

EFFECTS OF COMMERCIAL MESSAGE CONTENT EXPOSURE ON AUDIENCE IMPRESSIONS

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ABSTRACT

This study investigated effects of listening and/or watching commercial-messages (CMs) on audience impressions. We carried out experiments of TV advertisements presentation in conditions of audio only, video only, and audio-video. As results, we confirmed the following two effects: image-multiple effect, that is, the audience brings to mind various images that are not directly expressed in the content, and marking-up effect, that is, the audience concentrates on some images that are directly expressed in the content. The image-multiple effect, in particular, strongly appeared under the audio only condition. Next, we investigated changes in the following seven subjective responses; usage image, experience, familiarity, exclusiveness, feeling at home, affection, and willingness to buy, after exposure to advertisements under conditions of audio only and audio-video. As a result, noting that the image-multiple effect became stronger as the evaluation scores of the responses increased.

Keywords: *commercial message content, audio media, video media, advertisement*

1. INTRODUCTION

Methods of advertising have become increasingly diversified owing to the advent in recent years of digital media, as represented by the Internet, in addition to the conventional four major media – TV, radio, newspapers, and magazines. As a result, surveys and researches have been performed from various perspectives [1] – [11]. Various models are available,

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especially those focusing on the effects of advertisements [6] – [10]. Many analyze the causal relationship between the volume of advertising to which audiences are exposed (e.g., number of advertisements, frequency of exposure) and the effectiveness of the advertising (e.g., recognition rate, sales), but do not consider the effectiveness of the content of the advertisements. Thus, we need to create methods of advertising by taking into consideration the content of each advertisement to take full advantage of the characteristics of each medium. To understand the characteristics, we must quantitatively evaluate how accurately the intended communications (defined here as sending messages with clear intentions to recipients) of advertisement senders (advertisers and producers) are conveyed to recipients (audiences and users). However, no method of quantitatively evaluating the customer appeal of advertisements by taking into consideration the intentions of the senders has been established yet.

Some studies have researched the parallel effects of using multiple types of media for advertising [9] – [11]. One study suggests that the recognition of TV advertisements increases by the use of TV and radio advertisements in parallel instead of using only TV advertisements, and that the higher the exposure to radio advertisements, the higher the recognition of TV advertisements [11]. However, this research focused only on the recognition of advertisements and did not consider any psychological changes in the recipients caused by the exposure.

As a first step to verifying the intended communications, we studied the effects on recipients of exposure to advertisements. We report in detail the psychological changes in the recipients caused by the exposure.

2. EFFECTS ON RECIPIENTS OF EXPOSURE TO ADVERTISEMENTS

We researched the effects on recipients of the exposure to ads, which we assumed cause the following two effects in recipients:

- Image-multiple effect; in which images or audio directly expressed in ads trigger recipients to select identify associated images which are not directly expressed in the advertisements.
- Marking-up effect; in which advertisements prompt recipients to concentrate on the targeted images.

We omitted other possible effects, including the use of celebrities to increase recipients' familiarity with the products.

2.1. Experimental stimuli and environment

We used ten TV advertisements in five categories as the experimental stimuli: six in food and beverage, one in fashion, one in precision and office equipment and stationery, one in household and leisure goods, and one in service and leisure [3]. Each advertisement ran for 30 to 60 seconds. A 43-inch (109-cm) plasma display (PDP-435, Pioneer Corp.) placed 1.62 m away from the subject presented the video stimulus. The viewing angles were 32.7° (W) ×

18.8° (H). Two loudspeakers (PS-S513B, Victor Co., Ltd.) at an angle of 60° presented the audio stimulus. The sound pressure level was about 60 dB (A). The video and audio stimuli were used separately and together.

2.2. Procedures

We carried out the presentation experiment under three conditions: audio only, video only, and audio-video. Under each condition, the advertisements were played twice in succession to the subjects. Immediately after that, the subjects were given three minutes to write down their impressions about the advertisements in nouns or terse phrases (the “free description test”). Then the subjects were asked to rate on a scale of 1 (almost no impression) to 7 (very strong impression) their impressions of words drawn from the advertisements (the “impression evaluation test”). The evaluation words (7 to 23 per ad) were nouns or terse phrases (for example, “alcohol,” “thank you,” “autumn leaves”) drawn from the video images or dialog or were directly associated with them.

The above process constituted one round. Following an initial training round, five rounds were performed successively per session. Each subject sat for two sessions, each of about 30 minutes. The presentation order of advertisements was random and varied depending on the subjects.

2.3. Subjects

A total of 60 subjects participated in the experiments: audio only, 20 (16 men, 4 women); video only, 20 (14 men, 6 women); audio-video, 20 (17 men, 3 women). All subjects were in their 20s and had normal hearing and eyesight (including those with corrected vision). A total of 600 rounds were performed (10 advertisements × 3 conditions × 20 subjects).

2.4. Results

In the free description test, the scores of words included in the ads in video only and audio-video were around twice those in audio only (Fig. 1). The scores of words not included in the ads varied slightly depending on the type of ad, but generally, the scores in audio only were highest, followed by video only and audio-video. The scores for other words were generally low but followed a similar trend to the words not included. These results show that the number of words included in the ads increased when video was presented, and the numbers of words not included and other words increased when either audio (more so) or video only was presented.

In the impression evaluation test, words were ranked from highest to lowest score; Fig. 2 shows the result of CM4 shown in Fig. 1 as an example. Plotted values represent the average score of the evaluation. Standard deviations are shown only for reference purposes as the number of samples is small, and detailed discussion based on standard deviation may be difficult.

In CM4, the first two words in audio only and the first four words in video only and audio-video each had high average evaluation scores of ≈ 6 and relatively small standard deviations (Fig. 2). The results of several other ads show similar trends, while the rest show generally lower evaluation scores with larger standard deviations. The increase in scores with a

decrease in standard deviation depending on the type of advertisement or the method of advertising indicates that these advertisements tend to leave strong impressions on the recipients.

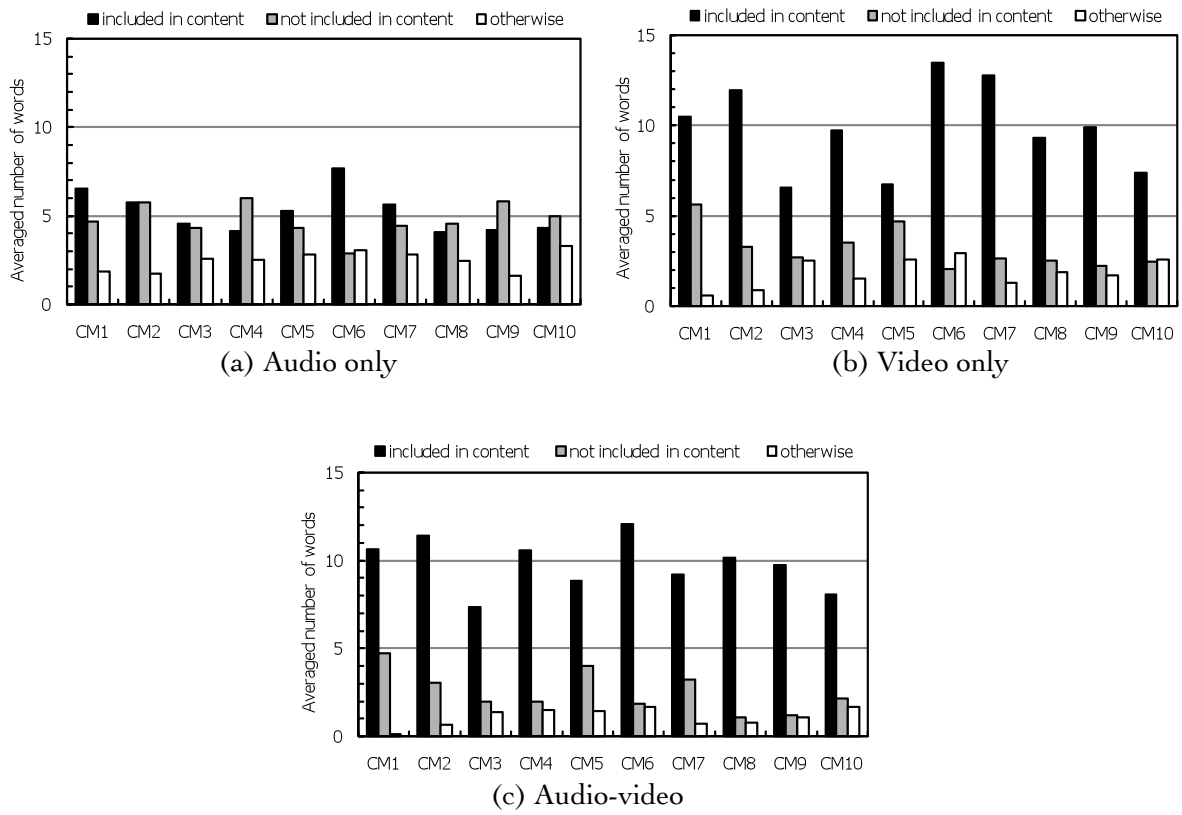


Figure 1: Result of free description test (average number of words). “Otherwise” includes adjectives and opinions such as “interesting” and “difficult to understand.”

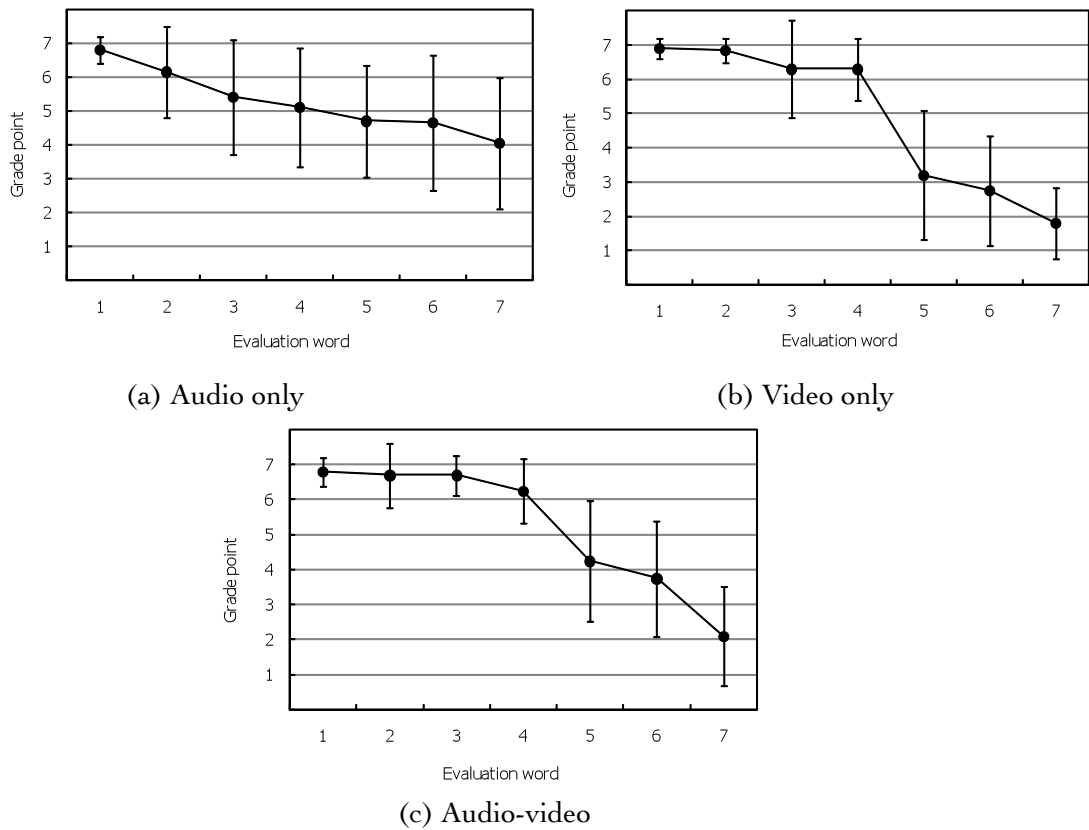


Figure 2: Results of impression evaluation test (average scores of the evaluation in CM4)

2.5. Discussion

In the free description test, the subjects tended to describe more words directly included under the video only and audio-video conditions, and to describe more words not included under the audio only condition. We tested the differences by using typical values under the audio only and audio-video conditions by the Mann–Whitney U -test, an order-based non-parametric test (Table 1). Under “words included,” eight ads were significant at 1% or 5%, indicating that the number of words included was higher under the audio-video condition than under audio only. This difference suggests that the subjects received strong visual impressions from visual information: the audio-video results showed a similar tendency to the video only results. Under “words not included,” five advertisements were significant at 1% or 5%, indicating that the number of words not included was higher under the audio only condition than under audio-video. This difference exactly represents the image-multiple effect. Thus, the expressions in the audio only advertisements apparently caused the subjects to identify various images which were not directly expressed in the advertisements.

Table 1: Differences in typical value between audio only and audio-video (Mann–Whitney *U*-test)

	Significance probability	
	Words included in content	Words not included in content
CM1	0.026*	0.989
CM2	0.001**	0.011*
CM3	0.007**	0.091
CM4	0.000**	0.009**
CM5	0.020*	0.862
CM6	0.060	0.478
CM7	0.081	0.265
CM8	0.000**	0.000**
CM9	0.000**	0.000**
CM10	0.004*	0.023*

*: significance level 5%

** : significance level 1%

In the impression evaluation test, several evaluation words had high scores with small standard deviations, indicating that the subjects concentrated on the images expressed in the advertisements. This represents the marking-up effect. To determine any tendencies in the marking-up effect, we listed the evaluation words with an average score of $\bar{x} = 6$ and its corresponding standard deviation is $s = 1$ (used to eliminate words with a large standard deviation) under each condition (Table 2). More words showed the marking-up effect under audio-video, followed by video only and audio only. The result suggests that the marking-up effect was more effective when video was present. However, some words showed a high marking-up effect under audio only (CM3, CM6) or under video only (CM1, CM2, CM8). This suggests that the marking-up effect may also depend on the type and content of advertisements and the methods of presenting advertisements. It will be necessary to verify whether the marking-up effect operates as intended by advertisement producers in concentrating the recipients' attention.

3. CHANGES IN IMPRESSIONS AFTER EXPOSURE TO ADVERTISEMENT

Having verified the image-multiple and marking-up effects, we studied psychological changes in recipients as a result of the exposure to advertisements by looking at specific items.

Table 2: Number of words with evaluation score of $\bar{x} = 6$ and its corresponding standard deviation is $s = 1$, showing marking-up effect

	Audio only	Video only	Audio-video
CM1	1	2	1
CM2	1	3	2
CM3	2	0	1
CM4	1	3	4
CM5	0	1	0
CM6	2	1	2
CM7	1	1	5
CM8	0	2	1
CM9	0	2	4
CM10	0	1	2

3.1. Subjective responses to advertisements

Exposure to advertisements is assumed to cause various psychological changes in recipients. To test this idea, we evaluated seven subjective responses with likely high relevance to the content of advertisements:

- (1) **Usage image:** image of using (experiencing) the advertised products by the subjects themselves.
- (2) **Experience:** overlap with the subjects' experiences or thoughts.
- (3) **Familiarity:** feeling a close association with the advertised products.
- (4) **Exclusiveness:** feeling that the information is exclusive to the subjects themselves.
- (5) **Feeling at home:** feeling comfortable with the advertised products – “human touch,” “friendliness,” and “relaxing.”
- (6) **Affection:** increased affection for the advertised products.
- (7) **Willingness to buy:** increased willingness to buy (use) the advertised products.

We carried out an experiment to evaluate these seven subjective responses after exposure to advertisements, and examined the image-multiple effect described in Sec. 2.4.

3.2. Stimuli and environment

We used eight TV advertisements in seven categories as the experimental stimulus. These advertisements can be classified by industry as follows: energy and materials: one type, food and beverage: one type, cosmetics and toiletry: one type, precision and office equipment and stationery: one type, construction and housing: one type, automobile and related goods: two types, and household and leisure goods: one type [3]. Each advertisement ran for 30 to 90 seconds. The experiment was performed in a room with seating capacity for 60 people. Each subject group consisted of about 50 people. Three 36-inch (91-cm) CRT displays (TH36D10, Panasonic Corp.) were placed on both sides of the room (a total of six displays) for the video stimulus. The subjects were told to watch the display that gave the widest viewing angle from their seats. Four loudspeakers (PS-S513B, Victor Co., Ltd.) were placed on both sides of the room for the audio stimulus. The sound pressure level was about 55 to 60 dB (A), depending on the locations of the seats. The experiment was performed with audio only and audio-video.

3.3. Procedure

We carried out the presentation experiment under two conditions of audio only and audio-video. Under each condition, the advertisements were played twice in succession to the subjects. Immediately after that, the subjects were given three minutes for a free description test. Then the subjects were asked to rate on a scale of 1 to 7 their feelings about the seven subjective responses listed above; for example, “usage image” ranged from 1 (no change in impression) to 7 (impression expanded broadly).

The above process constituted one round. Following an initial training round, four rounds were performed successively per session. Each subject group sat for two sessions, each of about 40 minutes. The two sessions were performed successively with a rest of about 10 minutes in between.

3.4. Subjects

A total of 211 subjects participated in the experiment: audio only, 105 (55 men, 50 women); audio-video, 106 (52 men, 54 women). The subjects were in their 30s and 40s and had normal hearing and eyesight (including those with corrected vision).

3.5. Results

In the free description experiment, the number of words not included was high under audio only, while the number of words included was high under audio-video (Fig. 3).

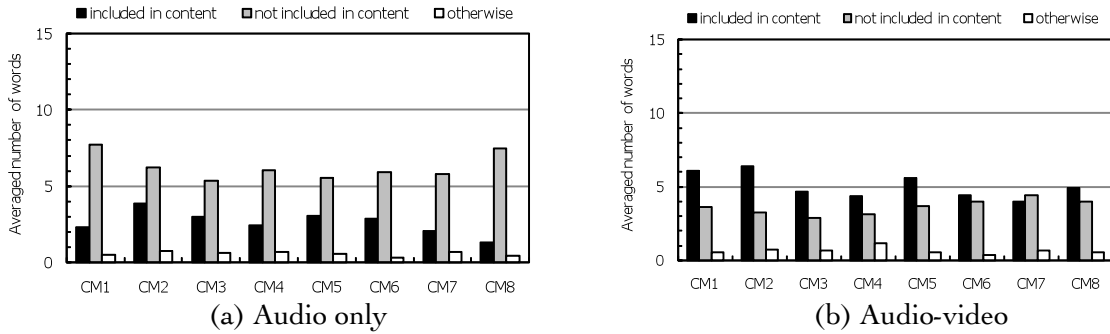


Figure 3: Result of free description experiment (average number of words)

The average values of all seven subjective responses to advertisements CM1 and CM2 were high under both audio only and audio-video conditions (Fig. 4). The results of the other CMs varied: values were high under audio only for some subjective responses, high under audio-video, or almost the same under both conditions.

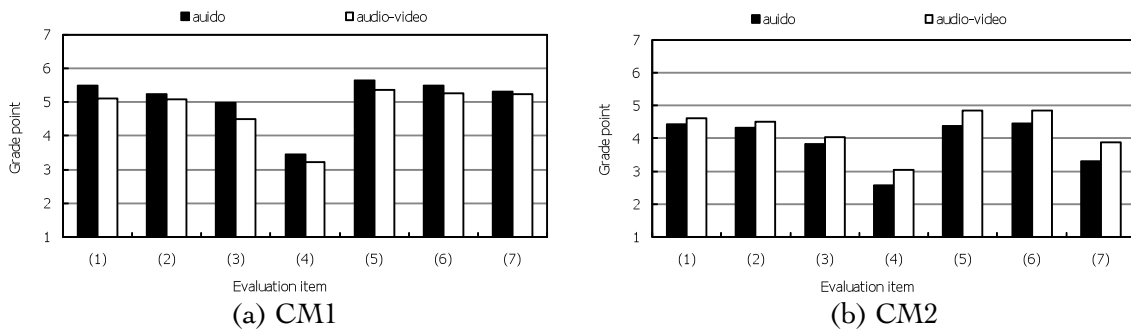


Figure 4: Psychological changes in the seven items (Sec. 3.1) after exposure to advertisements

3.6. Discussion

The results of a higher number of words not included under audio only and a higher number of words included under audio-video in the free description experiment are almost the same as those found in Sec. 2.4. This similarity suggests that the image-multiple effect is strong under the audio only condition. However, the number of words included under audio-video is higher in Fig. 1(c) than in Fig. 3(b) in many cases. This difference may have been caused by the use of a large display for each subject in the experiment in Sec. 2.1, but of small displays in the experiment in Sec. 3.2, creating differences in ease of viewing.

The evaluation scores for the seven subjective responses in Sec. 3.1 varied depending on the type of advertisement and the subjective responses. Some were high under audio only

while others were high under audio-video or were almost the same under both conditions. We tested these differences by Mann–Whitney U -test. Scores were significantly higher ($P = 0.05$) in subjective response (1) to CM4 under audio only; in subjective responses (4), (5), and (7) to CM2 under audio-video; and in subjective responses (5) and (7) to CM8 under audio-video. However, these results may have depended heavily on the content of the advertisements. It will be necessary to verify accurately to what extent the intentions of advertisement producers drive the psychological changes in recipients by taking such intentions fully into consideration.

We also looked at the relationship between the results of the free description experiment and the evaluation results of the seven subjective responses (Table 3). Nine minor correlations were found. Correlations under audio only were higher than those under audio-video in many cases.

Table 3: Co-relationship between number of words not included and evaluation results of seven subjective responses (Spearman’s rank correlation coefficient)

		Evaluation items						
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
CM1	audio only	<u>0.303</u>	0.295	0.215	0.196	0.119	0.175	0.218
	audio-video	0.183	0.242	0.091	0.069	0.108	0.128	0.116
CM2	audio only	<u>0.254</u>	<u>0.294</u>	<u>0.328</u>	<u>0.289</u>	<u>0.277</u>	<u>0.293</u>	<u>0.175</u>
	audio-video	0.158	0.070	-0.026	0.036	-0.002	0.021	-0.061
CM3	audio only	<u>0.123</u>	0.102	0.027	0.025	-0.057	-0.030	-0.022
	audio-video	0.064	0.227	0.162	0.081	-0.006	0.018	0.075
CM4	audio only	<u>0.432</u>	<u>0.439</u>	0.269	0.172	0.271	<u>0.335</u>	<u>0.222</u>
	audio-video	0.379	0.324	0.293	0.202	0.317	0.270	0.189
CM5	audio only	<u>0.286</u>	<u>0.297</u>	<u>0.264</u>	0.037	<u>0.200</u>	0.152	0.096
	audio-video	0.239	0.196	0.200	0.176	0.101	0.169	0.191
CM6	audio only	<u>0.154</u>	<u>0.152</u>	<u>0.152</u>	0.112	<u>0.166</u>	<u>0.148</u>	0.093
	audio-video	0.127	0.101	0.106	0.119	0.154	0.119	0.103
CM7	audio only	0.242	0.188	<u>0.210</u>	0.119	<u>0.203</u>	<u>0.248</u>	0.146
	audio-video	0.250	0.267	0.151	0.160	0.135	0.179	0.150
CM8	audio only	<u>0.143</u>	<u>0.319</u>	<u>0.236</u>	<u>0.118</u>	<u>0.244</u>	<u>0.129</u>	<u>0.196</u>
	audio-video	0.038	0.115	0.027	-0.007	0.062	0.062	0.063

Gray: $\rho \geq 0.3$; underline: audio only > audio-video

A box-and-whisker plot of the number of words not included in subjective response (2) to CM4, in which the correlation under audio only was higher than that under audio-video, shows that as the evaluation score increased, the number of words not included increased under the audio only condition (Fig. 5). Such a phenomenon may be specific to the audio only condition, as the correlation in Table 3 was higher than that under audio-video. However, as the result also shows a tendency to depend on the contents of advertisements, it is necessary to perform further studies based on the intended communications.

The subjects in the experiment in Sec. 2.3 were in their 20s, while those in Sec. 3.4 were in their 30s and 40s. The image-multiple effect and psychological changes through exposure to advertisements depend on the level of knowledge and experience of each subject, and especially the times they live through. Therefore, it will be necessary to perform analyses by generation.

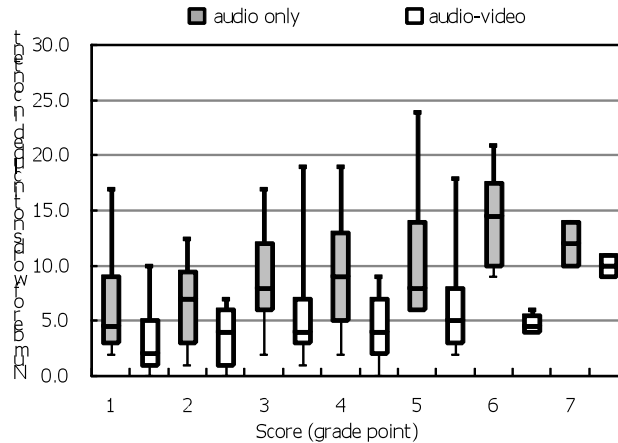


Figure 5: Relationship between number of words not included and evaluation scores of subjective response (2). The top and bottom of each box represent 25% and 75% respectively, while the central line represents the median value. The top and bottom of each whisker represent the minimum and maximum values.

4. CONCLUSION

By studying the effects on recipients of exposure to advertisements under conditions of audio only, video only, and audio-video, we were able to confirm the image-multiple effect (in which images or audio directly expressed in advertisements trigger recipients to identify associated images which were not directly expressed in the advertisements) and the marking-up effect (in which advertisements prompt the recipients to concentrate on the targeted images). The image-multiple effect tended to be strong, especially under the audio only condition. We also evaluated the impressions of subjects just after the exposure to advertisements to test the marking-up effect. However, the responses did not necessarily represent the level of attention of the recipients to the advertisements. It will be necessary to study in detail how to measure the levels of attention and excitement of recipients during advertisements.

Next, we studied changes in seven subjective responses of subjects (usage image, experience, familiarity, exclusiveness, feeling at home, affection, and willingness to buy) after exposure to advertisements under the audio only and audio-video conditions. There is a tendency that the subjects' responses of words which were not directly expressed in the advertisements increased, or the image-multiple effect became stronger, as the evaluation scores increased, particularly under the audio only condition. However, as the result may also depend heavily on the content of the advertisements, further studies incorporating the intentions of advertisement producers may need to be performed.

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