



Source Memory for Multiple Web Texts about Scientific Topics

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BACKGROUND

○ **Science Information on the Web:** Science information on the web is often inconsistent when a number of persons with different opinions talk about the same topic (especially, if it is a controversial topic). So, source information is important for judging how trustworthy the information is (Braten et al., 2009).

○ **Source Memory for Web Texts:** Some studies focused on training or instruction on how to use source information (e.g., Brem et al., 2001; Wiley et al., in press). However, source memory for texts is not evaluated directly, particularly when participants do not expect a source memory test.

○ **Purposes of the Study:**

- **We investigated source memory by using multiple web texts.** This was done to imitate Internet search situations in which participants are exposed to multiple source information about the same topic. We used two topics: genetically-modified food (considered more important to everyday life) and space exploration (considered less important to everyday life).

- **We examined misattribution of sources in terms of two viewpoints: author's specialty and opinion about the topic.** These factors are supposed to cue source judgment.

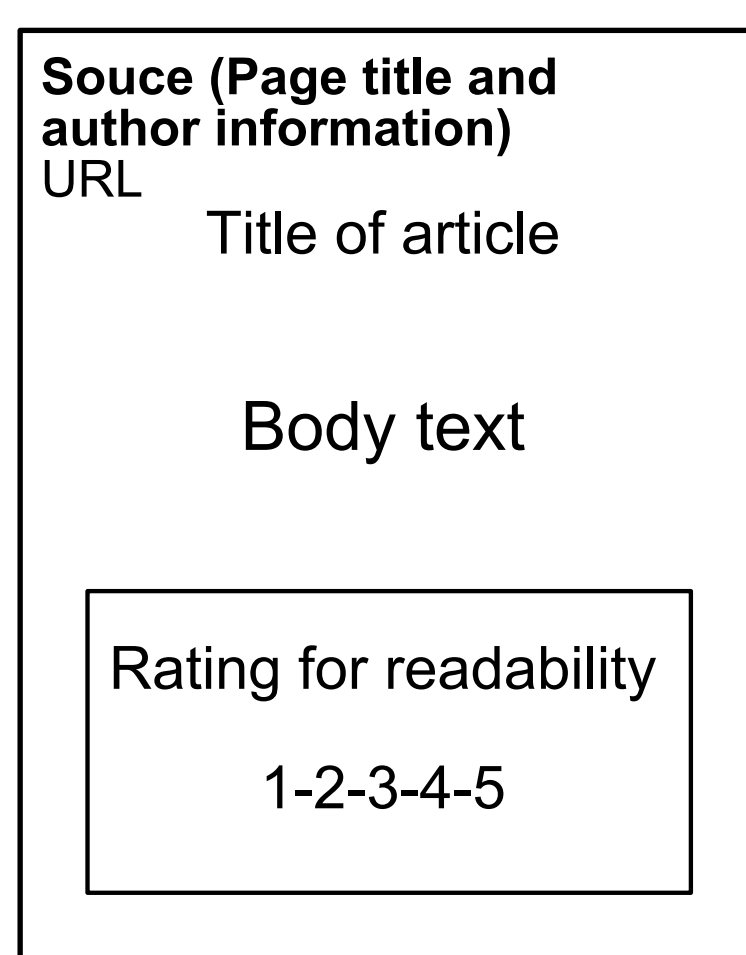


Figure 1. Presented Format of Texts.

METHOD

○ **Participants:** 106 undergraduates participated as volunteers (18-28 years old).

○ **Materials:** 6 Japanese texts about two topics were gathered from the Internet. Each text was affirmative, dismissive, or neutral to its topic and written by either a specialist or a layperson (see Table 1).

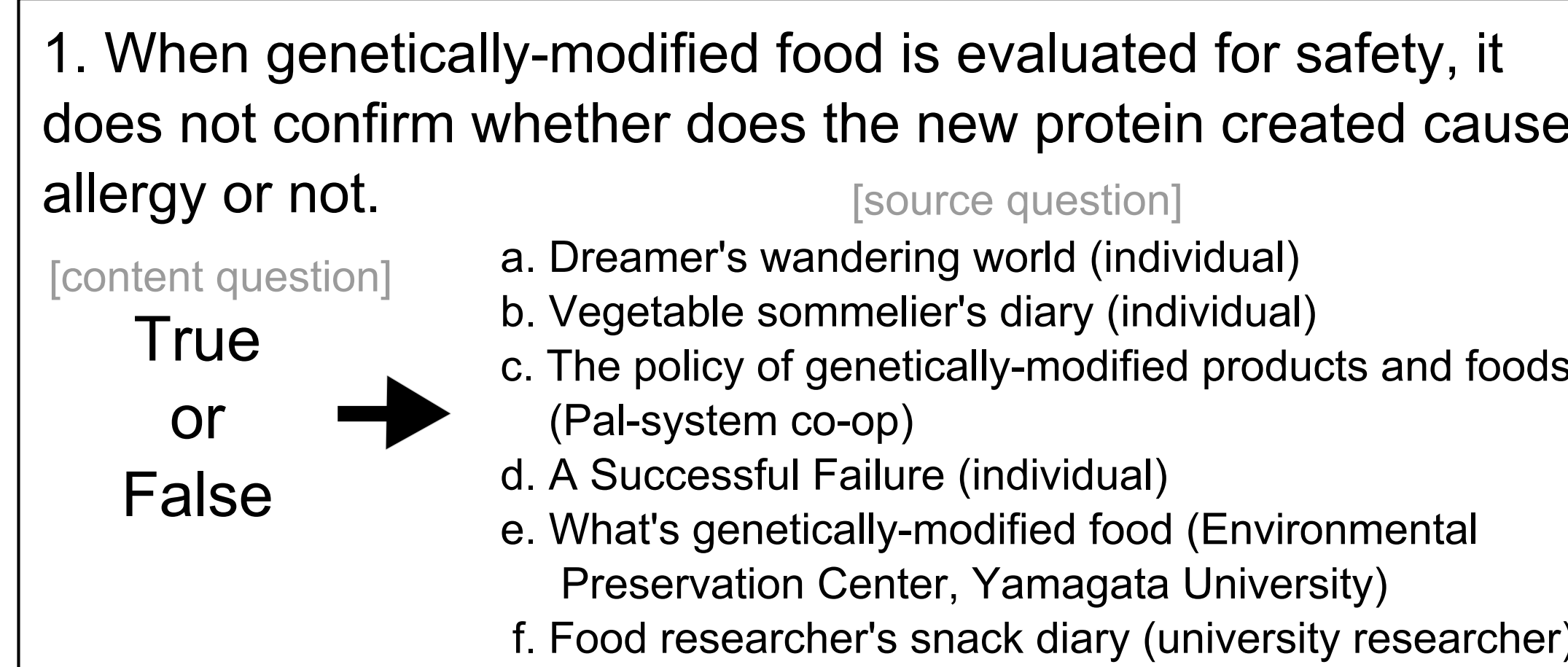
Table 1 Title of Materials for genetically-modified food.

Author	Opinion	title of the site (owner of the site)
1. specialist A	affirmative	Food researcher's snack diary (university researcher)
2. specialist B	neutral	What's genetically-modified food (Environmental Preservation Center, Yamagata University)
3. specialist C	dismissive	The policy of genetically-modified products and foods (Pal-system co-op)
4. layperson D	affirmative	A Successful Failure (individual)
5. layperson E	neutral	Dreamer's wandering world (individual)
6. layperson F	dismissive	Vegetable sommelier's diary (individual)

○ **Procedures:** Participants were tested in their classroom or in small-groups.

- **Reading phase:** Participants read 6 printed texts and rated them for readability within 2 min (Figure 1). They were assigned either genetically-modified food texts or space exploration texts.

- **Test phase:** Participants were asked to answer two questions about several statements.
 - Content: Is it consistent with the texts?
 - Source: Which one of the 6 texts it refers to?



At the end, they rated the importance of several scientific topics on a 7-point scale as a manipulation check.

RESULTS and DISCUSSION

Table 2 Response Frequency of Source Monitoring Test.

Source	Response	Genetically-Modified Food (n =52)						Space Exploration (n = 54)					
		1	2	3	4	5	6	1	2	3	4	5	6
1	specialist A affirmative	12	30	19	13	6	23	45	20	14	7	9	10
2	specialist B neutral	12	18	15	25	30	2	19	26	27	25	11	8
3	specialist C dismissive	20	17	25	19	9	11	18	12	32	8	23	12
4	layperson D affirmative	23	15	21	13	11	20	15	21	11	24	12	21
5	layperson E neutral	26	13	18	12	12	20	15	19	15	9	31	17
6	layperson F dismissive	15	16	23	16	14	10	7	9	15	32	13	31

*The diagonal cells represent correct responses (yellow). The cells including above 30 responses are in red, and the cells including above 20 responses in pink.

○ **Importance Ratings:**

- GM food: $M = 5.04$

- S Explor: $M = 3.60$

○ **Response for Source Test:**

6 x 6 matrices were generated for the two topics (Table 2). Rates of correct responses were:

- GM food: $M = .12$

- S Explor: $M = .29$

○ **MPT Modeling** (Batchelder & Riefer, 1990): We assumed that: 1. If the source information is available, participants respond correctly; 2. If the source information is unavailable, they judge sources according to their supposed Author or Opinion; 3. there is Preference for either factors (Figure 2). The model was applied to data for each topic (Table 3).

- GM Food: $G^2(21) = 17.30, p = .69.$

- S Explor: $G^2(21) = -40.64, p = 1.00.$

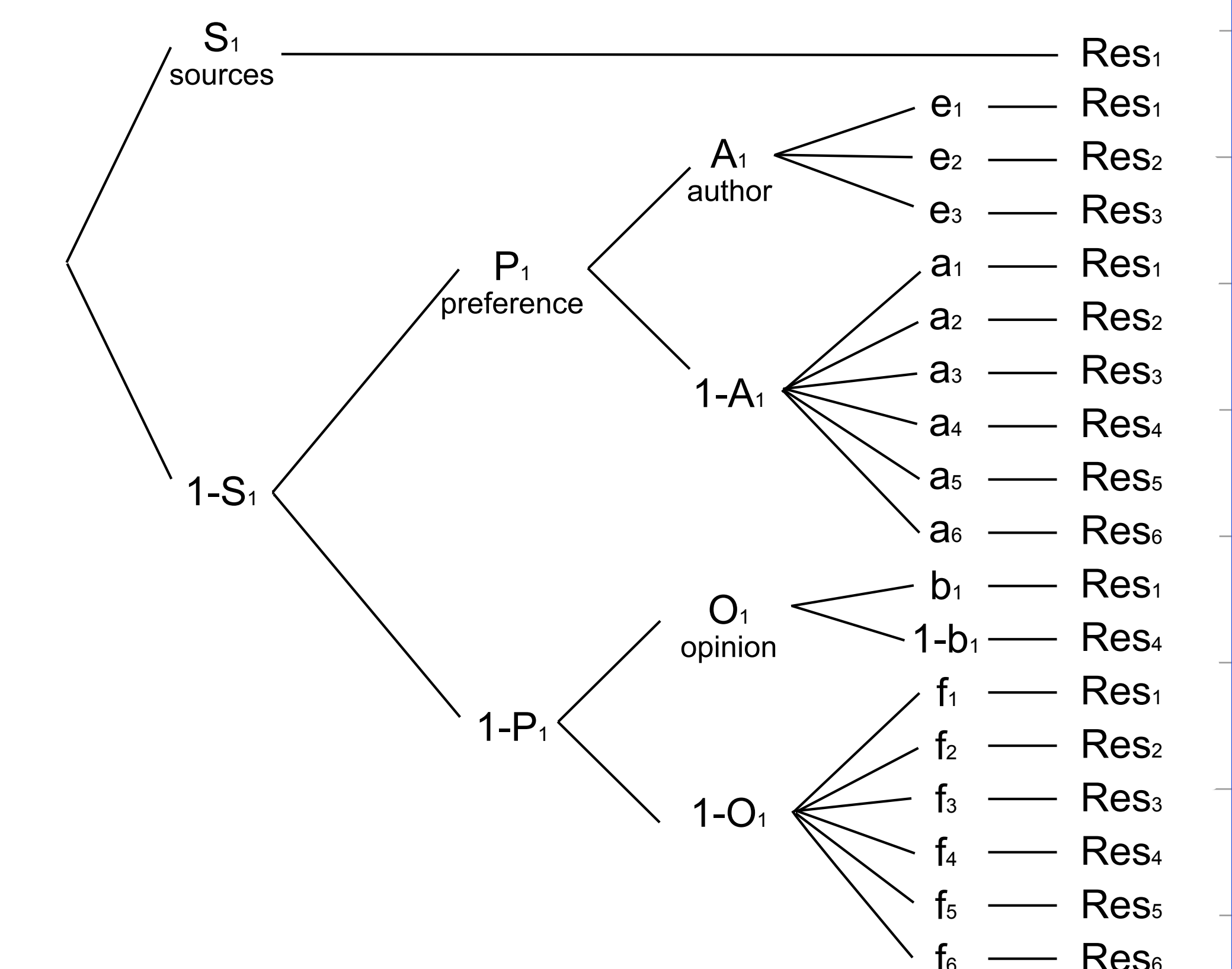


Figure 2. Multinomial Processing Tree Model of Source Memory for Multiple Texts.

Table 3 Parameter Estimates and Goodness-of-Fit for the Data.

	S	P	A	O	G ^{2*}
genetically-modified food	.00	.00	.21	.31	17.30
space exploration	.00	.00	.07	.42	-40.64

*Goodness-of-Fit

Conclusion

- **Very Low Source Memory:**
 - Incidental memory for source was poor.
- **Different Processes of Source Judgement:**
 - Generally, opinion to topics presents base for source judgement.
 - Author's specialty is taken into account when the topic of the texts is important.