the whole morae of a phrase should be raised without changing the accentuation. However, it would be natural for NNSs, who have not yet fully acquired the accent rules, to modify accent patterns subconsciously and place the AN on inappropriate morphemes intending to emphasize the meaning instead of raising the pitch of a whole word as intonation.

4.6.3 One AN strategy

Reconsidering the three types of ILSs identified in the above-mentioned analysis, it appears that the simple strategy of 'only one AN being placed in a unit' is applied. Since the Japanese accent is a word accent, not more than one AN can be placed in a unit. Unless correct segmentation of an accentual phrase is acquired, it is possible for NNSs to produce ILS-1 and ILS-3, in both of which one AN is placed on a unit of ILS, which is not an appropriate unit of the target Japanese accent system. For example, *hachigatsu'-made-deshita-kara* 'since it was until August', in which although one AN should be placed only on the mora /tsu/, two ANs were placed on /ha/ and /ma/, and none on /tsu/. Presumably, the NNS participant B2 considered each of the two components of the phrase, that is, *hachigastu* and *made-deshita-kara* as independent accent units. The

other example is *jiyu'utte+ig'ba* 'if I say it is free', that is, ILS-3 combined two independent accentual phrases, in which although two ANs should be placed on the morae /yu/ and /e/, only one AN is placed on /e/. It is presumed that the participant D2 considered the two accentual phrases as one unit. Presumably, this strategy is also natural for NNSs to accentuate Japanese since the Japanese accent is a word accent.

4.6.4 Word (phrase)-final pitch falling strategy

NNSs show some characteristics of the pitch falling at the word-final position in their discourse. First, the final mora of accentual phrases tends to be lengthened, and its pitch is raised once and then lowered. For example, as mentioned above, in the unaccented [O] in ILS-2, such as in *wa'seda-de* 'at Waseda University' spoken by B3 and *gaikoku'jin-wa* 'foreign people are' spoken by D1, the pitch of the engthened word final morae /de/ and /wa/ was once raised and then lowered (Figures 4-3 and 4-4). It is presumed that NNSs applied '*shiriagari* intonation: rise and fall intonation' (Inoue 1997, 2008), which is the phenomenon seen among NSs of Japanese, although the pitch range of rising by NNSs seems to be small, as seen in Figures 4-3 and 4-4, compared to that by NSs.

Second, as for ILS-3, the first part component of the phrase is always unaccented, whereas the final part component is accented and is therefore lowered in pitch, such as *jiyu'utte+ ig'ba* 'if I say it is free' spoken by D2. Furthermore, NNSs in DATA-1 do not seem to apply specialists' accentuation (Inoue 1992, 1998) in which NSs tend to use unaccented pattern as stated above (see section 4.3.1). That means that NNSs are apt to use accented patterns, that is, pitch-falling patterns rather than pitch-levelling patterns.

Thus, it is presumed that the word final pitch falling rather than word final pitch-levelling is natural for NNSs. This preference seems to be possessed not only by NNSs but also by NSs. It is well known that the pitch contour of a spoken sentence tends

to fall over the course of an utterance as an instance of 'the pitch downtrend phenomenon[4]' (for example, Fujisaki and Sudo 1971; Pierrehumbert and Beckman 1988; Kubozono 1993), which occurs in Japanese as well as in many other languages.

4.6.5: Antepenultimate accent strategies

Accentuation in Japanese following the antepenultimate accent rule is originally called a *kihonteki akusento* 'fundamental accent' by Terakawa (1944), and this type of accent is claimed to be a basic pattern of accented nouns (Wada 1951; Akinaga 1985; Kubozono 2006a). According to Kubozono (2006a, 2006b), the antepenultimate accent rule is subject to the following three universal principles, which also exerts effects to the compound word accent rules in Japanese:

(1) An accent is not placed on the final syllable of a word

(2) An accent is not placed on the syllable too far from the end of a word

(3) An accent tends to be placed on the heavy syllable which includes two or more morae rather than a light syllable which includes only one mora.

According to the antepenultimate accent rule in Japanese, the AN is placed on the syllable containing the third mora from the end of the word (antepenultimate). This accentuation can be seen in a large number of accented words in Japanese, for example, in loanword accentuation (McCawley 1968), such as *ba'nana* 'banana', *komyunike'eshon* 'communication' *erebe'etaa* 'elevator or lift'[5] and *kare'ndaa* 'calendar'[6]. According to

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[4] This phenomenon is discussed at length in Chapter 7.

[5] Since the antepenultimate mora of this phrase is a heavy (long vowel) syllable /ee/, the AN is placed on the preceding mora /e/. Because the AN can not be placed on the second mora of a heavy syllable.

[6] The antepenultimate mora of this phrase is the second mora of heavy syllable /ren/, the AN is placed on the preceding mora /re/.

Kubozono (2996a), this rule is strikingly similar to the Latin accent rule which has several universal constraints including the above principles, and he cited Prince and Smolensky (1993) that the Latin-type accent rule can be decomposed into some universal principles such as Nonfinality, Edgemostness and Weight-to-stress. In Latin, the accent is placed on the second syllable from the end of the word. However, when the second syllable is a light syllable, the preceding syllable, the third syllable from the end is accented. These accent rules in both languages can be accounted for in terms of syllable structure and syllable weight. If we assume the syllable is one of two types, 'heavy' which includes double morae (W) having long vowel, diphthong, double consonants or syllabic nasal and 'light' which contains a single mora (S), words can be categorized into eight groups as follows, depending on the syllable weight of their last three syllables:

(a) WWW, (b)WWS, (c)SWW, (d)SWS, (e)WSW, (f)WSS, (g)SSW and (h)SSS.

Japanese words following the antepenultimate rule are accentuated as in (a') to (h'):

(a')WW'W, (b')WW'S, (c')SW'W, (d')SW'S, (e')WS'W, (f')W'SS, (g')SS'W and (h')S'SS.

The Latin accent is from (a'') to (h'') as follows:

(a'')WW'W, (b'')WW'S, (c'')SW'W, (d'')SW'S, (e'')W'SW, (f'')W'SS, (g'')S'SW and (h'')S'SS.

Thus, the accentuation in Latin is different from those in the Japanese antepenultimate rule only in (e') and (g'), and are (e'')W'SW and (g'')S'SW respectively. Nevertheless, the accentuation in those two patterns in Japanese is fluctuating nowadays, with the young generation of Japanese tending to use these Latin-type accent (e'') and (g'') instead of (e') and (g') and seemingly two types of accent patterns in (e) and (g) are employed. For example, *kaadi'gan–ka'adigan* 'cardigan' and *myuuji'shan–myu'ujishan* 'musician' are now fluctuating between two accent patterns.

In order to investigate how NNSs employ the antepenultimate accent rule as strategies, I analysed all participants' incorrectly accented content words except for inflected words, verbs and adjectives in DATA-1 concerning the above eight groups from (a) to (h) on the basis of the Latin accent in terms of syllable. (Those content words exclude ILS-1 having two ANs in a phrase, unaccented ILS-2[O] and ILS-3[OP].) As a result, it may safely be assumed that participants produced the following four types of antepenultimate accent strategies:

(i) Antepenultimate pattern in a word (-3 Word): Place the AN on the second syllable from the end of the word, however, when the second syllable is a light syllable, on the third syllable from the end, for example, *amerika* 'America' (S'SS), *furansu* 'France (SW'S), *o-matsuri* 'festival' (S'SS), *chuugoku'-jin* 'Chinese people' (S'SW), *shoogaku-kin* 'scholarship' (S'SW) and *funi'ki* 'an atmosphere' (W'SS).

(ii) Penultimate pattern in a word (-2 Word) : Place the AN on the penultimate but light syllable of a word, for example, *watashi* 'I' (SS'S), *chu'ugaku* 'junior high school' (WS'S), *oto'toshi* 'the year before last' (SS'S) and *chikatetsu* 'subway' (SS'S).

(iii) Antepenultimate pattern in the first component (-3 Com): Place the AN on the second syllable from the end of the first component of the word, however, when the second syllable is a light syllable, on the third syllable from the end, for example, *daigaku'-in* 'post graduate school' (W'SS), *shoogaku-kin* 'scholarship' (W'SS) and *sanne'n-see* 'third year student' (W'W).

(iv) Penultimate pattern in the first component (-2 Com): Place the AN on the penultimate but light syllable of the first component of the word, for example, *tanaka-sense'e* 'Senator Tanaka' (SS'S), *fuji'moto-sensee* 'professor Fujimoto' (SS'S), and *roshia'-jin* 'Russian people' (S'W).

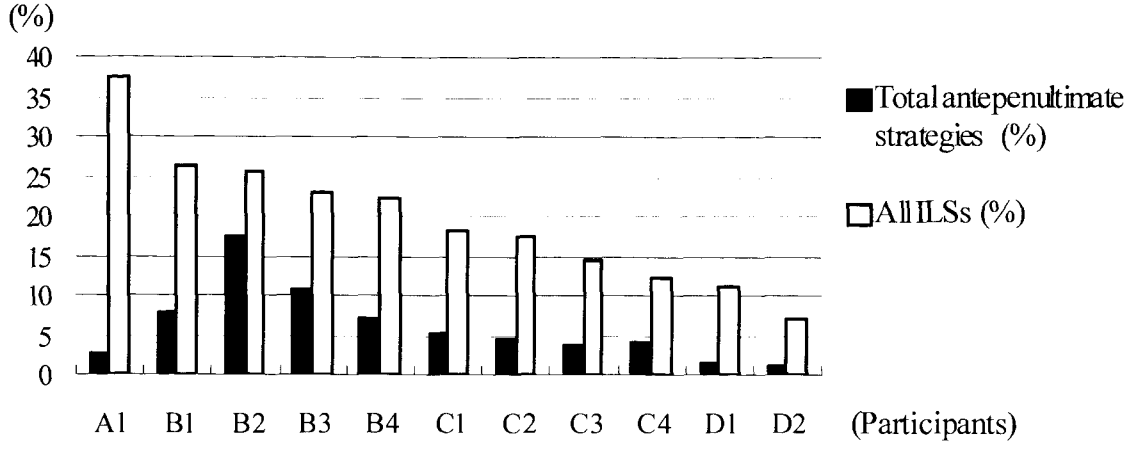
It is presumed that although participants internally possess universal principles as

norms of accentuation probably included in their L1 or other already learned foreign or second language, they do not clearly possess the correct rules of Japanese accentuation. Therefore, they produced four types of antepenultimate strategies which were not necessarily appropriate. As for the penultimate patterns in (ii) -2 Word and (iv) -2 Com, the AN is placed on the light syllable contrary to the penultimate patterns in Latin, which are accented always on the heavy syllable. It is presumed that since not only participants but almost all other NNSs of Japanese also appear to have difficulty to distinguish between syllables of single mora and double morae as noted above, they produced those inappropriate penultimate accentuations according to antepenultimate accent strategies (cf. Kubozono 2006a, 2006b). Each participant's application of four types of antepenultimate accent strategies and the percentage in their total number of phrases in their discourse are shown in Table 4-3 below. Figure 4-6 shows the percentage of each participant's application of the total number of four types of antepenultimate accent strategies and the percentage of all ILSs which are all incorrect accentuations in their all phrases in the discourse.

Table 4-3: Application of antepenultimate accent strategies

Participants	-3 Word (%)	-2 Word (%)	-3 Com (%)	-2 Com (%)	Total antepenultimate (%)	Total number of phrases
A1	1 (0.5)	4 (2.1)	0	0	5 (2.7)	187
B1	15 (4.3)	13 (3.7)	0	0	28 (8.0)	348
B2	22 (9.4)	12 (5.1)	3 (1.3)	4 (1.7)	41 (17.5)	234
B3	11 (4.3)	13 (5.1)	3 (1.2)	0	27 (10.7)	253
B4	14 (3.9)	9 (2.5)	0	3 (0.8)	26 (7.3)	357
C1	14 (2.6)	14 (2.6)	0	0	28 (5.2)	535
C2	7 (1.6)	11 (2.5)	0	1 (0.2)	19 (4.4)	436
C3	6 (1.7)	8 (2.2)	0	0	14 (3.9)	363
C4	11 (2.4)	6 (1.3)	0	2 (0.4)	19 (4.1)	458
D1	2 (0.3)	7 (1.1)	0	1 (0.2)	10 (1.5)	647
D2	3 (0.6)	2 (0.4)	0	1 (0.2)	6 (1.2)	489

Fig. 4-6: Application of total antepenultimate accent strategies



4.6.6 Compound word accent strategies

In Japanese accentuation, not only the antepenultimate accent rules but the compound accent rules are also subject to the universal principles described above (Kubozono 2006a). Compound word accent rules have been discussed by a number of researchers, for example, Akinaga (1958, 1985, 2001), McCawley (1968), Sato (1989), Kubozono (1993, 1995) and Uwano (1997, 1999, 2003), and the main assumptions are shared in those studies as follows. The accentuation of a compound noun is determined by the phonological structure of the second component of a word as in following two types. The first type is where the second component consists of one or two morae; (a) the most productive accentuation is where the final mora of the first component is accented, for example, *daigaku'-in* 'post graduate school' (daigaku + i'n) (b) unaccented compound accent pattern, such as *nihon-go* 'Japanese language' (niho'n + go) and (c) the accentuation of the second component is retained, for example *ao-zo'ra* 'blue sky' (a'o + so'ra).

The second type is where the second component has three or more morae; (d) the AN is placed on the first mora of the second component, such as *tookyoo-da'igaku* 'Tokyo University' (*tookyoo+ daigaku*) in which the word accent of the second component is unaccented, *ranchi-ta'imu* 'lunch time' (*ra'nchi+ta'imu*) in which the word accent of the second component is accented on the first syllable and *makunouchi+be'ntoo* 'variety box lunch' (*makuno'uchi+bento'o*) in which the word accent of the second component is accented on the final 'syllable', or (e) the word accent of the second component is retained, for example, *aisu-kuri'imu* 'icecream' (*a'isu+kuri'imu*) in which the second component is mid-accented and the accentuation of the second component is retained.

Thus, compound word accent rules exert an influence not only on content word + content word structure, but also on the structure of content word with a suffix or affix. Moreover, Kubozono (2006b) suggests that compound accent rules cover the accented verbs and adjectives, which are accented on the root-final vowel, for example, *shirabe'-ru* 'to examine' and *uma'-i* 'tasty'. In other words, the AN is placed preceding the boundary of the root and inflected suffix of a word, which is considered as a compound structure.

Through the analyses of all the incorrectly accented accentual phrases, which exclude the patterns of ILS-1 having two ANs in a phrase, unaccented ILS-2[O] and ILS-3[OP], in DATA-1 on the basis of syllable rather than mora, it may be assumed that NNSs tend to form the following four kinds of strategies, namely the compound accent strategies, as follows:

(1) Word- I : Place the AN on the syllable preceding the boundary of components of a word, for example, *nihon-go* 'Japanese language', *nisen-nen* 'two thousand years', *shihan-da'igaku* 'teachers' college', *gendai-bu'nka* 'contemporary culture',

benkyoo-shi(ta) 'studied', *wasure-ru* 'forget' and *tsuuji-ru* 'to be understood'. (This type includes the pattern in which one heavy syllable is divided by a boundary, such as *chiga-u* 'different', where one syllable /gau/ is divided.)

(2) Word-II : Place the AN on the syllable following the boundary of components of a word, for example, *mai-shuu* 'every week', *yokohama-sen* 'Yokohama line', *menze'e-ten* 'duty free shop', *hachi'-nen* 'eight years', *jitsuyoo-teki* 'practical', *hikizu-ra(-nai)* 'not to prolong' and *na'-kat(ta)* 'did not exist'.

(3) Phrase- I : Place the AN on the syllable preceding the boundary of components of an accentual phrase rather than a word, for example, *amerika-no* 'American', *tomodachi-wa* 'a friend', *kekkateki-ni* 'consequently', *ki'ree-desu* 'beautiful', *shira'be-te* 'examine and', *sotsugyooshima'shita-kedo* 'graduated but' and *sorei'gai-wa* 'other than that'.

(4) Phrase-II : Place the AN on the syllable following the boundary of components of an accentual phrase, for example, *kite'-kara* 'after coming', *niho'n-yori* 'more than Japan', *wakara'-nai* 'do not understand', *ko'-nai* 'do not come' *bikku'rishi-mashita* 'was surprised' and *da'isuki-desu* 'love'.

Word-1 and Word-2 are accented on the syllable preceding and following the boundary of components of 'a word' respectively just like the compound accent rules but irrespective of the length of the second components, while Phrase- I and Phrase-II are accented on the syllable preceding and following the boundary of components of 'an accentual phrase' rather than 'a word'. Presumably participants utilized the compound word accent rules for a word expanding to an accentual phrase but regardless of whether the second component is a content word, suffix or particle, and the number of mora. It is presumed that although participants possess universal principles mentioned above as universal norms internally in their mother tongues, they had not acquired the target compound word accent rules appropriately and yielded the results utilising strategies,

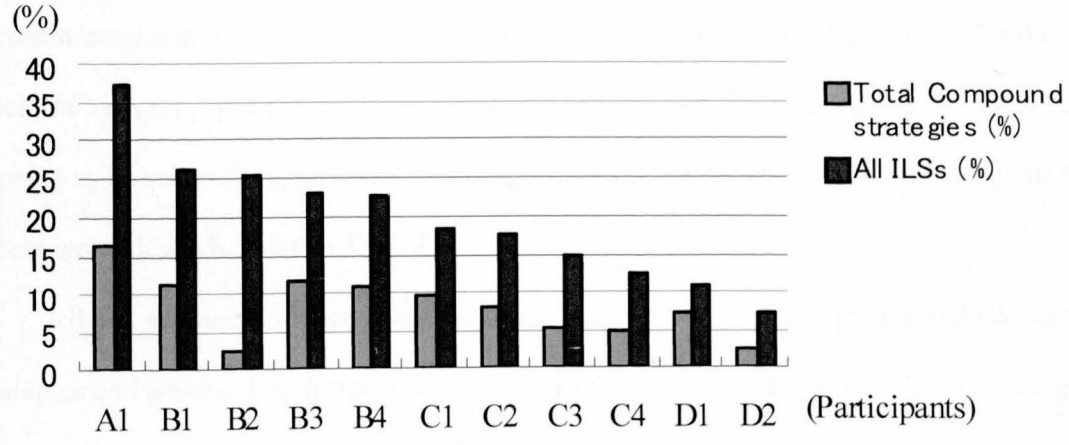
which are a more general and wider category compared to rules (Neustupný 1987a, 1989a) and which do not determine the exact location of AN.

Table 4-4 shows the number of applications of the four types of compound accent strategies and the percentage in the total number of phrases for each participant. Figure 4-7 shows the percentages of applications of compound accent strategies and all ILSs, which are all incorrect accentuations including ILS-1, ILS-2[O] and ILS-3[OP], for the total number of accentual phrases by each participant.

Table 4-4: Application of compound word accent strategies

Participants	Word-1 (%)	Word-2 (%)	Phrase- I (%)	Phrase-II (%)	Total Compound	Total number of phrases
A1	1 (0.5)	1 (0.5)	22 (11.8)	5 (2.7)	29 (15.5)	187
B1	2 (0.6)	7 (2.0)	27 (7.8)	5 (1.4)	41 (11.8)	348
B2	8 (3.4)	2 (0.8)	4 (1.7)	0	14 (6.0)	234
B3	9 (3.6)	8 (3.2)	10 (4.0)	1 (0.4)	28 (11.1)	253
B4	11 (3.1)	2 (0.6)	25 (7.0)	2 (0.6)	40 (11.2)	357
C1	13 (2.4)	7 (1.3)	33 (6.2)	3 (0.6)	56 (10.5)	535
C2	5 (1.1)	4 (0.9)	8 (1.8)	11 (2.5)	28 (6.4)	436
C3	4 (1.1)	5 (1.4)	7 (1.9)	3 (0.8)	19 (5.2)	363
C4	7 (1.5)	3 (0.7)	15 (3.3)	7 (1.5)	32 (7.0)	458
D1	8 (1.2)	7 (1.1)	26 (4.0)	6 (0.9)	47 (7.3)	647
D2	1 (0.2)	2 (0.4)	4 (0.8)	5 (1.0)	12 (2.5)	489

Fig. 4-7: Application of total compound word accent strategies



Thus, the participants utilized both antepenultimate accent strategies and compound word accent strategies for most of their accented incorrect accentuations and only a limited number of other accentuations, as indicated in the Table 4-5 and Figure 4-8 below. Table 4-5 indicates the number of application and percentages in the all accentual phrases, which are ① antepenultimate accent strategies, ② compound word accent strategies, ③ overlapping of both strategies, ④ the total use of both strategies, which can be considered as universal strategies, without overlapping, ⑤ other accentuations including ILS-1, ILS-2[O] and ILS-3[OP], ⑥ total number of accented incorrect accentual phrases and total number of phrases by each participant. Figure 4-8 shows the percentage of ④application of universal strategies and ⑤ other accentuations in ⑥ the total number of accented incorrect accentual phrases.

It is clear that almost all participants' accented incorrect phrases can be considered as due to the applicaiton of either antepenultimate or compound accent strategies. There is, however, an exception to this, that is, ILS-3 [OP] which combined incorrect an unaccented phrase and a correctly accented phrase, for example *jiyu'u-tte+ ig'-ba* 'if I say it is free', which participants consider as one accent unit, in addition to ILS-1.

Hence, it is a valid assumption that participants utilise the universal norms for most of their application of incorrectly accented phrases, for which mainly antepenultimate accent strategies and compound accent strategies are applied overlapping with each other, since the universal principles (1) to (3) above can account for both strategies. Thus, it appears to be naturally appropriate to consider both the antepenultimate and compound accent strategies to be another face of ILSs.

All the above-mentioned strategies, that is, four kinds of antepenultimate accent strategies and another four kinds of compound word accent strategies are presumed to be produced on the basis of the universal principles of accentuation. However, since those

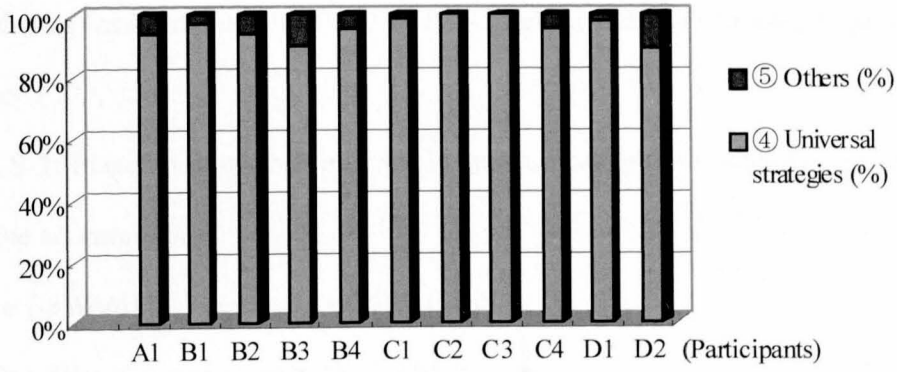
strategies are derived from the target accent rules, that is, antepenultimate accent rules and compound word accent rules, the strategies are considered to be produced as L2 overgeneralizations as well as from use of their universal norms through their L1.

Table 4-5: Antepenultimate and compound accent strategies

Participants	①Antepenultimate strategies (%)	②Compound strategies (%)	③Overlapping (%)	④Universal strategies (%)	⑤Others (%)	⑥All accented incorrect phrases (%)	Total number of phrases
A1	5 (2.7)	29 (15.5)	1 (0.5)	33 (17.6)	2 (1.0)	35 (18.7)	187
B1	28 (8.0)	41 (11.8)	2 (0.6)	67 (19.3)	2 (0.6)	69 (19.8)	348
B2	41 (17.5)	14 (6.0)	6 (2.6)	49 (20.9)	3 (1.3)	52 (22.2)	234
B3	27 (10.7)	28 (11.1)	11 (4.3)	44 (17.4)	5 (2.0)	49 (19.4)	253
B4	26 (7.3)	40 (11.2)	8 (2.2)	58 (16.2)	3 (0.8)	61 (17.1)	357
C1	28 (5.2)	54 (10.1)	8 (1.5)	74 (13.8)	1 (0.2)	75 (14.0)	535
C2	19 (4.4)	28 (6.4)	4 (0.9)	43 (9.9)	0	43 (9.9)	436
C3	14 (3.9)	19 (5.2)	0	33 (9.0)	0	33 (9.1)	363
C4	19 (4.1)	32 (7.0)	8 (1.7)	43 (9.1)	2 (0.4)	45 (9.8)	458
D1	10 (1.5)	47 (7.3)	1 (0.2)	56 (8.7)	1 (0.2)	57 (8.8)	647
D2	6 (1.2)	12 (2.5)	1 (0.2)	17 (3.5)	2 (0.4)	19 (3.9)	489

①+②-③=④, ④+⑤=⑥, ⑤Others: ILS-1, ILS-2[O] and ILS-3[OP] are included.

Fig. 4-8: Production of accented incorrect accentuation



4.6.7 Universal strategies and ILSs

As noted above, universal strategies, specifically, antepenultimate accent strategies and compound accent strategies appear to be included in ILSs. In other words, universal strategies are interchangeable with ILS-2 and can be used for a final part of ILS-3. For example, although *funi'ki* 'an atmosphere' is -3Word in an antepenultimate strategy because its syllable structure of the word final three syllables are W'SS, it can be regarded as ILS[A] because it is the first mora accented pattern. Another example is *mai-shuu* 'every week' is Word- II in a compound accent strategy because the AN is placed on the following syllable of the boundary, and is the same as ILS[C] because the second mora from the end of a component is accented. Moreover, *zenzen+chigai-ma'su* 'completely different' is ILS[OC], and it can also be a Phrase- I in a compound accent strategy. Therefore, both strategies, ILSs and universal strategies, seem to be the two sides of the same coin although ILS-1, ILS [O] and ILS [OP] are excluded from universal strategies.

Viewed in this light, the following new classification of ILSs can be suggested in place of what I described in 4.2. Therefore, I propose here the following new ILSs:

(1) ILS-1: Place two AN in one accentual phrase, as in the examples, *kokusai- ka'nkee-ni* 'in international relations'. Although this is excluded from universal strategies it can be regarded as the combination of any of ILS-2 below, *kokusai- ka'nkee-ni* is Word- I and Phrase- I .

(2) ILS-2: Place no more than one AN in an accentual phrase, which contains following nine accentuations:

AE [-3Word] *amerika* 'America' (S'SS),

AF [-2Word] *chu'ugaku* 'junior high school' (WS'S),

AG [-3Com] *daigaku'-in* 'post graduate school' (W'SS),

AH [-2Com] *tanaka-sense'e* 'Senator Tanaka' (SS'S),

CJ[Word- I] *shihan-da'igaku* 'teachers' college',

CK[Word- II] *mai-shuu* 'every week',

CL[Phrase- I] *kekkateki-ni* 'consequently',

CM[Phrase- II] *niho'n-yori* 'more than Japan' and

[O] The accentual phrase is not accented, for example, *tato'eba* 'for example'.

(3) ILS-3 is combining more than one accentual phrase without acknowledging the boundaries between the two. In this pattern, the first phrase or phrases with no AN is followed by an accented phrase, as in the following examples:

[O-AE] *watashi-no+ tomodachi-no* 'my friend's' (S'SS),

[O-AF] *gakkoo-no+purogu'ramu* 'school program' (SS'S),

[O-AG] no example was found in DATA-1,

[O-AH] no example was found in DATA-1,

[O-CJ] *yappa'ri+nihon-go-mo* 'as I expected Japanese language is also',

[O-CK] *kankee+na'-kere-ba* 'if nothing to do with',

[O-CL] *ke'kko(o)+tokai-de'su* 'surprisingly big city'

[O-CM] *ichiban+daiji'-desu* 'most important' and

[OP] *jiyu'u-tte+ ie'-ba* 'if I say it is free'. (This strategy [OP] is a combined unaccented phrase and correctly accented phrase without acknowledging the boundary.)

This ILS system with universal strategies appears to be more natural and meaningful compared to the original ILSs, of which the accent patterns express few characteristics. However, grouping of the three types are meaningful, as it shows the three developmental stages in both ILSs. Thus, it is one of the most important findings in this chapter that the

ILS system is based on both adapted L2 and universal norms through L1, which overlap with each other. There is one other thing that is important for the constituents of interlanguage system.

4.7 Production Process of Learners' Accentuation

Recently, the discussion of second language acquisition based on cognitive psychology has become more common in the field of applied linguistics. Corder (1994) claimed the following:

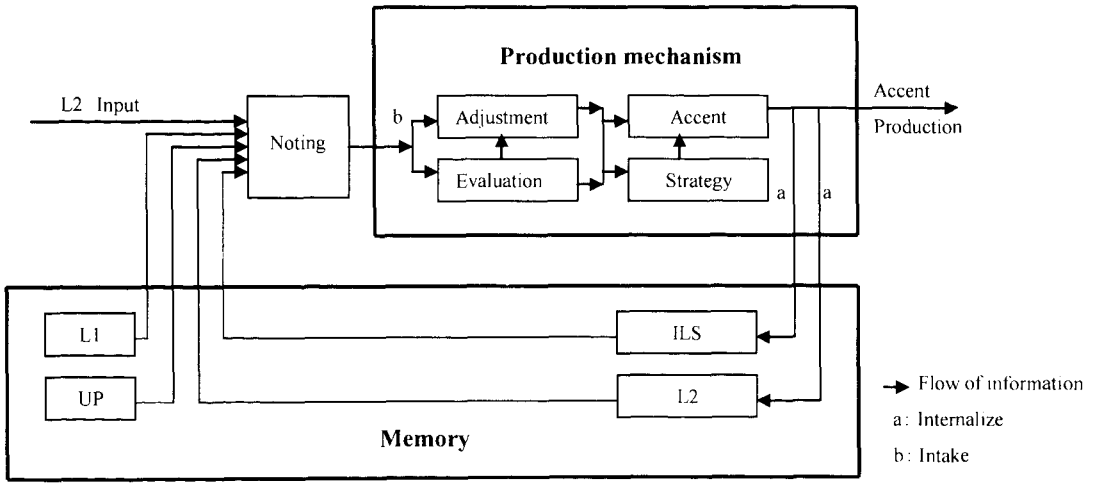
> The current psychological framework for approaching the phenomenon of second language acquisition is firmly cognitive. By this, I mean that the process of acquisition is seen as one of creating a body of implicit knowledge upon which the utterances in the language are based. Acquiring a language is a creative process in which learners are interacting with their environment to produce an internalized representation of the regularities they discover in the linguistic data to which they are exposed. This internal representation is their interlanguage competence.

Bialystok and Sharwood Smith (1985) claimed that the distinction between linguistic knowledge and the learner's control of that knowledge in the real-time processing of utterances is important in order to define interlanguage. Furthermore, interlanguage involves both the mental representation of systematic, organized information about the TL and the procedures for effectively and efficiently retrieving that knowledge in appropriate situations.

I propose a model of learners' production process of accentuation from a cognitive viewpoint based on the empirical characteristics of learners' accentuation mentioned above, in particular, the accentuation produced by the participants in my data. Figure 4-9 is the production model of accentuation by learners, which distinguishes a memory and a

production mechanism. Four types of knowledge, that is, learners' L1, L2, ILS and universal property (UP), are internally stored in their memory. The arrows indicate the flow of information, although all arrows do not always occur in this way. Every model expresses only what is intended to be modelled. The actual cognitive or linguistic activities are far more complicated. Although the UP may be stored in memory as the L1 norm, this does not automatically mean that all L1 norms are the UPs. Viewed in this light, the universal norm can be regarded as a separate independent norm.

Fig. 4-9: Model of production process of Japanese accentuation by learners



The production process of accentuation discussed here is a process of implicit[7], specifically, subconscious process, while the management process is a mainly explicit, specifically conscious process, which is discussed in Chapter 6.

[7] 'Automatic' is the term used in the field of cognitive science (Tomlin and Villa 1994).

4.7.1 Production process of accentuation

Japanese language learners do not possess sufficient rules of accentuation from the beginning of their learning. However, even at the early stage of learning, they have to cope with the problem of accentuation and try to appropriately place the AN (Anzai 1982). For this purpose and in this circumstance, they seem to produce 'strategies' instead of target accentuations, in many cases ILSs of accentuation. Learners seem to note[8] or discover strategies or correct accentuation from TL (L2) input from the outside world which includes teaching (Siegler and Jenkins 1989). They may also note strategies or target accentuations according to the knowledge that is internally stored in their memory as norms. The noted strategy or accentuation is taken in (route-b in Figure 4-9), evaluated with their accentual competence acquired by that time, and adjusted, and then produced as a strategy of accentuation or target accentuation, or stored in a memory without output (route-a in Figure 4-9).

4.7.2 Input of target (L2) accentuation and noting

It is assumed that L2 input including that which comes through classroom teaching is not always noted. According to Krashen's Input Hypothesis (1985), humans acquire language in only one way – by understanding messages, or by receiving 'comprehensible input'. However, even if it is difficult to find target accent rules, that is, both ordinary and listing rules, directly from the input, it may possible to find some strategies. In Figure 4-9, when the input is noted, it becomes intake (route-b) depending on the learner's understanding of input. In other words, only noted L2 input, regardless of whether it is noted implicitly or explicitly, becomes intake to be evaluated and adjusted.

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[8] 'Detect' is the term used in the field of cognitive science (Tomlin and Villa 1994).

4.7.3 Use of internalized knowledge

It is presumed that when NNSs produce accentuation, they utilise the internalized knowledge, specifically, accent norms and strategies in their memories, which are L1 norms, L2 norms, ILSs, and universal norms. The internalized accent norms and strategies seem to be noted and taken in by NNSs for production of the target Japanese accentuation or ILSs.

It is assumed that NNSs' L1 norms and other learned language norms, such as L2 English norms as well as strategies, are stored in their memory from the beginning of learning, and are used in the production of the L2 Japanese accentuation or ILSs. The L1 norms that NNSs hold in their memory are generally stable and fixed, although there is a likelihood of L1 loss.

NNSs seem to acquire the target L2 rules of accentuation, that is, both ordinary and listing rules, and store them in their memory. They utilise those stored L2 rules as L2 norms and produce accentuations or strategies using them. Therefore, it is assumed that the number of acquired L2 accentuations in learners' memories increase with their development of L2 competence of accentuation.

The internalized ILSs are also noted and taken in for production of accentuation. However, when the variability in ILSs does not arise and accentuation is always appropriate, that accent rule is considered to be acquired and to be a L2 norm. As I mentioned above, the use of ILSs reflects the development of learners' accentual competence. Thus, the state of ILSs in a learner's memory changes with the development of a learner's accentual competence.

As stated, some characteristics of NNSs' accentuations appear to be universal. Participants presumably possess universal norms of accentuation from the beginning of their learning. The state of universal properties in learners' memories must be stable and

fixed. The universal norms are usually included in L1 norms although not all L1 norms are universal.

4.7.4 Evaluation and adjustment

It is assumed that there is a function of evaluation and adjustment in the accent production process as shown in Figure 4-9 above. The internalized norms are taken in, interact with input L2 information and are then evaluated with the evaluation standards that learners have acquired by that time. If the accentuation is evaluated inappropriately, it is adjusted. The adjusted accentuation or strategy are produced as a strategy of accent or correct accent, or stored in a learner's memory without output (route-a in Figure 4-9).

Thus, a learner's representation of accentuation in L2 norms and ILSs is transformed and developed internally in the learner's memory by the repeated process of evaluation and adjustment that occurs in interaction with the Japanese language.

4.8 Summary

Unlike NSs, NNSs in many cases produce strategies of accentuations instead of TL accentuations. Through the analysis of each participant's accentuation in discourse in contact situations, ILSs and universal strategies that are based on norms – mother tongue norms, TL norms and universal norms – were identified, and then further examined.

The various strategies produced by learners appear to be integrated into a system of ILSs, of which there are three different types depending on the developmental stages. Those strategies can be considered to be natural strategies from a different viewpoint, which is 'natural' rather than 'systematic'. The five kinds of natural strategies, some of which appear to be based on universal norms, were introduced in this chapter. Moreover, I suggested it is possible to redefine the claim that ILSs are produced as an

overgeneralization of the TL, but at the same time, through universal norms. Particularly, each of the three developmental stages is produced using L2 norms, and most of the accented words or phrases are produced as antepenultimate accent strategies or compound accent strategies using universal norms, all of which overlap with each other and moreover with other strategies as well. Finally, a model of learners' production process of Japanese accentuation was introduced from the point of view of cognitive psychology.

CHAPTER 5

STYLE-SHIFTING OF JAPANESE ACCENTUATION BY NON-NATIVE SPEAKERS AND IBARAKI DIALECT SPEAKERS

5. 1 Introduction

In daily communication, we generally select an appropriate variation of style in speech, writing or other language behaviour according to the type of situation in which the language is being used. We use a formal or polite speech style in a formal situation, such as a ceremony, and an informal or colloquial speech style in intimate, informal situations. This change of style of communication is called style-shift. Selecting the correct style is an important element of the purpose of language activity.

In general, NNSs show two kinds of variability, free variation and systematic variation, in their ILSs. Free variation in ILSs was discussed in the previous chapter. In this chapter, systematic variation in accentuation of NNSs is analysed and compared with that of the Ibaraki dialect speakers of Japanese (IBSs).

This chapter analyses NNSs' style-shifting of accentuation in three different speech styles utilized in formal and informal situations and in word list reading. My claim is based on the hypothesis that learners' linguistic production can be expected to show varying degrees of success depending on the speech style used. I predict that appropriate production of accentuation most frequently occurs when speakers read a word list; they displays a lower degree of correctness in formal styles, and the lowest degree of correctness in informal styles, as Labov (1970, 1972) suggested. As I discussed in chapter 2, Labov introduced five types of contextual speech styles, in each of which phonological variables co-occur systematically. However, although Labov's studies are based on NSs, his findings have not necessarily been supported in the case of NNSs

(Tarone1985). Therefore, the results of analyses in this chapter are unpredictable.

I will compare participants' accentuation with that of eight IBSs, who are NSs of Japanese, and investigate the question of whether the style-shifting in accentuation by NNSs in different situational contexts occurs in the same way as that of the IBSs, whose accentuation is not the same as that of the Tokyo dialect, as outlined earlier. According to Yamada (1995, 2003a, 2007), IBSs and NNSs apply exactly the same strategies, that is, ILSs, which showed developmental stages towards the Tokyo dialect accentuation. To the best of my knowledge, no research has been conducted so far on the contrast between style-shifting of accentuations by NNS and NS groups, except by myself (Yamada 2003a, 2007).

5.2 Style-shifting by NNSs of Japanese

I investigated NNSs' accentual style when shifting between an informal situation, a formal situation and a word list reading, with reference to Labov's scale. The participants were ten NNSs[9]. The formal situation involved a conversation between the participant and a NS professor at their first meeting, and mainly consisted of the professor interviewing the participant. In the informal situation, the conversations were between the participant and a close NS friend. To study how learners read a word list, I picked 25 words from an elementary-level Japanese language text book and asked participants to read them aloud. In the follow-up interview, all 10 participants reported that they were more relaxed and found it easier to talk in an informal situation than in a formal situation or with the word list reading. With regard to the attention they paid to their accentuation,

[9] C1 is not included in this data set, because his interlocutor in the informal situation was not actually a close friend, but rather a fellow student of the same departmental laboratory, as mentioned in Chapter 3.

two participants claimed that they paid attention to their accentuation more frequently in formal situations than in informal situations. Other participants reported that they did not pay attention to their accentuation at all. As for reading the word list, almost all participants considered the appropriateness of their pronunciation, including accentuation of some words, but could not evaluate or adjust their accentuation accordingly.

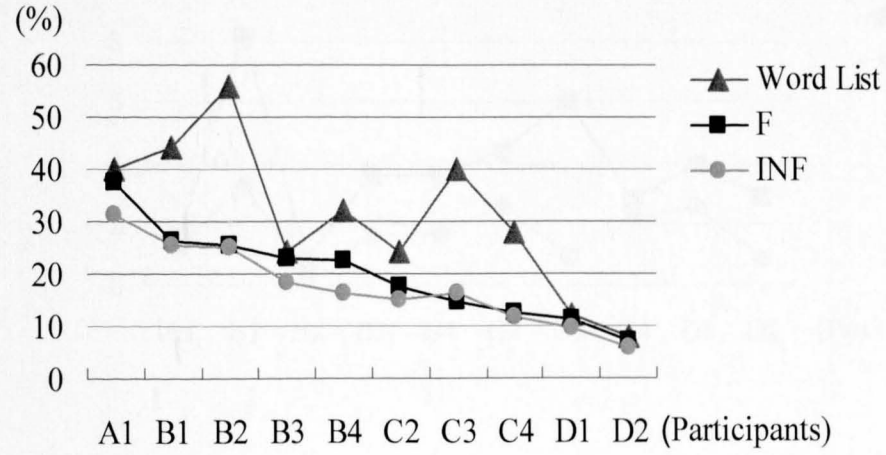
5.2.1 Appropriateness of accentuation in three speech styles

The appropriateness of participants' accentuation in three situations is summarized in Table 5-1 and Figure 5-1 below. In Table 5-1, the total numbers of application of ILSs, percentages and total numbers of the accentual phrases produced during reading the word list, in the formal situation (F) and in the informal situation (INF) are presented. In Figure 5-1, the percentages of ILSs produced in three situations and in two situations respectively are shown. Since the accentuation used for ILS is incorrect, comparing the formal and informal situations, the accentuation was more appropriate in the informal situation (Figure 5-1), and the accentuation during the reading of the word list was the most inappropriate among three styles, except in the case of C3 (Table 5-1, Figure 5-1). The difference of appropriateness among these three styles showed statistical significance ($F = 10.780$, $p < 0.05$). Although these results were systematic, they came out in reverse order to the Labov's model. According to Tarone (1985), the same results often occurred in SL learners' performances.

Table 5-1: Frequencies of inappropriate patterns (ILSs) used in three styles

Participants	A1	B1	B2	B3	B4	C2	C3	C4	D1	D2
WordList										
ILSs	10(40%)	11(44%)	14(56%)	6(24%)	8(32%)	6(24%)	10(40%)	7(28%)	3(12%)	2(8%)
Total	25	25	25	25	25	25	25	25	25	25
F										
ILSs	70(37.4%)	92(26.4%)	60(25.6%)	58(22.9%)	80(22.4%)	76(17.4%)	53(14.6%)	57(12.4%)	72(11.1%)	35(7.2%)
Total	187	348	234	253	357	436	363	458	647	489
INF										
ILSs	53(31.2%)	62(25.5%)	63(24.9%)	57(18.4%)	49(16.3%)	67(14.8%)	48(16.1%)	32(11.5%)	43(9.5%)	20(5.8%)
Total	170	243	253	309	301	453	299	278	453	344

Fig. 5-1: Inappropriate patterns (ILSs) used in the three styles



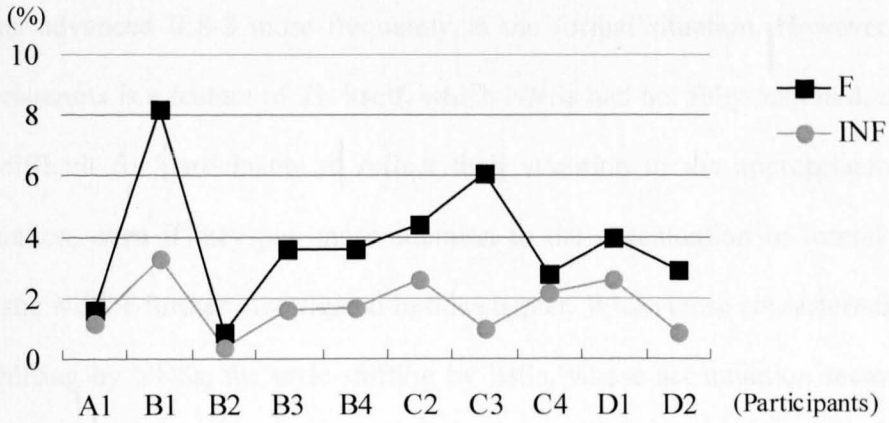
5.2.2 ILS-3 in formal and informal situations

Unlike the style-shifting in the appropriateness of accentuation, the difference in application of the most advanced ILS-3 in formal and informal situations showed exactly the same results as in Labov's model. ILS-3 was used more frequently in the formal situation than in the informal situation. The number and percentage of the application of ILS-3 and the total numbers of phrases used in the formal and informal situations are indicated in Table 5-2, and the percentage of application of ILS-3 is shown in Figure 5-2.

Table 5-2: Application of ILS-3 in formal and informal situations

Participants	A1	B1	B2	B3	B4	C2	C3	C4	D1	D2
F										
ILS-3	3(1.6%)	28(8.2%)	2(0.9%)	19(3.6%)	13(3.6%)	19(4.4%)	22(6.1%)	13(2.8%)	26(4.0%)	14(2.9%)
Total phrases	187	348	234	253	357	436	363	458	647	489
INF										
ILS-3	2(1.2%)	8(3.3%)	1(0.4%)	5(1.6%)	5(1.7%)	12(2.6%)	3(1.0%)	6(2.2%)	12(2.6%)	3(0.9%)
Total phrases	170	243	253	309	301	453	299	278	453	344

Fig. 5-2: Application of ILS-3



The application of ILS-3 showed a statistically significant difference between formal and informal situations ($t = 3.794$, $p < 0.05$). Presumably implicit attention was paid to the accentuation of ILS-3 during speech more strongly in the formal situation than in the informal situation. All participants mentioned in the FUI that they tensed up more in the formal situation compared to the informal situation. In those circumstances, it seems to be natural that they chose the most advanced ILS-3 more frequently in the formal situation than in the informal situation.

5.2.3 Characteristics of style-shifting by NNSs

Although each of the above mentioned style-shifting of accentuation by NNSs showed systematicity depending on the situation, the results in appropriateness were exactly the reverse of those in the application of ILS-3 which corresponded to Lobov's results. This difference may be caused by the difference of the nature between ILSs and the TL accentuation. It is presumed that since ILSs were created by NNSs themselves as a substitute for the target accentuation, the use of ILSs may reflect the degree of attention to the accentuation depending on the situation and it was not difficult for NNSs to select the most advanced ILS-3 more frequently in the formal situation. However, since the appropriateness is a feature of TL itself, which NNSs had not fully acquired, it appears to be difficult for participants to reflect their attention to the appropriateness of the accentuation, even if they pay more attention to the accentuation in formal situations. This issue will be further investigated in this chapter. While these characteristics concern style-shifting by NNSs, the style-shifting by IBSs, whose accentuation seems to bear a resemblance to that by NNSs, is presented in the following section.

5.3 Style-shifting by Ibaraki Dialect Speakers (IBSs)

The Ibaraki dialect accentuation is considered to be in the process of language change towards the Tokyo dialect, which is the Japanese standard language. It is presumed that this language change has been caused by the marked increase in people's exposure to the Tokyo dialect due to the greater movement and interaction that is a result of the development of the transportation system and the influence of the mass media (Mase 1981; Takamaru 2010). The accentuation in the Ibaraki dialect is regarded as being the accent-less type, in which the accent patterns are not fixed for a particular word, having a frequently used unaccented pattern. Accordingly, the Ibaraki dialect accentuation does

not have the distinctive features of any accent pattern, specifically the accent patterns are fluctuating (Hirayama 1986; Yamaguchi 1975, 1989). One of this pattern's most prominent prosodic features is rising intonation. The language change that is taking place in the Ibaraki dialect accentuation seems to be proceeding from an unaccented one pattern accentuation towards the Tokyo dialect accentuation. The accentuation of the IBSs who appear to have acquired to some extent the Tokyo dialect accentuation is discussed in this section. The IBSs' production and style-shifting of accentuation presented in Yamada (1995, 2003a, 2007) are compared with those by the NNSs above and are discussed.

Yamada (2003a) investigated the accentuation of eight IBSs who were university students in Ibaraki prefecture. All participants and their parents were born and lived in the region where the Ibaraki dialect is spoken. The data has two sets. One set consists of a 15-minute conversation between eight participants and a Tokyo dialect speaking professor whom they met for the first time; this is the formal situation. The other set consists of four pairs of 15-minute conversations between eight close friends, described above; this is the informal situation. The four pairs of friends were J1W and J2W, J3X and J5X, J4Y and J8Y, and J6Z and J7Z. Although all of the participants could place the AN, they could not always appropriately use them as consistent with the Tokyo dialect accentuation. Therefore, the data were analysed for the location of the AN. All discourse was recorded by audio and transcribed. A follow-up interview was then conducted in which participants' attention to their accentuation and their attitude towards the Ibaraki dialect was discussed.

According to Trudgill (1986), speakers may reduce pronunciation dissimilarities with other speakers by using pronunciations that are an intermediate version of the two dialects in contact (known as approximation or fudged dialects). Trudgill uses the term

'interdialect' for the intermediate pronunciation of two dialects in the manner of the term 'interlanguage', which was coined by Selinker (1972) in studies of SLA. The label 'interdialect' is intended to refer to situations where contact between two dialects leads to the development of forms that are not originally part of either dialect (p. 62). In this chapter, the term 'interdialect strategy (IDS)' is used to refer to the strategy created by the IBSs, which is adopted as a substitute system for their target accentual system.

5.3.1 Characteristics of interdialect strategies (IDSs)

The characteristics of IDSs created by IBSs are quite similar to those of ILSs created by NNSs of Japanese. The similarities are those characteristics, such as free variation, which do not show distinctive features of the word, or development towards the Tokyo dialect accentuation. In addition, the Ibaraki dialect accentuation itself bears some resemblance to IDSs and ILSs, such as having free variation, and therefore the accentuation in such cases is not fixed. As such, it seems to be impossible to distinguish whether the IDSs or the Ibaraki dialect is used in a participant's accentuation. Accordingly, in the data all inappropriate accentuations on the basis of the Tokyo dialect accentuations were analysed and the following three types of accentuations, namely IDSs, were identified:

(1) Interdialect strategy 1 (IDS-1): To form a pattern by combining more than one phrase without placing an AN. The IDS-1 has a rising intonation towards the end of the strategy, and a final mora is prominently pronounced and lengthened; for example, *noru toki'-ni* "when I ride", which is pronounced without the AN and with rising intonation. Presumably, this is the transference or borrowing of the Ibaraki dialect accentuation, which is their mother tongue dialect of Japanese.

(2) Interdialect strategy 2 (IDS-2): To form a pattern in which not more than one AN is placed in a phrase, and although the pattern is a regular accent pattern of the target, the location of the AN is inappropriate; for example, *sense'e-ga* 'teacher is' and *me'ritto-o* 'merit' and *ari'gatoo* 'thank you'. In addition, an unaccented pattern of IDS-2, such as *amayakasa'rete* 'spoiled' indicates some sort of boundary at the end of the phrase, including a lengthening or rising of pitch at the ending mora.

(3) Interdialect strategy 3 (IDS-3): to form a pattern by combining more than one phrase without acknowledging boundaries. The first phrase spoken with no AN is followed by an accented phrase. When the Tokyo dialect speakers pronounce two or more accentual phrases without pausing, the ANs of each phrase are retained. The participants seem to consider this type as one accent unit. Examples are *I'tsu+itta'-no?* 'When did you go?' and *ko'ne+tsukatte'-made* 'go so far as to pull strings'.

(4) Development of IDSs

The following Table 5-3 shows eight participants' gender (F indicates female and M indicates male), applications of total IDSs and the percentage in the total number of accentual phrases in a 15 minute discourse in a formal situation of appropriateness of accentuation and developmental groups. The percentage of IDS applications by J1W and J2W is relatively small, that is, the inappropriate accentuation is small in number, so that they are categorized in Group 1. J3X and J4Y are Group 2 and J4X, J6Z, J7Z and J8Y are Group 3. Those groupings are dependent on their percentage of IDS applications or appropriateness of accentuation.

Table 5-3: Participants' accentuation

Participants	J1 W	J2 W	J3 X	J4 Y	J5 X	J6 Z	J7 Z	J8 Y
Gender	F	F	M	F	F	M	M	F
All IDSs in F	19(2.2%)	17(3.1%)	55(6.7%)	62(9.4%)	99(13.5%)	87(15.6%)	146(17.0%)	115(20.5%)
Total phrases	877	545	816	662	736	557	859	562
Groups	1	1	2	2	3	3	3	3

IDS-2 and IDS-3 created by IBSs correspond to ILS-2 and ILS-3 created by NNSs, respectively, based on the accent patterns and the developmental stages of each type. Although IDS-1 and ILS-1 are the most primitive types, their patterns are different. Table 5-4 shows the application of IDSs-1, -2 and -3 as spoken by eight participants in the three groups and the ratio of IDS-2 to IDS-3 (IDS-2/IDS-3) in the formal situation. IDS-1 appears to be the most primitive strategy and was applied by only Group 3 participants, who produced inappropriate accentuations, that is, the number of applications of all IDSs, most frequently (for 16.6% of the total numbers of the phrases). IDS-3 appears to be a more advanced strategy than IDS-2, based on the fact that the Group 3 participants, who produced more inappropriate accentuations, more frequently applied IDS-2 than IDS-3 (ratio of IDS-2 to IDS-3: IDS-2/IDS-3 is 1.84), while Group 2 participants, who produced less inappropriate accentuations than Group 3 participants, more frequently applied IDS-3 than IDS-2 (ratio of IDS-2 to IDS-3: IDS-2/IDS-3 is 0.92). Group 1 participants, who produced the least amount of inappropriate accentuations, applied the least IDS-2 and IDS-3 the fewest times among the three groups, because all three types of IDSs are inappropriate accentuations.

Table 5-4: Application of IDSs

Participant Groups	IDS-1	IDS-2	IDS-3	IDS-2 / IDS-3	All IDSs	Total Number of Phrases
Group 1 (n=2)	0	22 (1.5%)	14 (1.0%)	–	36 (2.5%)	1422
Group 2 (n=2)	0	56 (3.8%)	61(4.1%)	0.92	117 (7.9%)	1478
Group 3 (n=4)	3(0.1%)	290 (10.7%)	157 (5.8%)	1.84	450 (16.6%)	2714

Thus, the IBSs presumably develop their accentual competence gradually by shifting the frequency with which they use each type of IDSs in the same way that NNSs do (see previous chapter). At the same time, it is found that the length of IDS-3, which is the most advanced IDS, is longer than that of IDS-2.

Another characteristic of IDSs is variability, containing both the free variation and systematic variation. In relation to free variation, it seems that a singular participant will apply different IDS patterns for a particular word depending on the occasion. For example, in the case of J7Z, in the formal situation, he used the verb *a'ru* 'there is, exist', 13 times, eight times appropriately and five times inappropriately, using IDSs, such as *a'ru-mitai-de* (IDS-2) 'there seems to be', *tokoro'-ga+ a'ru-n-de* (IDS-3) 'there is a place and' and *a'ru-to+ omo'u-n-desukedo* (IDS-3) 'I think there is...'. Therefore, these IDSs do not show the distinctive features of a particular word but rather free variation.

5.3.2 Appropriateness of IBSs' accentuation in formal and informal situations

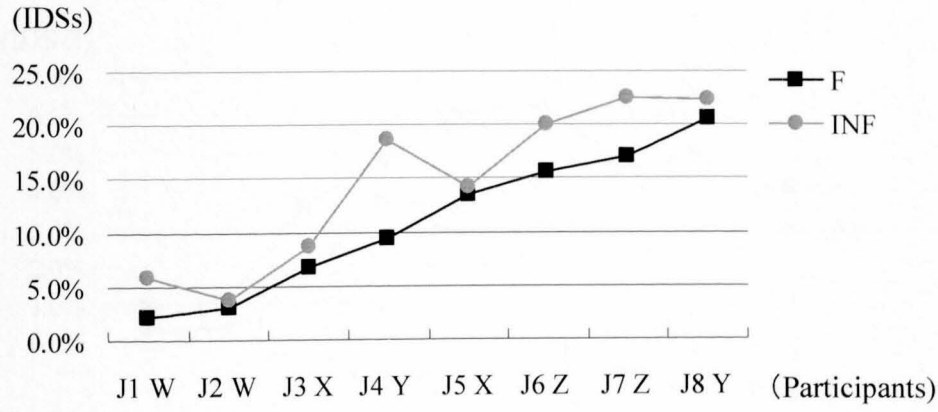
In Table 5-5 and Figure 5-3, the number of applications of all the IDSs, or inappropriate accentuations, its percentage, and the total number of phrases used by participants in both formal and informal situations are indicated. The percentage of applications of IDSs in

informal situations by all participants is larger than that in formal situations. This difference between both situations is statistically significant ($t = -3.325$, $p < 0.05$). Therefore, IBSs' accentuation in formal situations is significantly more appropriate than in informal situations. From this it can be concluded that IBSs' accentuation shows systematic variation, that is, style-shifting in accordance with Labov's model. It appears that this style-shift is caused by differences in the level of attention paid to the language; in this case, attention to Japanese accentuation consistent with Labov's theory (1970). Presumably this attention is implicit or subconscious. This style-shifting is different from that of NNSs' accentuation, which is more appropriate in an informal situation than that in the formal situation, as discussed above.

Table 5-5: Appropriateness of accentuation (application of all IDSs)

Participants	J1 W	J2 W	J3 X	J4 Y	J5 X	J6 Z	J7 Z	J8 Y
F								
IDSs	19(2.2%)	17(3.1%)	55(6.7%)	62(9.4%)	99(13.5%)	87(15.6%)	146(17.0%)	115(20.5%)
Total phrases	877	545	816	662	736	557	859	562
INF								
IDSs	33(5.8%)	12(3.7%)	43(8.6%)	80(18.7%)	80(14.1%)	105(20.0%)	82(22.5%)	78(22.3%)
Total phrases	573	322	499	428	567	525	364	349

Fig. 5-3: Application of all IDSs



According to Yamada (2003a), although J6Z, J7Z and J8Y produced a larger number of inappropriate accentuations than the other participants, those three participants' accentuations sounded closer to the Tokyo dialect accentuation than the accentuations of other IBSs who are not students of the same university. It appears that because the students of the university where the eight participants study are from a variety of places in Japan, the opportunity for contact situations where different dialects interact readily occurs.

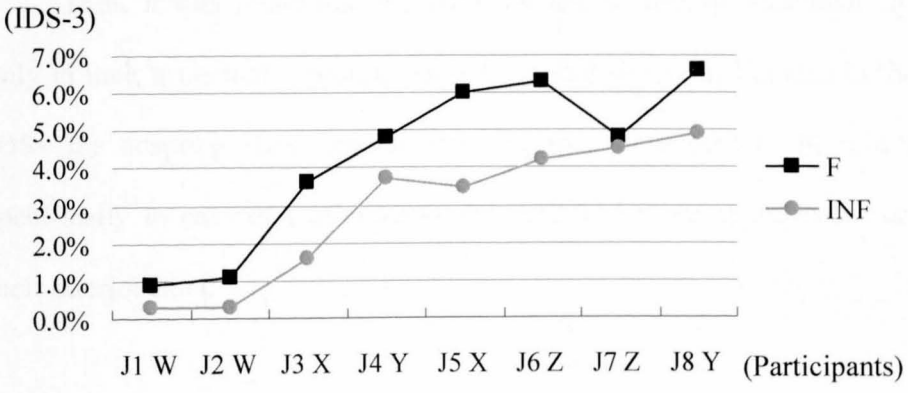
5.3.3 Style-shifting in application of IDS-3

The application of IDS-3, which is the most advanced IDS, by eight participants both in formal and informal situations, is shown in Table 5-6 and Figure 5-4.

Table 5-6: Application of IDS-3 in formal and informal situations

	J1 W	J2 W	J3 X	J4 Y	J5 X	J6 Z	J7 Z	J8 Y
F	8(0.9%)	6(1.1%)	29(3.6%)	32(4.8%)	44(6.0%)	35(6.3%)	41(4.8%)	37(6.6%)
INF	2(0.3%)	1(0.3%)	8(1.6%)	16(3.7%)	20(3.5%)	22(4.2%)	12(4.5%)	17(4.9%)

Fig. 5-4: Application of IDS-3



The percentage of applications of IDS-3 in formal situations is greater than that in informal situations for all eight participants, and those differences are statistically significant ($t = 4.923$, $p < 0.05$). This is consistent with Labov's model while it is different from NNSs' style-shifting in the application of ILS-3.

5.3.4 Correlation between application of IDSs and appropriateness

Table 5-7 shows the ratio between each participant's percentage of application of IDS-2 and IDS-3 (IDS-2/IDS-3) (1) in formal situations, (2) in informal situations, (3) the ratio between occurrences of (2) and (1) (INF/F), and (4) the percentage of his or her production of inappropriate accentuation in formal situations. Here, there seems to be a close relation between (3) and (4). Figure 5-5 shows the negative correlation between them, which was statistically significant ($r = -0.835$, $p<0.05$).

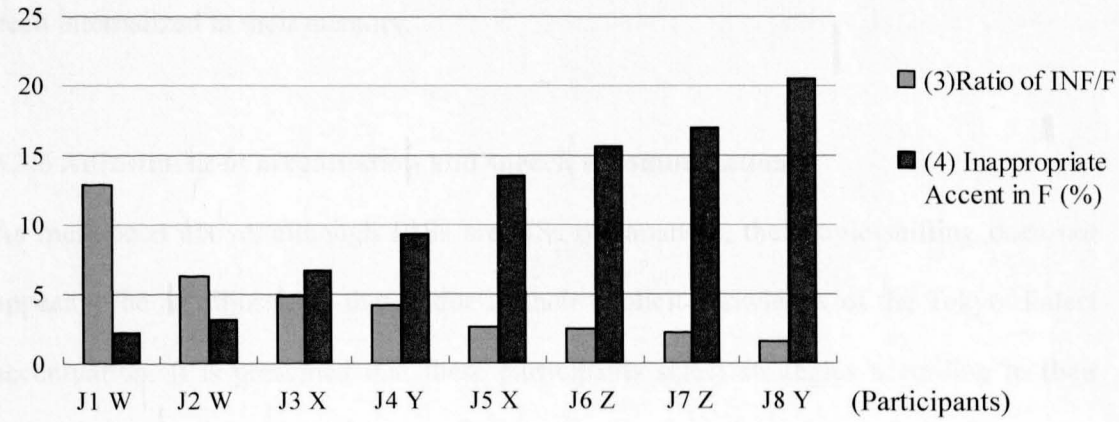
Hence, it is presumed that the participants who can produce more appropriate accentuation, such as J1W, are also able to adjust their accentuation to make it closer to their interlocutor's accentuation by choosing IDS-2 rather than IDS-3 in an informal situation. Contrary to this, the ratio of IDS-2 to IDS-3 by the participants who produce more inappropriate accentuation, such as J8Y, is not as high. Presumably, they do not adjust their accentuation so that it is closer to their interlocutor's accentuation.

Thus, it was found that the IBSs showed systematic accentual style-shifting not only in their accentual appropriateness in formal situations but also in their selection of IDSs for adapting their accentuation for their interlocutors in informal situations, specifically in case of participants who produced more appropriate accentuation than their interlocutors.

Table 5-7: Ratio of IDS-2 to IDS-3 (IDS-2/IDS-3)

Participants	J1 W	J2 W	J3 X	J4 Y	J5 X	J6 Z	J7 Z	J8 Y
(1) F	1.4	1.8	0.9	0.94	1.25	1.49	2.56	2.11
(2) INF	18	11.3	4.38	4	3.35	3.77	5.83	3.41
(3) INF/F	12.9	6.3	4.87	4.26	2.68	2.53	2.28	1.62
(4) Inappropriate Accent in F	2.20%	3.10%	6.70%	9.40%	13.50%	15.60%	17.00%	20.50%

Fig. 5-5: Correlation between appropriateness and application of IDS-2/ IDS-3



5.3.5 Consciousness and knowledge of accentuation

The participants' consciousness and knowledge of accentuation were discussed in the follow-up interviews (Yamada 2003). In the informal situation, which consisted of one dialect situation with a close friend, all participants reported they were relaxed and not concerned about either language use or accentuation. However, since their interaction was recorded using an audio device, they could not entirely help being conscious of the conversation, and their speech was most likely not the same as it would be with their family members in daily lives, which was not being audio recorded. On the other hand, in the formal situation, which is the contact situation of dialects with a

Tokyo-dialect-speaking professor, all participants stated that they intended to speak properly. However, they claimed not to be concerned about accentuation in either situation.

Furthermore, they did not appear to possess an explicit knowledge of accentuation of either the Ibaraki dialect or the Tokyo dialect, and consequently, they did not appear to be concerned whether their accentuation was different from that of the Tokyo dialect or not. Although they were not able to objectively explain their accentuation, it is presumed that they covertly utilized implicit knowledge of the accentuation, that is, IDSs which had been internalized in their memory.

5.3.6 Adjustment of accentuation and speech accommodation

As mentioned above, although IBSs are NSs of Japanese, their style-shifting does not appear to be an adjustment that is due to their explicit knowledge of the Tokyo dialect accentuation. It is presumed that these participants select strategies according to their implicit knowledge and adjust their accentuations to become more like those of their interlocutors (particularly in informal situations). That adaptation can be regarded as a 'convergence', the process whereby individuals shift their speech styles to become more like those of the people with whom they are interacting (Giles and Smith 1979).

5.4 Differences of Style-shifting between NNSs and IBSs

Some similarities and differences in the production of accentuation between Japanese language learners (NNSs) and Ibaraki dialect speakers (IBSs) were found. The ILSs created by NNSs and the IDSs created by IBSs are very much alike. The accentuation of those two groups appears to be at some stage in the development into the target Tokyo dialect accentuation. The accent patterns of ILSs-2 and -3 are exactly the same as those

of IDSs-2 and -3 respectively, and the developmental process towards the target accentuation is quite similar, although the accent patterns of ILS-1 and IDS-1, which are at the most elementary stages, are different. It is presumed that the primary reason for those similarities is due to both participants targeting the same Tokyo dialect accentuation. The main characteristic of both ILSs and IDSs is overgeneralization of the target accentuation. However, it is presumed that IDSs are comprised of universal strategies, specifically the antepenultimate strategies and compound word accent strategies, although the examination of those two strategies was not taken up in this study. Concerning the accent patterns of IDS-1 and ILS-1, IDS-1 appears to involve the transference or borrowing from participants' mother tongue dialects, that is, the Ibaraki dialect accentuation, whereas ILS-1 is created presumably because it is difficult for NNSs not only to produce but also to perceive long words, such as compound words. However, those words are not difficult for IBSs who are NSs of Japanese.

In addition, both of the participant groups showed free variations (Yamada 1995, 2003, 2007). Both of the participant groups showed the same style-shifting in application of the most advanced IDS-3 and ILS-3, in which the accentuations in the formal situations were more appropriate than in the informal situations. In addition to the above, some differences in the style-shifting of accentuation between NNSs and IBSs were found, as described below.

While both groups showed the same systematic variability in specific style-shifting between IDS-3 and ILS-3, they exhibited differences in style-shifting between NNSs and IBSs with respect to the appropriateness of accentuation. The NNSs' accentuation was more appropriate in informal situations, whereas the IBSs produced more appropriate accentuation in formal situations. The commonness of style-shifting between IDS-3 and ILS-3 is presumably because both ILSs and IDSs are created by themselves based on

norms of their own rules internalized by them, whereas the differences in style-shifting between them are based on appropriateness, that is, with reference to TL norms which NNSs did not poses.

5.4.1 Style-shifting differences between NNSs and IBSs

It is worthwhile examining the factors involved in this difference more closely.

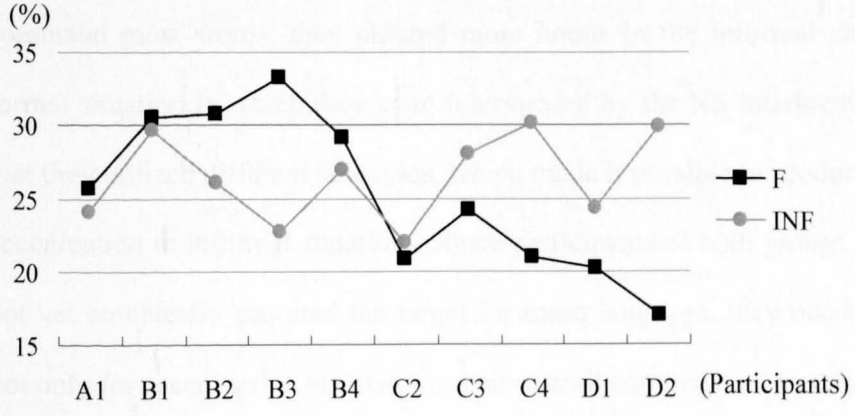
(1) Style-shifting based on appropriateness of accentuation by NNSs

One reason for the result that the accentuation by NNSs in informal situations was more appropriate than in formal situations is the influence of learners' use of strategies. It is predicted that even if the usage of a word is acquired, the accentuation of the word may not be. In particular, it is predicted that it is difficult for learners to acquire accentuation of words used infrequently. Accordingly, it is assumed that NNSs can accentuate more properly if they can choose a limited number of words which they are accustomed to. The correlation between the appropriateness of accentuation and the restriction of vocabulary used in a certain length of discourse is worth investigating. Table 5-8 and Figure 5-6 indicate the number and the percentage of distinct nouns in all of the content words, that is, accentual phrases, used in each of the formal and informal situations, and the percentage of inappropriate accentuations produced in the formal situation. The order of each participant from A1 to D2 corresponds to the order of the appropriateness of the accentuation that they produced. A1 produced the most inappropriate accentuation and D2 produced least inappropriate accentuation.

Table 5-8: Percentage of distinct nouns

Participants	A1	B1	B2	B3	B4	C2	C3	C4	D1	D2
F										
Nouns	48	106	72	84	104	91	88	95	131	83
(%)	25.7	30.5	30.8	33.2	29.1	20.9	24.2	21	20.2	17
INF										
Nouns	41	72	66	70	81	99	84	84	110	103
(%)	24.1	29.6	26.1	22.7	26.9	21.9	28.1	30.2	24.3	29.9
Inappropriate accent in F(%)	37.4	26.4	25.6	22.9	22.4	17.4	14.6	12.4	11.1	7.2

Fig. 5-6: Use of distinct nouns



As a result, the participants can be classified into two groups: Group 1, which consists of A1, B1, B2, B3 and B4, and Group 2, which consists of C2, C3, C4, D1 and D2. Group 1 applied more distinct nouns in formal situations than in informal situations, whereas Group 2 applied more distinct nouns in informal situations than in formal situations. To elaborate, Group 1 participants conversed using a limited number of nouns in the informal situation compared to the formal situation.

It is predicted that, in many cases, learners may be able to produce more appropriate accentuations for words that they are accustomed to using (Yamada 1992a),

as noted above. It is also assumed that their interlocutors in informal situations tend to be their intimates and know their vocabulary limitations. Therefore, it would be possible for interlocutors to adjust their selection of words to those that are familiar to learners. Thus, it appears that Group 1 participants utilised a strategy whereby they limit the number of words they use and this influenced the production of appropriate accentuation in the informal situation. As seen in Table 5-8 and Figure 5-6, Group 2 participants who produced more appropriate accentuation and whose Japanese competence was higher than the Group 1 do not appear to use that strategy and do not appear to restrict the number of words they speak in the informal situation. Probably because they can freely command most words, they utilized more nouns in the informal situation than in the formal situation in which they were interviewed by the NS interlocutors. It is presumed that they utilized different strategies, which made it possible to produce more appropriate accentuation in informal situations. Since participants of both groups are NNSs who had not yet completely acquired the target Japanese language, they needed to use strategies not only for accentuation but also for their overall command of Japanese.

(2) Style-shifting of in-group convergence by IBSs

The IBSs shifted their speech styles to make them more like those of the person with whom they were interacting. Participants who produced more appropriate accentuations in formal situations appeared to adapt their accentuation to that of their interlocutors (i.e. convergence). However, this type of convergence, which appears to be downward convergence (Giles and Smith 1979), was not found in NNSs' conversations with NSs in the formal situation nor in the informal situation. Presumably the informal situation for the IBSs was a conversation with members of an in-group and therefore the speech style was implicitly shifted for the sake of expressing solidarity (Giles and Smith 1979).

However, NNSs' interactions were in contact situations and therefore their conversations were not with their in-group members.

(3) Style-shifting of accentuation by IBSs

Apart from NNSs' style-shifting, IBSs showed style-shifting in which their accentuation was more appropriate in formal situations (consistent with Labov's model), although they had not yet acquired the target accentuation, and the IDSs produced by them showed a strong resemblance to the ILSs produced by NNSs. It is presumed that since IBSs are NSs of Japanese they implicitly have the norms of the TL in a 'nascent stage' (Neustupný 2004), which NNSs do not possess.

5.5 Summary

The accentuation by NNSs showed the systematic style-shifting in formal and informal situations. They used ILS-3, the most advanced strategies, more frequently in formal situations than in informal situations (consistent with Labov's model). However, their accentuation was more appropriate in informal situations than in formal situations, which is inconsistent with Labov's model.

The production and style-shifting of accentuation of IBSs were presented and compared with those of NNSs. The accentuations of the two groups were very much alike. The accentuations of both groups appear to be in the process of developing into target Tokyo accentuation. IBSs produced IDSs that have almost identical characteristics with the ILSs produced by NNSs. Although the style-shifting in appropriateness of accentuation by NNSs did not match Labov's model, the style-shifting by IBSs did.

The probable reasons for the difference in style-shifting between NNSs and IBSs were discussed. According to Labov, NSs produce more successful phonological speech

sounds and more attention is paid to their speech in formal situations than in informal situations. It was found that NNSs appear to utilise more strategies for commanding Japanese language in informal situations than in formal situations. NNSs whose Japanese language competence is comparatively elementary used a strategy whereby they used a more limited number of nouns in the informal situation than in the formal situation. This strategy appears to make it possible to produce more appropriate accentuation in the informal situation, because it is easier for NNSs to initiate the topic compared to the formal situation, where most of the topics are chosen by NS interlocutors as part of the interview. Furthermore, since interlocutors were peers, they could adjust the selection of words that were familiar to NNSs in informal situations. However, NNSs whose Japanese language competence was at an advanced stage did not appear to use the same strategy. This was most likely because a restriction of words was not necessary for them as they could freely command larger vocabularies. Presumably, they used different strategies which made it possible to produce more appropriate accentuation in informal situations.

On the other hand, since the IBSs are NSs of Japanese, they do not have to use such strategies as are used by NNSs, except in regard to accentuation, specifically, to produce IDSs. Presumably, they possess norms of the target Japanese in a nascent stage (Neustupný 2004). V iewed in this light, the style-shifting in accentuation by NNSs and IBSs can be regarded as an implicit or subconscious adjustment of accentuation depending on the situation. The explicit management of accentuation will be taken up in the next chapter.

CHAPTER 6

MANAGEMENT OF ACCENTUATION

6.1 Introduction

As stated, although both NNSs and NSs pay little attention to accentuation, it is commonly observed that NNSs develop their accentual competence as their Japanese language ability progresses. Accordingly, it is a valid assumption that learners manage their accentuation, even if they do not pay explicit attention to this feature of the Japanese language (Yamada 2003b). This chapter shows how NNSs of Japanese manage their accentuation, both explicitly and when they are unconscious of the relevant processes, through the analyses of DATA-1 in the formal situation.

According to the language-management theory (Neustupný 1985a, 1995a, 1997; Jernudd and Neustupný 1987), when we generate language, the generation (production) process does not always succeed and deviations from the norm may arise. The adjustment of such deviations is the aim of the language management by speakers. Accordingly, it is necessary for speakers to possess strategies for language production and language management. The theory of language management started as a theory of language planning, under the name of language correction (Neustupný 1985a, 1985b; Jernudd and Neustupný 1987), but this study deals with language problems as management processes, which consist of five stages, as previously mentioned: (1) deviation from the norm, (2) noting of the deviation, (3) evaluation, (4) selection or planning of an adjustment and (5) implementation of the adjustment.

6.2 Consciousness and Knowledge of Accentuation

It is presumed that knowledge of accentuation involves previous experience about

accentuation that has been internalised by the learner. The models of acquisition by second language acquisition researchers assume that acquisition involves both declarative knowledge and procedural knowledge (Ellis 1999: 234). These two types of knowledge are explained from the viewpoint of cognitive psychology, and the following characteristics have been pointed out:

> Declarative knowledge can be defined as knowledge to which an individual has conscious access and which can therefore be stated directly, either verbally or by some other means. Procedural knowledge is knowledge to which the individual has no conscious access and, as such, its presence can only be demonstrated indirectly through some form of action (Parkin 1990: 93-95).

Anderson's (1995: 234-6) description of the above-mentioned types of knowledge is as follows:

> 'Declarative knowledge is explicit knowledge which we can report and of which we are consciously aware', 'Procedural knowledge is knowledge of how to do things, and it is often implicit', or 'Procedural knowledge is knowledge about how to perform various cognitive activities.

Thus, the knowledge that learners internalise can be implicit or explicit. In the case of implicit knowledge, learners are not aware of what they know, whereas in the case of explicit knowledge, they are aware of what they know (Ellis 1999: 234).

This thesis refers to these two types of knowledge as declarative knowledge and non-declarative knowledge, where the former is defined as the knowledge that learners can consciously and explicitly explain by language, whereas the latter is defined as the knowledge that learners cannot explain explicitly and about which learners are unconscious.

The following are examples of participants' declarative knowledge of Japanese

accent as reported in FUIs, although not all of these are appropriate claims concerning Japanese accentuation:

1. The Japanese accent is a pitch accent.
2. The accented syllable is pitched higher than the preceding one.
3. The Japanese accent is a stress accent.
4. Native Japanese speakers possess certain accentual rules.
5. A word accent may be changed when the word is connected to another word.
6. The accent of each word that comprises homonyms such as *a'me* 'rain' and *ame* 'candy', *ha'shi* 'chopsticks' and *hashi'* 'bridge', *kami'* 'paper' and *ka'mi* 'god' and *kite'kudasai* 'please come' and *kite kudasa'i* 'please wear' is different.
7. Sometimes it is difficult to communicate when the accent of a certain word is inappropriate.
8. The accent of each word is fixed.
9. The accentuation of the Kansai dialect is different from that of the Tokyo dialect.
10. The accent is a feeling of a higher-pitch sound compared to the preceding sound, and the final sound is low pitched.

These statements cover knowledge of the general characteristics of Japanese accentuation but not the knowledge of individual-word accentuation, except for a few examples such as those of homonyms in number 6. However, two participants, C2 and C4, who studied the Japanese language in high school and at university in China, remembered the accentuation of words as declarative knowledge, including compound words, although they did not completely remember the rules of compound-word accentuation. However, some participants did not distinguish accentuation from pronunciation.

According to the FUIs, no participants, except for C2 and C3, paid any conscious attention to their own accentuation, whereas C2 and C3 consciously accentuated some

words and C3 was frequently careful about her accentuation. The following is an example of accentuation by B3, who did not pay attention to accentuation in the discourse. An asterisk '*' indicates incorrect accentuation.

71 NS: So'ogen-ji, so'ogen-ji-desu-ka? 'Soogen-ji (name of the temple), is it Soogen-ji?'

72 B3: So'ogen-ji. 'Yes, it is Soogen-ji.'

73 NS: So'ogen-ji-tte iu-to rinza'i-shuu-desu-ka? 'As for Soogen-ji, does it belong to Rinzai sect?'

*74 B3: So'ogenji wa rinza'i-shuu-desu. 'Soogen-ji belongs to the Rinzai sect.'

In the above discourse, B3 placed AN on the mora /ge/ for the word *soogen-ji*, such as *so'ogen-ji*, for six out of the seven times that it was used. However, he placed AN on the mora /so/ only once in No. 72 in which he answered the question by the NS, who attempted to confirm the name of the temple in No. 71, and where the NS's accentuation was constantly the same: *so'ogenji*. The NSs of the Tokyo dialect places the AN on the mora /so/. In the FUI, B3 reported that he attempted to pronounce the name of the temple *soogen-ji* clearly and that he was not conscious of the accentuation at all. It may be explained that the accentuation of *so'ogen-ji* by B3 was unconsciously changed from his usual accentuation as a consequence of his attempt to pronounce it clearly in order to inform the accurate name of the temple, but he did not intend to pronounce an appropriate accentuation of the word *soogen-ji*. This change seems to occur because he lacks declarative knowledge, such as that the word containing the morpheme /ji/ 'temple' should be accented on the first or the last mora (Akinaga 2001: 24), or simply that the AN for the word *soogen-ji* should be placed on the mora /so/. Another possibility is that B3 unconsciously followed the accentuation by the NS at No. 71. Therefore, the two different accentuations for one word by B3 depend neither on his declarative knowledge

of accentuation, nor on his conscious management of accentuation. He reported in the FUI that he paid absolutely no attention to his accentuation. Therefore, it is conceivable that both his unconscious change of accentuation in No. 72 and the selection of the accentuation for *so'ogen-ji* in No. 74 depend on his non-declarative knowledge of accentuation. All these points clarify that the accentuation of B3 is produced by relying on non-declarative knowledge without any conscious attention being focused on accentuation. In addition, all the other participants, except for C2 and C3, produced their accentuation mostly in the same way as B3 did.

On the other hand, C2 stated that although she is usually not conscious of her accentuation, she occasionally pays attention to accentuation. C3 reported that she frequently paid conscious attention to her accentuation. Having made this distinction, we should consider how the participants manage their accentuation.

The participants' attitude toward accentuation and the participants' learning experience of accentuation particularly at the early stages of Japanese-language learning seemed to reflect whether they had sufficient declarative knowledge of accentuation. The following section concerns participants' types in accordance with their reports in the FUIs.

First, in the case of C2, although she majored in Japanese language in China, she began studying for her masters degree in business administration in Japan three months before the data collection occurred, and her major concern in using the Japanese language was successful communication and interaction in order to achieve her purpose of study, rather than to improve her Japanese-language competence. Therefore, she paid little attention to her accentuation, and reported that she began to be unconscious of her accentuation after coming to Japan. She also reported in the FUI that the talki about accentuation brought back memories of her studying Japanese in China. Carefui thought

about accentuation seemed to exist only in her past. The same type of attitude was found in the cases of B4 and C4. They were unconcerned about their accentuation after they came to Japan because no one pointed out accentuation to them and they began to feel that accentuation was not important for communication and interaction in their experience of living in Japan, although they formerly paid explicit attention to accentuation when they were studying Japanese in China. There, they studied the accentuation of each word and memorised accentual patterns, and their teachers explicitly corrected their accentuation in class.

C3 started to manage her accentuation after her incorrect accentuation was pointed out. In addition, when the data was collected, she was preparing to start teaching at a university and, therefore, it was easily understood that her intention to manage her accentuation in order to improve her accentual ability was serious. Presumably, she was managing her accentuation for the purposes of avoiding the image of foreignness through poor accentual production and aimed to improve her accentual competence to be as close as possible to a NS's accentuation.

Some participants, namely, B1, C1, D1 and D2, thought that they did not need to manage their accentuation because they did not have any problem with accentuation in terms of communication and interaction in Japan. These participants also reported that because NSs in Japan state that their accentuation and the use of the Japanese language are excellent, they do not think they need to improve it. D1 and D2, in fact, produced good accentuation, but B1 did not do so (cf. Table 6-1). As far as the case of B1 is concerned, his overall Japanese-language competence appeared to be at an advanced level. His language speaking sounded fluent, and he produced numerous phrases in a 10-minute discourse. He did not seem to have any difficulty in communicating and interacting in Japanese. However, his accentuation competence did not seem to be high

(Table 6-1). In addition to this, his intonation is very similar to that of IBSs. It appears that because he did not have sufficient experience of exposure to the target Tokyo dialect and was only exposed to the Ibaraki dialect, his Japanese, particularly his accentuation and intonation, sounded very much like those by IBSs who had acquired the Tokyo dialect accentuation to some extent. As mentioned in the previous chapter, although ILSs by NNSs and IDSs by IBSs are almost the same, intonation of the IBSs is unique and is clearly different from either the TL or ILS users. Therefore, presumably B1's accentuation was more likely influenced by that of the Ibaraki dialect . In the cases of participants C3, D1 and D2, who studied Japanese in Korea, and B1 and C1, who studied Japanese in China, their accentuations were corrected in the class, although they did not clearly understand what they practiced or what the teachers corrected. These five participants did not have sufficient declarative knowledge of accentuation. However, C3, D1 and D2 had experienced explicit accentuation practice after they came to Japan and seemed to have declarative knowledge of some particular accentuation of words. Also, C3 and D1 had close relations with NSs who corrected their accentuation.

Finally, A1 reported that she had numerous problems in terms of achieving a comfortable command over the Japanese language. The accent was not important to her for successful communication and interaction in Japanese when living in the Japanese society. B2 and B3 experienced a similar problem, although their situations were better than those of A1. These three participants, A1, B2 and B3, who studied Japanese at the same university in the USA, received attentive accent teaching and their accentuations were corrected by teachers in class. However, they did not clearly understand and remember what they learned because they received no explanation about it. Therefore, they were unlikely to posses any declarative knowledge of individual word accentuation and the concept of Japanese accent.

As a consequence, most of the participants appear to take it for granted that Japanese accentuation is not important for communication and they learned accentuation implicitly in class. Presumably it is the prevailing view among the Japanese language teachers that explicit teaching of individual word accentuation is almost impossible and therefore it might be effective to correct their accentuation without explanation in order to implicitly provide distinguishing features of Japanese accentuation to learners.

6.3 Explicit Management of Accentuation

I will first identify examples of the five stages of self-management by the participants in the discourse found in the FUIs.

6.3.1 Deviations

In general, the participants' accentuation, which is different from the Tokyo dialect accentuation, should be regarded as deviations from the norm. However, there was no example of deviation from the norm that caused communication or interaction problems in the discourse data. Furthermore, an accentuation different from that of the Tokyo dialect is not always regarded as a deviation from the norm, even for native Japanese speakers in Japanese society. On the other hand, in this thesis, an accentuation different from that of the Tokyo dialect is categorised as a deviation from the target accentuation norm, and is considered to be the starting point of the management of accentuation, following the language management model by Neustupný (1985a, 1995, 1997 etc.) and Jernudd and Neustupný (1987).

Data on correct and erroneous accentuations by 11 participants are displayed in Table 6-1. In the table, 'ILSs' indicates the number of applications that the three types of ILSs were applied, in which ILS-3 consists of two or more accentual phrases in a unit, as

discussed in Chapter 4. 'Error' indicates the number of erroneous accentual phrases for the total application of ILSs, 'Correct' indicates the number of correct accentual phrases and 'Total' indicates the total number of accentual phrases in a 10-minute segment of discourse.

Table 6-1: Participants' accentuation

Participants	A1	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2
ILSs	70	92	60	58	80	97	76	53	57	72	35
	37.4%	26.4%	25.6%	22.9%	22.4%	18.1%	17.4%	14.6%	12.4%	11.1%	7.2%
Error	73	124	62	67	93	129	96	75	72	98	49
	39.0%	35.6%	26.5%	26.5%	26.1%	24.1%	22.0%	20.7%	15.7%	15.1%	10.0%
Correct	114	224	172	186	264	406	340	288	386	549	440
	61.0%	64.4%	73.5%	73.5%	73.9%	75.9%	78.0%	79.3%	84.3%	84.9%	90.0%
Total	187	348	234	253	357	535	436	363	458	647	489

Although knowledge of Japanese accentuation as reported in the FUI by the 11 participants was only general declarative knowledge, except for a few examples mentioned above, they produced fairly good accentuation, namely, 61.0–90.0% correctness in their total number of accentual phrases, which is normally the unit of Japanese accentuation.

6.3.2 Noting

According to the FUIs, although most of the participants did not pay any attention to their accentuation, only C2 and C3 did so. D1 and D2 reported that they only note some particular phrases which they experienced having been indicated as an error by a NS, and they clearly remember the experience of NS's indication, although they did not use those

accentual phrases in the data in this study.

The following are all examples of C2's noting of accentuation reported in the FUIs:

16: *Bunpoo-ga ichiban daiji'-desu-keredomo. Ha'i. Soshite* ***koogo***? 'Grammar is most important, but.... Yes. And spoken language?' (She noted the accentuation of *koogo* before she produced it. However, she did not note any specific accent pattern; she merely felt something was wrong with her accentuation.)

*18: *Wakara'nai-n-desu-yo.* ***Ingo****-no yo'ona kotoba....* 'I do not understand the word as it is jargon.' (She noted her accentuation *ingo*, which was a deviation from the norm, after she produced it.)

*78: *I'ma-wa* ***chuugoku'-jin****-wa anoo...* 'Now, Chinese people are well...'

(The accentuation of *chuugoku'-jin*, which was a deviation from the norm, was noted after she produced it.)

90: *...Ha'ru-ga* ***naga'ku*** *na'in-desu-yo-ne.* '... springtime is not long'

(The accentuation of the accentual phrase *naga'ku* was noted after she produced it. She thought her accentuation was a deviation from the norm although it was correct.)

C2 noted the accentuations of these four accentual phrases, which was 0.9% of her total number of phrases. However, two out of the four examples were not, in fact, deviations; only *ingo* in No. 18 and *chuugoku'-jin* in No. 78 were deviations from the norms.

As far as C3 is concerned, she began to focus on her accentuation after her experience of being told about her accentual deviations from the norm. The following are all reported instances of her noting:

*2: *Hai.* ***fuchinobe****-kara.* 'Yes, from Fuchinobe.'

(She noted on the accentuation of *fuchinobe* before producing it, although she did not appear to note any specific accent pattern.)

16: *Do'kutaa-no* ***zemi****-ga a'tte*... 'I attended the seminar for the Doctoral course and...'

(The accentuation of *zemi* was noted before she produced it.)

52: ***Ka'nkoku****-no-desu*. 'That's the Korean one.'

(She noted her declarative knowledge of accentuation *ka'nkoku*, before producing it.)

*54: ***Owatte'-kara***. *So'o-desu*. 'After I finished it. Yes, it is so.'

(The accentuation of *owatte'-kara* was noted before she produced it. She noted the accentuation *owatte-ka'ra*, which was produced immediately before by a NS interlocutor, intending to adopt it.)

56: ***Nihongo-ga'kkoo*** *cho'tto kayotte'te*... 'I attended a Japanese-language school for a short time...'

(She noted the accentuation of ***nihongo-ga'kkoo***, which was her weak declarative knowledge accented on the mora /ho/, before she produced it.)

82a: *suggo'i* ***shi'nsetsu****-ni*...'Very kindly...'

(She noted the accentuation of *shi'nsetsu* and wondered whether it was correct or was a deviation from the norm while she was producing it.)

82b: *Moo* ***shi'nsetsu***, *nande'mo*... 'They are kind for everything'"

(The accentuation of the word *shi'nsetsu* was noted and she wondered whether it was correct or a deviation from the norm while she was producing it.)

*100: ***Fuchinobe****-no e'ki-no chika'ku-ni*... 'Near the Fuchinobe station...'

(The accentuation of the word *fuchinobe* was noted before she produced it.)

120a: ***Chi'ba****-to iba'ragi-wa ah seeha'ntai-nan-desu-ka*? 'Are Chiba and Ibaraki in the opposite direction?' (She noted the accentuation of the word *chi'ba* before producing it, although she did not note any particular accent pattern. She reported that she was careful about this accentuation because she had experienced this being

indicated as an accentual deviation.)

*120b: *Chi'ba-to **iba'ragi**-wa ah seeha'ntai-nan-desu-ka*? 'Is it the opposite direction for Chiba and Ibaragi?'

(She noted the accentuation of the word *iba'raki* that AN should be placed on some mora, which was her imperfect declarative knowledge, before producing it.)

132: *Daigaku'in-wa **ma'da**...* 'Graduate school is not yet...'

(She noted the accentuation of *ma'da*, which appeared to be her weak declarative knowledge, before producing it.)

150: *Watashi-no tomodachi-wa mo'o **hoto'ndo**...*'Almost all of my friends are already...'

(C3 noted the accentuation of the phrase *hoto'ndo*, which was her declarative knowledge, before producing it.)

162: *Gakkoo-ni **iru** toki'-ni-wa...* 'When I am at school...'

(The unaccented accentuation of the word ***iru***, which she thought a deviation from the norm, was noted after producing it.)

C3 noted her accentuation 13 times in the 10-minute discourse, which was 5.0% of the total number of accentual phrases. C3, as well as C2, noted accentuations which were not necessarily deviations from the norms. They appeared to have noted accentuations which were declarative knowledge possessed after their experiences of producing deviations from the norm, particularly in the case of noting before producing the accentuations. However, their noting lacked confidence and was weak.

6.3.3 Evaluation

Evaluation of a noted deviation or knowledge can be positive or negative, and it is the second type that researchers have focused on to date. C2 noted four times in the discourse and three were negatively evaluated depending on her declarative knowledge

of accentuation, which was not always appropriate. In one example, she could not evaluate due to lack of declarative knowledge.

C3 seemed to evaluate noted accentuation with weak consciousness, depending on her past unsuccessful experiences, for which she did not have substantial knowledge and was not confident in evaluating whether the knowledge she had was correct or not. Since most of her noting appeared to be in accordance with her vague images of accentuations before production, they were positively evaluated or not evaluated, except for one case of noting after production.

6.3.4 Adjustment planning, selection and implementation

How the examples of C2 and C3's noting proceeded to the management stages will be examined according to data from the FUI:

(1) Case of C2

C2's management at each stage is indicated in Table 6-1 below. C2 vaguely noted some past experience for the accentuation of ***koogo*** 'spoken language' in No. 16 before producing it, she probably did not note any particular accent pattern She could not evaluate it, probably because she did not have declarative knowledge of the accentuation of this phrase. She then produced an unaccented pattern, which is the correct accentuation, without consciousness. She could not explain why she produced this accentuation. She thus appeared to finish her management process at the stage of the noting. She reported that she was not confident of the accentuation of that word and that the feeling of uncertainty of accentuation remained even after producing it.

Table 6-2: Management of accentuation by C2

Phrase	Production	Adjustment	Deviation (Knowledge)	Noting	Evaluation	Selection	Implementation
koogo	koogo	Pre	—	#	—	—	—
ingo	*i'ngo	Post	*i'ngo	#	Neg.	ingo	—
chuugo'ku-jin (chuugoku'-jin)	chuugo'ku-jin	Post	chuugo'ku-jin	#	Neg.	*chu'ugoku-jin	—
naga'ku (na'gaku)	naga'ku	Post	naga'ku	#	Neg.	na'gaku	—

Phrase: accentual phrase with correct accentuation, Production: C2's production, Pre: pre-management, Post: post-management, Deviation: noted deviation, Neg.: negative evaluation, Selection: selected adjustment, Apostrophe ('): AN is placed on the preceded mora, Asterisk (*): incorrect accentuation, –: not carried out, #: carried out.

For ***ingo*** 'jargon' in No. 18, she noted it after producing it and negatively evaluated it, and then selected the adjustment of an unaccented pattern because she knew that the correct accentuation of *ingo* was unaccented. However, she did not proceed to the adjustment implementation stage because she could not find an opportunity to implement her adjustment while the conversation was going on.

The accentuation of ***chuugoku'-jin*** 'Chinese people' in No. 78 was noted after her production and was negatively evaluated. Then she selected the adjustment of the first mora-accented *chuugo'ku-jin*, although she did not proceed to the adjustment implementation stage. She thus finished her management at the stage of adjustment selection. She reported that although she had learned the compound-word accent rules, she forgot the rule for *–jin* '–people', and was not confident in implementing the selected adjustment. It is thought that she unconsciously produced the accentuation by placing the AN on the mora /go/.

The accentuation of ***naga'ku*** 'long' in No. 90 with an AN on the mora /ga/ was noted after she produced it, followed by a negative evaluation, after which she selected the adjustment *naga'ku* with an AN on the mora /na/, although her production was

correct. However, she finished her management process at the stage of adjustment selecting. Although in fact both accentuations of placing the AN on /na/ and /ga/ are correct, *naga'ku* is a new variation, which can be commonly heard in Japan and is probably different from what she had learned.

Accordingly, it is thought that she produced the correct accentuation unconsciously for two out of the four words that she noted but negatively evaluated or could not evaluate because she did not have the correct declarative knowledge. It is also thought that she had, or started to have, the correct non-declarative knowledge of accentuation for those words. Thus, none of her management processes proceeded to the adjustment-implementation stage.

According to the FUI, C2 came to Japan as a post-graduate student three months prior, and since then, she had been busy with simply communicating or interacting successfully in Japanese and had stopped paying attention to accentuation. This experience of C2 was shared by B4 and C4, who studied Japanese in China, as mentioned above. Only C2 managed the accentuation four times in the 10-minute discourse although her evaluation and adjustment selection were not always correct. This is probably because the length of C2's residence in Japan was much shorter than other two participants. In addition, B4 reported in his FUI that he felt the accentuation that he studied in China was often different from that of NSs in Japan. It is thought that they studied mainly the accentuation of content words, and that they did not study or had forgotten the accentuation of compound words such as *chuugoku'-jin* 'Chinese people', which is different from the accentuation of *chu'ugoku* 'China', without *jin*. In addition, they did not study or had forgotten the variation of basic accentuation such as *naga'ku*, which is quite popular among NSs, and they only had declarative knowledge of the basic accentuation of *na'gaku*. That may be one reason why B4 felt that what he studied was

different from an NS's accentuation. Thus, their consciousness of accentuation appeared to have gradually weakened over time.

(2) Case of C3

C3's management stages are indicated in Table 6-3 below.

Table 6-3: Management of accentuation by C3

Phrase	Production	Adjustment	Deviation (Knowledge)	Noting	Evaluation	Selection	Implementation
fuchinobe	*fuchino'be	Pre	—	#	—	—	—
zemi	zemi	Pre	—	#	—	—	—
ka'nkoku	ka'nkoku	Pre	(ka'nkoku)	#	Pos.	ka'nkoku	ka'nkoku
owatte'-kara	*owatte-ka'ra	Pre	*owatte-ka'ra (NS)	#	—	*owatte-ka'ra	*owatte-ka'ra
nihongo-ga'kkoo	nihongo-ga'kkoo	Pre	(*niho'ngo-gakkoo)	#	Pos.	*niho'ngo-gakkoo	—
shi'nsetsu (shin'seetu)	shin'setsu	In	shin'setsu	#	—	—	—
shi'nsetsu (shin'seetu)	shin'setsu	In	shin'setsu	#	—	—	—
fuchinobe	*fuchino'be	Pre	—	#	—	—	—
chi'ba	chi'ba	Pre	—	#	—	—	—
iba'raki	*ibaragi	Pre	(AN on some mora)	#	Pos.	AN on some mora	—
ma'da	ma'da	Pre	—	#	—	—	—
hoto'ndo	hoto'ndo	Pre	(hoto'ndo)	#	Pos.	hoto'ndo	hoto'ndo
iru	iru	Post	iru	#	Neg.	*i'ru	—

Phrase: accentual phrase with correct accentuation, Production: C3's production, Pre: pre-management, In: in-management, Post: post-management, Deviation: noted deviation, (Knowledge): noted declarative knowledge, Neg.: negative evaluation, Pos.: positive evaluation, Selection: selected adjustment, Apostrophe ('): AN is placed on the preceded mora, Asterisk (*): incorrect accentuation, –: not carried out, #: carried out.

In No. 2 above, C3 noted the accentuation of the word ***fuchinobe*** 'name of the place' with no particular accent pattern before production. However, since she did not have

declarative knowledge of it, she could not evaluate it. Therefore, it is considered that she finished her management at the stage of noting, although she produced the accentuation by placing the AN on the mora /no/.

As for the accentuation of the word ***zemi*** 'seminar' in No. 16, C3 noted it before producing it only for an instant probably owing to the past experience of deviating from the norm. However, judging from the FUI, there was a lack of consistency in her report about her management of accentuation. It is presumed that her declarative knowledge was so weak that she did not note the specific accent pattern and therefore she did not evaluate it and finished her management after noting. Then she produced an unaccented pattern, which is a variation of the first mora accented original pattern *ze'mi*, and which she appeared to think appropriate although she was not sure. However, she reported that she also noted the pronunciation of /ze/ at the same time, although she did not clearly account for the pronunciation either. Hence, it is presumed that her management was for the pronunciation of /ze/ rather than accentuation and therefore, she produced unaccented accentuation. Japanese language learners tend to produce unaccented accent patterns when they hesitate, for example, in choosing a word, as I described in Chapter 4.

According to the FUI, C3 possessed declarative knowledge for the word ***ka'nkoku*** 'Korea' in No. 52 that the AN should be placed on the mora /ka/, although she was not confident of the appropriate application of this knowledge. The management process was that she noted the accentuation of *ka'nkoku* before producing it, and positively evaluated it, selected it as an adjustment and then implemented it.

In No. 54, C3 noted the accentuation of ***owatte-ka'ra*** 'after it was finished', which was produced by a NS immediately before and she positively evaluated it. C3 selected it for an adjustment and then implemented it in accordance with the NS's accentuation which was accented on the mora /ka/. C3 reported that because she did not have

declarative knowledge of the correct accentuation for this phrase, she simply followed the NS's accentuation through all stages of management after her noting.

C3 noted the accentuation for ***nihongo-ga'kkoo*** 'Japanese- language school' in No. 56 with AN on the mora /ho/, which was declarative knowledge, before producing it. She positively evaluated it and selected it for an adjustment; however, she did not implement the selected adjustment. It is considered that she finished her management process at the stage of adjustment selection. Consequently, she produced the correct accentuation *nihongo-ga'kkoo* unconsciously placing the AN on the mora /ga/, which she could not explain.

In No. 82(a) and No. 82(b), C3 noted the accentuation of ***shi'nsetsu*** 'kind' while producing it, and wondered whether it was correct. However, her management process appeared to finish at the stage of noting. C3's accentuation *shi'nsetsu*, with placement of the AN on the first syllable /shin/ is correct.

C3 noted ***fuchinobe-no*** 'name of a place' in No. 100 before producing it, and wondered if the accentuation should be changed when *eki* 'station' follows, as in *fuchinobe-no eki-no*. It appeared that since she did not have substantial declarative knowledge of accentuation for this phrase, she finished her management at the stage of noting and produced the accentuation placing the AN on the mora /no/ without consciousness. Judging from the FUI, she did not seem to note any specific accent pattern.

C3 noted the accentuation of ***chi'ba*** 'a place name' in No. 120a before producing it. She reported that although she had the experience of being corrected in her accentuation of *chiba*, she could not evaluate it. It appeared that she finished her management at the stage of noting, and then produced it by accenting on the mora /chi/ unconsciously.

C3 noted her declarative knowledge of the accentuation for the word

iba'raki 'name of a place' in No. 120b, such that the pitch should be lowered somewhere after the mora, which was imperfect knowledge. It is likely that she positively evaluated the noted knowledge of accentuation and selected it; however, she did not implement it probably because her declarative knowledge was imperfect. Then, she produced the accentuation without lowering the pitch and did not place the AN anywhere on that accentual phrase. (C3's pronunciation of *ibaragi* was incorrect.)

C3 noted the accentuation of ***ma'da*** 'not yet' in No. 132 before producing it. Judging from the FUI, she appeared to have finished her management process after noting. She produced the accentuation placing the AN on the mora /ma/.

The C3's knowledge of accentuation for ***hoto'ndo*** 'almost' in No. 150, where that the AN should be placed on the mora /to/ was noted before producing and positively evaluated. Then, it was selected for the adjustment and implemented.

In No. 162, C3 produced the accentuation for ***iru*** 'be' without placing the AN. Then, she noted it, negatively evaluated it and selected the adjustment where AN is placed on the mora /i/. However, she did not implement the selected adjustment.

According to the FUI and from the above examples, it is clear that she knew about language management and she could explain her management to some extent. In other words, she was conscious of her management of her accentuation. However, because her declarative knowledge of word accentuation was mostly imperfect, she was not confident in her evaluation or selection of adjustment in most of her management processes. Therefore, her consciousness of the management process was weak, that is to say, C3 managed her accentuations mostly in accordance with an imperfect declarative knowledge of individual word accentuation. The total number of occurrences of management was 13, that is, 3.6% of her 363 accentual phrases in the 10-minute discourse, out of which four (1.1%) proceeded in the management process stage of

adjustment implementation, while nine instances of them (2.5%) did not. That is, some of the accentuation produced by C3 was not linked with her conscious declarative knowledge of accentuation, even if she started the management process.

6.3.5 Management strategies

In the preceding sections, I described all the examples of the management of accentuation in the data to which the participants paid conscious attention in accordance with data from the FUIs. Consequently, three distinct types of management strategies (Neustupný 1978, 1995, 2004) were revealed: pre-management, in-management and post-management (Tables 6-1 and 6-2). Research on language management mainly concerns post-management based on the occurrence of deviations. The three types of management strategies found in the data will be considered next.

(1) Pre-management strategies

From the examples of noting by C2 and C3, the following three types of pre-management strategies were found. First, the participants simply noted accentuation. Although participants noted accentuation for the phrase before producing it, they did not appear to form a particular mental picture of accentuation. Therefore, they could not evaluate it and seemed to finish management after noting. It appeared that their noting was based on neither deviation nor declarative knowledge. This type includes C2's *koogo* in No. 16, C3's *fuchinobe* in No. 2 and 100, *zemi* in No. 16, *chiba* in No. 120a and *mada* in No. 132 (Tables 6-2 and 6-3). Second, it is thought that participants possessed declarative knowledge of the accentuations for those words based on their previous unsuccessful experiences of deviations from the norms, and noted those declarative knowledge before production. Most noted accentuations were positively evaluated and selected as

adjustment although they were not always implemented. The examples of this type were *kankoku-no-desu* in No. 52, *nihongo-gakkoo* in No. 56, *ibaraki* in No. 120b and *hotondo* in No. 150 by C3 (Table 6-3). Third, participants noted NS's accentuation produced just before their utterance and adopted it without their own evaluation because they did not appear to have the declarative knowledge of the accentuation for that phrase. In other words, presumably the participant simply relied on the NS's accentuation, and evaluated it positively, selected it and implemented it. This type includes the example *owatte-kara* by C3 in No. 54.

(2) In-management strategies

Participants noted their accentuation while producing it. The in-management strategy occurred twice by C3 for the same word *shinsetsu* in No. 82(a) and (b) in data. She reported that she could not evaluate them and wondered whether the accentuation she was producing was a deviation from the norm or not.

(3) Post-management strategies

Participants noted their already produced accentuation as deviations from the norm, although these were not always actual deviations. Examples of this type were C2's *ingo* in No.18, *chuugoku-jin* in No. 78, *nagaku* in No. 90 and C3's *iru* in No. 162, although none of these were implemented presumably because those incorrect accentuations did not obstruct the flow of communication.

6. 4 Implicit Management of Accentuation

As noted above, it seems to be generally understood that language acquisition involves both declarative knowledge and non-declarative knowledge. Learners can explicitly

describe declarative knowledge consciously, whereas learners cannot explicitly describe the non-declarative knowledge of which they are unconscious. However, the most important addition to be made to those two types of knowledge is the presence of weakly conscious knowledge. This can be accounted for by the existence of graded stages of knowledge between declarative knowledge and non-declarative knowledge. Examples of this weakly conscious knowledge are found in both C2 and C3's FUI, as mentioned above.

The question we must consider next is how accentuation is selected and produced in the case where the management does not proceed to the implementation stage. According to the FUIs, C2 and C3 did not explicitly focus on their accentuation after they stopped their management. Therefore, it is presumed that in these cases, they implicitly applied ILSs as norms. For example, C2 stopped her management for *koogo* in No. 16 at the stage of noting and produced the correct unaccented accentuation. However, she could not explain why she produced the accentuation of the unaccented pattern for *koogo*. She presumably applied ILS-2 and it was accidentally correct, or she may have implicitly acquired it. Another example is *ma'da* in No. 132 by C3. She noted it before she produced it, and she finished her management process at the stage of noting. Although her accentuation for *ma'da* is correct, it can be considered that she produced ILS-3 (OP), which consists of an unaccented phrase + a correctly accented phrase, that is, *daigaku'in-wa* + *ma'da* in which *ma'da* is the second part. She reported that she felt that *daigaku'in-wa ma'da* was one accent unit, that is, ILS-3.

As mentioned above, none of the participants, except for C2 and C3, paid any attention to their accentuation in the data. In the case of C2, she explicitly managed her accentuation for only four phrases; in each case, she did not proceed to the implementation stage. Even C3 explicitly noted her accentuation 13 times and proceeded

to the adjustment-implementation stage for only four phrases in her 363 accent units in the discourse. For the remainder of the 350 accent units, she did not focus on accentuation. However, as mentioned earlier, all 11 participants produced fairly good accentuation, probably by using non-declarative knowledge. Therefore, it can be said that learners are able to progress their accentual competence, even if they do not have sufficient declarative knowledge of the accentuation for individual accentual phrases.

As far as the development of accentual competence is concerned, it was confirmed in Chapter 4 that learners create three types of ILSs. The application of those ILSs reflects the development of the learners' accentual level of competence. The frequency of application of each of the three types of ILSs changes as learners' accentual competence progresses. Furthermore, learners usually create and apply the ILSs without paying attention to them. It was hypothesised in Chapter 4 that the accentuation-production process includes the function of evaluation and adjustment, even if it is an unconscious process. Therefore, it is predicted that learners can manage their accentuation without sufficient declarative knowledge. In other words, learning accentuation without declarative knowledge may be possible.

Thus, it appears that Japanese-language learners implicitly as well as explicitly manage their accentuation. It is likely that their accentual competence develops not only with explicit declarative knowledge but also with implicit non-declarative knowledge. It is highly probable that their non-declarative knowledge, such as ILSs, is closer to the target accentuation than their declarative knowledge. For instance, C3 produced correct accentuation in accordance with non-declarative knowledge for the word *nihongo-gakkoo* 'Japanese-language school' twice in Nos. 56 and 66, although her adjustment selection in No. 56, which did not proceed to the implementation stage, was inappropriate.

As far as the management stage of noting is concerned, researchers of

second-language acquisition have claimed some aspects of implicit noting or noticing with a variance. Schmidt (1990, 1993a, 1993b, 1995, 2001), as well as Neustupný, claimed that noting, or noticing, assumes an important role in second-language acquisition. The concept of 'noticing' in second-language learning by Schmidt seems to be close to that of 'noting' in the management process by Neustupný (1985a, 1995a, 1997) and by Jernudd and Neustupný (1987). However, their viewpoints are not exactly the same. The management theory seems to be based on a conscious processes; however, Neustupný (1985b, 1997) claimed that noting is not necessarily conscious and that unconscious noting, that is, implicit noting, is possible, while Schmidt did not accept subliminal (or unconscious) noticing (1990). Schmidt explicitly excluded subliminal or unconscious notice, that is, implicit noting, although he referred to the importance of noticing that is performed in second-language learning. In addition to these, Tomlin and Villa (1994) defined detection (or noting) and awareness (or consciousness) from the perspective of cognitive psychology and neuroscience based on Posner (for example, 1990, 1992), and claimed that there can be detection without awareness, which differs from Schmidt's above-mentioned claim. According to their viewpoint, Schmidt's idea of noticing can be replaced with the notion of detection.

In such circumstances, my greatest concern about the management process is whether implicit management is possible. Although this question is methodologically difficult to investigate here, it appears to be a key issue within research on NNSs' acquisition of Japanese accentuation. The examples of management identified in my data were mostly weak management for which participants did not have sufficient declarative knowledge. Therefore, in the next chapter, I investigate the implicit noting of accent patterns through the measurement of brainwaves.

6.5 Summary

In this chapter, the accentuation of 11 participants was analysed from the viewpoint of self-management of accentuation through FUIs. The findings identified three different cases: (1) accentuation is produced without paying any conscious attention, (2) accentuation is produced throughout all stages of the management processes and consciously based on declarative knowledge and (3) accentuation is produced without paying conscious attention, although it is noted with weak consciousness, and does not reach the implementation of adjustment selection because the participants did not have sufficient declarative knowledge of individual word accentuation. In addition, it is thought that when participants' management did not reach the implementation stage, they produce their accentuation by employing ILSs as norms without using declarative knowledge. It is also found that learners' knowledge on Japanese accentuation is not a dichotomy between declarative and non-declarative knowledge, but rather, it takes the form of graded stages.

CHAPTER 7

BRAINWAVES AND IMPLICIT[10] NOTING[11] OF ACCENTUATION

7. 1 Introduction

The management of accentuation was investigated in Chapter 6, and it was found that not all participants explicitly note their own accentuation in the discourse, and they could not explain why they produced that particular accentuation. It is predicted that when they do not note the accent explicitly they note the accent implicitly using their non-declarative knowledge of accentuation.

Nevertheless, a convincing account for implicit noting in behavioural studies has not been presented so far, due to methodological difficulties (although it should be noted that Clyne (1975) introduced a means for non-verbal checking of implicit noting). However, the study of brainwaves can provide a possibility for direct examination of brain activities, such as for implicit or explicit noting, during perception of auditory speech sound (Inouchi et al. 2003; Yamada et al. 2009).

This chapter investigates these two issues utilising the methodology of brainwave measurement. Namely,

(A) The way brains of NNSs of Japanese implicitly note changes in the auditory accentual pitch patterns of Japanese. For example, whether they implicitly note *atsu'i* 'hot' with an AN on the second mora (LHL) after the word *atsui* 'thick' without AN (LHH), and

(B) Whether or not the brains of NSs of the Tokyo dialect of Japanese show the same patterns.

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[10] Also referred to as 'automatic' in the fields of neuroscience and cognitive science.
[11] Also referred to as 'detection' in the fields of neuroscience and cognitive science.

7.2 Brainwave Measurement

The methodology utilised in this chapter involves brainwave measurement experiments. Participants are both NSs and NNSs of DATA-2. The methodology of brainwave measurement was introduced in Chapter 3; this will be expanded upon in this chapter.

7.2.1 Event related potentials (ERPs)

Human activities are always accompanied by electrical brainwaves which can be measured via electrodes positioned at various locations on the scalp. The response of the brain to stimuli and some aspects of the processing of information can be studied by measuring the electrical activity of the brain. This activity measured with electrodes is EEG (electroencephalogram). The brain response (in the form of electrical activity or brainwaves) to stimulus events in the outside world can be described as follows. Events occurring in the outside world are transformed and transmitted to the brain via the sense organs of the body (eyes, ears, etc.) which causes changes in electrical potential within neuronal structures. When the external stimulus is a discrete event such as a click or flash, transitory cortical potentials occur after a delay called 'latency' from the onset of stimulus. These electrical activities produced by such as the auditory sound of the accent pattern are called 'event related potentials' (ERPs). The ERP waveforms caused by particular aspects of cognitive activity are characterised by intensity (amplitude) and latency, together with specific locations of electrodes on the scalp to measure them (Cooper 1980).

7.2.2 Mismatch Negativity (MMN): ERP component

Generally each ERP consists of a number of components and a particular component has certain characteristics. In order to investigate the implicit noting of the accent pattern as a

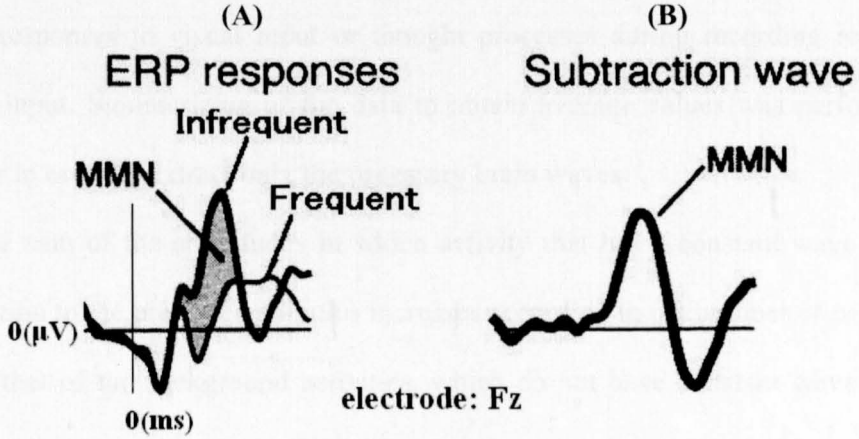
brain activity, it is essential to examine the mismatch negativity (MMN) of the ERP component (Näätänen et al 1978). According to Näätänen (2000), the MMN is generated by the brain's implicit response to change in auditory stimulation, and it can be measured even in the absence of attention and without any task requirement. The MMN component is characterized as one of the series of negative deflections on the basis of zero microvolt (μV) amplitude, and is elicited by 'infrequent'[12] stimuli that occur infrequently in a repetitive series of frequently occurring 'frequent'[13] stimuli, usually peaking at 100 to 200 milliseconds after the onset of stimulus change from the frequent to the infrequent. Thus, an MMN is elicited when, for example, auditory tone changes in frequency, duration or intensity, or one phoneme is replaced by another. The MMN occurs depending on the presence of a 'memory trace', that is, some kind of past experience stored as memory, formed by the preceding frequent stimuli. The frequent stimuli develop a memory trace, and then, if infrequent stimuli occur while this memory trace is still active, the implicit change noting reaction occurs, which generates an MMN component (Näätänen 2000). The MMN component is defined as the difference between the amplitude of the response to infrequent stimuli and that of the response to frequent stimuli, which is obtained by subtracting the amplitude of frequent stimulus response from that of infrequent stimulus response recorded at the electrode sites where the MMN is maximal, usually at the frontal area (Näätänen 2003).

Figure 7-1 shows the schematic illustration of event-related potential (ERP) waveforms for the frequent and infrequent stimuli (A) and the difference waves obtained by subtracting the frequent stimulus response from that of the infrequent stimulus response (B) recorded at electrode site Fz. ERP waveforms usually consist of a sequence

[12] 'Rare' or 'Deviant' is the term used by researchers of neuroscience.
[13] 'Standard' is also used by researchers of neuroscience.

of positive and negative voltage deflections, which are called peaks, waves or components. In these waveforms, negative voltages are plotted upward. It is a common, although not universal, convention to plot ERP waveforms with negative voltages upward and positive voltages downward (Luck 2005) as in Figure 7-1.

Fig. 7-1: Schematic illustration of the mismatch negativity (MMN)



*Adapted and modified from Näätänen (2003:344)

7.2.3 Averaging

The ideal study for the implicit noting of Japanese accentuation would establish the ways in which noting is performed in a natural chain of speech, but the methodology of ERP study does not allow observation of such data. Only simplified sequences of averaged data can be studied (for example, Joo'o 1996; Miyazaki 2003; Inouchi et al. 2003).

The brainwave is not usually analysable with the observation of a single presentation of the stimulus, and requires hundreds of repeated presentations. In this study, the frequent stimuli were repeated 400 times, whereas the infrequent stimuli were repeated 100 times. The amplitude (intensity) of the waveform, which is the response to particular brain function, such as implicit noting of the accent change, is small. However,

the amplitude of the waveforms, which are not the response to particular brain functions, such as eye blinking, eye movements and unnecessary body movements, are often two to three orders of magnitudes larger and considered as noise (artefacts) arising from muscle current. Therefore, those recorded waveforms, of which the amplitude exceeded ± 80 μV, were excluded from the data in this study. Even after such noise is excluded, recorded waves still contain some brain responses other than responses to experimental stimuli, such as responses to visual input or thought processes during recording responses to auditory input. Summarizing of the data to obtain average values was performed by a computer in order to extract only the necessary brain waves.

The sum of the amplitudes in which activity that has a constant wave shape and time relation to the presented stimulus increases according to the number of presentations, whereas that of the background activities, which do not have constant wave shape and latencies, does not increase rapidly. The activity not related to the stimulus tends to average out to be zero, and the remaining signal represents the electrical activity that is caused by the repeated stimulus. The averaging technique was employed here simply to extract small single waveform of ERP, from the background activities. ERP waveforms, in which noise was thus excluded, were retained for analysis[14].

7.3 Experiment

7.3.1 Design of Experiment

The experiment was performed in two parts, Experiment Part 1 (EP-1) and Part 2 (EP-2). In EP-1, meaningless pseudo-word *papapa* was employed as the stimulus in two accent

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[14]I am indebted to Professor Hisaki Ozaki of the Laboratory of Physiology Faculty of Education, Ibaraki University, Japan and Associate Professor Miyuki Hosokawa of Department of Elementary Education, College of Literature, Ibaraki Christian University, Japan for their assistance with developing methodology on the basis of neuroscience.

patterns, unaccented LHH, and the second mora accented LHL. However, in EP-2, the third mora of *papapa* in LHH, that is, /pa/ in H, and the third mora of *papa'pa* in LHL, that is, /pa/ in L were used as stimuli. EP-2 was carried out in order to identify the time-window (time-period) of the response to the third mora stimuli. The stimuli both in EP-1 and EP-2 were acoustically presented to participants, and they were instructed to watch a silent cartoon and ignore these stimulus sounds. Stimuli were selected for the following three reasons. First, as all participants encounter *papapa* for the first time, this can keep the conditions constant for NNSs and NSs. Second, use of the meaningless word *papapa* removes the possibility of semantic interference, such as one when responding to the meaning or to one of two existing words having higher frequency of general usage. Third, *papapa* can achieve good audibility as /p/ is voiceless plosive (the closure in the articulation of the plosive is voiceless) the sound is not continuous between two morae, Japanese words which start with voiceless consonant /p/ are rare and therefore highlighted, and the sonority of vowel /a/ as well as /e/ is better than others.

Two types of the meaningless pseudo-word, *papapa*, were employed as the stimuli, one with the accent pattern LHH without AN in a sequence of morae /papapa/, and the other as LHL with an AN on the second mora /papa'pa/ (see Figure 7-2). Both the accent patterns LHH and LHL exist in actual Japanese words although in the pseudo-word *papapa* they are meaningless. Both the pseudo-words LHH /papapa/ and LHL /papa'pa/ were pronounced naturally as Japanese words by a female NS of the Tokyo dialect of Japanese. The duration of both the LHH and LHL stimulus words was 500 milliseconds (ms), and they were sampled at the rate of 16,000 hertz (Hz) with SUGI SpeechAnalyzer (Animo Ltd.).

Fig. 7-2: Acoustic waveforms, pitch contours, spectrograms and sound pressures of the two stimuli

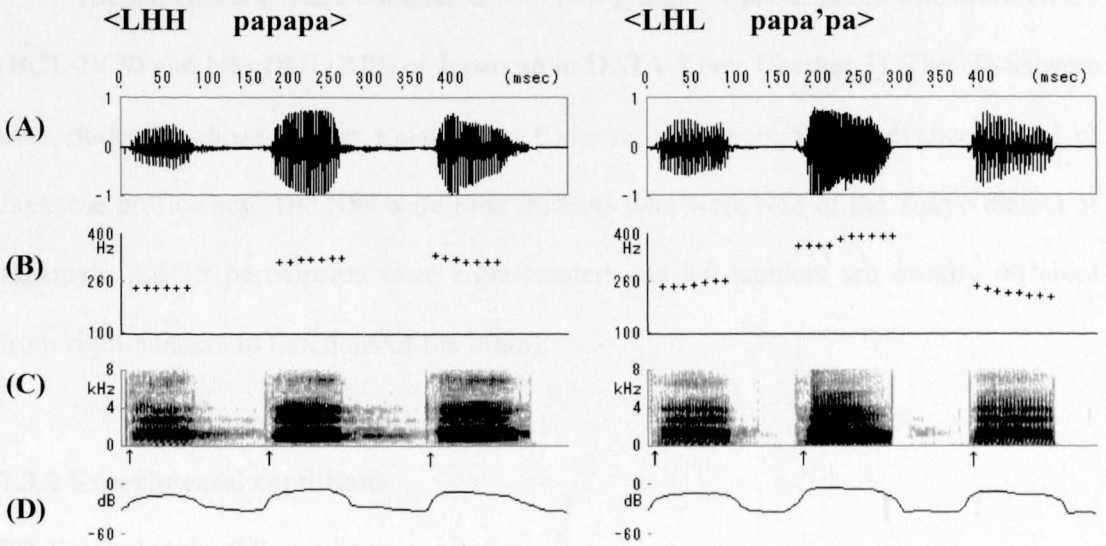


Figure 7-2 presents (A) acoustic waveforms, (B) pitch contours which are not continuous because of the voiceless consonant /p/, although both stimuli were pronounced without pause, (C) spectrograms showing the glides of consonant /p/ and vowel /a/ at the beginning of each mora indicated by arrows and (D) sound pressures of the two stimuli /papapa/ in LHH and /papa'pa/ in LHL.

As discussed above, each stimulus /papapa/ consists of a sequence of three morae. However, the sonic differences among three morae might influence the discrimination of pitch patterns LHH and LHL. Particularly, contrary to Japanese, in the case of NNSs whose mother tongue semantically distinguishes the difference of aspiration, such as NSs of Chinese, the difference of aspiration among three articulations of /p/ might interfere with the response to the stimuli LHH and LHL. Therefore, two NSs of Chinese, who are not participants of EP-1 and EP-2, were asked to check the auditory discrimination of two stimuli. According to these speakers, those stimulus sounds were different only in pitch patterns and they did not note any aspiration difference among three realisations of

/p/ in both stimuli.

The experiments were conducted with two groups of participants who were NNSs (BC1–BC9) and NSs (BJ1–BJ9) of Japanese in DATA-2 (see Chapter 3). The NNSs were nine students, whose mother tongue was Chinese, who were at an advanced level of Japanese proficiency. The NSs were nine students who were NSs of the Tokyo dialect of Japanese. All 18 participants were right-handers (as left-handers are usually different from right-handers in functions of the brain).

7.3.2 Experimental conditions

EP-1 included the following two conditions.

(1) *LHH-infrequent* condition: LHH was the infrequent stimulus and LHL was the frequent stimulus

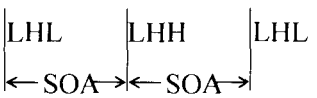
(2) *LHL-infrequent* condition: LHL was the infrequent stimulus and LHH was the frequent stimulus.

Condition (1) is thus the reverse of the other condition. In both conditions, 500 repetitions of the stimuli, comprising 80 % of the frequent version and 20 % of the infrequent version, occurred in a randomized sequence. They are arranged so that each infrequent version always followed a frequent version. In both conditions, sequences of the stimuli were presented with a stimulus onset asynchrony (SOA), which is the interval between the onset of a stimulus and the next stimulus, of 1000 milliseconds. Consequently the sequences of the two types of conditions in EP-1 were presented as follows.

(1) *LHH-infrequent* condition: LHH 100 times (20 %) + LHL 400 times (80 %)

LHH-LHL-LHL-LHL-**LHH**-LHL-LHL-LHL-LHL-**LHH**-LHL-LHL-**LHH**-LHL

SOA: 1000 ms (The interval between the onset of LHH / LHL (500 ms) and LHL / LHH (500 ms) is 1000 ms.)



(2) *LHL-infrequent* condition: LHL 100 times (20 %) + LHH 400 times (80 %)

LHH-LHH-**LHL**-LHH-LHH-LHH-LHH-**LHL**-LHH-LHH-**LHL**-LHH-LHH-LHH

SOA: 1000 ms (The interval between the onset of LHH / LHL (500 ms) and LHL / LHH (500 ms) is 1000 ms.)

In conditions *LHH-infrequent* and *LHL-infrequent*, the initial two morae of LHH and LHL shared a phonologically common rising pitch (LH), while the final morae were different. The third mora of H in LHH was level in pitch with the preceding high pitched mora, whereas that of L in LHL was falling in pitch from the preceding mora (Figure 7-2 above). Therefore, the responses to the third mora of LHH and LHL were analysed in this research. For that purpose, in addition to these two conditions for EP-1, two types of single-mora conditions were also carried out in EP-2 in order to identify the time-window (period) in which MMN was prominently revealed. That time-window was adopted for the analysis of MMN due to the third mora in conditions *LHH-infrequent* and *LHL-infrequent*.

The single-mora conditions in EP-2 were *H-infrequent* and *L-infrequent*. In the *H-infrequent* condition, the extracted third mora H of LHH was the infrequent, and the extracted third mora L of LHL was the frequent. In the *L-infrequent* condition, the extracted third mora L of LHL was the infrequent, and the extracted third mora H of

LHH was the frequent, that is, the reverse of the other single-mora conditions. The stimuli in *H-infrequent* condition were identical with the third mora of condition *LHH-infrequent*, and in *L-infrequent* condition, with the third mora of condition *LHL-infrequent*.

For both single-mora conditions in EP-2, sequences of the 125 ms stimuli in which 100 repetitions of infrequent and 400 repetitions of frequent stimuli with an SOA of 500 ms were presented, and were sampled at the rate of 16,000 hertz (Hz) with SUGI SpeechAnalyzer (Animo Ltd.).

(1) *H-infrequent* condition: H 100 times (20 %) + L 400 times (80 %)

SOA: 500ms (The interval between the onset of H / L (125 ms) and L / H (125 ms) is 500 ms.)

(2) *L-infrequent* condition: L 100 times (20%) + H 400 times (80%)

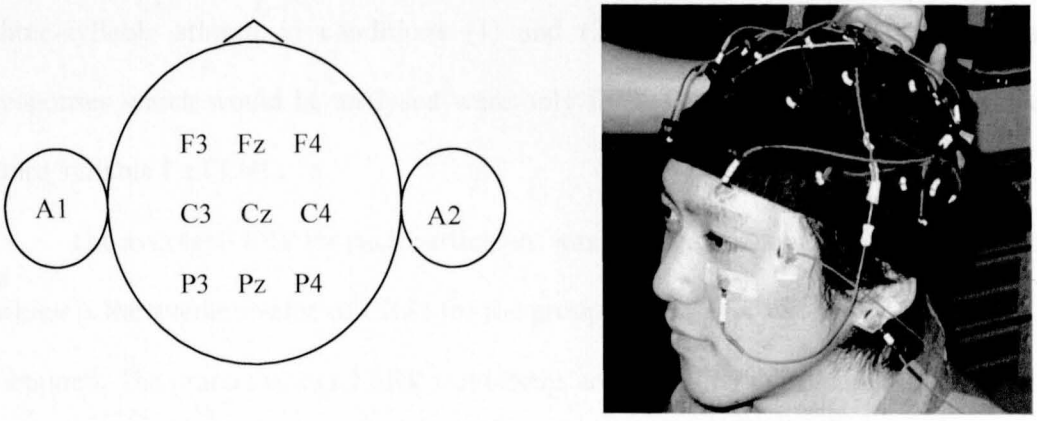
SOA: 500 ms (The interval between the onset of H / L (125 ms) and L / H (125 ms) is 500 ms.)

7.3.3 EEG recording

The experiment was conducted in a soundproof chamber. Auditory stimuli were delivered with an intensity of 65 decibels sound pressure level (dB SPL) via an audio speaker placed at a distance of 1.2 m from the participant, who sat relaxed, wearing an electrode cap. Participants were instructed to watch an animated silent cartoon without subtitles on a video monitor, and to ignore any sounds that they heard in order to respond to the stimuli without attention. The use of silent cartoons without subtitles was to avoid influence of language they might otherwise hear and watch. While the stimuli were being presented with 65 dB SPL using STIM (NeuroScan Ltd), the electrical activity of the participant's brain was continuously recorded. The EEG was digitalized in

one-millisecond intervals with an online filter DC-30 Hz by the SCAN system (NeuroScan Ltd.). In order to measure brainwaves, a set of electrodes was placed on certain positions on the scalp of a participant according to the International 10-20 system (Jasper 1958) using an electrode cap at a resistance of 5 KΩ or less. The electrodes picked up electrical activity from the brain along with activity from other sources, as mentioned above. The naming of each electrode indicates what area of the brain an electrode lies over; for example, 'F' indicates frontal, 'C' indicates central vertex, and 'P' indicates parietal. Sites whose names end in 'z' are on the midline (zenith), those ending with odd numbers refer to locations on the left side of the scalp, and those with even numbers refer to locations on the right side of the scalp. In this study, nine electrodes were used: frontal Fz, F3 and F4, central Cz, C3 and C4, and parietal Pz, P3 and P4 using the combined earlobes, A1 and A2 as the reference (see Figure 7-3).

Fig. 7-3: Schematic diagram of a human head with electrode locations (left) and the picture of a participant with electrode cap (right)



In addition to the EEG recordings, electrooculograms (EOG) were employed in order to check eye movements at the corners of the left and right eyes for noting of muscle current arising from eye movements and at the upper and lower sides of the left eye for noting of

eye blinks respectively making the total number of electrodes to be 15. In Figure 7-3, a schematic diagram of a human head with electrode locations is shown on the left, and the picture of a participant with electrode cap is shown on the right.

The recording produced 15 channel EEG and EOG waveforms in two conditions in EP-1, and two single-mora conditions in EP-2 for each participant. In every experimental condition in EP-1 and for each single-mora condition in EP-2, EEGs for each participant with amplitude exceeding 80 μV were excluded as artefacts, and only artefact-free waveforms were averaged for further analyses[15].

7.3.4 Analyses

As stated above, the responses to the third mora of LHH and LHL in conditions of *LHH-infrequent* and *LHL-infrequent* were analyzed. The baselines were corrected to be zero μV using the average potential during the 100 milliseconds preceding third-mora onset. ERPs were obtained in both conditions from 100 ms before to 400 ms after the onset of stimuli. It must be noted that the stimuli, which were heard by participants for three-syllable stimuli in conditions (1) and (2) were LHH and LHL, whereas the responses which would be analysed were only for the third syllable H of LHH and the third syllable L of LHL.

The averaged ERP for each participant was summed up, and then the grand average, which is the average value of ERPs for the groups NNSs and NSs in two conditions, was obtained. The grand averaged ERP waveforms are presented in Figures 7-5, and 7-6. The use of grand averages has its strong and its weak points. It masks the variability across participants, which is beneficial because the variability makes it difficult to see the

[15] The technical correctness was checked by Professor Ozaki and Associate Professor Hosokawa mentioned above.

similarities, but this is also a drawback as the grand average may not accurately reflect the pattern of individual results. Nevertheless, almost all published ERP studies utilise grand averages (Luck 2005).

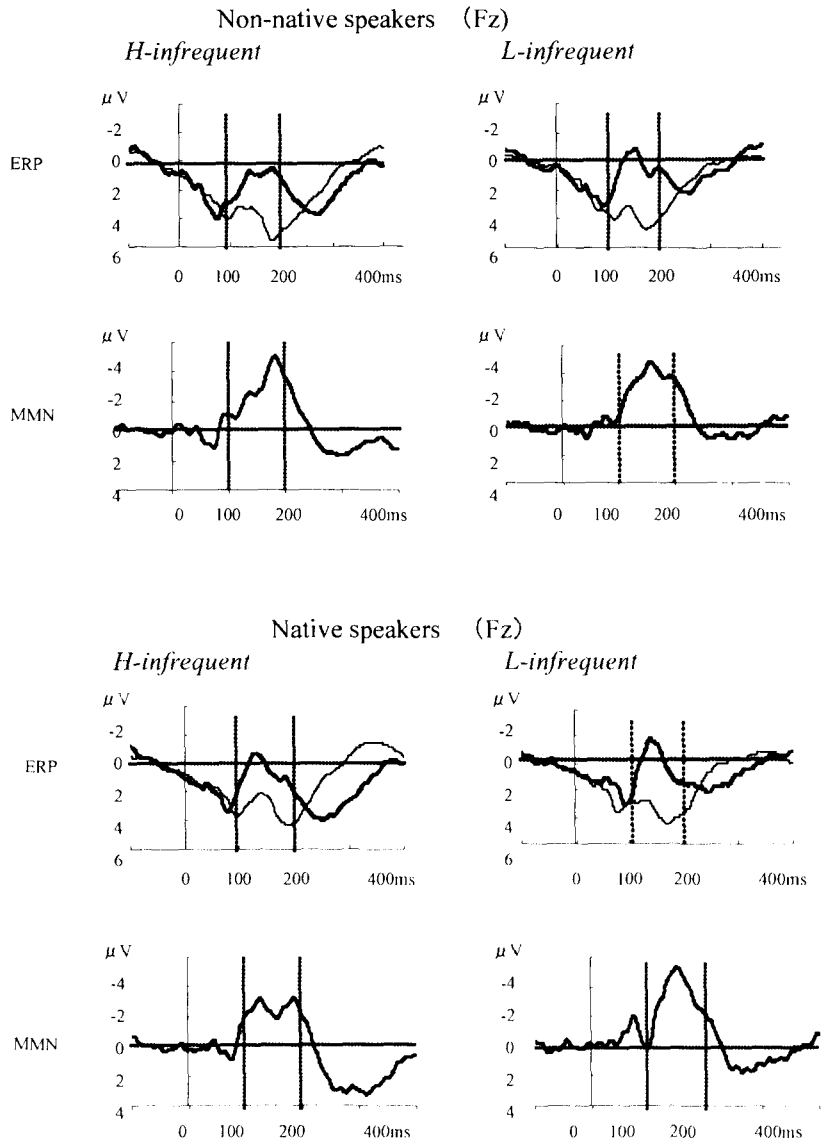
In calculating MMN, each participant's ERP as a response to the frequent stimuli was subtracted from that due to the infrequent stimuli, and then all participants' difference data, that is MMN, were grand-averaged. The grand averaged MMN waveforms are also presented in Figures 7-5 and 7-6 below each ERP waveforms.

7.4 Results

To identify the time-window (period) in which MMN was prominently revealed, the grand-averaged ERPs and MMN components due to the EP-2 (*H-infrequent* and *L--infrequent* conditions) in both the NSs and NNSs in Figure 7-4 were examined. ERPs from 100 to 200 ms after the onset of the stimulus were significantly different in both the NSs and NNSs, and prominent MMN was observed during the 100-200 ms time-window in the subtracted waveforms (Figure 7-4).

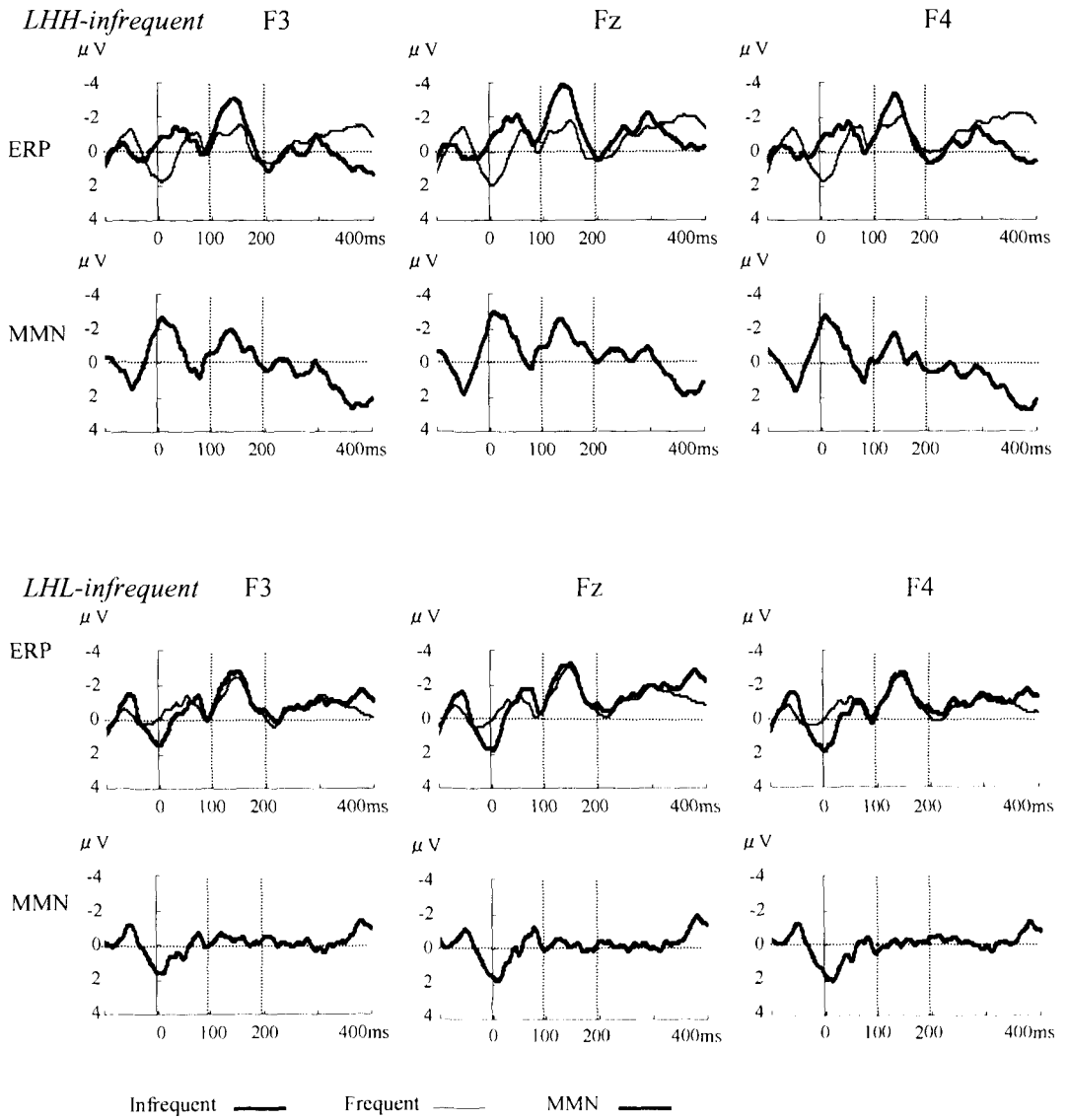
The grand-average of infrequent and frequent ERP due to the third mora in the *LHH-infrequent* and *LHL-infrequent* conditions in the NNSs and NSs are shown in Figures 7-5 and 7-6, respectively. Since MMN is known to be prominent in the frontal area (Näätänen 1995), signals at electrodes F3, Fz and F4 are presented here in waveforms.

Fig. 7-4: ERP and MMN waveforms in single mora conditions



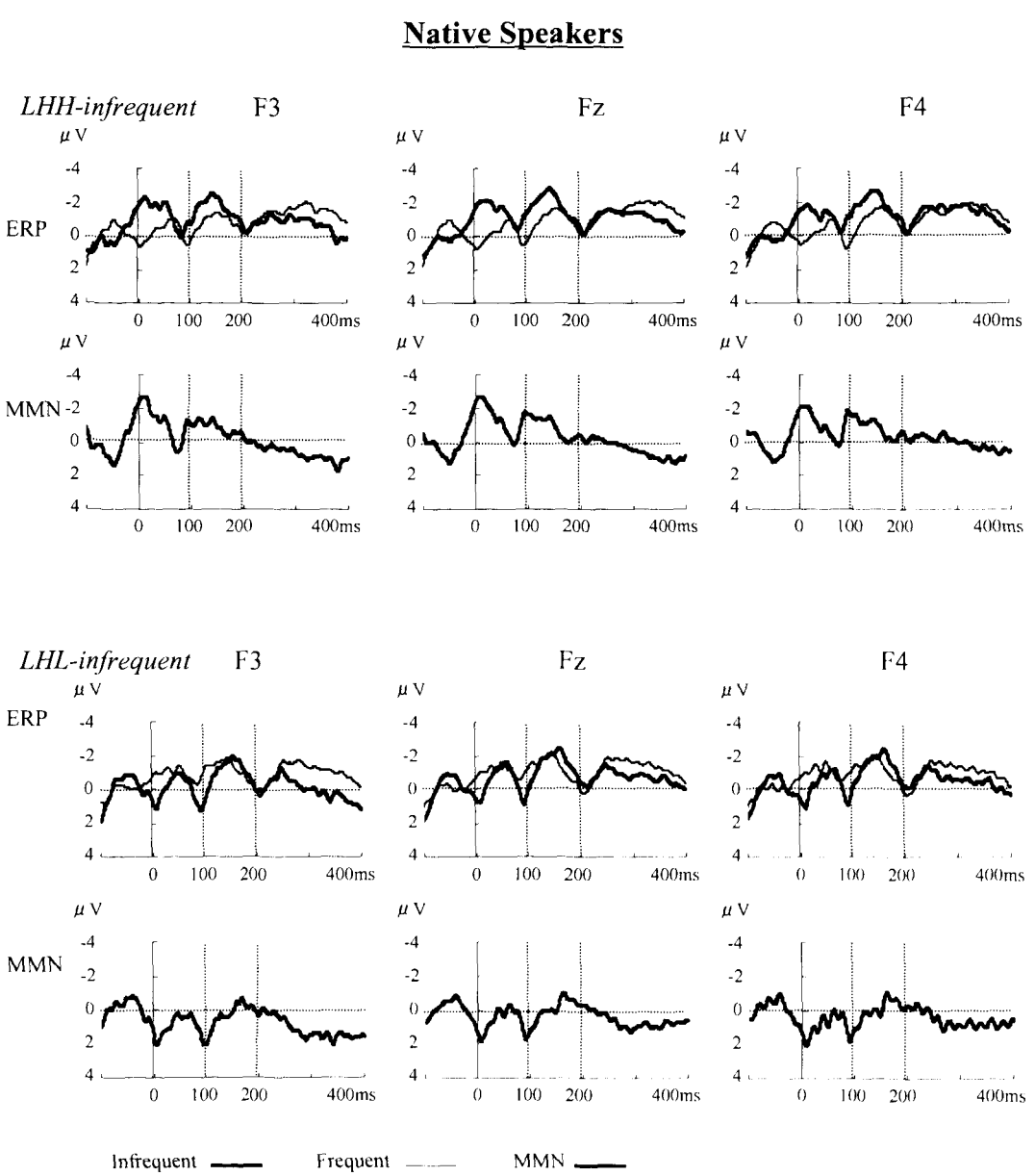
Grand averaged ERP waveforms in response to the frequent (thin line) and infrequent (thick line) stimuli, and the MMN (difference waveforms of ERPs) at Fz in *H-infrequent* and *L-infrequent* conditions in NNSs and NSs are presented. The MMN wave is greatest in all cases with peak latency between 100-200 ms after the onset of stimuli. Negative voltages are plotted upward.

Fig. 7-5: Grand averaged ERP and MMN waveforms in NNSs



Grand averaged ERP waveforms in NNSs in response to the frequent (thin line) and infrequent (thick line) stimuli, and the MMN (difference waveforms of ERPs), at F3, Fz, and F4 in *LHH-infrequent* and *LHL-infrequent* conditions are presented. The MMN between 100-200 ms in the *LHH-infrequent* condition is significantly greater than that in the *LHL-infrequent* condition. Negative voltages are plotted upward.

Fig. 7-6: Grand-averaged ERP and MMN waveforms in NSs



Grand-averaged ERP waveforms in NSs in response to the frequent (thin line) and infrequent (thick line) stimuli, and the MMN (difference waveforms of ERPs) at F3, Fz, and F4 in *LHH-infrequent* and *LHL-infrequent* conditions are presented. The MMN between 100-200 ms in the *LHH-infrequent* condition is greater than that in the *LHL-infrequent* condition, just as in Fig. 7-5. Negative voltages are plotted upward.

In order to clarify the features of MMN, ERP in response to the frequent stimulus were subtracted from those in response to the infrequent stimulus in both conditions and in both groups. In Figures 7-5 and 7-6, grand averaged ERP waveforms in response to the frequent (thin line) and infrequent (thick line) stimuli are presented, and the MMN (difference waveforms of ERPs) in *LHH-infrequent* and *LHL-infrequent* conditions in NNSs in Figure 7-5 and NSs in Figure 7-6 are shown in the lower half of each ERP waveforms.

Figires 7-5 and 7-6 show that regardless of the stimulus condition, that is, *LHH-infrequent* or *LHL infrequent*, a negative component that peaked around 150 ms after the onset of the third mora stimulus was observed in both the NNSs and NSs in response to the infrequent as well as the frequent stimuli. In both NSs and NNSs, the MMN in response to the *LHH- infrequent* was prominent, whereas the MMN in response to the *LHL-infrequent* was weak, as seen in Figures 7-5 and 7-6.

Therefore, using the results of the single-mora presentations in EP-2 as a reference, the mean amplitude of the MMN data of the two conditions in EP-1 were statistically tested between 100 ms and 200 ms after the onset of the third mora of the stimuli (Figures 7-5 and 7-6). For this analysis, the MMN data were divided into four 25-ms time-windows, that is, during latencies of 100-124 ms, 125-149 ms, 150-174 ms, and 175-199 ms after the onset of the third mora stimulus, and MMN data in each condition was statistically examined.

A four-way analysis of variance (ANOVA) was performed for condition, (*LHH-infrequent* and *LHL-infrequent*), group (NSs and NNSs), location (nine electrodes) and time-window (four periods). The ANOVA revealed a significant interaction among the condition, location and time-window ($F\ [24, 384] = 2.21$, $p < 0.01$). Secondly, a two-way ANOVA was employed for condition and location in each of the four

time-windows. As a result, a significant interaction was observed between condition and location ($F [8, 128] = 3.37$, $p < 0.05$) in the 100-124 ms time-window. Statistical contrast tests were conducted for condition and location in the 100-124 ms time-window. In a comparison between conditions among the nine locations, the mean amplitude of MMN in F3 ($F [1, 17] = 6.67$, $p < 0.05$) and Fz ($F [1, 17] = 5.56$, $p < 0.05$) in the *LHH-infrequent* condition was larger than that in the *LHL- infrequent* condition. However, the interaction in the remaining three time-windows during 125-199 ms was not significant, and the difference between the groups in MMN amplitudes was not significant at any location or in either the *LHH-infrequent* or the *LHL-infrequent* condition[16].

According to the results, a statistically significant MMN was elicited in the *LHH-infrequent* condition in both the NSs and NNSs of Japanese at the locations of Fz and F3 (Figures 7-5 and 7-6), peaking from 100 to 124 ms after the onset of the third mora of the stimuli. These results suggest that the accentual pitch patterns are implicitly noted at the location of the frontal brain area, depending on the nature of the stimuli.

7.5 Behavioral Test

After the above experiments, the behavioral response of pressing a button to the required stimulus was obtained from all participants in both groups in an attended situation. In these tasks, the same stimuli were presented as those used in the above experiment, that is, LHH, LHL, H, and L. Each task included 50 repetitions of the stimuli, of which 80 % were frequent and 20 % were infrequent. First, the participants heard the frequent and infrequent stimuli, and then they were instructed to press the button when they heard the

[16] The statistical correctness was checked by Prof. Ozaki and Associate Professor Hosokawa.

infrequent stimulus. The mean correct button-pressing response was 98.8 % in NSs and 100 % in NNSs; the mean occurrence of button-pressing response to a wrong stimulus was 0.6 % in the NSs and 0.3 % in the NNSs. These data indicate that participants almost always correctly discriminated the stimuli. Thus, analysis of the response results in the behavioral test conducted in an attended situation confirmed the accuracy of over 98.8 % by both the groups. The results of experimental brain responses to the stimuli in the unattended situation are discussed below.

7.6 Cross-linguistic Differences

The pitch patterns of the stimuli used in the above experiments were based on the Japanese accent system, which is different from the Chinese accent system. Although both are pitch accent languages, the unit of accent in the Chinese language is a 'syllable', and Chinese language is called tone language. Chinese (Mandarin) has four lexical tones (Chao 1968). Each of these occurs on a 'syllable' as a unit. In contrast, the Japanese accent occurs on a 'word' as a unit, and thus the Japanese accent is called word accent. This is a marked difference. Therefore, it was anticipated that sensitivity in NNSs to the stimuli would be different from that in NSs. However, contrary to the expectation, experimental results revealed that the cross-linguistic difference in MMN amplitude between NSs and NNSs was not statistically significant. The reason for this appears to be that stimuli *papapa* and *papa'pa* in this study were meaningless pseudo-words, which do not occur in the usual language input. Both the groups probably encountered these pseudo-words for the first time in the present experiments, therefore, neither group had any prior experience of hearing or vocalizing these pseudo-words. Accordingly, the experiment resulted in the MMN in the NSs being not significantly larger than that in the NNSs. The most likely reason for the lack of cross linguistic difference is the fact that

real words were excluded and only meaningless pseudo-words were used as stimuli.

On the other hand, the present results appear to support findings of Pulvermüller et al. (2001), who investigated brain responses to the same spoken syllable completing a Finnish word and a pseudo-word. They found that the MMN to the same spoken Finnish syllable as an infrequent stimulus was larger in amplitude when it completed a Finnish word than when it completed a pseudo-word in native Finnish-speaking participants, whereas this MMN enhancement did not occur in foreign participants who did not know Finnish. According to Pulvermüller et al. (2001), this MMN enhancement to Finnish words in Finnish NSs may be caused by the activation of the permanent neuronal memory traces for mother-tongue words. Only NSs would store the long term memory traces for real words, whereas neither NSs nor NNSs appear to store long term memory traces for the pseudo-words. Hence, in this study, it is suggested that the cross-linguistic difference in MMN amplitude did not show a statistical significance between the NSs and NNSs, even though Chinese and Japanese participants had different accent systems in their mother tongues. The most probable reason for the results is the fact that real words were excluded as stimuli.

7.7 Difference of Conditions

7.7.1 Influence of pitch pattern difference

In both the groups, MMN was statistically significant in the *LHH-infrequent* condition but not in the *LHL-infrequent* condition. In general, as long as other qualifications are equal, infrequent stimuli appear to draw more attention than series of repetitive frequent stimuli, irrespective of whether the stimuli are attended or unattended. Therefore, even in a situation in which an individual participant is not attending to stimuli, responses to infrequent stimuli appear to be more sensitive than those to frequent stimuli, and

infrequent stimuli appear to bring out a larger negative component than frequent stimuli do. Furthermore, even if the frequencies of the infrequent and frequent stimuli are reversed, the size of the MMN component may not change so long as the other characteristics remain the same.

In both the groups in this study, however, MMN in the *LHL-infrequent* condition was not as prominent as in the *LHH-infrequent* condition, even though *LHL-infrequent* was the reverse of *LHH-infrequent*. Therefore, it is predicted that factors other than the difference of the frequencies of the stimuli might be involved in item (word)-final pitch discrimination. It may be surmised that MMN enhancement in the *LHH-infrequent* condition was due to the difference of the pitch patterns between the LHH and LHL stimuli, that is, the difference of endings between the two patterns.

7.7.2 Influence of pitch downtrend

The best explanation for the effect of the difference between LHH and LHL appears to be found in the 'pitch downtrend' phenomenon, that is, the phenomenon of intonation. In Japanese, as well as in many other languages such as Chinese, it is observed that the pitch contour of a spoken sentence, even in the case of a one-word utterance tends to decrease over the course of an utterance (for example, Fujisaki and Sudo 1971; Fujisaki and Hirose 1984; Pierrehumbert and Beckman 1988; Fujisaki et al. 1989; Fujisaki 1989; Kubozono 1993).

According to Fujisaki and Sudo (1971), pitch (F_0) contours of words and sentences consist of two components. One of these is a *phrase component,* which represents the baseline of a pitch contour. The shape of the pitch contour shows a rise at the beginning and a natural and gradual decline towards the end of the utterance. Each utterance usually includes one or more *phrase components*. This phenomenon is generally called

'declination'. The other is an *accent component,* which consists of one or more accent units. These units are characterized typically by an initial pitch rise and a quick pitch fall caused by accent. These phenomena can be seen not only in sentences but also in a single word. The 'pitch downtrend' tendency may account for the fact that, for both NSs and NNSs of Japanese, mid-accented LHL stimuli sound more natural than unaccented LHH stimuli.

Because the two stimuli in this study were both natural human vocal sounds, it was recognized that the pitch contour of LHL and LHH showed an initial rise and final decline in the pseudo-word stimuli *papapa* and *papa'pa* (Figure 7-2). The pitch of the second mora H in LHL, which is the AN, falls toward the third mora, due to the decline in the *accent component*; moreover, the pitch of the last mora L decreases to a pitch lower than that of the first mora L, most likely due to the decline in the *phrase component* from the beginning toward the end (Fujisaki 1989). However, it can be seen in Figure 7-2 that the pitch within the third mora H of LHH is decreasing slightly due to the decline of the *phrase component.* Normally, this decline is not perceptible. Since LHH is unaccented, the pitch does not fall below that due to the decline in the *phrase component.* Hence, the pitch in LHL declines much more conspicuously toward the end of a word, compared to the decline of pitch in LHH.

As mentioned above, a decrease in pitch toward the end of an utterance is a natural tendency in many languages. Therefore, it is surmised that when LHL was embedded in LHH, that is, in the *LHL-infrequent* condition, LHL was so natural that the stimulus change from frequent LHH to infrequent LHL hardly elicited the MMN component. In contrast, when LHH is embedded in LHL, that is, in the *LHH-infrequent* condition, LHH was likely to be perceived as unnatural, and a stimulus change from frequent LHL to infrequent LHH was easier to note. This 'pitch downtrend' can be found in both Japanese

and Chinese languages (Fujisaki et al. 1989). Therefore, this phenomenon in the stimuli in this study must have been perceived by both the groups without any significant cross-linguistic difference.

On this point, the neuronal memory trace might be driven much more conspicuously by LHH than by LHL, resulting in the enhancement of the MMN component in the *LHH-infrequent* condition rather than in the *LHL-infrequent* condition in both the groups. Furthermore, it is suggested that NSs as well as NNSs implicitly note unnatural pitch patterns in distinction from natural pitch patterns which involve the 'pitch downtrend' in their brain.

The 'pitch downtrend' model by Fujisaki and Sudo (1971) is a phonetic phenomenon. In general, when speakers intend to phonologically express linguistic information such as LHH or LHL, they actually produce it phonetically in the form of a pitch contour which shows the objective physical quantity with 'pitch downtrend'. However, listeners subjectively perceive them phonologically as LHH or LHL without declination.

On the other hand, assuming it to be true that MMN was statistically significant only in the *LHH-infrequent* condition under the influence of 'pitch downtrend' phenomenon, it is presumed that participants implicitly perceived and processed the stimuli as the objective physical quantity in the form of pitch contours in their brain contrary to their subjective perception of accent patterns.

In addition, it is worth noting the results of Inouchi et al. (2003), whose stimuli were synthesized sounds of real words of Japanese, where three NSs of Japanese listened and evaluated natural sounding words. In this case, participants' brain responses were most likely acoustically driven rather than semantically driven as words. The point to observe here is that the pitch contours of stimuli in Inouchi et al. showed neither the

declination nor the initial rise; in other words the 'pitch downtrend' phenomenon was not taken into account. This is presumed to be the main reason that participants' brain responses to the stimuli were not in response to the sounds of words. It is presumed that the NSs' evaluation for the stimuli was based on their subjective perception, which was different from participants' brain response.

Viewed in this light, the involvement of the 'pitch downtrend' phenomenon can be regarded as an indispensable factor for the implicit noting of Japanese accentuation as the sound of words. Thus, it may be said that the results of analyses in this study support the validity of 'pitch downtrend' model reported in Fujisaki and his colleagues (e.g., 1971, 1984, 1989), and others.

7.7.3 Brain responses to the unaccented pitch pattern

The results suggested that the unaccented pattern LHH was perceived as unnatural by both NSs and NNSs of Japanese in their brains. It is worthwhile considering this brain response to the unaccented pattern more closely. Despite the fact that the number of unaccented Japanese words is large, NNSs did not often produce this pattern in discourse in this study (see Chapter 4). Moreover, the unaccented pattern in Japanese lacks a sufficient function of accent, that is, integrating a word, which is observed in many languages. Thus, it appears to be possible to assume that the unaccented pattern is a unique, unusual and noticeable pattern among various languages. According to Greenberg in his 'Language Universals' (1966, 2005: 14), in general the unmarked category has higher frequency than the marked.

However, on the other hand, recently the noteworthy trend of levelling of accent can be observed among NSs of Japanese. The unaccented specialists' accentuation is widely used by experts in a certain field, as mentioned before, although NNSs'

application was not found in DATA-1 in this study. It is a well-known fact that the accentuation of unfamiliar words like most loan words tends to follow the antepenultimate accent rules, which are commonly used for newly coined words or meaningless words as well. According to Inoue who identified the specialists' accentuation (1992, 1998), when words become familiar and the meaning is clearly noticed, the unaccented pattern instead of antepenultimate accent pattern is apt to be used for those loan words by specialists. For example, the specialists or lovers of audio equipments use the terms belonging to those field, which in many cases they are loan words, such as *gi'taa* 'guitar' or *bi'deo* 'video' without AN because they are already familiar with those audio equipments earlier than others. Thus, one of the reasons why the unaccented pattern rather than antepenultimate pattern is used by specialists is that they feel those words are close to them, and another reason is that the pronunciation of the unaccented pattern is easy; the pitch does not abruptly fall but just gradually declines, and thus the learning of pitch pattern for those words is not necessary (Inoue 1998).

However, the results of this chapter appear to be able to account for the different view as to why specialists are fond of unaccented pattern for their technical terms. The specialists' accentuation which does not clearly involve the pitch downtrend phenomenon is presumably perceived as unnatural, as noted above, and is usually unfamiliar and sounds strange to ordinary people. Therefore, it would be apt to attract the attention of listeners. Thus, specialists subconsciously choose this pattern presumably in order to attract listeners' attention and to show that they are experts in some special field and also to show solidarity within a group.

7.8 Summary

In this chapter, the implicit noting of accentual pitch patterns LHH and LHL by NNSs

and NSs in their brains was investigated by means of brainwave measurement As the results of the examination, it was shown that the participants appear to note implicitly the accentual pitch patterns in their brain. The LHH pitch pattern was perceived as unnatural in the brain due to the lack of pitch downtrend phenomenon, which is observed in various languages as well as in both Chinese and Japanese. A significant difference of brain response between NSs and NNSs was not revealed in the results of experiments, most likely because the meaningless pseudo-word *papapa* was used as stimuli, and because the pitch downtrend phenomenon can be observed in both of the participant group's mother tongue languages.

It is considered that the unaccented pattern like LHH which does not fully involve the pitch downtrend phenomenon appears to be the marked property of accent in various languages, as discussed above. Moreover, the unaccented specialists' accentuation identified by Inoue (1992, 1998) is popular among specialists in various fields, presumably because specialists or experts implicitly know that this unaccented pattern is unnatural and therefore, it attracts people's attention.

There are still unresolved issues for future study: (1) one more possible accent pattern HLL should be tested beyond the two patterns in the present study, (2) real word stimuli should be utilised in order to find whether the difference between the NNSs and the NSs shows up in implicit noting of accent patterns, (3) the response by the participants who do not have experience of learning the Japanese language might show the difference from that by NSs and NNSs and (4) the stimuli of three morae within the duration of 160-170 ms (Yabe et al. 1997; Yabe et al. 1998) as one unit, in which the intervals between the stimulus morae are shortened, should be applied in order to avoid the possibilities of superposing of responses. These points may reinforce the validities of the findings presented here as well as the pitch downtrend phenomenon.

CHAPTER 8

CONCLUSION

8.1 Introduction

The current study investigated learners' accentuation from a variety of perspectives: the production of accentuation mainly concerning ILSs, style-shifting in formal and informal situations, management processes and the implicit brain perception of accent patterns. The focus of these discussions was learners' implicit knowledge. SLA researchers have a great interest in exploring learners' unconscious learning and the acquisition of second language accentuation. The major part of the SLA generally appears to be implicit learning and the production of ILSs, which also appears to be an implicit system. It is worth emphasizing that this study approached the investigation of automatic noting of accentual pitch patterns from the interdisciplinary perspectives of applied linguistics and neuroscience, which enabled an in-depth examination of accentuation.

8.2 Summary of Major Findings

8.2.1 Japanese language learners' production of accentuation

The analysis of learners' production of accentuation within discourse in contact situations followed the typology of Neustupný. The system of ILSs, which mainly comprises overgeneralization of the TL accentuation, was identified and found to exhibit characteristics such as three levels of developmental patterns as well as free variation. The data analysis also demonstrated accentuation influenced by participants' L1 and examples of pidginization, in addition to the production of correct L2 accentuation. Learners also produced accentuation derived through natural strategies such as integrating, prominence and word (phrase)-final pitch falling strategies.

The analysis put forward regarding the production of accentuation has further interesting results and implications for SL Japanese accentuation. The most important findings are antepenultimate accent strategies and compound accent strategies, of which accentuations are all accented. These strategies appear to be produced using universal norms, which presumably NNSs possess in their mother tongues. Since strategies overlap with each other in general, it appears that those two universal strategies are regarded as involving ILSs. In other words, antepenultimate and compound word accent strategies are presumably the major constituents of ILSs. It may safely be said that these two strategies are another face of ILSs, with both the first identified ILSs and two universal strategies as two sides of the same coin. In addition to these, I displayed a model of an implicit production process of accentuation by NNSs, which includes the functions of evaluation and adjustment.

8.2.2 Style-shifting of accentuation by NNS participants and IBSs

An examination of NNSs' speech style of accentuation in formal and informal situations was performed and compared with that of the Ibaraki dialect speakers (IBSs) in previous research (Yamada 2003, 2007). It was found that participants' accentuation showed systematic unconscious style-shifting. In an application of the most advanced ILS-3 and IDS-3 created by NNSs and IBSs respectively, they demonstrated exactly the same results, which is consistent with Labov's model. According to Labov, linguistic production can be expected to show varying degrees of correctness depending on the speech style used. Correct production most frequently occurs in formal styles, while the informal style generally displays a lower degree of correctness. Moreover, when more successful phonological production occurs, more attention is paid to speech (Labov 1970: 48).

However, the style-shifting in appropriateness of accentuation by NNSs did not match Labov's model, although the style-shifting by IBSs did. The probable reasons for this difference seem to result from NNSs easily utilising more strategies when speaking Japanese language in informal situations than in formal situations (for example, speaking with a restricted number of familiar words). Such strategies appear to make it possible to produce more appropriate accentuation in informal as opposed to formal situations. On the other hand, since the IBSs are NSs of Japanese, they do not have to use such strategies. Presumably, they possess norms of the target Japanese in a nascent stage (Neustupný 2004) for commanding Japanese, which NNSs do not possess. On the other hand, the ILS-3 and IDS-3 are created as substitutes for the target accentuation which neither of the participant groups has acquired.

8.2.3 Explicit management of accentuation

The analyses of learners' accentuation management for all five stages revealed that learners' accentuation was produced implicitly, while explicit management was difficult for most learners in the study. Indeed, most participants did not explicitly manage their accentuation; only two learners did so in their discourse. Furthermore, their management is categorized as 'a weak management', since the process did not reach the final implementation stage owing to their insufficient declarative knowledge of accentuation. Such weak management can be explained by the fact that participants began management without clear and accurate declarative knowledge of accentuation and therefore had to stop management before reaching the implementation stage. Instead they produced accentuation without conscious attention, in many cases as an ILS. Thus, the two participants who did engage in some management could not account for their management process and their final production of that particular accentuation. Therefore,

it is presumed that they possess both implicit and explicit knowledge of accentuation for the same word, although the explicit knowledge was not substantial. The other nine participants did not consciously manage their accentuation. However, some proof of implicit noting was found in the discourse.

The analysis in this management study showed three distinct types of management strategies, pre-management, in-management and post-management. The participants' pre-management appeared to be based on unsuccessful past experiences. It is assumed that participants have some ideas of accentuation in their minds on the basis of which they note, evaluate or select their adjustments before producing the accentuation, although those ideas are not clear-cut. For the in-management process, participants note or evaluate their accentuation or select an adjustment during its production. Although examples were limited, post management began with deviation and proceeded with noting of the deviation and evaluation as described by Jernudd and Neustupný (1987) and others.

Thus, learners' accentual competence seems to be potentially possible to progress implicitly and explicitly with both nondeclarative and declarative knowledge. Therefore, both explicit management as well as implicit management are likely to contribute to the development of their accentual competence. However, in many cases nowadays accent is not taught explicitly in class, therefore, learners are presumed to implicitly manage their accentuation as demonstrated in the model of the production process of Japanese accentuation (Figure 4-9).

8.2.4 Brain perception of accentuation

The experiment in brainwave measurement was conducted to examine whether NNSs and NSs implicitly note the accentual pitch pattern changes from LLH to LHL and from LHL

to LHH. The findings based on brainwave measurements indicate that both the NNS and NS participant groups implicitly noted accentual pitch patterns in their brains. In both groups, MMN in the LHH-infrequent condition was more prominent than in the LHL-infrequent condition. This indicates that the MMN enhancement in the LHH-infrequent condition was due to difference of the word-final pitch patterns. The pitch in LHL falls much more clearly towards the end of a word compared to the decline of pitch in LHH. The 'pitch downtrend' phenomenon, (i.e., a decrease in pitch towards the end of an utterance) is a natural tendency in many languages. Thus, for both NNSs and NSs, the second mora accented LHL, which involves the pitch downtrend phenomenon more clearly, sounded more natural than the unaccented LHH. Accordingly, it is suggested that NSs as well as NNSs implicitly noted unnatural pitch pattern differently from the natural pitch pattern which involves the 'pitch downtrend phenomenon'. Finally, no significant difference was found in implicit noting between NSs and NNSs, probably because the stimuli were a meaningless pseudo-word which both participant groups encountered for the first time. In addition, some features of unaccented pitch pattern under the influence of the pitch downtrend phenomenon were discussed.

8.3 Theoretical Implications for Second Language Accentuation Research

This study from multiple perspectives of Japanese language learners' accentuation, which particularly focussed on learners' implicit knowledge, was summarised above. These findings have contributed to our understanding of the NNSs' internal learning strategy for Japanese accentuation. The major contributions include identifying the universal strategies which appear to constitute ILSs and the neuronal auditory implicit perception of accent patterns. Furthermore, some theoretical implications and the implications for

the teaching of accentuation are explored.

8.3.1 Universal norms and ILSs

According to Neustupný (1985b), learners produce second language in contact situations using L2 norms, which may be deficient, borrowed, adapted (interlanguage) or rigid. He also claimed that learners' language is generally produced using L1 and L2 (base) norms, ILSs or pidginization, in addition to the possibility of using universal norms (2004). To the best of my knowledge, no noteworthy empirical study of universal norms has been carried out so far. This study put forward two strategies, antepenultimate and compound word accent strategies, derived from the accent rules in Japanese, which can be decomposed into several universal constraints attributed to universal principles of accent (Kubozono 2006a; Prince and Smolensky 1996 cited by Kubozono).

The second theoretical contribution of this study is that the source of ILSs, which appears to be derived from universal principles, is newly added to the overgeneralization of an L2 rule or transference from an L1 rule. One of the major questions has been the production of the penultimate mora accented pattern, which is very common among Japanese language learners' accentuation, (for example, Yamada 1994a; Matsuzaki 1999). Yamada (1994a) interpreted this pattern as occurring due to the 'rhythmical strategies' which is not described as universal strategies but which appear to correspond to the antepenultimate strategies in this study. However, Matsuzaki (1999) seems to consider it transference (interference) from the mother tongue. As noted previously, learners, irrespective of their mother tongues, may possess universal principles of accentuation in their L1. The antepenultimate strategies may thus be the new version of the rhythmical strategies put forth by Yamada (1994a).

Hence, this study puts forward a new view of ILSs for the SLA research on

Japanese accentuation, namely that ILSs include not only L2 overgeneralizations and L1 transference but also strategies created through universal norms from their mother tongues.

8.3.2 Style-shifting of accentuation and the Labovian paradigm

The results of the style-shifting analysis showed that NNSs' style-shifting of ILS-3 was consistent with Labov's theory, whereas that of appropriateness of accentuation was not. Contrary to this, regarding NSs who are the IBSs, both their style-shiftings of IDS-3 and appropriateness were consistent with Labov's model. The findings of NNSs' style-shifting suggested that while the style-shifting of ILSs includes adapted or transferred deficient L2 norms, the style-shifting for appropriateness is analysed by reviewing L2 itself, which participants have not acquired. With respect to the style-shifting for accentual appropriateness, while NNSs appeared to use strategies for purposes other than accentuation, IBSs did not. This may be due to the fact that IBSs are NSs of Japanese, although they have not acquired the Tokyo dialect accentuation. From these remarks, it is implied that Labov's model appears to be applicable only for NSs of the language concerned, specifically, L2 which participants have not acquired is not applicable since strategies are used for purposes other than accentuation. Another implication is that the ILSs and IDSs which they have created by themselves allow participants to be similar to the NSs.

8.3.3 Language management theory

This study analysed the characteristics of learners' management of accentuation, and the data revealed 'weak management'. The learners' biggest weakness concerning explicit management is their lack of declarative knowledge for noting, evaluation and adjustment

selection. As such, even if learners start the first stage and move on to the second stage, they can not go further easily. Additionally, the important implication is that their final accentuations are presumably the ILSs produced without explicit attention.

As observed previously, Petri and Mishkin's neuropsychological study (1994) proposed the dual-system model of learning as follows. The brain has two systems for learning and retention of experience: explicit and implicit memory, or declarative and non-declarative knowledge. According to them, 'what is learned may depend on how it is learned, and different systems allow for different kinds of learning.' 'The experiences encountered in a learning situation would be retained to some degree by both systems' (Petri and Mishkin 1994: 36 and 37). Some examples in this study presented evidence that participants learned using both systems. The two participants appeared to implicitly produce ILSs after beginning explicit management process for a particular accentuation. Presumably, they possess two types of learning experiences regarding accentuation of the same word. According to Petri and Mishkin, access to the information within these two systems would also appear to differ dramatically. The contents of the implicit system appear to be unavailable to their conscious awareness. Similarly, the two participants in this study could not explicitly account for their final production of ILSs.

Hence, the analysis of language management put forward in this study suggests the validity of the dual-system theory of learning. This can be seen by participants' explicit processes of language management and the implicit production of ILSs which they could not explain, although their explicit management was weak.

8.3.4 Mismatch Negativity (MMN) studies for implicit noting of accentuation

MMN (Näätänen et al. 1978) is currently the only valid objective measure of auditory processing in the human brain which can be elicited, even in the absence of attention.

The results of our examination indicated that the MMN was more prominently revealed in the *LHH-infrequent* condition than in the *LHL-infrequent* condition, regardless of whether the participants were NNSs or NSs.

The analysis of MMN in this study has some important implications for the Japanese accent. First, the results support the validity of the 'pitch downtrend' model reported by Fujisaki and his colleagues (for example, 1971, 1984, 1989) and others. In addition, the important influence of the pitch downtrend phenomenon upon the unaccented pattern implies that the unaccented pattern is perceived as unnatural by both NNSs and NSs. This implication supports the appropriateness of the word (phrase)-final pitch falling strategy noted in Chapter 4. For instance, the *shiriagari* intonation, which is a rise-fall intonation, (Inoue 1997, 2008), is the phenomenon seen among NSs of Japanese and is also applied by NNSs. NNSs utilize this strategy when they produce an unaccented ILS [O]; the final mora of accentual phrases tends to be lengthened, and its pitch is raised once and then finally lowered, which is consistent with the pitch downtrend phenomenon.

Another implication is that the tendency to level the pitch of accentuation, particularly the 'specialists' accentuation' (Inoue 1992, 1998), presumably attracts the attention of listeners. For example, experts in a certain field tend to use an unaccented pattern for terms characteristic of that field. The study results can account for specialists' use of unaccented pattern as follows. The specialists' accentuation is usually unfamiliar and strange to laymen. The MMN results of the brain examination showed that the unaccented pattern is perceived as unnatural and therefore it presumably attracts the attention of listeners. Hence, it is assumed that specialists subconsciously choose this accentuation in order to attract listeners' attention and to show that they are experts in some specific field, which is contrary to the explanation by Inoue (1998). Inoue claims

that specialists are apt to use unaccented pattern for technical terms in their field, because generally people tend to use this accent pattern for the words familiar to them and the specialists are already familiar with those terms earlier than others. Thus, a new view is obtained from the MMN study which provides a different reason for specialists' use of this accent pattern.

Although the number of unaccented Japanese words is large, NNSs do not often use this pattern, including the specialists' accentuation in the data in this study. It is presumed that unaccented pattern is unfamiliar to them. In addition, the unaccented pattern does not have the function which integrates an accentual phrase, observed in many languages. This implies that the unaccented pattern is unusual to NNSs and is categorized as a unique feature of accent, even though the number of unaccented words in Japanese is numerous.

8.4 Implications for Teaching of Accentuation

The results obtained from this study have some important implications for the teaching of accentuation. One point is that learners would like to improve their accentual competence, but do not have a realistic view of their competence. For example, some participants believe that their accentuation is excellent, even if they still display the foreignness factor. NSs would easily recognize NNSs' foreignness feature due to their accentuation or other speech sounds, even though they are advanced level or near native level speakers who can easily communicate or interact with the NSs. Neustupný (1987b) describes the norms of pronunciation as follows: 'As long as foreigners struggle with their basic vocabulary, NSs will not be bothered about their accent. However, as the competence of foreign speakers improves, stricter criteria are applied . . . This is a general feature of many languages and is not limited to Japanese' (p. 168).

Some participants who did not manage their accentuation in the current data reported in the FUIs that they remember another person's indication as well as their own noting of incorrect accentuation and recall it whenever they use that particular word. Therefore, as long as learners intend to improve their accentuation, explicit learning of accent rules and explicit management is not completely impossible for them. Moreover, it is anticipated that management makes it possible to prevent fossilization and supports more rapid progress of their accentuation. In this sense, the management of accentuation can be considered as a learner strategy, similar to those noted by Oxford (1990).

However, the lack of declarative knowledge of target accentuation, even by those who managed their accentuation, was confirmed by the data. The FUIs showed that accentuation does not appear to be explicitly corrected by teachers in Japanese language classes. Accordingly, it is suggested that the clear explanation of accentuation (no matter how simple) will help learners to manage their accentuation.

Two attitudes are likely to exist concerning accentuation in the teaching and learning of Japanese. One is that L2 accentual competence appears to implicitly develop as ILSs and conscious attention to accent is not important for communication or interaction, even if ILSs are not completely appropriate. In the post-modern paradigm of a globalized society, speaking with imperfect accentuation is natural for NNSs and improving this linguistic aspect is not a priority as long as their communication or interaction is mostly effective. This seems to be similar to the situation in big cities such as Tokyo where the native Tokyo dialect speakers use standard Japanese accentuation, while people from regions with different dialects speak in a variety of accentuations or IDSs. However, in general, people communicate or interact without paying attention to those varieties since such situations are considered natural. Therefore, people do not always think that careful learning or elaborate teaching of L2 accentuation is necessary.

On the other hand, a contrasting attitude can also be found. Some learners would like to become as proficient as possible if they are going to learn Japanese in any case. Particularly, correct accentuation needs to be learned because inappropriate accentuation displays the foreignness of NNSs, even if their grammar, vocabulary and interaction competence are appropriate. According to Neustupný (1985a: 48), 'when the base language is Japanese, the foreignness factor can assume a high prominence, with a strong version of foreigner talk being applied by Japanese participants irrespective of the competence of the foreign speaker in Japanese'. In order to respond to this attitude towards Japanese accentuation, rethinking on teaching of accentuation is likely to be necessary. It is, therefore, worth to consider this from the viewpoint of language management.

In the management of accentuation study in Chapter 6, the following points relate to the teaching of Japanese accentuation. First, teachers must consider adequate correction of learners' accentuation. Learners reported that although their spoken Japanese was corrected in class, they did not understand the correction. Such correction is presumably intended to help them implicitly acquire accentuation as non-declarative knowledge. However, teachers must determine more specific ways and means to handle this situation. This problem in correction is seemingly common, since participants who studied in different places unanimously reported the same issue. In any case, it is necessary to confirm learners' understanding of teachers' correction. Matsuzaki (2009) and Ogawara (2009) have closely examined this topic.

Secondly, according to participants' reports, they have the belief that conscious attention to their accentuation is not necessary because people around them do not appear to be sensitive to their accentuation and some were even praised for their accentuation. However, judging by their accentuation in the data, there is room for further

improvement, contrary to their experiences of receiving praise. Therefore, it is presumed that they cannot accurately evaluate their own accentual competence. This is similar to Japanese students' academic English competence needed for studying at Australian university. They do not recognize the existence of a problem because they reported having passed the English proficiency test requirements before entering the university (Marriott 2000). The learners of Japanese do not seriously consider that incorrect accentuation exhibits their foreignness, even at near native stages, since they believe that it it rarely causes problem in interaction. Furthermore, many of the learners appear to have no appropriate declarative knowledge of accentuation, which is necessary for noting deviations, evaluating the noted deviation and the adjustment selection in the management processes.

In view of these problems, some steps to improve learners' accentuation can be proposed. One option is making a habit of explicit self-management of accentuation. This would stimulate learners to pay explicit attention to their accentuation and make it possible to improve their accentual competence in addition to their implicit learning.

Bearing in mind the various conditions described and the limitations of time in a class schedule, one possible teaching plan is to utilise learners' after-school hours and ask NS volunteers, who are interested in pronunciation or just accent, to partner the learners. The following is a tentative plan to be further developed on the basis of the language management theory. A learner and a volunteer could meet once a week and audio record their short conversational discourse. The learner checks his/her recorded accentuation and corrects inappropriate accentuations individually. The next week, the volunteer can check the learner's self-corrections, point out deviations and provide correct accentuations for the learner. The volunteer may submit a report of the corrected accentuations of words to the teacher so that the teacher can explicitly teach the

frequently corrected inappropriate accentuations in class.

With such a procedure, it may be possible for learners to grow accustomed to noting deviations in their accentuation. However, for all their efforts, evaluation would still not be easy for them because of the difficulty of learning the declarative knowledge of listing and ordinary rules of accentuation. Hence, the teacher should give lectures on these rules. Learners reported some examples of recalling the accent rule learned in class and then managing their accentuation through the implementation stage by using it in actual discourse (e.g., Yamada 1992). Thus, after repeating this activity with an NS volunteer and practicing the corrected accentuation through means such as shadowing (Toda 2008), learners would have more declarative knowledge of accentuation and realise their abilities. Then they could manage accentuation involuntarily, which would lead them to acquisition, if all has gone well. It is predicted that the mastering of self-management of accentuation is an important first step towards the acquisition of TL accentuation. Apart from these teaching strategies, Toda (2009) introduced the self-learning materials for Japanese phonological speech sounds, which provide learners with both implicit and explicit knowledge of the target speech sound.

8.5 Limitations of this Research and Directions for Future Research

Like other studies in this area, this study has limitations which restrict the generalizations that can be made from the results; these are reflected in future research possibilities. First, despite the fact that this study newly found the ILSs created by NNSs based on universal norms, the examination of those strategies used by IBSs was not carried out. Since ILSs resemble IDSs closely, it is expected that those strategies based on universal norms are able to be found.

Second, in the present brainwave measurement experiments, the stimulus pitch

patterns LHH and LHL were utilised, and it was found that the MMN response was more prominent in LHH, which does not involve pitch downtrend phenomenon clearly and hence was perceived as unnatural. For future investigation, the remaining possible pattern of HLL should be examined in addition to those two patterns already used.

Third, brainwave measurements showed that both NNSs and NSs implicitly noted accentual pitch patterns. However, the results indicated no significant difference between NNSs and NSs, possibly because the stimulus sound was the meaningless pseudo-word *papapa*. In future research, real word stimuli should be employed in order to determine whether any differences of noting are presented between NNSs and NSs.

Fourth, this study carried out brainwave examinations of implicit noting of accent patterns in a pseudo-word by NNSs and NSs of Japanese. The non-speakers of Japanese who have no experience of learning the Japanese language might show different responses from those by NNSs and NSs. Therefore, participants who are non-speakers of Japanese should be included in order to clarify whether the accent patterns are perceived as speech sounds of word accent or acoustic sounds other than speech sounds.

Finally, in order to avoid the possibility of superposing of responses to the stimuli, the duration of stimuli should be shortened. According to the MMN studies (Yabe et al. 1997; Yabe et al. 1998), three mora stimuli within the duration of 160-170 ms as one unit should be applied. These implications for the future studies may reinforce the validities of the findings presented in this current study.

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APENDIX-1

WORD-LIST

The following word-list without Roman letters was read aloud by participants for the investigation of participants' style-shifting of accentuation, which is described in detail in chapter 5.

1. アイスクリーム	(aisu-kuriimu)
2. 集める　(あつめる)	(atsumeru)
3. 妹　(いもうと)	(imooto)
4. 山手線　(やまのてせん)	(yamanote-sen)
5. 日本語　(にほんご)	(Nihon-go)
6. エスカレーター	(esukareetaa)
7. 食べ物　(たべもの)	(tabemono)
8. 英語　(えいご)	(eego)
9. 水曜日　(すいようび)	(suiyoobi)
10. 趣味　(しゅみ)	(shumi)
11. ドイツ語 (ドイツご)	(doitsu-go)
12. 日本　(にほん)	(nihon)
13. 東京駅　(とうきょうえき)	(tookyoo-eki)
14. ドイツ人　(ドイツじん)	(doitsu-jin)
15. 昼休み　(ひるやすみ)	(hiru-yasumi)
16. プレゼント	(purezento)
17. 東京　(とうきょう)	(tookyoo)
18. 食べた　(たべた)	(tabeta)
19. おいしい	(oishii)
20. ドイツ	(doitsu)
21. 日曜日　(にちようび)	(nichiyoobi)
22. おもしろい	(omoshiroi)
23. 学生 (がくせい)	(gakusee)
24. トマトジュース	(tomato-juusu)
25. 新幹線　(しんかんせん)	(shinkansen)

APENDIX-2

Examples of Follow-up Interview Questions

These are summary questions about accent asked to participants without reference to particular word accent.

1. Please explain about your learning of Japanese?
2. Could you explain about Japanese accent?
3. At your Japanese language class did you learn anything about Japanese accent?
   Did your teacher explain about Japanese accent? Do you remember anything about it?
4. At your Japanese language class, how did you practice accent?
   How did your teacher correct your accent?
5. Have you ever practiced accent by yourself? How did you practice?
6. What do you think the best way of improving your accent?
7. What do you think of Japanese accent? Do you think it important? Why do you think so?
8. Usually, what are you careful about in your conversation? Do you ever think about accent or pronunciation?
9. What language do you mainly use in your daily life in Japan?

APENDIX-3

Examples of Follow-up Interview Questions

These questions were asked to participants in relation to particular word accent with reference to audio recorded and/or transcribed discourse.

1. Did you think anything about accent during the conversation? Which word accent did you notice?
2. Did you notice that accent before or after you pronounced that word?
3. How did you notice it? Did you think your accent inappropriate?
4. What accent did you think correct for that word?
5. Did you think anything about your accent after you pronounced that word?
6. How did you finally produce that particular accent?
7. (This is a question about the ILS-3 produced by the participant in discourse.)
   Do you think this is one unit of accent, or two?