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The effect of a character's emotional shift on narrative comprehension

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While reading a story, readers feel happy when good things occur and worry when characters are in danger (Zwaan, 1999). When readers understand the narrative, they construct situation models (Kintsch, 1998). Situation models are multidimensional representations consisting of five dimensions: time, space, causation, intentionality, and the protagonist (Zwaan & Radvansky, 1998). Zwaan, Langston, & Graesser (1995) developed the event-indexing model to explain how readers construct coherent multidimensional representations of situations. According to the model, events and the actions of characters are important in situation model construction. Readers can represent and update characters' emotions (de Vega, Le'on, & Diaz, 1996). The present experiments focus on the effect of a character's emotion when people read a story in which a change in the character's emotion is induced.

Method

Participants. Thirty Japanese speakers were recruited at Kyoto University.

Materials. The materials were 16 stories (4 themes \times 4 emotional states: worry-relief, relief-worry, worry-worry, and relief-relief). Emotional-shift versions were worry-relief and relief-worry. No-shift versions were worry-worry and relief-relief. There were 24 sentences in each story. Presentation of the versions of the stories was counterbalanced with a 4×4 Latin square. Each participant read four stories.

Procedure. Participants were instructed to read the stories in order to appreciate the story and sympathize with the characters. Stories were presented one sentence at a time on a CRT. Reading was self-paced; readers pressed the space bar to proceed. Reading time of each sentence was collected. After finishing each story, readers rated their emotional response to each on five 7-point scales (sympathy, similarity between the character and the reader, experience, interest in the theme, and readability of the story).

Results and Discussion

We performed multiple regression analyses of reading times to assess that reading times could be predicted by the temporal breaks, causal breaks, and a character's emotional shift. Table 1 presents the b-weights from the multiple regression analyses. As Table 1 indicates, temporal discontinuities caused sentence reading times to increase, suggesting that the temporal dimension is crucial. The result is consistent with Zwaan, Magliano, & Graesser's (1995) study. A character's emotional shift also caused sentence reading times to increase. Words and serial positions have consistently been robust predictors of reading times (e.g., Zwaan et al., 1995). These current results indicate that

readers monitor temporal continuity and represent a character's emotion. The multiple regression analyses suggested that a character's emotional shift caused sentence reading times to increase; therefore, readers monitored a character's emotional shift during the on-line reading process. We conclude that, when readers monitor the dimensions of the protagonist in an event-indexing model, emotions similar to those of that character are invoked.

Table 1 B-Weights

Variable	B-Weights
Temporal breaks	134.0*
Causal breaks	8.6
Emotional shifts	209.1*
Words	49.5***
Serial positions	-32.2***
R ²	.30

p < .05, ** p < .01, *** p < .001

Table 2 The difference of score in characters' emotional shifts (standard deviation) range: 1-7

Theme	Examination		Moving		Party		Marriage	
	S	N	S	N	S	N	S	N
1	4.7 (1.3)	4.5 (1.7)	4.1 (2.2)	2.9 (1.8)	3.4 (2.0)	4.3 (2.2)	1.6 (.96)	1.2 (.58)
2	4.0 (1.5)	4.4 (1.8)	4.7 (1.8)	4.1 (2.1)	5.1 (1.3)	5.1 (2.2)	2.5 (1.1)	2.9 (1.4)
3	5.7 (1.1)	5.4 (1.4)	5.6 (1.1)	5.5 (1.3)	5.9 (.89)	6.5 (.76)	4.8 (1.4)	3.9 (1.7)
4	4.5 (1.6)	4.0 (1.7)	5.6 (1.2)	4.0 (1.5)	4.0 (1.3)	5.1 (1.8)	4.9 (1.6)	3.9 (1.4)
5	3.9 (1.5)	4.2 (1.6)	5.3 (1.4)	4.0 (1.9)	3.7 (1.3)	4.6 (1.4)	4.7 (1.6)	4.2 (1.4)

Note. S: shift, N: no-shift

1: sympathy, 2: similar thinking and action to the character 3: experience, 4: the interest in the theme, 5: the readability of the story.

Table 2 displays the score differences in characters' emotional shifts. As Table 2 reveals, interest in the story theme was higher in the shifting version than in the no-shift version, for the moving and the marriage story ($t(28) = 3.3$, $p = .003$, $t(28) = 1.9$, $p = .074$). Interest in the theme was higher in the no-shift version than in the shifting version, for the party story ($t(28) = -1.9$, $p = .069$). The readability of the story was higher in the shifting version than in the no-shift version for the moving story ($t(28) = 2.1$, $p = .043$). On the other hand, the readability of the story was higher in the no-shift version than in the shifting version for the party story ($t(28) = -1.8$, $p = .078$). Because the reader's experience was higher in the no-shift version than in the shifting version ($t(28) = -2.1$, $p = .049$), the party theme exhibited a pattern different from that of the other two themes. The present findings suggest that a character's emotional shift influences the reader's on-line and off-line processes.