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Chinese L2 learners' interpretation of empty subjects in Japanese sentences with sentence-final particles

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The present study investigates how Japanese native speakers (NSs) and non-native speakers (NNSs) use the sentence-final particles (SFPs) *-ne/-yo* along with tense shifting, to identify the empty subject in spoken Japanese sentences. Results of a reaction time experiment on a subject judgment task revealed that both NSs and NNSs prefer to interpret the empty subject as the speaker when the SFP *-yo* is attached, regardless of the tense in which the verbs were inflected, whereas the interpretation preference for sentences with the SFP *-ne* depends on the tense. With the present tense, NSs were inclined to interpret the empty subject as the speaker, but NNSs were not consistent with NSs. NNSs seemed to be confused when identifying the empty subject, particularly in sentences with the SFP *-ne* in the present tense, whereas the NSs interpreted it quickly. This preference difference between NSs and NNSs might reflect the NNSs' stereotypical understanding in interpreting the empty subject of sentences with SFPs.

Key words: empty subjects, sentence-final particles, tense, Chinese L2 learners, reaction time

Introduction

Subject ellipsis is a significant characteristic of Japanese as a radical pronoun-dropping (pro-drop) language. Numerous auxiliaries such as tense, sentence-final particles (SFPs), and honorifics display cues to identify ellipted arguments (Nariyama, 2003). Particularly, tense is known to exert different impacts on the compensation for identifying the ellipted subject, like 1a and 1b (Nariyama, 2003: 149).

(1a) *o Nihon-ni iku hazu-da.*
Japan-to go intend-COP¹
'(*1^(*)2/3) is going to Japan.'

(1b) *o Nihon-ni iku hazu-da-tta.*
Japan-to go intend-COP-PST
'(1/2/3) was going to go to Japan.'

1. *Note:* The abbreviations in this articles are used as follows: *o* [Ellipted subject]; COP [Copula]; ACC [Accusative]; TOP [Topic]; SFP [Sentence-final particle]; PST [Past]; 1 [First person]; 2 [Second person]; 3 [Third person]; [^] [a rising intonation].

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Nariyama (2003) demonstrates that subject-ellipted sentences like 1a, with the verb *hazu* (*intend*) in the present tense, plausibly refer to a third-person subject, while those in the past tense like 1b can be a first, second, or third-person subject. However, how Japanese speakers utilize the tense to identify the empty subject remains largely unexplored.

In addition, concerning the SFPs' effect on the interpretation of the empty subject, Tamaoka, Matsumoto, and Sakamoto's (2007) reaction time experiment has demonstrated that the most popular SFPs *-ne/-yo*, markers used to express the speaker's moods in the meaning of the given sentence, play a crucial role for identifying the ellipted subject in Japanese. Given the basic semantic features that the information before *-ne* is controlled by the addressee and the information before *-yo* is controlled by the speaker (Takiura, 2008), it is assumed to be typical that the subject-ellipted sentences with *-ne* refer to a second person like 2a, while those with *-yo* refer to a first person like 2b.

- (2a) *o Tokyo-e iki-tain-da-ne. ↑*
 Tokyo-to go-want-COP-SFP.
 'You want to go to Tokyo, don't you?'
- (2b) *o Tokyo-e iki-tain-da-yo.*
 Tokyo-to go-want-COP-SFP.
 'I want to go to Tokyo.'

Using stimulus sentences like 2a and 2b, Tamaoka et al. (2007) demonstrated that the native speakers (NSs) interpret empty-subject sentences with an SFP faster than those without it, and further, that sentences with *-yo* were processed faster than those with *-ne*. This greater processing load of *-ne* to compensate for subject-ellipted sentences may arise due to the difference in the basic semantic features of the two SFPs. In other words, the SFP *-ne*, in comparison with *-yo*, can be assumed to be a marker with a degree of freedom of interpretation because the controller of the information is open to the addressee instead of the speaker. The alleged greater degree of freedom might yield various possibilities for interpretation, resulting in a longer determination time for ellipted subjects in sentences with *-ne*. In line with this, a greater individual difference in neural reactivity (i.e., an event-related potential, early posterior negativity as revealed by electroencephalography) has been reported in dialogs with *-ne* than those with *-yo* (Kiyama, Verdonschot, Xiong, & Tamaoka, 2018).

Especially for the non-native speakers (NNSs) learning Japanese as a second language (L2), understanding of SFPs is one of the most difficult vocabulary tasks because of their multiple functions (Nazukian, 2005). Learners experience difficulty even at an advanced level (Yang, 2010; Shiraiwa, 2011). In the light of the aforementioned experimental findings which compared *-ne* and *-yo*, we predict that the ambiguity of subject-ellipted sentences with *-ne* rather than *-yo* is more difficult for NNSs. Further, compared with those in the present tense, sentences in the past tense are assumed to be confusing for NNSs because subject-ellipted sentences in the past tense can be any person. To examine these predictions for NNSs'

interpretation of the subject-ellipted sentences in spoken Japanese sentences with SFPs *-ne/-yo* along with the tense, we conducted a reaction time experiment to compare the NNSs' and NSs' processing load for the sentences.

Methods

Participants

Twenty NSs (11 males; age range: 19-24, $M = 21.2$) and 24 NNSs (8 males; age range: 20-27, $M = 23.5$) of Japanese participated in this experiment. All participants were healthy graduate and undergraduate students at Tohoku University, Japan. The first language of the NNSs was Chinese, and they had passed the Japanese-Language Proficiency Test at the N1 (the most advanced) level. Their average residence time in Japan was 12.5 months.

Stimuli

We created and recorded a total of 28 subject-ellipted target sentences with *-ne/-yo* with neutral intonations, and 28 filler sentences with another SFPs *-no/-ka* (Table 1), utilizing Tamaoka et al.'s (2007) stimuli. Each sentence was tensed to investigate the influence of the verb tense on interpretation. Consequently, we prepared a total of 112 target stimuli (i.e., 28 base sentences \times 2 SFPs: *-ne/-yo* \times 2 types of tense: present/past). The stimuli were recorded by a male NS of Japanese and saved as WAV sound files using PRAAT version 5.1.31 (Boersma, 2002). All the target sentences are shown in the Appendix.

Table 1. Stimulus Examples

Tense	Sentence with <i>-yo</i>		Sentence with <i>-ne</i>	
Present	<i>Terebi-o</i>	<i>miru-yo.</i> television-ACC watch-SFP. '(I/you) watch television.'	<i>Terebi-o</i>	<i>miru-ne.</i> television-ACC watch-SFP. '(I/you) watch television.'
Past	<i>Terebi-o</i>	<i>mi-ta-yo.</i> television-ACC watch-PST-SFP '(I/you) watched a television.'	<i>Terebi-o</i>	<i>mi-ta-ne.</i> television-ACC watch-PST-SFP '(I/you) watched television.'

Procedure

Participants were seated in front of a monitor and heard the auditory stimulus sentences through headphones. They were instructed to make a subject judgement task regarding which of the speaker or the addressee was the subject of the presented subject-ellipted sentence via button press, as accurately and as quickly as possible (Fig. 1). They were instructed to press either F key labeled with "*Hanashite* (Speaker)" by the left index finger or J key labeled with "*Kikite* (Addressee)" by the right index finger according to their judgment. The whole procedure took approximately 20 minutes. We used E-prime 2.0 (Psychology Software Tools, Sharpsburg, PA) for presenting stimuli and acquiring behavioral data.

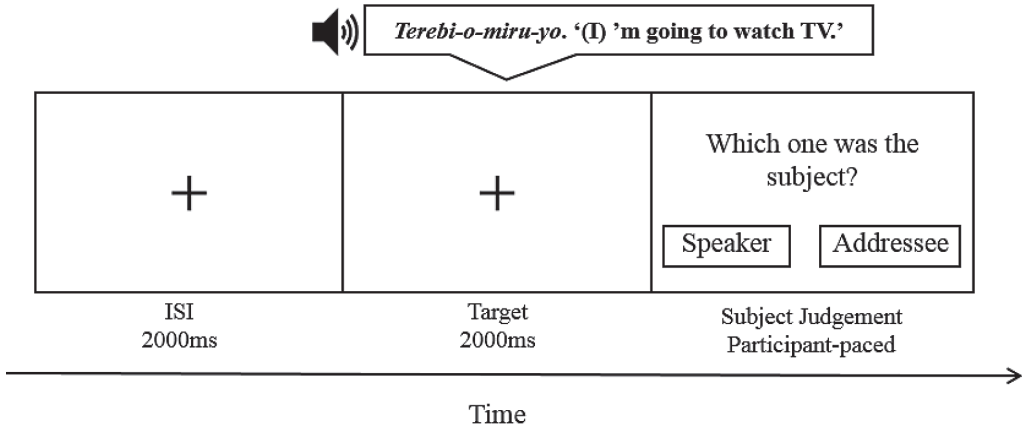


Fig. 1. Experimental trial for the subject judgement task

Note: Everything was presented in Japanese for the actual experiment

Analysis

A series of linear mixed effects (LME) modeling (Baayen, 2008) were conducted to estimate the NSs' and NNSs' preferences and the processing loads for empty-subject interpretation. The NSs' model examined the effects of the two fixed factors of SFP type (*-ne* and *-yo*) and tense (present and past) on participants' subject preference (PREF), as well as the reaction time (RT) from the beginning of the sentence presentation. Also, each participant each sentence were included as random effects. For the NNSs' model, the third fixed factor of their residence time (RES) in Japan was also included. The estimations were conducted using packages *lme4* (Bates, Maechler, Bolker, & Walker, 2015) and *lmerTest* (Kuznetsova, Brockhoff, & Christensen, 2017) within R version 3.5.1 (R Core Team, 2018). To make fixed-effect parameters (β) standardized, we scaled all continuous variables before conducting LME modeling.

Results

As shown in Fig. 2, NSs and NNSs shared similar inclinations to interpret the empty subject as the speaker in sentences with *-yo* in both the past and present tenses (above 98% in NSs; above 85% in NNSs). However, there were inconsistent preferences in interpreting those with *-ne*. When NSs judged sentences with *-ne* in the present tense, 75.0% of the NSs judged the subject as the speaker, while in the past tense, 80.7% judged the subject as the addressee. LME modeling revealed that the interaction effect of SFP and tense ($\beta = .584, p < .001$), as well as the main effects, were significant on the PREF data (Table 2). The NNSs' judgment was similar to that of the NSs in interpreting sentences with *-ne* in the past tense (82.1% for the addressee), but indistinctive in the present tense (44.0% for the speaker; 56.0% for the addressee), as shown in the significant interaction effect of SFP by tense ($\beta = .251, p < .001$, Table 3).

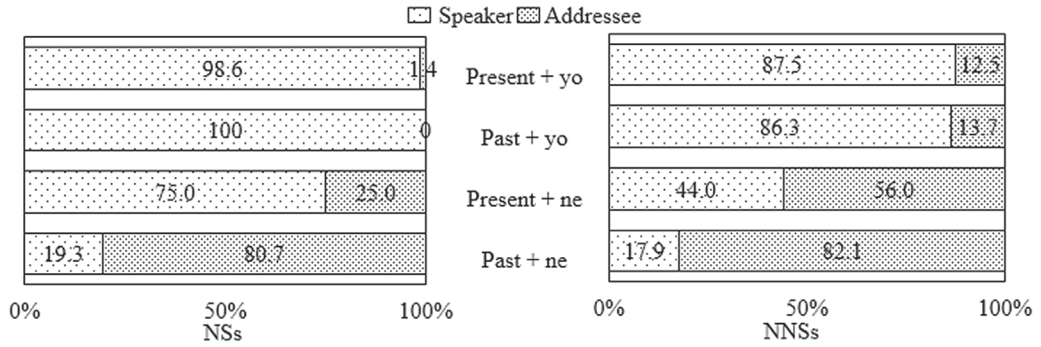


Fig. 2 Interpretation for spoken Japanese empty-subject sentences with SFPs

Table 2. Fixed effects of LME analysis on NSs' interpretation preference for empty-subject sentences

Fixed effect	β	95% CI [LL, UL]	<i>df</i>	<i>t</i>	<i>p</i>
(Intercept)	.814	[.728, .901]	52	18.768	< .001
SFP	.155	[.098, .212]	521	5.337	< .001
Tense	-.554	[-.611, -.496]	523	-18.953	< .001
SFP * Tense	.584	[.502, .666]	526	13.973	< .001

Notes: Values in brackets denote 95% confidence intervals. SFP: sentence-final particles.

Table 3. Fixed effects of LME analysis on NNSs' interpretation preference for empty-subject sentences

Fixed effect	β	95% CI [LL, UL]	<i>df</i>	<i>t</i>	<i>p</i>
(Intercept)	.823	[.754, .893]	91	23.446	< .001
SFP	.052	[-.030, .134]	647	1.238	.216
Tense	-.262	[-.344, -.181]	648	-6.301	< .001
RES	.041	[-.013, .094]	621	1.502	.134
SFP * Tense	.251	[.135, .366]	642	4.254	< .001
SFP * RES	-.037	[-.117, .044]	647	-.896	.370
Tense * RES	-.008	[-.091, .074]	663	-.198	.843
SFP * Tense * RES	-.011	[-.130, .108]	656	-.183	.855

Notes: Values in brackets denote 95% confidence intervals. SFP: sentence-final particles, RES: Residence Time.

The RT data revealed that the NSs' judgment of the subject-ellipted sentences with *-ne* was faster in the present tense (605 ms) than in the past tense (869 ms), whereas the *-yo* sentences exhibited the opposite: faster in the past tense (515 ms) than in the present tense (766 ms, $p < .001$; Fig. 3). This interaction effect between SFP and tense was significant ($\beta = .806$, $p < .001$, Table 4). In contrast, the NNSs' RT data did not indicate such an effect ($\beta = -.056$, p

= .644, Table 5). The interpretation of sentences in the past tense was consistently faster (*-ne*: 1633 ms; *-yo*: 1505 ms) than those in the present tense for both *-ne* and *-yo* (*-ne*: 1887 ms; *-yo*: 1663 ms).

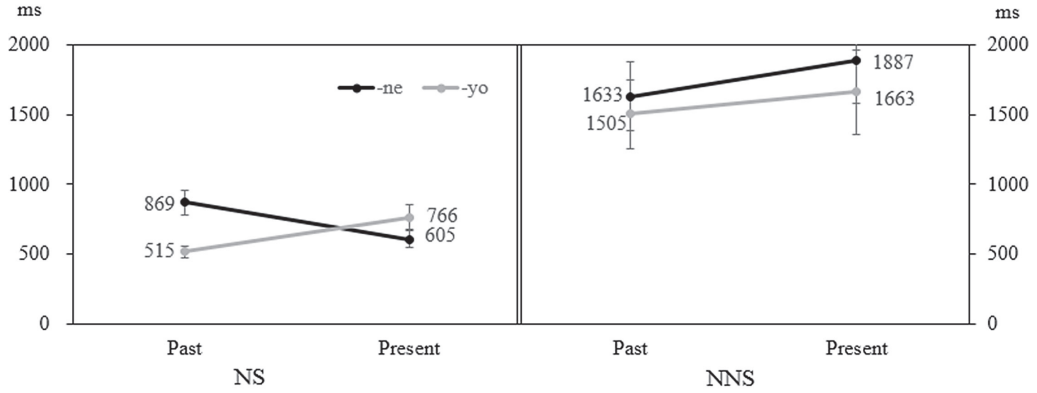


Fig. 3 Mean reaction time of interpretation for spoken Japanese empty-subject sentences with SFPs

Table 4. Fixed effects of LME analysis on NSs' reaction time for empty-subject sentences

Fixed effect	β	95% CI [LL, UL]	<i>df</i>	<i>t</i>	<i>p</i>
(Intercept)	.278	[.053, .503]	49	2.478	< .05
SFP	-.552	[-.765, -.339]	539	-5.094	< .001
Tense	-.408	[-.622, -.194]	540	-3.759	< .001
SFP * Tense	.806	[.504, 1.108]	534	5.242	< .001

Notes: Values in brackets denote 95% confidence intervals. SFP: sentence-final particles.

Table 5. Fixed effects of LME analysis on NNSs' reaction time for empty-subject sentences

Fixed effect	β	95% CI [LL, UL]	<i>df</i>	<i>t</i>	<i>p</i>
(Intercept)	-.021	[-.304, .263]	33	-.149	.883
SFP	-.070	[-.236, .097]	644	-.821	.412
Tense	.141	[-.026, .307]	647	1.659	.098
RES	.000	[-.110, .110]	635	-.004	.997
SFP * Tense	-.056	[-.291, .180]	647	-.463	.644
SFP * RES	-.019	[-.186, .147]	646	-.23	.818
Tense * RES	-.019	[-.189, .152]	651	-.215	.830
SFP * Tense * RES	.211	[-.038, .460]	650	1.689	.092

Notes: Values in brackets denote 95% confidence intervals. SFP: sentence-final particles, RES: Residence Time.

Discussion

To elucidate how L2 learners of Japanese interpret the ellipped subject by using SFPs *-ne/-yo* along with the tense, we conducted a reaction time experiment to compare the subject interpretation preference as well as the processing load between NSs and NNSs. Our predictions on NNSs' processing of subject-ellipted sentences were partially supported. The results support our first prediction that NNSs were confused when identifying the ellipped subject, particularly in sentences with the SFP *-ne* than *-yo*. However, the RT data is not in line with the second prediction that the processing load for the subject-ellipted sentences is greater in the past tense in comparison with those in the present tense because the subject-ellipted sentences in the past tense can refer to any person.

The NNSs exhibited a different interpretation, especially for the SFP *-ne*, suggesting that some NNSs (even at the advanced level) may misunderstand the referent of a given sentence uttered by the NSs in daily spoken communication with the SFP *-ne* in the present tense. It is possible that they are not fully familiar with the various atypical usages of *-ne*. Sawyer (1992) and Hajikano (1994) pointed out that the L2 learners of Japanese learn one of the very typical usages of *-ne*, like “*Sou desu-ne* (Yes, that's right),” at the very beginning of Japanese learning, and they lack chances for enough input that *-ne* has diverse usages depending on context and interpersonal relationships between the speaker and the addressee.

Further, they might not have understood that SFPs exert influence on the subject prediction (Yonezawa, 2005). Indeed, a widely-used introductory textbook of Japanese for Chinese learners (Zhou & Chen, 2009) provides only the limited description that the SFP *-ne* is used when the speaker requests agreement/confirmation or is impressed by something, and that *-yo* is used to express the speaker's intent. It includes no explicit mention of the preferred referent of the ellipped subject in sentences with SFPs and the different preferences according to the tense. Consequently, NNSs might have a stereotypical (fossilized) strategy for interpreting the ellipped subject of sentences with SFPs; namely, interpreting the ellipped subject to be the addressee rather than the speaker in sentences with *-ne*, and vice versa in sentences with *-yo*. The present behavioral results show that NSs have dynamic interpretations of the ellipped subject in sentences with *-ne*, especially in the present tense, yielding a call that teachers should let learners of Japanese notice different possible preferences for ellipped subjects in sentences with SFPs when they communicate with NSs. Further elaboration is needed to compensate for the lack of descriptions about diverse uses of SFPs in Japanese learning textbooks.

Despite the above findings, the present study has some limitations as a first experimental attempt at L2 learners' processing of subject-ellipted sentences with SFPs. We did not manipulate the intonation of the SFPs *-ne/-yo* when creating the auditory stimuli of the subject-ellipted sentences with SFPs. In addition, although we only compared the subject preference between the first person and the second person, without the third-person, a more comprehensive investigation including any possible points of view for the ellipped subject will

be required to fully acquire the mechanism to process the subject-ellipted sentences with SFPs depending on the tense in spoken Japanese.

Overall, we have demonstrated the differences between NSs and NNSs in subject interpretation when they are confronted with empty-subject sentences with SFPs, especially for *-ne*. Particularly, tense exerts a significant impact on the interpretation inclination. This discrepancy might originate from the current method of Japanese language education, indicating a call for language teaching textbooks to elaborate upon instructions concerning the multiple possibilities of the ellipted subject interpretation, which can be affected by SFPs.

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Appendix Base sentences used as experiment stimuli (Tamaoka et al., 2007)

1	テレビを見る。	<i>Terebi-o miru.</i>	Watch television.
2	犬を飼う。	<i>Inu-o kau.</i>	Have a dog.
3	音楽を聴く。	<i>Ongaku-o kiku.</i>	Listen to music.
4	手紙を書く。	<i>Tegami-o kaku.</i>	Write a letter.
5	CDを買う。	<i>CD-o kau.</i>	Buy a CD.
6	ケーキを作る。	<i>Keeki-o tukuru.</i>	Bake a cake.
7	写真を取る。	<i>Syasyin-o toru.</i>	Take a picture.
8	パソコンを習う。	<i>Pasokon-o narau.</i>	Learn how to use a computer.
9	荷物を運ぶ。	<i>Nimotu-o hakobu.</i>	Carry a bag.
10	ゴミを捨てる。	<i>Gomi-o suteru.</i>	Dump garbage.
11	ボールを蹴る。	<i>Booru-o nageru.</i>	Kick a ball.
12	ゆかたを着る。	<i>Yukata-o kiru.</i>	Wear a yukata (Japanese clothing).
13	新聞を読む。	<i>Syinbun-o yomu.</i>	Read a newspaper.
14	警察を呼ぶ。	<i>Keisatu-o yobu.</i>	Call the police.
15	洗濯物をたたむ。	<i>Sentakumono-o tatamu.</i>	Fold laundry.
16	プレゼントを贈る。	<i>Purezento-o okuru.</i>	Send a present.
17	本を探す。	<i>Hon-o sagasu.</i>	Look for a book.
18	うたを歌う。	<i>Uta-o utau.</i>	Sing a song.
19	お金を数える。	<i>Okane-o kazoeru.</i>	Count money.
20	漢字を覚える。	<i>Kanzi-o oboeru.</i>	Learn kanji.
21	お母さんを手伝う。	<i>Okaasan-o tetudau.</i>	Help one's mother.
22	芋を焼く。	<i>Imo-o yaku.</i>	Bake potatoes.
23	家賃を払う。	<i>Yatyin-o harau.</i>	Pay rent.
24	スープを温める。	<i>Suupu-o atatameru.</i>	Warm soup.
25	車を洗う。	<i>Kuruma-o arau.</i>	Wash a car.
26	ピアノを弾く。	<i>Piano-o hiku.</i>	Play the piano.
27	熱を計る。	<i>Netu-o hakaru.</i>	Gauge temperature.
28	歯を磨く。	<i>Ha-o migaku.</i>	Brush teeth.

Note: We recorded a total of 112 target sentences with SFPs *-yo/-ne* in the present and past tenses, utilizing these base sentences.

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