The Topic Comprehension Process in Simile Sentences

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Introduction & Research Aims

Some previous studies investigate what meaning the topic or vehicle are understood as having in a declarative (e.g., metaphor) or a comparative (e.g., simile) sentence. For example, Taira & Kusumi (2009a; 2010) used a priming paradigm and a meaningfulness decision task (MDT) to examine the process of topic in a metaphor comprehension. Their results showed that the topic in a metaphor comprehension activates all the meaning (both the metaphor-relevant meaning and the metaphor-irrelevant meaning). Those fact may reflect that...

◆ the topic can play a role in making acceptable all the meanings for the correct and quick comprehension of the metaphor (c.f. McGlone, & Manfredi, 2001).

◆ there is some problems in the experimental paradigm, such as the position and overrepresentation of topic in the experimental paradigm.

In natural Japanese, a comparative expression can be formed by two types of simple sentence.

◆ 「言葉は 武器のように 人を傷つける」
"a word, like a weapon, hurts someone (kotoba wa buki no youni hito o kizutsukeru)"

◆ 「武器のように 言葉は 人を傷つける」
"like a weapon, a word hurts someone (buki no youni kotoba wa hito o kizutsukeru)."

The problems we mentioned above can be solved by using those comparative sentences and the meaning decision task of topic because the two types of comparative sentence can control the position and presentation of topic.

Our study investigates the simile and its effect on topic meaning comprehension.
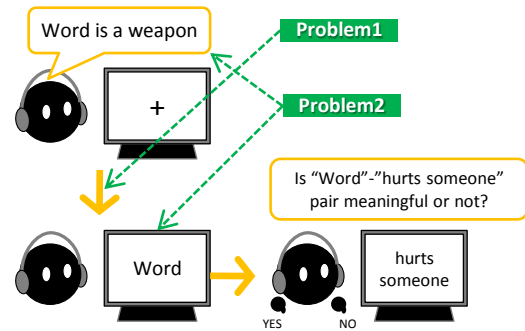

Figure 1. The experiment paradigm in Taira & Kusumi (2009; 2010)
Problem1: the interval between the presentation of topic in the priming session and in the decision session.
Problem2: the presentation of topic both in both in the priming session and in the decision session.
Those problems can activates the whole knowledge of topic so as that the participants can easily access all the meaning of topic.

Method

Participants

84 undergraduates and graduate students all who were native Japanese speakers.

Materials

The 72 pairs of Japanese comparative sentence (e.g., "a word is like a weapon") and interpretative feature (e.g., "a word hurts someone"). Our past studies have investigated the conventionality of the vehicle and aptness (Taira & Kusumi, 2009b; see APPENDIX) of the materials.

All the material were formed in three conditions: the first one presented the topic and features with no vehicle; the second one put the vehicle in natural Japanese order, after the topic; and the third was in reverse order from the second, with the vehicle written before the topic.

◆ after-topic   "A word, like a weapon, hurts someone."
◆ before-topic   "Like a weapon, a word hurts someone."
◆ no-vehicle   "A word hurts someone."

Procedure   The experiment was composed only of MDT (see Figure 2).

Step1: The topic was presented in the after-tipic condition. Otherwise, either the vehicle or the character list (* * *) as control stimulus was presented in the before-topic condition.
Step2: Either the comparative stimulus or the character list (* * *) was presented in the after-topic condition. Otherwise, the topic was presented in the before-topic condition.
Step3: The interpretative feature was presented. The participants were instructed to judge whether the pair of topic and interpretative feature was meaningful or not as quickly as possible.
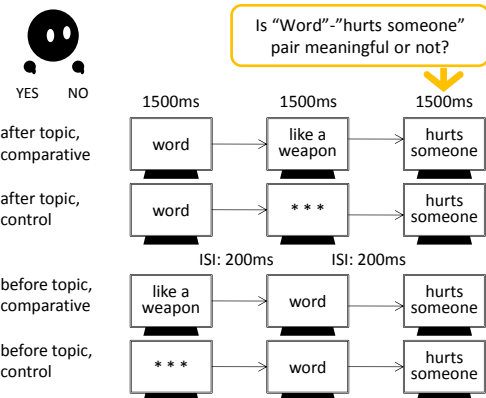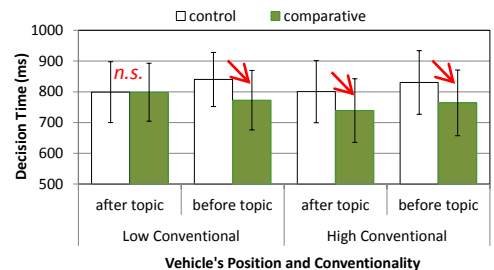

Figure 2. The experiment paradigm in Taira & Kusumi (2009; 2010)
In a meaningful decision, the participants were required to ignore the vehicle. If the topic is activated as the meaning of interpretative feature, decision time in STEP3 will take shorter. Otherwise, if the subject is suppressed as the meaning of predicate, the decision time will take longer.

Results & Discussion

Table 1. Mean decision time in the MDT (*SD*)

vehicle position	after topic	before topic
vehicle type		
control	795.8 ms (104.6)	827.0 ms (97.9)
vehicle	772.1 ms (115.0)	765.1 ms (112.6)

divided by the median of vehicle conventionality

Result of ANOVAs: vehicle position (after topic vs. before topic) x vehicle type (control vs. vehicle)

- The main effects of vehicle position ($F_p(1, 83) = 4.60$, $F_i(1,71) = 9.79$, $p < .05$, $p < .005$) and vehicle type ($F_p(1, 83) = 36.74$, $F_i(1,71) = 42.05$, $ps < .001$) were significant.
- The interaction between vehicle type and vehicle position was also significant ($F_p(1, 83) = 15.09$, $F_i(1,71) = 7.48$, $p < .001$, $p < .01$).
  - The vehicle helps the participants judge the pair of topic and interpretative feature as meaningful more quickly than the control both in the after-topic ($F_p(1, 166) = 7.60$, $F_i(1,142) = 9.48$, $p < .01$, $p < .005$) before-topic ($F_p(1, 166) = 51.76$, $F_i(1,142) = 44.63$, $ps < .001$) conditions.
  - In the control condition, the difference between after-topic and before-topic was significant ($F_p(1, 166) = 17.37$, $F_i(1,142) = 16.90$, $ps < .001$), although the difference in the condition of comparative vehicle presented was not significant ($F_p(1, 166) = 0.87$, $F_i(1,142) = 0.00$, $ps > .10$).

◆ **The topic of comparative sentence is quickly understood as a simile-relevant meaning.**

◆ The before-topic condition can solve the problem 1 & 2 so that the **simile-relevant meaning is activated even when the vehicle is low-conventional one.**
   ◆ However, vehicle conventionality and aptness cannot be independent of each other ($r = 0.53$, $p < .001$; from Taira & Kusumi, 2009b) so that aptness can also have an effect on the processing of comparative sentence (c.f. Chiappe, Kennedy & Smykowski, 2003; Jones & Estes, 2006).

◆ We will investigate the simile-irrelevant meaning in the next research.

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Pilot Study

Aims To investigate the comprehension equivalence between the topic in sentences with after-topic vehicles and topic in the sentences with before-topic vehicles.

Participants 120 undergraduates participated in the pilot study. All were native Japanese speakers and different individuals from the participants in the experiment.

Materials 72 Japanese comparative sentences (e.g., "a word is like a weapon") were used. The materials in the experiment were the same as in the experiment.

Procedure The pilot study was a simple rating task. The participants were presented with the material sentences (e.g., "a word hurts someone"), and required to rate how important a feature the predicate of the sentence (e.g., "hurt someone") was for the subject of the sentence (e.g. "a word"). We used a 5-point scale for importance rating (1 = "not at all important" to 5 = "very important").
We used a booklet in the pilot study. The participants were presented with 96 sentences which included 24 practice sentences and 72 trial sentences. The practice sentences were printed on the first page of the booklet, and the trial sentences were printed in the next pages. The order of printed trial sentences was counterbalanced between participants (Figure 3).
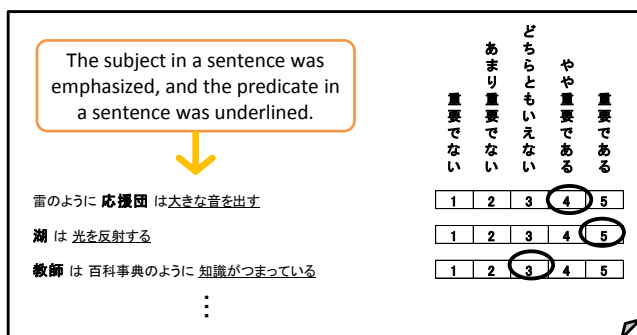
The subject in a sentence was emphasized, and the predicate in a sentence was underlined.

雷のように **応援団** は大きな音を出す

湖 は 光を反射する

教師 は 百科事典のように 知識がつまっている

Figure 3. The example of pilot study rating.

Results The data were analyzed via one-way ANOVA (sentence conditions: no-vehicle, after-topic, before-topic) with participants (F_p) and items (F_i). The main effect of the sentence conditions was significant ($F_p(2, 238) = 3.50$, $F_i(2, 142) = 4.75$, $ps < .05$). Ryan's multiple-comparison procedure revealed that the difference between after-topic and before-topic sentences was not significant ($t_p(238) = 0.67$, $t_i(142) = 0.78$, $ps > .10$). There was no difference between importance ratings in the after-topic and before-topic conditions. This suggests that a topic and an after-topic vehicle are almost equal to a topic and before-topic vehicle. In that light, vehicle word order has little effect on the comprehensive strength of topic in a comparative sentence.
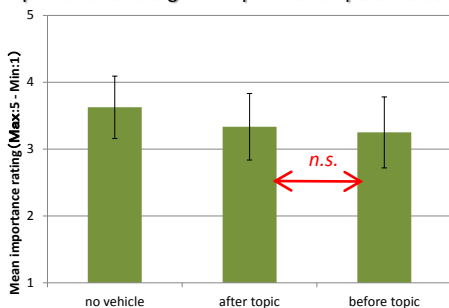
Additional analysis: multiple regression analysis

Table 1. Beta weights from the regression analyses of comparative decision times in the after topic and before topic conditions

	After topic		Before topic	
	β	t value	β	t value
decision time in a control condition	.33	** 3.23	.58	*** 5.86
vehicle conventionality	-.07	-0.77	.08	0.87
aptness	-.30	** -2.82	-.22	* -2.28
topic-feature importance rating	-.17	† -1.83	-.05	-0.57
number of letters	.22	* 2.34	.19	* 2.31
Adjuster R^2		.45		.57

The factor which mainly affect the decision time in a MDT is not vehicle conventionality, but aptness of simile. The detailed discussion will be presented at Japan Cognitive Science Society 2011.

APPENDIX: Examples of materials

◆ **Example of similes with high conventional vehicle**
  <High apt>
  Word is like a weapon.   → Word, like a weapon, hurts someone.
  Life is like a gamble.   → Life is, like a gamble, unpredictable.
  <Low apt>
  A cheer group is like a thunder.   → A cheer group is, like a thunder, loud.
  Knowledge is like an accessory.   → Knowledge is, like an accessory, put on.

◆ **Example of similes with low conventional vehicle**
  <High apt>
  Man is like a wolf.   → Man, like a weapon, acts instinctively.
  A kindergarten is like a zoo.   → A kindergarten is, like a zoo, noisy.
  <Low apt>
  Alcoholism is a parasite.   → Alcoholism, like a parasite, make us ill.
  The exam is like a bear.   → The exam is, like a bear, tough.

The materials in Japanese is available online.
http://homepage.mac.com/hirachi/psycho/lings/

Reference

Chiappe, D., Kennedy, J., & Smykowski, T. (2003). Reversibility, aptness, and the conventionality of metaphors and similes. *Metaphor and Symbol*, *18*, 85–105.

Jones, L., & Estes, Z. (2006). Roosters, robins, and alarm clocks: Aptness and conventionality in metaphor comprehension. *Journal of Memory and Language*, *55*, 18-32.

McGlone, M. S., & Manfredi, D. A. (2001). Topic-vehicle interaction in metaphor comprehension. *Memory and Cognition*, *29*, 1209-1219.

Taira, T. & Kusumi, T. (2009a). The meaning of topic and vehicle in metaphor comprehension: Evidence from meaningfulness decision task. *Proceedings of the 26th Annual Meeting of the Japanese Cognitive Science Society*, 92-95.

Taira, T. & Kusumi, T. (2009b). The cognition of the topic and vehicle and aptness of metaphor. *Proceedings of the 9th Annual Meeting of the Japanese Cognitive Linguistics Association*, 465-471.

Taira, T. & Kusumi, T. (2010). Semantic change of topic and vehicle in metaphor comprehension: Process of irrelevant meaning. *Proceedings of the 10th Annual Meeting of the Japanese Cognitive Linguistics Association*, 513-523.

Taira, T. & Kusumi, T. (2011). Semantic change of topic and vehicle in metaphor comprehension: Process of irrelevant meaning. *Proceedings of the 10th Annual Meeting of the Japanese Cognitive Linguistics Association*, 513-523.