

報告番号	※	第	号
------	---	---	---

## 主 論 文 の 要 旨

論文題目

Japanese EFL Learners' Acquisition of Number  
Feature Representation in English

(日本人英語学習者の数素性表象)

氏 名

田村 祐

## 論 文 内 容 の 要 旨

This dissertation investigates the acquisition of number feature representation in English, targeting Japanese EFL learners. In this study, the acquisition of a plural morpheme is defined as the ability to make a form-meaning mapping between the morphological form of nouns (*cat* vs. *cats*) and two types of number meaning, viz., grammatical number ([sg] vs. [pl]) and conceptual number (SINGLE vs. MULTIPLE). Chapter 1 briefly summarizes the history of second language acquisition research focusing on plural morphemes, and then states the aim of the dissertation. The last section of Chapter 1 describes the organization of the entire dissertation.

The first few sections of Chapter 2 consist of a literature review on second language morpheme acquisition studies, and the problems persisting in the previous studies are indicated. Then, a critical construct, the number feature, is introduced along with various psycholinguistic (e.g., Bock & Miller, 1991; Eberhard, 1999; Humphreys & Bock, 2005) and theoretical linguistic research (e.g., Sauerland, Anderson, & Yatsushiro, 2005; Sauerland & Elbourne, 2002; Smith, 2015) on this issue.

The lacuna in the previous studies is the lack of perspective with regard to form-meaning mapping, which is what second language acquisition consists of, as argued by DeKeyser (2005). The majority of the earlier studies that investigated the acquisition of plural morphemes relied on the anomaly detection paradigm and number agreement errors (e.g., Jiang, 2004, 2007). In the anomaly detection paradigm, researchers ask their participants to read or listen to sentences, some of which include grammatical errors. It is predicted that if the participants know the targeted grammatical structure, the responses to ungrammatical items would be delayed as compared to grammatical ones. Trenkic, Mirkovic, and Altmann (2014) insisted that there exists a difference between noticing errors in ungrammatical sentences and using the knowledge of grammar efficiently in processing grammatical sentences (p.239).

This study distinguishes three types of number features; morphological, grammatical, and conceptual number, with reference to Nickels et al.'s (2015) model of lexical access in speech production. The morphological number refers to whether a noun receives the morphological plural morpheme or not (*cat* vs. *cats*).

The morphological number is not always identical to the grammatical number; for instance, some English nouns do not have morphologically plural forms, while they can still function as being grammatically plural (e.g., *This sheep has been cloned* vs. *These sheep have been cloned*, taken from Corbett, 2000, p.66). The grammatical number can be distinguished from the conceptual number as well; for example, so-called pluralia tantum, such as *scissors* and *trousers*, are conceptually singular, but they are grammatically plural in how these nouns conceptually represent a single entity, while showing plural agreement (e.g., *the blue trousers are mine*).

Two key factors related to the number feature are the Animacy Hierarchy and the markedness of number. The Animacy Hierarchy predicts that languages differ as to the types of nouns that can be morphologically pluralized (Corbett, 2000). The hierarchy is ordered such that humankind nouns (1st person, 2nd person, 3rd person, kin, human) are in the higher position, and inanimate nouns occupy the lowest position, with animate nouns in the middle. If a language allows the morphological pluralization of inanimate nouns, all the other types of nouns in the higher positions in the hierarchy can be pluralized.

The other factor, the markedness of number, applies to both the grammatical and conceptual numbers. From the grammatical viewpoint, marked forms are considered to be derived from unmarked forms; that is, the singular form is unmarked and the plural form is marked. This view has been supported by the fact that only the marked forms cause number-agreement errors (e.g., Bock & Eberhard, 1993; Eberhard, 1997). However, from the viewpoint of the conceptual number, plural forms are considered to be unmarked, given that nouns with the unmarked feature can be a subset of the ones with the marked feature (Bale, Gagnon, & Khanjin, 2011; Sauerland, 2003; Sauerland et al., 2005). Since singularity can be a subset of plurality as plural nouns can sometimes denote “one or more” interpretations as argued by Zweig (2009), plural forms are considered to be conceptually unmarked forms, and singular forms are rather marked.

One novelty that this dissertation provides is the view that form-meaning mapping of the number feature involves morphological, grammatical, and conceptual levels. This view has been widely accepted in the field of psycholinguistics and theoretical linguistics research, which is reviewed in Chapter 2. Bearing this distinction and the problems with the previous SLA research in mind, the present study conducted two psycholinguistic experiments that directly tapped the form-meaning association between morphologically singular or plural nouns and their grammatical meaning of singularity or plurality and conceptual meaning of singularity or plurality. The research questions of this dissertation were:

RQ1        Is it possible for Japanese EFL learners to link morphological and conceptual numbers, despite having a first language that does not morphologically mark the number feature?

RQ2        It is possible for Japanese EFL learners to link morphological and grammatical numbers, despite having a first language that does not morphologically mark the number feature?

RQ1 was examined in Chapter 3, and RQ2 was investigated in Chapter 4.

Chapter 3 discussed Experiment 1 that focused on the representation of the conceptual number. This

was done using a sentence-picture matching task, which is an expansion of Jiang et al. (2017). The participants were 32 native speakers of English and 96 Japanese EFL learners. In the sentence-picture matching task, the participants first looked at a picture consisting of three objects and then read a sentence describing the picture. The task was to judge whether the sentence and the picture matched with regard to colors or locations of the objects. The critical items did not match the morphological number of nouns in the sentence and the number of objects in the picture. If the participants activated the conceptual number from singular or plural nouns and matched them with the conceptual number of the objects, they would be likely to show response time (RT) delay in the two mismatch conditions.

Chapter 4 covered Experiment 2, which mainly investigated the association of the morphological number and the grammatical number. The task in Experiment 2 was a stroop-like number judgment task, where the participants were engaged in a self-paced reading task and were asked to judge the number of words that they had been reading when prompted, as either one or two. The RTs to the judgment were expected to be delayed when the participants judged plural nouns as one word because of the intervention of mentally activated grammatical plurality (Berent et al., 2005; Patson & Warren, 2010). In this task, there were two types of conditions: judging plural nouns as one word (one-word condition) and judging singular nouns as two-word (two-word condition). If the participants activated the grammatical number of nouns, it was expected that they would take more time to judge grammatically plural nouns (e.g., *cats*, *rabbits*) as one word, and grammatically singular nouns (e.g., *the cat*, *a cat*, *one*) as two words. The same participants who participated in Experiment 1 participated in Experiment 2.

In Chapter 5, the results of the two experiments were briefly summarized and discussed from the viewpoint of the grammatical number, the conceptual number, and the contrast between the two types of number features. The results of Experiment 1 found that native speaker participants' RT was slower in both singular-noun/multiple objects and plural-noun/single-object conditions, indicating that native speaker participants were sensitive to conceptual number mismatch. In contrast, Japanese EFL learner (JEFL) participants showed a mismatch effect only in the singular-noun/multiple objects condition.

The results of Experiment 2 found that both the NS group and JEFL group judged morphologically plural nouns to be one-word more slowly than they judged morphologically singular nouns. The delay in the two-word conditions differed in the two groups of the participants. Clear interference effect was found in a+sg condition for the NS group and in one+sg condition for the JEFL group.

The JEFL participants' failure in making the association between morphological plurality and conceptual plurality and that between morphological singularity and grammatical singularity could be explained by the markedness of number, given that plurality is conceptually unmarked and singularity is grammatically unmarked. This contrasting result revealed in the two experiments suggests that the form-meaning mapping of the number feature representation can no longer be assumed to be a one-to-one form-meaning mapping relationship, but that the conceptual and grammatical number should have a link to the morphological number independently.

Later, in Chapter 5, several limitations that could have impacted the interpretation of the results are

discussed. The first one is the explicit instruction that required the participants to ignore the number mismatch in Experiment 1, which might have changed the process of number information. The second one is the lack of any reliable effect of the proficiency of participants. The proficiency level of the participants was largely at a CEFR B level, and whether the more advanced learners would show a similar tendency as NS should be investigated in future research. The third one is the animacy of the nouns used in the two experiments. Imbalanced proportions of animate and inanimate nouns used in the two experiments could have added to the conflicting nature of the results obtained in the two experiments.

In the last chapter, several directions for future research are proposed. First, animacy of nouns should be of interest for future research that investigates number feature representation. Second, from a methodological viewpoint, more research that attempts to investigate the form-meaning mapping relationship on the acquisition of morpheme is needed. Third, future research should consider the problem regarding L1 speakers as the baseline. Since the responses of L1 speakers are not necessarily the most desirable or accurate ones, methods for interpreting the discrepancy between L1 speakers and L2 speakers should be carefully considered in future studies. It is hoped that this dissertation will motivate further studies in investigating form-meaning mapping of the second language grammar acquisition.