Choice Between the Synonymous Pairs of *Sutoppu* and *Teishi*: A Case Study on Synonyms of Western Loanwords and Sino-Japanese in Modern Japanese Based on Corpus

DENG Qi

School of Foreign Studies, Northeastern University, China

dengqixq123@gmail.com

Abstract

This paper discusses the results of a corpus-based study on the usage and functions of the western loanword *sutoppu* and its synonymous Sino-Japanese, *teishi*. Our analyses focus on the following four perspectives: (1) frequency, (2) conjugation types, (3) characteristics of genres used, and (4) collocations. The results show that *sutoppu* is used mostly in a causative form, implying something compulsory or intentional, whereas *teishi* is mostly used in its passive form to imply inevitability. In addition, *sutoppu* emphasizes instantaneity and has the meaning of intentionally stopping something with great resistance. Whereas *teishi* permits a certain duration of time and describes the state of being stopped.

Keywords: western loanwords, Sino-Japanese words, *sutoppu*, *teishi*, synonyms

Povzetek

Članek obravnava rezultate korpusne študije o uporabi in vlogah novejše prevzete besede *sutoppu* in njene sino-japonske sopomenke *teishi*. Analize se osredotoča na naslednje štiri vidike: (1) pogostnost, (2) vrste spreganja, (3) značilnosti uporabljenih uporabljeni žanrov in (4) kolokacije. Rezultati kažejo, da se *sutoppu* večinoma uporablja v vzročni obliki, kar nakazuje na obvezno ali namerno dejanje, medtem ko se *teishi* večinoma uporablja v pasivni obliki in s tem izraža neizogibnost. Poleg tega *teishi* dovoljuje določen čas izvedbe oziroma opisuje stanje ustavljanja, *sutoppu* pa poudarja trenutnost in ima pomen namernega ustavljanja nečesa z velikim odporom.

Ključne besede: novejše prevzete besede, sino-japonske besede, *sutoppu*, *teishi*, sinonimi

1   Introduction

Japanese vocabulary can be classified into four lexicon strata according to its origin: native (or Yamato), western loanwords, Sino-Japanese words, and hybrid vocabulary (Sugimoto & Iwabuchi, 1994; Ito & Mester, 1999; Nihongogakkai, 2018). Among the aforementioned four strata of Japanese, western loanwords and Sino-Japanese can function as verbs by adding *suru* to the noun. It should be noted that there are many synonymous pairs between *suru*-verbs in western loanwords and Sino-Japanese words, and their proper usage is one of the major difficulties for learners of Japanese.

The reason why learners feel it difficult to learn the distinctive usage of the synonymous *suru*-verb in western loanwords and Sino-Japanese can be summarized as follows: (1) western loanwords are one of the most difficult strata to learn, and the acquisition of western loanwords is accompanied by various difficulties (Jinnai, 2008, Yamasita et al., 2018). (2) Moreover, it has been pointed out that there is no description in dictionaries on how to use them correctly (Yamashita et al., 2018). Although there have been some case studies on the criteria for the use of synonymous *suru*-verb pairs in western loanwords and Sino-Japanese, it is clear that there is still a lack of basic information to help learners distinguish the difference in the usage (Mogi, 2015).

To address the above-mentioned problems, in this study, we investigate the semantic differences between *suru*-verb western loanwords and Sino-Japanese, by taking the pair of *stoppu* and *teishi* as an example. Regarding the selection of the target words in this study, Yamashita et al. (2018) took up 9 pairs of synonymous *suru*-verb in western loanwords and Sino-Japanese and conducted an awareness survey among 110 native Japanese speakers. Yamashita's study revealed that 7 of the 9 pairs can be classified into three major types, while the difference between 2 pairs (ストップ *stoppu* and 停止 *teishi*, テスト *tesuto* and 試験 *shiken*) cannot be well explained. However, Yamashita (2018) focused his investigation on the introspection of native speakers. Since a corpus-based study is considered valid when the introspection of native speakers does not work (Ishikawa, 2012), this study will attempt to elucidate the usage of ストップ *sutoppu* (hereinafter referred to as *sutoppu*) and 停止 *teishi* (hereinafter referred to as *teishi*) as an example, to cover the first limitation.

2   Literature review

The study of synonyms has been a fruitful area of corpus linguistics (Gries & Otani, 2010), which is discussed in many introductory books on corpus linguistics, such as Kennedy (1998), McEnery & Wilson (2001), etc. Corpus data can not only provide insights into naturally occurring language (Sinclair, 1991) but are also regarded as an effective tool to distinguish the differences between synonyms (Biber et al., 1998; Hunston, 2002; Moon, 2010). Besides the works which have investigated the

differences between synonyms using corpora in English (Biber et.al, 1996; Liu, 2010; Chuang, 2011; etc.), many studies have compared the semantic functions of synonyms in Japanese (Sugimoto, 2009; Shinya, 2010; Zhao, 2013; etc.).

Regarding the works that have compared the semantic functions of synonymous western loanwords and Sino-Japanese, for example, Miyata & Tanaka (2006) took up the western loanword リスク *risuku* and compared it with its synonyms 危険 *kiken*, 危険性 *kikensei* (all of which mean "a risk") by using a newspaper database (*Asahi*, *Mainichi*, and *Yomiuri* newspaper from 2003 and 2004). Miyata (2007) compared メリット *meritto* and its synonym 利点 *riten* (both of which mean "a merit") also by using a newspaper database (*Asahi*, *Mainichi*, and *Yomiuri* newspapers from 2003, 2004, and 2005). Sato (2013) compared ムード *mūdo* with 雰囲気 *fun'iki* (both of which mean "atmosphere/mood") using a newspaper database (*Asahi* newspaper) and clarified the semantic features of each.

However, there are not so many studies that have compared synonymous *suru*-verb western loanwords and Sino-Japanese. The following is an overview of studies on synonymous pairs between *suru*-verb western loanwords and Sino-Japanese from the following two perspectives: the qualitative survey on the awareness of native Japanese speakers, and quantitative surveys of the corpus.

Regarding the awareness survey, Yamashita et al. (2018) conducted a survey among 110 native Japanese speakers (teachers and students) to clarify the differences between synonymous *suru*-verbs as either western loanwords or Sino-Japanese. The task was two-fold: the first was) sentence production, in which the participants were asked to write down sentences they could think of, using each of the synonyms, and the second was freewriting about their findings on the differences in the usages of the same synonyms. Results revealed that 7 of the 9 pairs are classified into three major types: (1) differences are seen in terms of the semantic nuance (e.g. 開始する *kaishi-suru*/ スタートする *sutāto-suru* [begin]), B(2) differences are seen in terms of the number of senses (e.g. 点検する *tenken-suru*/ チェックする *chekku-suru* [investigate, check]), and (3) differences are seen in terms of the range of use (e.g. 練習する *renshū-suru*/ トレーニングする *toreningu-suru* [train, have a physical practice]). However, the difference between the two pairs (ストップ *stoppu* and 停止 *teishi*, テスト *tesuto* and 試験 *shiken*) could not be well explained.

About the quantitative surveys, Chen (2014) used a newspaper database to clarify the semantic frames of western loanwords, ケア *kea*, and Sino-Japanese, 介護 *kaigo* (both of which mean "care") by classifying the co-occurrences of these two words. Mogi (2015) conducted a survey using the *Balanced Corpus of Contemporary Written Japanese* to compare the similarities and differences between マークする *māku-suru* and 記録する *kiroku-suru* (all of which mean "to mark") from the perspective of feature genres and co-occurring objects.

Although these studies have contributed a lot to a better description of the differences between synonymous western loanwords and Sino-Japanese, there is still room for improvement both in the database used as well as in the perspectives investigated. Regarding the database, many studies use relatively small databases, especially newspaper databases (Miyata et al., 2006; Miyata, 2007; Sato, 2013; Chen, 2014). As for the perspectives, there are many studies that focus on the frequency of appearances and collocations (Miyata et al., 2006; Miyata, 2007; Chen, 2014; Mogi, 2015), while only a few studies focus on the parts-of-speech (conjugation types) and characteristically used genres. Frequency and collocations may be considered a useful measure in identifying the differences between synonyms (Biber et.al, 1998; Evison, 2010; Aroonmanakun, 2015), and the preferable register and/or part-of-speech in which the words appear may also help students to understand the differences (Shaw, 2011; Phoocharoensil, 2020). Therefore, this study takes up *stoppu* and *teishi* as an example to clarify the differences in semantic properties from the following four perspectives: (1) frequency of appearance, (2) parts of speech and conjugation types, (3) characteristically used genres, and (4) collocations.

3   Aims and methodology

This section outlines the research questions, data, and methodology used in this study. We give an overview of the definitions of the two words in several dictionaries in Section 3.1 and set out research questions in Section 3.2. The compilation of the corpora is delineated in Section 3.3. The methodology employed to address the research questions is described in Section 3.4.

3.1   Dictionary descriptions of *sutoppu* and *teishi*

Prior to conducting the survey, we first refer to the dictionary definitions of *sutoppu* and *teishi* in four kinds of Japanese-Japanese (JJ) and Japanese-English (JE) dictionaries. The definitions in JJ are translated into English by the author. Definitions related to technical terms are excluded.

In these definitions, both *sutoppu* and *teishi* mean to stop and to desist, and there is no specific information on the conjugation types or genres in which words are likely to be used. Therefore it is considered to be highly difficult for learners to understand the specifics of usages of the two words by looking up a dictionary. To better distinguish these two words according to their actual usages, further investigation on how these two words are used is needed.

Table 1: Definition of *sutoppu* and *teishi* in dictionaries

Source	*stoppu*	*teishi*
JJ: 大辞林 *Daijirin*	（名）する。(1)とまること。やめること。(2)とまれの信号。 *(mei)suru.* (1) *Tomaru koto. Yameru koto.* (2) *[tomare] no shingo.* (1) to stop. (2) stop signal.	（名）する。(1)動いていたものがとまること。また、とめること。(2)していたことをやめること。また、やめさせること。 *(mei) suru.* (1) *Ugoiteita mono ga tomaru koto. Mata, tomeru koto.* (2) *Shiteita koto wo yameru koto. Mata, yame saseru koto.* (1) To stop something that was moving. (2) To stop doing what you were doing, or to make someone stop.
JJ: 新明解 *Shin-Meikai*	(1)［ーする］止まること。(2)止まれ（のしるし） (1) [-*suru*] *tomaru koto.* (2) *tomare* (*no shirushi*). (1) to stop. (2) a signal sign to stop.)	［ーする］(1)［移動しているものが］中途で止まること。(2)活動をやめ（させ）ること。 [-*suru*] (1) [*Idou shiteiru mono ga*] *chuuto de tomaru koto.* (2) *Katsudou wo yame* (*sase*) *ru koto.* (1) To stop a moving object. (2) To stop an activity.
JE: *Geneus*	n. stop. v.stop, halt.	n. (1) a stop; (2) suspension. v. (1) stop; (2) come to a stop (halt); (3) suspend.
JE: *Wisdom*	n. a stop. v. stop.	n. (1) (a) stoppage, a stop; (2) (a) suspension. v. (1) stop, pause; (2) cease; (3) suspend.

3.2   Aims and a research question

This study will elucidate the use of *suru*-noun western loanwords and Sino-Japanese, taking *sutoppu* and *teishi* as an example, for which the differences in the meaning are sometimes unknown even to Japanese native speakers. Although there are many linguistic perspectives regarding their semantic functions, this study elucidates the distinction between *sutoppu* and *teishi* from four perspectives: (1) frequency, (2) conjugation types, (3) characteristically used genres, (4) collocations. Specifically, we set up the following 4 research questions (RQs).

1.   What are the differences in the frequency of use?
2.   What are the differences in conjugation types?
3.   What are the differences in the genres used?
4.   What are the differences in collocations?

To verify these research questions based on corpus data, we further developed hypotheses for each question to make the verification process more systematic.

1.   (H1) According to some previous studies, the frequency of western loanwords is higher than that of Sino-Japanese (e.g., Miyata (2007) (メリット *meritto* vs. 利点 *riten*: 7898 vs. 5125)), while others found the frequency of Sino-Japanese to be higher than western loanwords (e.g., Miyata (2006) (リスク *risuku* vs.危険 *kiken*: 4671 vs. 8091), Chen (2014) (ケア *kea* vs. 介護 *kaigo*: 1097 vs. 3766)). Since *sutoppu* and *teishi* are expected to be used more frequently in socio-economic contexts, such as ストップ高 *sutoppu daka* for stock prices and 緊急停止 *kinkyu teishi* in issues regarding nuclear power plants, they are closer to リスク *risuku*/ 危険 *kiken* and ケア *kea*/ 介護 *kaigo* described in the studies above, and because of this, we expect the frequency of Sino-Japanese to be higher.

2.   (H2) Regarding the conjugation types, in lexical descriptions, there was no clear difference in verbosity and intransitivity, although details of the glosses were slightly different. On this basis, it is expected that the part-of-speech and conjugation types of the two words will be equivalent.

3.   (H3) Regarding the characteristic genres in which they are used, it was pointed out that western loanwords are more likely to be used in a more casual style and in everyday conversation, while Sino-Japanese words are relatively more likely to be used in a more formal style (e.g. Zhou (2014), Baba (2018)). Consequently, it is expected that *sutoppu* will be used more frequently in less formal genres like 'blogs' and 'magazines', while *teishi* will be used more frequently in more formal genres like 'white papers' and 'laws'.

4.   (H4) Regarding the collocations, (1) since western loanwords are assumed to be less restrictive in terms of word types that they co-occur with (e.g. Chen (2018) stated that ケア *kea* co-occurs with native Japanese, Sino-Japanese and western loanwords, but 介護 *kaigo* mainly co-occurs with native Japanese and Sino-Japanese), it is expected that *sutoppu* co-occurs with native Japanese, Sino-Japanese and western loanwords, but *teishi* mainly co-occurs with native Japanese and Sino-Japanese. (2) In addition, as mentioned in Miyata et al. (2006), when there is an existing word with a similar meaning, the reason for the existence of the western loanwords is that there is a certain separation between it and the existing word. So we expect that there will also be a difference in the co-occurrence of *sutoppu* and *teishi*.

3.3   Corpora

In this study, we use the *Balanced Corpus of Contemporary Written Japanese* (現代日本語書き言葉均衡コーパス *Gendai nihongo kakikotoba kinkō kōpasu*, henceforth BCCWJ), which is the first large-scale balanced corpus on the Japanese language developed mainly by the National Institute for Japanese Language and Linguistics (NINJAL). To capture the diverse reality of the written language, BCCWJ consists of

three subcorpora (publication subcorpus, library subcorpus, and special-purpose subcorpus) and covers a wide range of text registers including 'books in general', 'magazines', 'newspapers', 'governmental white papers', 'best-selling books', 'internet bulletin-board', 'blogs', 'school textbooks', 'minutes of the national diet', 'publicity newsletters of local governments', 'laws', and 'poetry verses'. The amount of data is 100 million words, which is comparable to BNC (Ishikawa, 2012, Maekawa et al., 2014).

3.4   Methodology

Regarding the RQ1 (frequency of use), we investigate the frequency of *sutoppu* and *teishi* in the BCCWJ.

For RQ2 (conjugation types), we first investigate the frequency with which the two words *sutoppu* and *teishi* are used as nouns and verbs respectively. We follow the conjugation patterns of verbs in BCCWJ (11 categories including negative form, continuous form, hypothetical form, imperative form, and others). The specific conjugation types are shown in Table 2. English translations are taken from *A Handbook of Japanese Grammar Patterns for Teachers and Learners* (Jammassy, 2015).

Table 2: The conjugation types of verbs

Conjugation patterns	Form	Example
連用形 *renyōu-kei*	conjunctive form	し *shi-*
	polite form	します *shi-masu*
	te-form	して *shi-te/*しまして *shi-mashite*
	ta-form	した *shi-ta/*しました *shi-mashita*
連体形 *rentai-kei*	dictionary form	する *suru*
終止形 *shuushi-kei*	dictionary form	する *suru*
仮定形 *katei-kei*	conditionals (*ba*-form)	すれば *sure-ba*
意志推量形 *ishisuiryō-kei*	volitional form	しよう *shi-yō*
可能態 *kanō-tai*	potential form	できる *dekiru/*できます *dekimasu*
命令形 *meirei-kei*	command form	しろ *shiro/*せよ *seyo*
未然形 *mizen-kei (*される *sareru)*	passive form	される *sareru/*されます *saremasu*
未然形 *mizen-kei (*させる *saseru)*	causative form	させる *saseru/*させます *sase-masu*
未然形 *mizen-kei (*せ *se)*	*se*-form	せ *se-*
未然形 *mizen-kei (*一般 *ippan)*	negative form	しない *shi-nai*

Regarding the RQ3 (genres), we investigate the frequency of *sutoppu* and *teishi* in 12 genres of BCCWJ (excluding prosody). In order to make appropriate comparisons between the genres, we adjust the raw frequency into frequency per million words.

Regarding the RQ4 (collocations), we conduct correspondence analysis to compare the co-occurences of the two words.

Correspondence analysis (Benzécri, 1973; Greenacre, 1984, 2017; etc.) has recently been adopted in many corpus studies. It is a method of data visualization by translating two-way and multi-way tables into more readable graphical forms (Greenacre, 2017; Beh & Lombardo, 2021). Correspondence analysis simultaneously classifies cases and variables, which are both called categories, and displays the internal structure existing in a set of item-category data in a simple two-dimensional scatter plot, which enables us to intuitively examine how the categories or items are mutually interrelated and grouped (Ishikawa, 2016).

Specifically, we separate both *sutoppu* and *teishi* into two groups: when either used as nouns or as verbs.

(1) When the two words are used as nouns, we extract the first word and the second word on the left of *sutoppu* or *teishi*, and the first word on the right of *sutoppu* or *teishi*. In addition, we sort the collocations and extract the top 15 words (if there was a word whose frequency matched that of the 15th word, all words with the same frequency were included). Furthermore, we make a frequency table with each genre of *sutoppu* and *teishi* as the first item (18 genres excluding the genre in which the frequency of the top word is less than 20), and the top words of co-occurrence as the second item (84 words excluding redundancy), and then conduct a correspondence analysis.

(2) When the two words are used as verbs, we first manually extract the objects, and then extract the top 30 words (if there is a word whose frequency agrees with the 30th word, we include all words whose frequency are the same). Next, we make a frequency table in which each genre of *sutoppu* and *teishi* is the first item (10 genres excluding the genre in which the frequency of the top word is less than 20), and the top words of the objects are the second item (64 words excluding duplicates) and conduct a correspondence analysis.

4   Results and discussion

This section presents the results and discussions on each of the four perspectives described above: frequency (RQ1) in Section 4.1, conjugation types (RQ2) in Section 4.2, characteristically used genres (RQ3) in Section 4.3 and collocations (RQ4) in Section 4.4.

4.1   The comparison of frequency

First, the frequency of *sutoppu* and *teishi* in BCCWJ are shown in Figure 1 below.
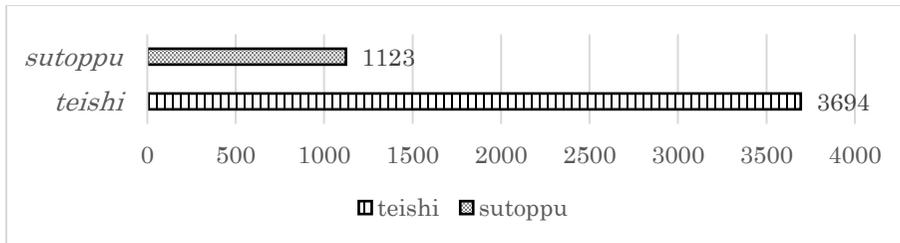

Figure 1: Frequency of *sutoppu* and *teishi*

Figure 1 shows that *teishi* is used more than three times as often as *sutoppu*, suggesting that Sino-Japanese is used with a much higher frequency.

As mentioned in the hypothesis, frequency comparisons between Sino-Japanese and western loanwords with similar meanings have been conducted in many studies, but the results have been disparate. For example, Miyata (2006) found that the frequency of the Sino-Japanese, 危険 *kiken,* was 30% lower than that of the western loanwords, リスク *risuku*. On the other hand, Chen (2014) showed that the frequency of the Sino-Japanese, 介護 *kaigo*, was 2.4 times higher than that of the western loanwords, ケア *kea*. In this study, *teishi* is 2.3 times more frequent than *sutoppu*, showing a similar result to the use of 介護 *kaigo* and ケア *kea* in terms of frequency relationship. Then, what causes the selection rate of Sino-Japanese for 危険 *kiken*/ リスク *risuku* to be low and that for *teishi*/ *sutoppu* high?

Firstly, as mentioned in the hypothesis, there is a difference in the contexts in which the words are used. In contexts closer to daily life, western loanwords are widely used to replace Sino-Japanese, while words that are frequently used in social and economic contexts, Sino-Japanese with high formality may be preferred.

Secondly, the difference may be caused by the part-of-speech nature of western loanwords. リスク *Risuku* is a pure noun that cannot be inflected, while *sutoppu* is a noun that can be inflected and used as a verb. In general, nouns refer to concrete objects, especially to specific, static objects with clear contours, so the one-to-one correspondence between an object and a word is strong and difficult to be replaced with other words. Verbs, on the other hand, are words that express the totality of changing motion, so their indicative content is usually broader than that of nouns. For example, if we compare the content implied by the noun 'oranges' with that implied by the verb 'eat', we find that the latter is much broader, more ambiguous, and less semantically specific. As a result, the strength of the one-to-one correspondence between verbs can be relatively lower, and as a result, a verb can be more easily substituted by another word. For this reason, the noun リスク *risuku* is rarely substituted

by 危険 *kiken*, while *sutoppu*, which can be used both as a verb and a noun, may frequently be substituted by *teishi*. This explanation also applies to the case of 介護 *kaigo* and ケア *kea*, which also have a high rate of Sino-Japanese selection.

Based on the above, the following two sections will look at conjugation types (parts of speech) (RQ2) and style (genre) (RQ3) separately.

4.2   The comparison of conjugation types

Next, we investigate the frequency of noun and verb uses of *sutoppu* and *teishi,* respectively. The results are shown as Figure 2 below.
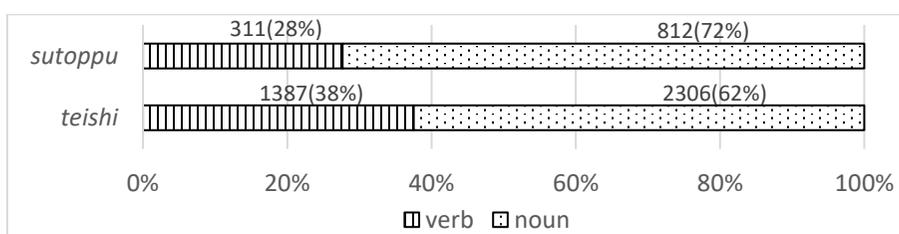

Figure 2: Frequency of the noun and verb uses of *sutoppu* and *teishi*

Figure 2 shows that both words are used more as nouns than verbs, however, the proportion of noun use of *sutoppu* was 72%, which is 10% higher than that of *teishi*.

Based on the BCCWJ's classification of verb conjugations, we can classify the verb uses of the two words as shown in Figures 3 and 4 below.
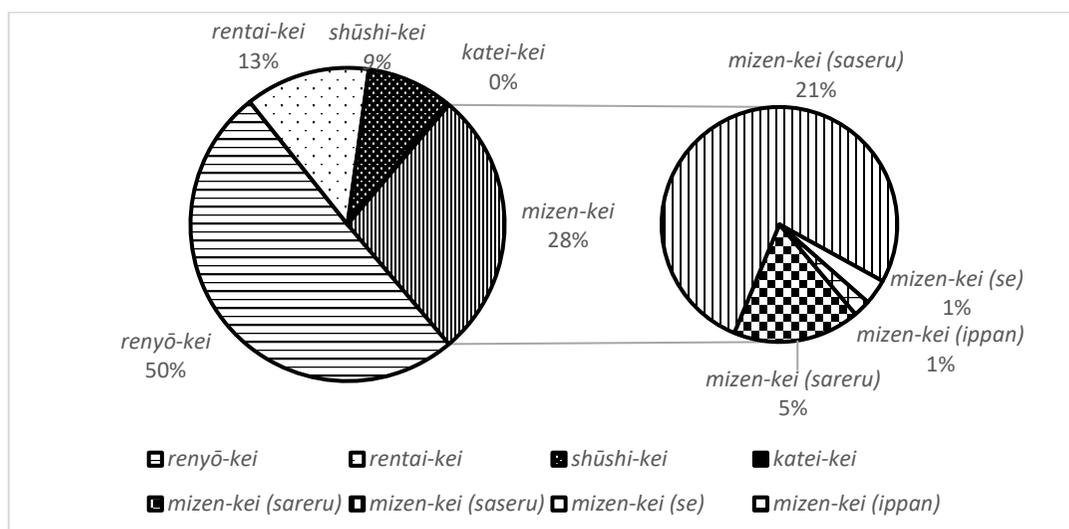

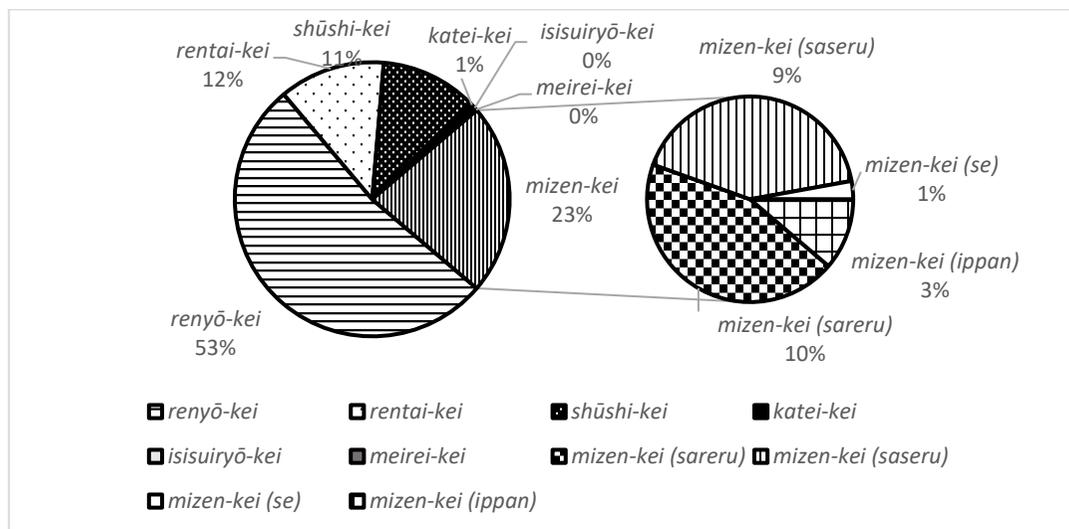**Figure 3:** Conjugation types of *sutoppu* used as a verb

Figure 4: Conjugation types of *teishi* used as a verb

Figures 3 and 4 show that the causative-passive form of *sutoppu* is 21.22%, which is 126.47% more than *teishi*, and the passive form of *sutoppu* is 4.82%, which is 51.56% less than *teishi*. In other words, *sutoppu* is used mostly in the active form and implies the meaning of compulsory and intentional, while *teishi* is used mostly in the passive form and may include the meanings of being situational passive, or inevitable.

As stated in the hypothesis, the part-of-speech and conjugation types of the two words seem to be equivalent from the point of view of dictionaries, but the results suggest that, contrary to the hypothesis, *sutoppu* is used more often as a noun, and is more likely to include the meaning of compulsory. If this point could be added to the dictionary, it would make it easier to understand the usage of the two words.

4.3   The comparison of genres

Concerning RQ1 and RQ2 above, we investigated the differences between *sutoppu* and *teishi* from two perspectives, frequency, and conjugation types. The results show that (1) in terms of frequency, *teishi* is used more than twice as often as *sutoppu*, (2) in terms of the conjugation types, *sutoppu* has more noun usages than *teishi*, and *sutoppu* has been used in its causative form one time more than *teishi*, emphasizing its meaning of forceful. So what differences exist in the genre preferences of the two words? The following are the results of a survey of the frequency of the two words in each genre of the BCCWJ.

Table 3: Frequency and ratio of *sutoppu* and *teishi* used for each genre

Genres (Abbreviations in BCCWJ)		*sutoppu*		*teishi*	
		PMW	ratio (%)	PMW	ratio (%)
books	published book(PB)	7.64	6	35.93	5
	library book(LB)	7.37	6	24.46	4
	best-selling books (OB)	5.61	4	20.58	3
magazines (PM)		25.87	20	29.92	4
newspapers (PN)		15.33	12	66.41	10
blog (OY)		30.61	24	24.92	4
school textbooks (OT)		2.15	2	25.85	4
publicity newsletters of local governments (OP)		13.32	10	37.55	5
minutes of the national diet (OM)		9.21	7	42.72	6
bulletin-board (OC)		9.36	7	38.22	5
white papers (OW)		3.48	3	56.52	8
laws (OL)		0.00	0	293.75	42

Three inferences can be made from Table 3. To begin with, *sutoppu* is used much more in the 'blogs' and 'magazines' genres, and also seen in the 'newspapers' and ' publicity newsletters of local governments' genres, but not at all in the 'laws' genre. It seems that *sutoppu* was found to be favored in more casual contexts.

Furthermore, *teishi* is used more in the 'laws' genre and to some extent also in the 'newspapers' genre. In other words, the use of *teishi* is preferred in more official contexts. The hypothesis stated that *teishi* is more frequently used in more formal genres than *sutoppu* because western loanwords are more likely to be used in a more casual style and daily conversation, while Sino-Japanese are more likely to be used in a more stiff style and official contexts. On these two points, we can say that the hypothesis is supported.

Finally, As for bias toward specific genres, *teishi* is overwhelmingly used in the 'laws' genre, which is more biased than *sutoppu*. It has often been pointed out that western loanwords have the function of creating a sense of freshness and making positive use of stylistic differences, but the present results suggest that Sino-Japanese may also have the function of highlighting differences between highly formal styles and other genres.

4.4   The comparison of collocations

Last but not least, we will focus on the words that co-occur with the two words for comparison. We will first look at the case of noun usage.
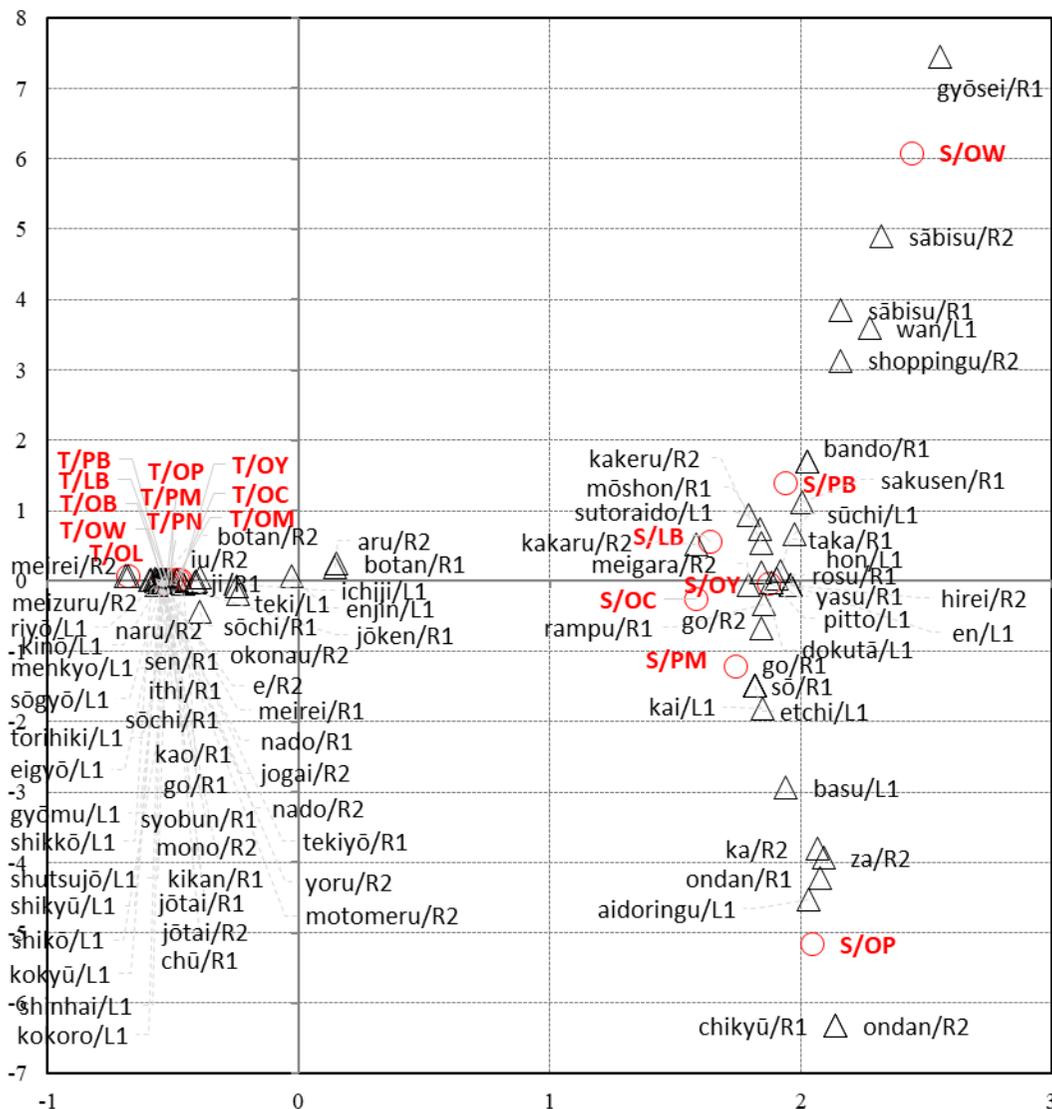

Figure 5: Scatter plots of feature words co-occurring with two words used as a noun

Figure 5 shows the results of the correspondence analysis which has the genres of *sutoppu* and *teishi* as first items and the 84 top co-occurring words as second items. The contribution of dimension 1 (vertical axis) and dimension 2 (horizontal axis) are 17.25% and 12.59%, respectively, which explains 29.83% of the total. As seen in Figure 5, *sutoppu* and *teishi* are separated on the left and right sides of the figure, and the words characteristic of the two words can be summarised in Table 4 below.

Table 4: Characteristic words for *sutoppu* and *teishi*

	sutoppu	*teishi*
left1	ワン *wan* (one), アイドリング *aidoringu* (idling), 数値 *sūchi* (numerical value), 円 *en* (yen), 本 *hon* (quantity unit), バス *basu* (bus), ビット *bitto* (bit), 回 *kai* (quantity unit), ドクター*dokutā* (doctor), エッチ *etchi* (etch), ストライド *sutoraido* (stride)	執行 *shikkō* (execution), 利用 *riyō* (use), 操業 *sōgyō* (operation), 呼吸 *kokyū* (breathing), 機能 *kinō* (function), 支給 *shikyū* (payment), 心 *kokoro* (heart), 心肺 *shinhai* (cardiopulmonary), 営業 *eigyō* (business), 業務 *gyōmu* (work), 免許 *menkyo* (license), 出場 *shutsujō* (one's turn to go on satge), 取引 *torihiki* (transactions), 思考 *shikō* (thinking),一時 *ichiji* (for a time), 的 *teki* (suffix), エンジン *enjin* (engine)
right1	行政 *gyōsei* (administration), サービス *sābisu* (service), 地球 *chikyū* (earth), 温暖 *ondan* (global warming), バンド *bando* (band), 作戦 *sakusen*(strategy), ロス *rosu* (loss), 高 *taka* (a limit high of a stock price), 安 *yasu* (a limit low of a stock price), ランプ *rampu* (lamp), モーション *mōshon* (freeze-fram), 層 *sō* (layer), 語 *go* (word), ボタン *botan* (button)	など *nado* (etc.), 条件 *jōken* (condition), 顔 *kao* (face), 提供 *tekiyō* (application), 処分 *shobun* (punishment), 措置 *sochi* (measure), 期間 *kikan* (period), 命令 *meirei* (command), 状態 *jōtai* (state), 位置 *ichi* (location), 中 *chū* (in), 線 *sen* (line), 後 *go* (after), 装置 *sōchi* (device), 時 *ji* (time)
right2	サービス *sābisu* (service), ショッピング *shoppingu* (shopping), 温暖 *ondan* (warm), ザ *za* (the), 化 *ka* (-ificaion), 比例 *hirei* (proportion), ゴール *gōru* (goal), かける *kakeru* (make), 銘柄 *meigara* (brand name), かかる *kakaru* (make), ある *aru* (be)	命令 *meirei* (command), 命ずる *meizuru* (command), など *nado* (etc.), もの *mono* (person), よる *yoru* (according to), 求める *motomeru* (demand), へ *e* (to), 除外 *jogai* (exclusion), 行う *okonau* (do), ボタン *botan* (button), 状態 *jōtai* (state), なる *naru* (become), 言う *iu* (say), する *suru* (do)

Regarding the word types of characteristic words, as hypothesized, *sutoppu* co-occurs with native Japanese (e.g. 高 *taka*, 安 *yasu*), Sino-Japanese (e.g. 数値 *sūchi*, 比例 *hirei*) and western loanwords (e.g.ドクター *dokutā*, モーション *mōshon*), but *teishi* mainly co-occurs with Sino-Japanese (e.g. 利用 *riyō,* 支給 *shikyū*).

Furthermore, in the words co-occurring with *sutoppu*, many words that express the characteristics of the point at which the *stop* occurs, such as 数値 *sūchi* (numerical value), 高 *taka* (maximum allowable single-day gain (stock exchange)), or 安 *yasu* (maximum allowable single-day loss (stock exchange)), whereas, in the words co-occurring with *teishi*, there are many words with continuity, such as 期間 *kikan* (period), 状態 *jōtai* (state), and 中 *chū* (middle). In other words, *sutoppu* often refers to a point of stopping and rarely includes the meaning of continuation of time, whereas *teishi* is allowed to mean the continuation of time.

Also, *sutoppu* is often used to emphasize the action of stopping something that is moving, or the act of trying to stop, such as ドクターストップ *dokutā sutoppu* (doctor stop: a doctor forbids a patient to do something they think will prevent a disease or a disability from worsening or leading to death) or ストップ地球温暖化 *sutoppu chikyū ondanka* (stop global warming) while *teishi* is often used to emphasize the state or the result of being stopped, such as 免許停止 *menkyo teishi* (license stop) or 営業停止 *eigyō teishi* (business stop), and to express the state of stopping bodily functions, such as 呼吸停止 *kokyū teishi* (stop breathing) or 心肺停止 *shinhai teishi* (cardiopulmonary stop).

The specific examples are given as follows.

(1) この問題にストップをかけるため，無駄なエネルギーを使用しない節約型の暮らしや，自然エネルギーへの転換などが求められています。(OP74_00002)

Kono mondai ni sutoppu wo kakeru tame, muda na enerugī wo shiyō shinai setsuyakugata no kurashi ya, shizen enerugī e no tenkan nado ga motomerareteimasu.

'In order to stop this problem, we need to save energy and switch to renewable energy sources.'

(2) 区は目標の達成に向け，照明設備や空調設備を高効率なものに更新し，装着可能なすべての庁有車にアイドリングストップ装置を装着など，率先して温室効果ガスの排出抑制にも取り組んでいます。(OP30_00002)

Ku wa mokuhyō no tassei ni muke, shōmeisetsubi ya kūchōsetsubi wo kōkōritsu na mono ni kōshinshi, sōchaku kanō na subete no chōyūsha ni aidoringu sutoppu sōchi wo sōchaku nado, sossenshite onshitsukōka gasu no haishutsu yokusei ni mo torikundeimasu.

'In order to achieve the target, the ward is taking the initiative to reduce greenhouse gas emissions by upgrading their lighting and air conditioning systems efficiency, and installing idling stop devices in all government-owned vehicles where they can be installed.'

(3) あと，不動産営業の労働実体は時間に直すと労働基準法以上に働いているケースが多く，そのまま手続きと会社が営業停止になってしまいます。(OC03_00938)

Ato, fudōsan eigyō no rōdō jittai wa jikan ni naosu to rōdō kijunhō ijō ni hataraiteiru kēsu ga ōku, sono mama tetsuzuki to kaisha ga eigō teishi ni natte shimaimasu.

'Also, in many cases, the actual labor of real estate salespeople is more than the labor standard law allows, if it is measured in hours. If the practise is not changed, the company will be suspended from business.'

(4) 特に，心肺停止状態の傷病者の救命率向上に資CPR（心肺蘇生法）の習得に主眼を置き，かつ訓練用人形等を用いた住民体験型の普及啓発活動の積極的な推進が求められている。(OW4X_00479)

Toku ni, shinhai teishi jōtai no shōbyōsha no kyūmeiritsu kōjō ni shiCPR (shinhai soseihō) no shūtoku ni shugan wo oki, katsu kunren-yō ningyō nado wo mochiita jūmin taikengata no fukyū keihatsu katsudō no sekkyokuteki na suishin ga motomerareteiru.

'In particular, there is a need to focus on the learning of CPR (cardiopulmonary resuscitation) to improve the lifesaving rate of injured people in cardiopulmonary arrest, and to actively promote hands-on educational activities using training dolls.'
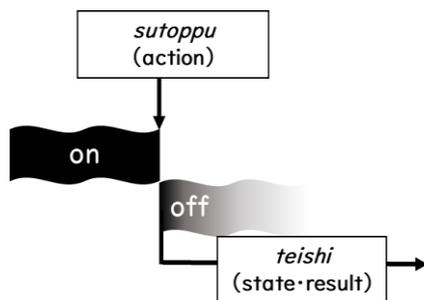
The findings above can be summarised as in Figure 6.

Figure 6: Illustration of the difference in noun usage between *sutoppu* and *teishi*

As shown in Figure 6, *sutoppu* emphasizes instantaneity and the action of stopping, whereas *teishi* allows for a certain amount of time and denotes the state of being stopped.

Next, we will look at cases where *sutoppu* and *teishi* are used as verbs. Figure 6 shows the results of the correspondence analysis with each genre of *sutoppu* and *teishi* as the first items and the 84 top co-occurring objects as the second items. As already mentioned, *sutoppu* is not used at all in the 'laws' genre, so we exclude the 'laws' genre

here. The contribution rates of dimensions 1 and 2 are 30.23% and 18.14%, which explain 50.24% of the total.

As can be seen from Figure 7, each genre of *sutoppu* and *teishi* was found to be divided on left and right. Summarizing their respective characteristic words , we obtain the following Table 5.
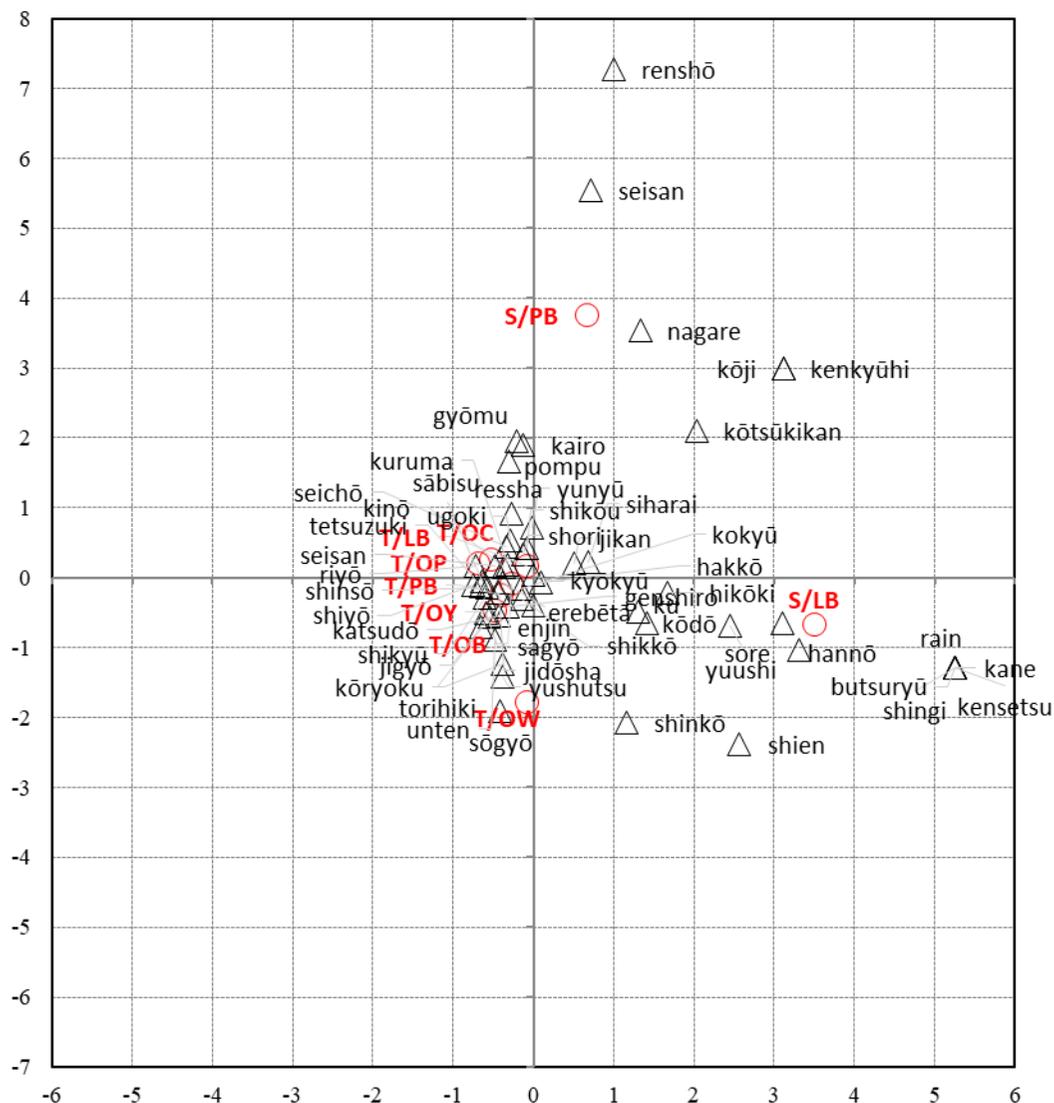

Figure 7: Scatter plots of feature words co-occurring with two words used as verbs

Table 5 shows that in the feature objects of *sutoppu,* there are many words that semantically denote 'something with high resistance or ongoing action', such as ゲーム *gēmu* (game), 物流 *butsuryū* (logistics), and 支援 *shien* (support). On the other hand, in the feature object of *teishi*, there are many nouns related to machines, such as 列車

ressha (train) and エンジン *enjin* (engine), and nouns related to bodily functions, such as 心臓 *shinzō* (heart) and 呼吸 *kokyū* (breathing), which express something with low resistance. Specific examples are given below.

Table 5: Characteristic words for *sutoppu* and *teishi*

Objects of *sutoppu*	Objects of *teishi*
心肺 *shiai* (match),	エレベーター*erebētā* (elevator),
ライン *rain* (line), 金 *kane* (money)	輸入 *yunyū* (import), 供給 *kyōkyū* (supply),
審議 *shingi* (deliberation),	思考 *shikō* (thought),
建設 *kensetsu* (construction),	回路 *kairo* (circuit (electric)),
物流 *butsuryū* (logistics),	処理 *shori* (processing),
反応 *hanno* (reaction)	呼吸 *kokyū* (breath),ポンプ *pompu* (pump),
工事 *kōji* (construction),	動き *ugoki* (movement),列車 *ressha* (train),
研究費 *kenkyūhi* (research funds),	原子炉 *genshiro* (nuclear reactor),
それ *sore* (it), 支援 *shien* (support),	成長 *seichō* (growth),
融資 *yūshi* (loan),	車 *kuruma* (vehicle),
交通機関 *kōtsūkikan* (transportation),	輸出 *yushutsu* (export),
飛行機 *hikōki* (airplane),	機能 *kinō* (function),
行動 *kōdō* (behavior),	エンジン *enjin* (engine),
流れ *nagare* (flow), 句 *ku* (phrase),	活動 *katsudō* (activity),
連勝 *renshō* (consecutive victories),	自動車 *jidōsha* (automobile),
生産 *seisan* (production),	再生 *saisei* (regeneration),
支払い *shiharai* (payment),	運転 *unten* (operation),
時間 *jikan* (time),	作業 *sagyō* (operation),
発行 *hakkō* (publishing)	心臓 *shinzō* (heart),支給 *shinkyū* (payment),
	サービス *sābisu* (services),
	事業 *jigyō* (business),
	使用 *shiyō* (use), 利用 *riyō* (use)

(5) 春先なのに数十年ぶりの大寒波がおとずれ，雪がふりはじめ，やがて猛吹雪にかわって，多くの交通機関がストップし，もちろん飛行機もとばず…(LB02_00085)

harusaki na noni sūjūnen buri no daikampa ga otozure, yuki ga furi hajime, yagate mōfubuki ni kawatte, ōku no kōtsū kikan ga <u>*sutoppu*</u> *shi, mochiron hikōki mo tobazu...*

'Even though it was the beginning of spring, the first major cold wave in decades hit, and snow began to fall, which soon became a blizzard, <u>stopping</u> many transportation systems, and of course, flights.'

(6) 現在，ヨーロッパの多くの国が，移民の流れをストップしようとしています。(PB35_00199)

genzai, yōroppa no ōku no kuni ga, imin no nagare wo <u>*sutoppu*</u> *shiyō to shiteimasu.*

'Currently, many European countries are trying to <u>stop</u> the flow of immigrants.'

(7) これを田辺海上保安部通信所が受信したが, 感度が非常に微弱であり, さらに, 浸水で発電機が<u>停止</u>しバッテリー使用による送信であったため約 3 分で通信が途絶えてしまったことなどから, L 号の遭難位置は野島埼の南方としか確認できなかった。(LBg5_00015)

kore wo tanabe kaijō hoambu tsūshin sho ga jushin shita ga, kando ga hijō ni bijaku de ari, sara ni, shinsui de hatsudenki ga <u>teishi</u> shi batterī shiyō ni yoru sōshin deatta tame yaku sampun de tsūshin ga todaete shimatta koto nado kara, L gō no sōnan ichi wa nojimazaki no nampō to shika kakunin deki nakatta.

'The *Tanabe* Coast Guard Station received the message, but the sensitivity was very weak, and the transmission was cut off after about three minutes because the generator was <u>stopped</u> by the flooding and a battery was being used for transmission.'

(8) けがや急病などで呼吸や心臓が停止してしまった場合, 人工呼吸や心臓マッサージは, 知識がないとできません。(OP15_00002)

kega ya kyūbyō nado de kokyū ya shinzō ga <u>teishi</u> shite shimatta baai, jinkō kokyū ya shinzō massāji wa, chishiki ga nai to dekimasen.

'If a person's breathing or heart <u>stops</u> due to injury or sudden illness, artificial respiration and cardiac massage cannot be performed without knowledge.'

The above examples show that *sutoppu* can mean to deliberately stop something that is of high resistance or a movement in progress, and similarly, in its noun usage, *sutoppu* emphasizes the action of stopping. In example (5), interruption of traffic should be avoided (which leads to psychological resistance to the interruption of traffic), but the snow unavoidably stopped the traffic, anyways. In example (6), it is considered that there is great resistance from the immigrants who try to come in with a strong will.

On the other hand, *teishi* often refers to stopping something with low resistance. In example (7), the subject of the action is a generator, and a generator does not have any intention of not wanting to stop, so *teishi* is chosen here. In example (8), the heart has already stopped spontaneously due to an injury or illness, and there is no particular resistance, so *teishi* has also been chosen here. Thus, *sutoppu* emphasizes sudden and forcible stopping which overcomes some kind of resistance, whereas *teishi* often describes things that have spontaneously stopped.

5   Conclusion

In summary, this paper has attempted to elucidate the use of the semantic functions of the western loanword *sutoppu* and its synonymous Sino-Japanese word *teishi* from four perspectives: (1) frequency, (2) conjugation types, (3) characteristically

used genres, and (4) collocations. The findings of this paper can be summarized as follows.

Firstly, in terms of frequency, *teishi* is used more than twice as often as *sutoppu,* which may be caused by the contexts in which the words are likely to be used and the part-of-speech nature (see 4.1).

Secondly, in terms of conjugation types (parts of speech), both words are used as nouns more frequently than as verbs, and *sutoppu* is used as a noun 10% more than *teishi*. In addition, *sutoppu* is used mostly in the causative form, implying something compulsory or intentional. Whereas *teishi* is mostly used in its passive form to imply inevitability (see 4.2).

Thirdly, from the perspective of genres, *sutoppu* is less genre-biased and is preferred in more informal contexts. On the other hand, *teishi* has a greater genre bias and is preferred in more public contexts (see 4.3).

Finally, in the case of collocations, when the two words are used as nouns, *sutoppu* emphasizes instantaneity and describes the action of stopping, whereas *teishi* permits a certain duration of time and describes the state of being stopped. When the two words are used as verbs, the characteristic objects of *sutoppu* semantically express something with high resistance or ongoing action, while the characteristic objects of *teishi* have many words which express something with low resistance. In addition, *sutoppu* has the meaning of intentionally stopping something with great resistance or stopping an action in progress, emphasizing the action of stopping, whereas *teishi* often refers to the state of being stopped (see 4.4).

Since the first corpus-based dictionary *Collins Cobuild Dictionary of English*, compiled by John Sinclair and published in 1987, the way dictionaries were compiled which had relied heavily on the introspective judgment of native speakers had changed. At present, almost all English dictionaries for learners are corpus-based, but Japanese dictionaries for learners are few in number, and there are still no fully corpus-based dictionaries (Ishikawa, 2014). Many previous studies have pointed out that there is room for the contribution of corpora and corpus analysis methods in the development of Japanese dictionaries for learners (Sunakawa, 2011; Tanomura, 2010; Ishikawa, 2014). In this study, we expect to shed new light on the development of Japanese dictionaries for learners. Table 6 is an example of a dictionary description that utilizes the findings of the present study.

As shown in Table 6, the use of the two words can be made clearer by adding the information of genre and conjugation types, as well as specific usage preferences.

To conclude, this paper has elucidated the usage of *sutoppu* and *teishi* in terms of their semantic functions. However, there are some limitations. Firstly, only one pair of a western loanword and its synonymous Sino-Japanese word was observed. Secondly,

the study does not incorporate native speaker reflections. We hope to address these points in our ongoing research.

Table 6: Proposal for a new dictionary description

sutoppu	• Characterisitic genres: ★ 'blogs', 'magazines' ☆'newspapers', 'white papers' × 'laws' • When used as a noun: Meaning: Emphasizes an action which is <u>stopped instantaneously</u>. Examples of collocations: (1) ドクターストップ *dokutā sutoppu* (doctor stop) (2) アイドリングストップ *aidoringu sutoppu* (idling stop) (3) ワンストップ行政 *wansutoppu gyōsei* (one-stop administration) (4) ストップ高 *sutoppu taka* (a limit high of a stock price) • When used as a verb: meaning: Emphasises <u>Intentionally or forcibly</u> stopping things or ongoing actions with <u>high resistance</u>. Examples of collocations: (1) 連敗をストップ *rempai wo sutoppu* (Stop the losing streak) (2) 供給をストップ *kyōkyū wo sutoppu* (stop the supply) (3) 支払いをストップ *shiharai wo sutoppu* (stop the payment)
teishi	• Characterisitic genres: ★'laws' ☆ 'newspapers' • When used as a noun: Meaning: Emphasizes the state of <u>being stopped</u>. Examples of collocations: (1) 利用停止 *riyō teishi* (utilization stop) (2) 出場停止 *shutsujō teishi* (exit stop) (3) 心肺停止 *shinhai teishi* (cardiopulmonary stop) (4) 停止状態 *teishi jōtai* (stop status) • When used as a verb: meaning: Emphasizes stopping <u>naturally</u> with <u>low resistance</u>. Examples of collocations: (1) 活動を停止 *katsudō wo teishi* (stop activity) (2) 機能を停止 *kinō wo teishi* (stop function) (3) エンジンを停止 *enjin wo teishi* (stop engine) (4) 呼吸を停止 *kokyū wo teishi* (stop breathing)

References

Aroonmanakun, V. (2015). Quick or fast: A corpus based study of English synonyms. *LEARN Journal: Language Education and Acquisition Research Network*, *8*(1), 53-62.

Baba, T. (2018). The possibility of studies of stylistic features of words using "writing style annotation for the library subcorpus of the BCCWJ" (in Japanese). *Proceedings of Language Resources Workshop, 3*, 241-256.

Beh, E. J., & Lombardo, R. (2021). *An introduction to correspondence analysis*. John Wiley & Sons.

Benzécri, J. P. (1973), L'Analyse des Données, Vol. I, La Taxinomie; Vol. II, L'Analyse des Correspondances. Dunod.

Biber, D., Conrad, S., & Reppen R. (1996). Corpus-based investigation of language use. *Annual Review of Applied Linguistics, 16*, 115-136.

Biber, D., Conrad, S., & Reppen, R. (1998). *Corpus linguistics: Investigating language structure and use*. Cambridge University Press.

Chen, X. (2014). The Difference of the Meanings of Synonyms in Katakana and Kanji: The Semantic Difference of "Care" and "Kaigo" (in Japanese). *The Ritsumeikan literature review, 637,* 1438-1450.

Chung, S. F. (2011). A corpus-based analysis of "create" and "produce". *Chang Gung Journal of Humanities and Social Sciences, 4*(2), 399-425.

Evison, J. (2010). What are the basics of analysing a corpus. In A. O'Keeffe & M. McCarthy (Eds.), *The Routledge Handbook of Corpus Linguistics*. (pp. 122-135). Routledge.

Greenacre, M.J. (1984). *Theory and Application of Correspondence Analysis*. Academic Press.

Greenacre, M.J. (2017). *Correspondence Analysis in Practice* (3rd ed.). Chapman & Hall/CRC.

Gries, S. T., & Otani, N. (2010). Behavioral profiles: A corpus-based perspective on synonymy and antonymy. *ICAME journal, 34*, 121-150.

Hunston, S. (2002). *Corpora in Applied Linguistics*. Cambridge University Press.

Inoue, N., & Akano, I. (Eds.) (2013). *The Wisdom English-Japanese Dictionary* (3rd ed.). Sanseido.

Ishikawa, S. (2012). *A Basic Guide to Corpus Linguistics* (in Japanese). Kabushiki Kaisha Hitsuji Shobō.

Ishikawa, S. (2014). Cooccurrence network analysis for sophistication of dictionary definitions of Japanese synonymous words: possibility of corpus-based Japanese dictionaries. (in Japanese). *The Institute of Statistical Mathematics cooperative research report, 308*, 1-21.

Ishikawa, S. (2016). Japanese polite sentence-final markers: desu, desuyo, desune, and desuyone A corpus-based analysis with a focus on frequency, collocation, and functional grouping. In J. Szerszunowicz, B. Nowowiejski, P. Ishida & K. Yagi (Eds.), *Linguo-cultural research on phraseology, 3*, 537-554.

Jammassy, G. (2015). *A Handbook of Japanese Grammar Patterns for Teachers and Learners*. Kurosio Press.

Jinnouchi M. (2009). Nihongo gakusyūsya no katakana isiki to katakanago kyōiku (in Japanese). *Language and Culture, 11*, 47-60.

Kennedy, G. D. (1998). *An introduction to corpus linguistics*. Routledge.

Liu, D. (2010). Is it a chief, main, major, primary, or principal concern?: A corpus-based behavioral profile study of the near-synonyms. *International Journal of Corpus Linguistics, 15*(1), 56-87.

Maekawa, K., Yamazaki, M., Ogiso, T., Maruyama, T., Ogura, H., Kashino, W., Koiso, H., Yamaguchi, M., Tanaka, M., & Den, Y. (2014). Balanced corpus of contemporary written Japanese. *Language resources and evaluation, 48*(2), 345-371.

Matumura, A., & Sanseidohenshūjo (Eds.) (2006). *Daijirinn* (3rd ed.). Sanseido.

McEnery, T., & Wilson, A. (2001). *Corpus linguistics: An introduction* (2nd ed.). Edinburgh University Press.

McEnery, T., & Hardie, A. (2014). *Gaisetsu Kōpasu Gengogaku: Shuhō, Riron, Jissen. [Corpus linguistics: Method, Theory, and Practice]*. (S. Ishikawa, Trans.). Hitsuji Shobō. (Original work published 2012).

Minamide, K., & Nakamura, M. (Eds.) (2011). *Genius Japanese-English Dictionary* (3rd ed.). Taishukan.

Miyata, K. (2007). Gairaigo "meritto" to sono ruigigo no imi hikaku shimbun wo shiryo to shite (in Japanese). *Kokyo Baitai no Gairaigo: Gairaigo Iikae Teian wo Aasaeru Chosa Kenkyu*. Kokuritsu Kokugo Kenkyusho.

Miyata, K., & Tanaka, B. (2006). Gairaigo risuku to sono ruigigo no imi hikaku: kison no ruigigo wo motsu gairaigo no sonzai riyu (in Japanese). *Proceedings of the Annual Meeting of the Association for Natural Language Processing, 12*, 600-603.

Mogi, T. (2015). A Corpus-based Study on Loanword Verbs in Japanese : A Case Study of maaku-suru (<mark) (in Japanese). *Kumamoto journal of culture and humanities, 106*, 83-95.

Moon, R. (2010). What can a corpus tell is about lexis?. In A. O'Keeffe & M. McCarthy (Eds.), *The Routledge handbook of corpus linguistics* (pp. 345-358). Routledge.

Nihongogakkai. (Eds.) (2018). *The Encyclopedia of Japanese Linguistics* (1st ed.) (in Japanese). Tokyodo Shuppan.

Phoocharoensil, S. (2020). Collocational patterns of the near-synonyms error, fault, and mistake. *The International Journal of Communication and Linguistic Studies, 19*(1), 1-17.

Sato, T. (2013). Semantic analysis in research of loan words : A case study in synonymy of mudo (mood) and fun'iki (in Japanese). *Bulletin of Gakushuin Women's College, 15*, 45-46.

Shaw, E. M. (2011). *Teaching Vocabulary Through Data-driven Learning*. Brigham Young University.

Sinclair, J. (1991). *Corpus, Concordance, Collocation*. Oxford University Press.

Shinya, T. (2010). Syntactic analysis of synonyms, jokyo and jotai: a corpus-based quantitative comparison. *Mathematical Linguistics, 27*(5), 173-193.

Sugimoto, T. (2009). A corpus-based analysis of synonymous verbs: nejiru and hineru. *Studies in language and literature. Language, 55*, 109-122.

Sugimoto,T., & Iwabuchi, T. (Eds.) (1994) *New Japanese linguistic dictionary* (in Japanese). Oufu.

Sunakawa, Y. (2011). On the Use of Corpora in Teaching Japanese as a Foreign Language (in Japanese). *Journal of Japanese Language Teaching, 150*, 4-18.

Tanomura, T. (2010). Japanese corpus and collocation: possibility of application to dictionary description (in Japanese). *Gengo Kenkyu, 138*, 1-23.

Taylor, J. R. (2003). Near synonyms as co-extensive categories: 'high' and 'tall' revisited. *Language Sciences, 25*(3), 263-284.

Yamada, T., Shibata, T., Sakai, K., Kuramochi, Y., & Yamada, A. (Eds.) (2005). *Shimmeikai Kokugo Jiten* (6th ed.) Sanseido.

Yamashita, N., Hata, Y., & Todoroi, Y. (2018). Japanese Native Speakers' use of Katakana Words and Their Synonyms (in Japanese). *Memoirs of the Faculty of Education Kagawa University, Part I, 149*, 45-42.

Zhao, (2013). A corpus-based study of the synonymous adverbs yatto and yōyaku: their stylistic differences and their co-occurrence relations with predicates (in Japanese). *Nihongokenkyū, 33*, 15-30.

Zhou, Q.L. (2014). Analysis of characteristics of different etymological synonyms in Japanese : A Survey on College Students (in Japanese). *Bulletin of Shizuoka Sangyo University, 16*, 33-44.