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Osaka University

A PRELIMINARY REPLICATION STUDY  
OF THE PROPERTIES OF CONTRASTIVE TOPIC  
MARKING IN JAPANESE \*

1 INTRODUCTION

In this short paper, I would like to show results from a preliminary study inspired by Nakanishi 2007. I will show native Japanese speakers' acceptability judgments for the token sentences when they are placed in varying contexts.

As to the token sentences, the relative scope of the universal quantifier *minna*, which literally means "all of them/everyone" and its negation (neg>*all of them* and *all of them*>neg) are considered. Each *minna* appears along with the particle *-wa*, which is conventionally referred to as a "topic-marker" in all of the token sets.

The results of acceptability judgment tell us that the surface scope reading of the universal quantifier (*wide* condition) is preferred. Within the *wide* condition, the ratings from the participants tell us that the *new* condition is preferred to the *given* condition. This acceptability tendency suggests that the association between thematic topic and *givenness* is not essential.

After the acceptability judgment data is considered, I will compare the sound data taken from two subjects. In Experiment 1, I conducted a preliminary replication study of Nakanishi 2007. I collected native Japanese speakers' production data and acceptability judgments (perception data) for *-wa*-marked key sentences. As far as their acceptability is concerned, they tend to prefer the *wide* condition (surface scope meaning). Also, within the *wide* condition, they show their preference for the *new* condition rather than the *given* condition. This implies an interesting point, that thematic topic does not necessarily require *givenness*. If *givenness* is a crucial property of thematic topic, then native speakers should prefer the *given* condition

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\* This paper is originated from my term paper. I would like to show greatest gratitude to Akiko Shimada, who has been always around to discuss this matter. Her sharp intuition was always helpful. For insightful comments and ideas in conducting (as well as designing) this experiment, I am indebted to Michael Wagner. My gratitude also goes to Kazuya Saito, Mina Sugimura, Tokiko Okuma, who provided me with helpful judgments and recording as informants. I would also like to thank Fiona Campbell for technical support. For providing me with this opportunity of submitting to OUP, I am grateful to Yukio Oba, and Sadayuki Okada. I am indebted to Mayumi Yoshimoto for her patient editing. Thanks are also due to Lance Williams for stylistic improvement. (It is unfortunate that my project is still at a rudimental stage.) All remaining errors and inaccuracy are of course my own.





## 3 EXPERIMENT : METHOD

***Participants***

Subjects are graduate students at McGill University. Their ages range from their late 20s to 40s. Three female students and one male student participated in this study. One participant each was of the following regional dialects: Kanto (Tochigi, which is roughly considered to be in the Tokyo Japanese area), Nagoya, Kansai, and Tokyo Japanese.

***Materials and procedure***

A total of 16 tokens were presented on the computer screen through a slide show. Between consecutive tokens, an instructional slide was presented in order to remind the participants what they were supposed to be doing, namely giving their acceptability of each token by rating it. Each token was presented in a manner in which it was sandwiched between the preceding context and the following context. The tokens were presented to the participants in a pseudo-randomized order. The relative scope of the universally quantified noun *minna* “all,” which is attached to *-wa*, is compared with its negation. In this test, a 2x2 factor matrix is used. Each context is designed to derive a certain reading (*wide/narrow*). Four verbs with negations are used in this experiment: ‘could not sleep’, ‘did not wake up’, ‘could not solve the problem’, and ‘did not come.’ The conditions are *wide* (surface: *all*>Neg) and *narrow* (non-surface: Neg>*all*), and are further divided into *given* and *new* conditions, resulting in cross-conditions of *wide/given*, *wide/new*, *narrow/given*, and *narrow/new*, respectively. Therefore, each condition was designed to have four tokens, for a total of 16. However, after I ran this test, I realized that the number of tokens cannot be even, because I accidentally used one more *wide/given* condition token and one fewer *narrow/given* condition token, token [4-3] (*Everyone didn't wake up*) being the problematic token. Therefore, the participants were exposed to 5 *wide/given* condition tokens and 3 *narrow/given* condition tokens. The exposure to the other conditions was an equal number of 4 tokens. First, the participants were asked to read the whole context on the slide silently. Then, only after they understood the meaning derived from context, they were asked to read the token sentence with that contextually retrieved meaning in their mind.

As for recording, the Record Narration function from Microsoft Powerpoint, a portable audio, and Praat software (Boersma & Weenik (2011)) were used. They were recorded in the McGill phonetics lab when available or in some other relatively quiet room. Participants were asked to rate each token sentence every time right after they recorded their production. The acceptability range was from 1: bad to 7: natural. They were asked to rate 16 sentences from the *-wa* marked conditions. In experiment two, they were asked to rate 16 sentences from the *-ga* marked counterparts (but I will only discuss the results from the *-wa* conditions in this paper.)

## 4 PREDICTIONS AND QUESTIONS

When the sentence was presented without context in the written form and no sound cue was provided, and they are asked to read the token sentence, the native speakers appeared to be puzzled. One native speaker told me that she was puzzled because she could not tell whether the token sentence had a *narrow* or *wide* meaning; in that case, she said she would just read the sentence away carelessly or absentmindedly<sup>1</sup>. Yet, if the token sentences were presented in the context which restricts them solely to *narrow* or *wide*, they would then accommodate their production. Furthermore, this should be realized onto their pitch contour or F0 value if they really associate meaning with contour as Nakanishi claims.

If Nakanishi's claim is right, native speakers are sensitive to the *narrow* and *wide* scope readings. If so, their production should show different pitch contour patterns, or F0 value patterns, according to the meanings in their mind. That is, prosodic pattern and scope readings will show strong correlation if Nakanishi is right. Also, if their sensitivity to *wide* and *narrow* scope readings is consistently biased toward a particular reading, they would sense strong weirdness, which should then be reflected in negative acceptability in the judgment test.

In other words, if they cannot accommodate *wa*-marked universal quantifiers within each context, they will find the token sentence to be marked. If they can accommodate a certain meaning (*wide/narrow*), they would find the token sentence to be natural. Then the questions are as follows:

- (4)
  - a. In which condition would the *narrow* reading (CT-reading) be preferred?
  - b. Do *givenness* and *newness* affect their acceptability?

## 5 RESULTS AND DISCUSSION

Below, the average rating for each condition is compared to the average rating for all conditions. Ratings range from 1 to 7. 7 was used as the highest acceptability and 1 was used as the lowest acceptability, respectively. In Table 1 below the average of each condition is provided.

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<sup>1</sup> However, she also said when she sees a sentence like the one used as a token sentence out of context, she probably assumes it to denote *narrow* reading. I do not know why, but it is probably because of the speaker's preference or related to *-wa*'s interaction with negation. Incidentally, when there is no negation (positive sentences) it is often said in the literature, contrastive *-wa* is disallowed. I think the reading should be highly dependent on the context.

Results for -wa marking

wide/given	wide/new	narrow/given	narrow/new
5.8	6	5.625	5.875

Table1

Comparison of Wide and Narrow Conditions

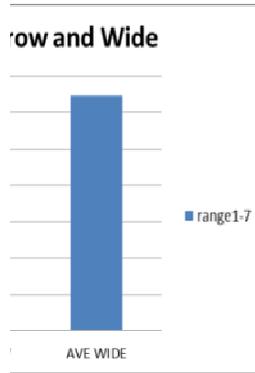


Figure 1

From Figure 1, it is apparent that the overall average rating for the *narrow* condition is lower than the overall average for both conditions. On the other hand, the overall average rating for the *wide* condition is almost equal to the overall average for both conditions. Therefore, Figure 1 indicates that the participants are in favor of the *wide* scope reading.

Comparison of Given and New Conditions

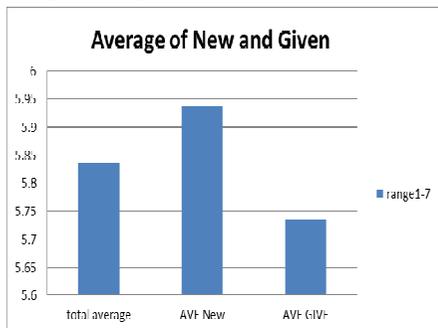


Figure 2

Comparison of Wide (New/Given) Conditions

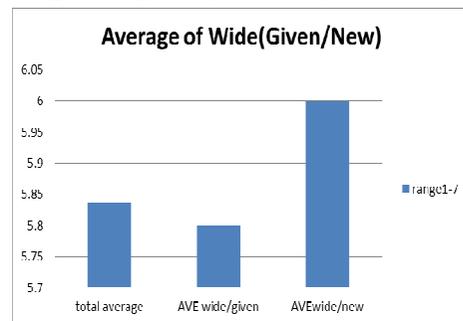


Figure 3

Figure 2 tells us that the subjects have more preference for *new* conditions than *given*

conditions. Figure 3 compares judgments for *wide*-internal conditions. Within the *wide*-internal conditions, the *new* condition is still preferred to the *given* condition. This is an interesting point, since it is often said that the TT reading (*wide*) associates with *givenness*. This data might be evidence that such association is not necessarily the case. That is, thematic topic does not imply *givenness* if *minna-wa* ‘all of them/everyone’ can be interpreted as thematic topic.

Comparison of Narrow (Given/New) Conditions

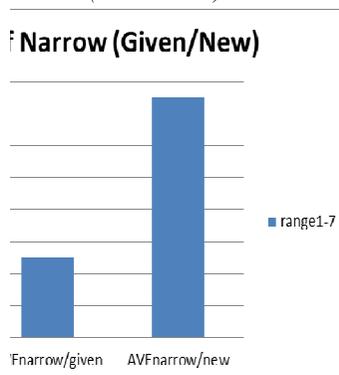


Figure 4

Figure 4 is for *narrow*-internal conditions. Just as the tendency was in Figure 3, Figure 4 shows that the subjects are in favor of the *new* condition within *narrow* conditions as well.

Based on the participants' ratings, it seems that they tend to prefer *wide* and *new* conditions. This indicates that they prefer the *-wa* of thematic use. Also, the judgment preference for the combination of *wide/new* to that of *wide/given*, which is seen in Figure 3, gives one suggestion that the conventional association between thematic topic and *givenness* might not be correct. The data imply that thematic topic does not imply *givenness*. The reader might oppose the idea of taking the *wide* scope reading of *minna-wa* as TT. Yet, if we consider this case as CT, the participants should dislike *wide* readings, because there is nothing (no other alternative) to be contrasted with.<sup>2</sup> Besides, one of the main properties of CT, which is discussed in Tomioka 2009, and Lee 2006, is considered to be reverse scope reading (*narrow* condition) in the *token* I used in this experiment. *Wide* reading cannot have this property, because we necessarily get *narrow* reading when *minna-wa* is interpreted as contrastive topic. As to answer the question as to in which condition *narrow* (inverse reading) is preferred, the answer seems to be the *narrow/new* condition, which is provided in Figure 4. The participants seem to be sensitive to both *wide/narrow* contrast and *new/given* contrast.

Now that we have observed the perception-based data, we will look at sound data (mainly peak points of F0 values) from two subjects in the next section.

<sup>2</sup> The possibility of assuming this as contrastive topic is suggested in the footnote three.

6 COMPARISON OF PROSODIC PATTERNS IN *-wa* -MARKED CASES**Subjects**

I am going to use the data from two participants: namely, Subject 1 and Subject 4. The reason I chose their data is that both their dialects are basically Tokyo Japanese. However, they show astonishingly opposite patterns. If the F0 realization patterns of these participants are not deviant, these data suggest that the correlation between prosodic pattern and scope readings might not be as solid as Nakanishi argues in her paper.

**Method**

I have manually collected the pitch peak and the lowest point (usually around the *-wa* particle) from the environment preceding the *-wa* particle as Peak1 and Low1, respectively. I have also collected the peak of the part following the *-wa* particle as Peak2 (namely, the VP constituent part) and the lowest point as Low2. Since I used Praat to get the maximum and minimum pitch, Low2 was totally unreliable due to the occasional creaky voice toward the end of the utterance, so I will only consider Peak 1, Peak2, and Low1. Also, as for the general pitch pattern, I collected pitch contour figures as well. The tables below are the results from Subject 1 and Subject 4. Both of them are *-wa* marked cases.

*The average F0 values of the points*

subject1wa			(Hz)
averageF0	Peak1	Low1	Peak2
wide/given	188.464	134.988	202.154
wide/new	175.44	122.0975	204.83
narrow/given	190.145	134.99	211.86
narrow/new	170.06	122.8975	201.665

(wa) Table 2

subject4 wa			(Hz)
averageF0	Peak1	Low1	Peak2
wide/given	242.47	187.628	201.26
wide/new	245.275	180.85	194.065
narrow/given	267.3967	207.6067	224.5
narrow/new	263.0125	193.85	207.225

(wa) Table 3

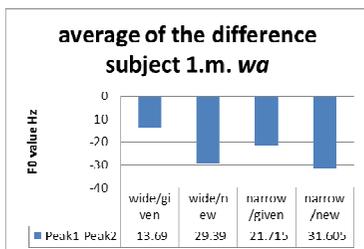
*F0 value difference between Peak1 and Peak2 (Peak1-Peak2)*

Figure 5

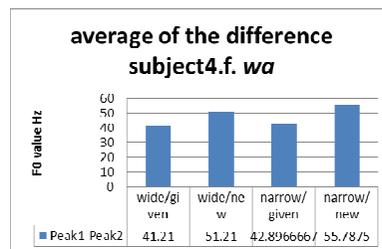


Figure 6

Table 2 is the data from Subject 1 and Table 3 is the data from Subject 4. Let us look at CT cases, namely *narrow* conditions in Table 2. We can see the F0 values of Peak2

are higher than Peak1. These tendencies in F0 values all fit to Nakanishi's thematic topic type, because her examples of thematic topics all seem to have higher pitch in the second Peak2 (VP constituent part). In terms of scope, *narrow* readings should be interpreted as CT. Furthermore, *narrow* scope is unlikely to be perceived as thematic topic (TT). Thus, Subject 1 seems to represent Nakanishi's TT type of F0 realization pattern thoroughly as far as F0 values are concerned. His prosodic realization pattern does not seem to disambiguate CT and TT readings. Incidentally, it might be said that Subject 1 is sensitive to information status between *new* and *given*, because *given* conditions get slightly higher F0 values compared to *new* conditions in Peak1. This trend is also observed in the F0 value difference between Peak1 and Peak2 in Figure 5. The difference is larger in the *new* condition compared to the *given* condition.

Let us look at Table 3. Subject 4 tends to put stress on the part preceding the *-wa* particle (Peak1) rather than the part following the *-wa* particle (Peak2). It might be possible to say that she shows some sensitivity to *narrow* conditions because *narrow* readings get slightly higher values in Peak1. (However, it can also be said that she is actually more sensitive to *new* or *given* information status if we compare the relative difference in F0 values between Peak1 and Peak2 as shown in Figure 6. In Figure 6, we can see that the degree of difference between Peak1 and Peak2 becomes greater in *new* conditions than *given* conditions.) Yet, overall, she clearly represents Nakanishi's CT contour pattern in all conditions because Peak2 seems to undergo post-focal reductions, which is not observed in Nakanishi's thematic topic cases. This might be problematic for Nakanishi's idea that there is correlation between prosodic cues and readings (CT/TT). Nakanishi's claim predicts that each participant shows different prosodic realization patterns according to the CT and TT readings of the *-wa* marked phrase.

We have seen that Subject 1 and Subject 4 behaved very differently. They both seem to be sensitive to the particular cues. (As for Subject 4, she might be sensitive for *wide* or *narrow* scope.) If we take figures 5 and 6 into consideration, both of the subjects seem to be sensitive to information status between *new* or *given*. When the condition is *new*, the difference between Peak1 and Peak2 becomes greater across scopes. Interestingly, they both show consistently one type of prosodic pattern, namely either CT or TT throughout, though it is possible to say that their sensitivity toward information status (*new/given*) is somehow realized prosodically. These data suggest that the correlation between CT/TT-reading and prosodic realization types might not be as solid as Nakanishi claims, and it might even be said that the correlation is an epiphenomenon as far as these two participants are concerned. Despite the fact that they do not clearly disambiguate CT/TT patterns, they seem to accommodate the relevant readings according to the conditions. The perception-based data (Table 1) tell us that they rated relatively moderate or higher ratings for all of the cases. They never rated lower than 5. Then what makes *narrow* scope reading possible if prosodic realization is not responsible for the CT-reading? I would speculate that the particle (*wa*) itself bears this function. Although the numbers of the data are limited and I am not in the position to make definite conclusions, this assumption does not seem to be unlikely as far as these two participants and the experiment two (*-ga* marked cases) are concerned.

## 7 CONCLUSIONS AND FURTHER ISSUES

Overall, participants preferred surface scope reading (*wide/new* scope reading). Also, they showed a relatively strong tendency to prefer *new* conditions rather than *given* conditions. This tendency also holds within the *narrow* conditions.

After the test, one of the participants commented on the infelicity of the *wide* condition due to the existence of other stronger alternatives. In parallel with English, the scope of *all*>*neg* is usually better expressed with *nobody*. It seems that one of the informants held exactly the same intuition which is normally seen in English speakers. Namely, he commented that he would use *dare-mo*, instead of *minna-wa*, which literally means *nobody*, and is usually considered to be an NPI in a negation sentence. Even though native speakers find some sentences strange, they nevertheless scored those sentences relatively high, with an average rating around 5. This shows that context plays an important role in deciding a certain meaning, and they seem to be able to accommodate the meaning by looking at the written text on the screen.

As to the correlation between CT/TT readings and prosodic patterns which is argued in Nakanishi 2007, at least two participants do not appear to disambiguate either of them clearly. Basically, they just fall into either CT or TT pattern categorically, and they do not seem to change their prosodic pattern depending on CT or TT readings. Nevertheless, the participants successfully accommodate each scope meaning with the help of context which is evident in the perception based data.

Despite the lack of the quantity of data, this experiment reveals a possibility that will shed new light on the properties of the *-wa* particle and associated particular prosodic patterns (CT/TT). If the data from the participants are not deviant, then the prosodic realization types between CT and TT are perchance epiphenomena as far as F0 values are concerned. At the very least, it might be said that the correlation between CT/TT readings and prosodic patterns are not as solid as Nakanishi claims. Of course, further data collection and theoretical explanation of why the participants represented the prosodic realization as they did should be accounted for, especially the reason why Subject 1 presented basically TT type of F0 realization consistently, and the reason why Subject 4 basically showed CT type of F0 realization.<sup>3</sup>

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<sup>3</sup> As to the general CT type of prosodic realization in Subject 4, I could suggest the possibility of surface scope contrastive topic reading. One informant who did not participate in this experiment told me that *-wa* marked universal quantifiers have *wide* scope meaning consistently when heard out of the blue. When he puts stress on the universal quantifier, he seems to get a contrast between the speaker and the rest of the people “*minna*” without reversing the relative scope between *negation* and *all of them*. The insinuation is as follows: I do not know about the speaker, but *all of them* (with the exclusion of the speaker) had no effect. If this interpretation of *-wa* marked universal quantifiers is applied to the *wide* scope conditions, then there is a possibility that *wide* scope readings are surface scope contrastive topic.

Note that CT does not necessarily mean non-surface meaning. In Tomioka 2009, it is argued that *narrow* reading of *minna* relative to negation (*neg*>*all of them*) is only possible in CT reading. I think that he did not mention the presence of surface contrastive topic reading. (If CT always triggers non-surface scope reading and if CT type of reading realizes prosodically, then the perception based data should disfavor *wide* (surface) reading. However, my participants (including Subject 4) preferred *wide* readings. That is, even though Subject 4 represented CT-type F0 value realization, she preferred *wide* readings. This is puzzling, but we have two alternatives to account for this. One alternative is that CT-meaning and the prosodic realization type do not necessarily coincide with each other. As for the other alternative, if we assume surface scope CT interpretation for Subject 4’s *wide*-scope conditions, then it is not problematic for the participants to favor *wide* conditions even when they are interpreted as

Having said that, as to decide whether there is strong correlation between CT/TT readings and prosodic realization as Nakanishi claims, I need to collect more data, and I think it is helpful to look at *ga*-marked cases. However, I have to leave these issues for future work.

#### APPENDIX

**Token Sets and Translation of Contexts:** They are presented in the following order onto the screen. Token and contexts are presented in Japanese to make their production as natural as possible. (Token sentences are shown in bold type below.)

1 **wide/given 1-1**

Yesterday there was a strong earthquake and it was M5.5; around here everybody seems to have spent a night unable to sleep.

**B: Everyone could not sleep.**

Finally, that earthquake stopped today.

2 **wide/new 4-2**

Yesterday, there was a party at Charlie's.

Apparently they were having a party all night.

Now, at 8 a.m., the postman has come for a delivery.

**Everyone didn't wake up.**

No wonder, they have just gone to bed.

3 **narrow/new 2-4**

Teacher A teaches intro psych.

Some of the grad students take this course for pleasure.

Teacher A unintentionally assigned the test for advanced psych to the intro students.

**Everybody couldn't solve the problem.**

But of course those grad students came up with the solution easily.

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CT (because in this reading there is something to be contrasted with). We can also solve the seemingly problematic pattern in which TT bears prosodic focus. Assuming this way, it might be plausible to regard the CT pattern which is also seen in *wide* scope conditions by Subject 4 as the utterance in CT meaning of non-scope-changing type, because the speaker or subject (in the context in my experiment) is contrasted with the rest of them in the discourse. If so, Subject 4 might be validation of Nakanishi's claim after all.

Still, the prosodic realization pattern which is observed in Subject 1 is problematic to Nakanishi's, because all of the conditions are uttered in the TT pattern. Whether to decide that Subject 1 is deviant or whether to push surface scope CT reading, I am on the fence at this point, and I need to do further data collection.

4 wide/given 2-1

There is a math class for literature students.

They all hated math, and they had to solve an unbearably difficult problem for the homework.

**Everybody couldn't solve the problem.**

That is why they hated math even more.

5 narrow /given 3-3

Mickey Mouse invited his friends to his party.

He invited Winnie the Pooh, Donald Duck, and Snoopy, but Snoopy could not come.

**Everyone didn't come to the party.**

But they had a party anyway.

6 narrow/new 4-4

Today is self-reading group day, and it starts as early as 8 a.m.

Usually first-years attend it, but yesterday some of them were working all night to finish up their assignment, so ...

**Everyone didn't wake up.**

Only Charlie Brown woke up that early and attended.

7 wide/new 1-2

Yesterday, the neighbors were extremely loud.

**Everyone could not sleep.**

So today they seem very exhausted.

8 wide /new 2-2

Teacher A did not want everybody to get a full mark.

So she deliberately inserted one open-ended question for the intro students.

**Everyone didn't solve the problem.**

Poor students. Such a wicked teacher Teacher A is.

9 wide /new 3-2

Ally is clumsy. Ally promised to go to the movie with Beth and Cathy on Sunday.

They were to meet at 7:00 p.m. Ally waited half an hour but could not see anyone.

**Everyone did not come.**

In fact, they just forgot their promise.

10 wide/given 4-1

Mary, Jane, and Kate had to leave early to take the first train to attend a special lecture by Chomsky, but since they drank too much last night, they are now too sick to wake up.

**Everyone didn't wake up.**

Of course, they missed the train and took a plane instead.

## THE PROPERTIES OF CONTRASTIVE TOPIC MARKING IN JAPANESE

- 11 narrow /given 2-3  
 TAs' chit chat  
 They teach the same course. Each of them had to grade half of the class.  
 The lecturer came and asked them:  
 Did everybody solve the problem? I think this problem was easy.  
 TA 1 said: No. **Everybody did not solve the problem.**  
 But most of them did well.
- 12 narrow /given 1-3  
 At the school trip  
 The teacher said that everybody was able to sleep last night.  
**Everybody was not able to sleep.**  
 I saw some of them sneak out of their room.
- 13 wide/given 3-1  
 It has been snowing very heavily and the whole the city had stopped functioning. Those who commute by public transportation were not able to come.  
 Mary walked to school, but the class was empty.  
**All of them did not come.**  
 In fact, after she checked her e-mail, the class had already been cancelled.
- 14 narrow /given 4-3 (actually wide/given context)  
 Yesterday was final exam day. They all have been working so hard this week for finals.  
 It was the first morning after the final, so they did not wake up that early anymore. It is six in the morning.  
**Everyone didn't wake up.**  
 They totally slept in until noon.  
 Other members of her group covered Mary's part, so they managed to finish the presentation without any serious problem.
- 15 narrow/new 3-4  
 Last Saturday was Snooky's birthday. She invited her friends. Since it was on Saturday, most of her friends showed up. Apparently, some had to work.  
**Everyone didn't come to the party.**  
 But people who came seemed to have really enjoyed it.
- 16 narrow /new 1-4  
 The tour guide thought the wake-up call would be okay for 7:00 a.m. to catch the return flight.  
 While most of the tourists had already spent a day at a hotel, some just arrived from being out all night.  
**Everyone was not able to sleep.**  
 So the guide had to secure extra hours for those who were extremely tired.  
 \*I used *all of them* and *everyone or everybody* for translation interchangeably.

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