

# Highlighting Effect: The Function of Rebuttals in Written Argument

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## Abstract

A rebutting counterargument is considered a very effective strategy to make one's own argument more persuasive; however, the possible reasons behind this are not clear. In this study, we investigated the effects of rebutting counterarguments on persuasiveness in written arguments. One hundred undergraduate students were assigned randomly to two conditions: a "non-rebuttal condition" and a "rebuttal condition." The participants in the non-rebuttal condition read written arguments that included three my-side reasons, and those in the rebuttal condition read written arguments with my-side reason, a counterargument, and a rebuttal. To determine the persuasiveness of the rebuttals in the written arguments, we investigated three points: 1) reader's direct evaluations toward counterarguments and rebuttals, 2) how the contents of arguments last in readers' minds, and 3) the relations between the first two points. As a result, we found that the participants in the rebuttal condition perceived counterarguments (other-side information) themselves to be needless, so the act of rebutting them was important for them and evaluated as being persuasive. Moreover, the participants in the rebuttal condition remembered my-side reasons better than the non-rebuttal condition. These results suggest that rebuttal has the function of "highlighting" my-side reasons.

**Keywords:** Written Arguments; Rebuttal; Persuasiveness; Recognition of Sentence

## Introduction

This study investigates the effects of rebutting counterarguments on persuasiveness in written arguments.

We use the term "rebutting" to describe the act of justifying my-side claims by countering the other-side's reasons (we call these reasons counterarguments). Rebutting is considered one of the most effective strategies to improve the quality of written arguments (e.g., Ferretti, Lewis, & Andrews-Weekerly, 2009; Ferretti, MacArthur, & Dowdy, 2000; Nussbaum & Kardash, 2005; Onoda, in press; Wolfe & Britt, 2008; Wolfe, Britt, and Butler, 2009; see Nussbaum, 2011 for a review). In one experimental study, for example, Ferretti et al. (2009) gave fourth- and sixth-grade students an elaborated goal including prompts of rebuttal generation to improve the quality of their writings, and Nussbaum and Kardash (2005) also instructed college students to rebut in their written arguments. The instructions of encouraging

generations of rebuttals are practiced in instructional situations as well, such as elementary schools (Ferretti et al., 2000; 2009; Onoda, in press) and colleges (Nussbaum & Kardash, 2005). In both experimental and daily situations, rebuttals could strengthen the robustness of logics; however, the reason rebuttals are persuasive has not yet been revealed.

## The Effects of Rebuttals on Persuasiveness

Toulmin (1958) suggested that arguments simply including my-side reasons are inadequate to be persuasive. The true persuasive arguments are those taking account of the other-side's point of view.

However, Baron (1995) found that the persuasiveness of written arguments with both my-side and other-side reasons have not always been evaluated better than arguments consisting only of my-side reasons. This suggests that referencing counterarguments are insufficient to increase persuasiveness. To write persuasive arguments, the preceding studies suggest that not only mentioning counterarguments but rebutting them is essential (e.g., Allen, 1991; Hale, Mongeau, & Thomas, 1991). For example, Wolfe et al. (2009) controlled the way in which counterarguments were responded to in written arguments (Ex. rebuttal, dismissal, and concession) and asked participants in each condition to rate their agreement with the claim, the quality of the argument, and their impression of the author. As a result, rebuttals led to significantly higher agreement, quality, and impression ratings than arguments with no counterargument. Overall, in a meta-analysis, O'Keefe (1999) found that readers judge rebutting texts to be more persuasive than texts that do not.

Although many studies emphasize importance of rebutting in written arguments, the mechanism of how rebuttals affect a reader's evaluation is unclear. For further research, we need to investigate the effects of rebutting by focusing on the following three points.

First, we must clarify reader's direct evaluation toward counterarguments and rebuttals. The evaluations toward whole written arguments, including counterarguments (and rebuttals) and one excluding them, were used as "evaluation toward counterargument or rebuttal texts (or my-side only

texts)” in previous research, but not the evaluations toward counterarguments and rebuttals themselves (e.g., Baron, 1995; Wolfe et al., 2009). The whole arguments themselves contain multiple elements such as the contents of claims, sentence structure, and quantity of information, and each of them interacts with one another. This makes it difficult to clarify the effects of rebuttals by comparing the difference between evaluations toward whole arguments with and those without rebuttals. Needless to say, the persuasiveness of written arguments should be judged from evaluations of whole arguments, but to examine the functions of counterarguments and rebuttals on persuasiveness, we need to clarify readers’ direct evaluation toward each sentence.

Second, the effects of a rebuttal on a whole argument should be re-examined in a between-subjects design. Wolfe et al. (2009) revealed that written arguments with counterarguments and rebuttals were evaluated higher by readers than arguments with no rebuttals in within-subjects design. In within-subject designs, participants read both types of arguments, so they might have judged written arguments with rebuttals relatively better than simple my-side arguments. This makes it difficult to determine whether arguments with rebuttals are good independently or relatively better than simple my-side arguments. Therefore, we need to examine whether readers evaluate arguments including rebuttals as being persuasive, even if they read the arguments independently.

Finally, we need to develop a method of measuring readers’ evaluation toward sentences. Previous studies have focused on immediate evaluations of participants soon after reading arguments (e.g., Baron, 1995; Wolfe et al., 2009). However, some persuasive arguments require time to take effect and need to last in readers’ minds. For example, the famous sleeper effect shows a delayed increase in the message’s persuasiveness from a minimally reliable source (Hovland & Weiss, 1951; Kelman & Hovland, 1953). The persuasiveness might increase as time advances, so it is important to determine whether the contents of arguments are remembered by readers. A true persuasive argument should remain in readers’ minds. According to this presumption, it is essential to carry the task, such as a recognition task, to see how strong the contents of arguments last in readers’ minds.

### The Purpose of this Study

The purpose of this study is to investigate the effect of rebutting on persuasiveness in written arguments. Previous studies suggest the importance of rebutting, but the exact role of rebutting is not clarified. More specifically, whether rebuttals themselves are persuasive or the structure including rebuttals is persuasive is not clear enough. Therefore, we asked participants to evaluate not only whole written arguments but also each sentence to clarify readers’ direct evaluations toward each sentence. This also enables us to see how each rating is related to evaluations of whole arguments. Lastly, we used a recognition task to see

participants’ remembrance of what was written in written arguments.

## Methods

### Participants and Experimental Design

The participants were 100 (41 males and 59 females) Japanese students from an introductory psychology class at a university. They participated voluntarily in the study. The participants were randomly assigned to one of two conditions: the non-rebuttal condition ( $n = 48$ ) or the rebuttal condition ( $n = 52$ ).

### Materials

**Arguments** Four brief arguments, chosen from the written arguments used in Wolfe et al. (2009), were used as materials. Some arguments’ topics were unfamiliar to Japanese students (for example, topics about gun control and presidential term are not familiar in Japan), so the researchers and four Japanese undergraduate students chose eight arguments that are familiar to Japanese students. Each participant received four randomly chosen arguments from these eight brief arguments and rated items below.

**Structure of Arguments** Participants in each condition read different structured written arguments. Differences in the argument structure between both conditions are shown in Table 1.

Table 1 Argument Structure in the Non-Rebuttal and Rebuttal Condition

Sentence	Contents	
	Non-rebuttal	Rebuttal
	Claim	Claim
Sentence 1	My-side reason 1	My-side reason 1
Sentence 2	My-side reason 2	Counterarguments
Sentence 3	My-side reason 3	Rebuttal

The same sentences were used for both conditions’ claim and my-side reason 1. Also, the same sentences were used in my-side reason 3 and the rebuttal, but there was a conjunction difference that my-side reason 3 started with “in addition,” and the rebuttal began with the word “however.” Examples of brief arguments are shown in Appendix 1. To control order effects, arguments were presented to participants in two counterbalanced orders.

**Evaluation Task** Sentences were presented one after another in each page, and participants were asked to rate each item shown below on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree).

On the first page, we presented the claim and asked participants to rate their agreement with the claim.

On the second, third, and fourth pages, we presented Sentence 1, Sentence 2, and Sentence 3 and asked

participants to rate “importance,” “interest,” “persuasiveness,” and “needlessness” in each sentence.

On the last page, we showed the whole written arguments to participants and asked them to rate the persuasiveness of whole arguments.

**Recognition Task** A week after the evaluation task, the same participants were assigned to recognition task that were composed of 16 sentences. Eight of them were “true” sentences taken directly from the evaluation task (Sentence 1 and Sentence 3), and other eight were technically “false” sentences which are similar to true sentences but have not appeared in the evaluation task. Participants were asked to rate their recognition assurance on a 4-point scale from 1 (have never seen it before for certain) to 4 (have seen it before for certain). Examples of sentences are shown in Appendix 2.

We did not show Sentence 2 (my-side reason 2 / counterargument) in the recognition task, because the contents of this sentence were different among conditions (see Appendix A).

## Procedure

In the evaluation task, we obtained participants’ informed consent and randomly presented four written arguments. Participants were asked to read and rate sentences on each page and asked not to return to previous page. This task was completed in 15 min.

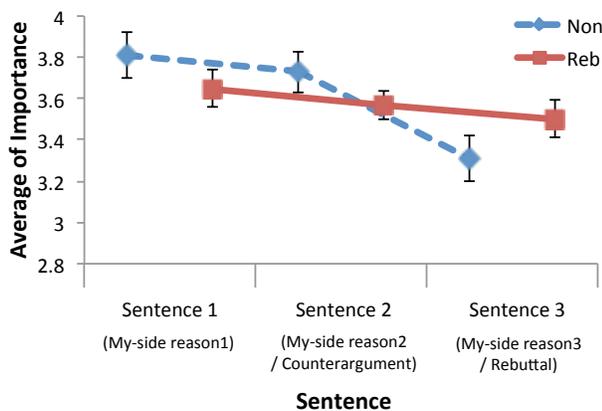
A week after the evaluation task, the recognition task has done. Sixteen sentences were shown to the participants, and they were asked to rate their assurance about their remembrance of each sentence in 10 min. Before the task, participants were told that this task is done to investigate the correctness of their memory and there are filler items that were not written in the evaluation task.

At the end of the study, they were thanked and debriefed.

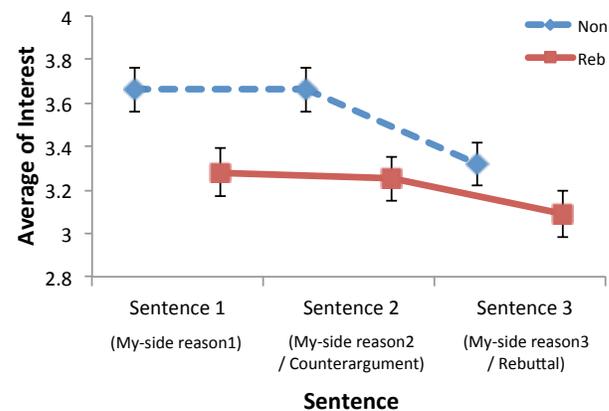
## Results and Discussion

### Evaluation of Each Sentence

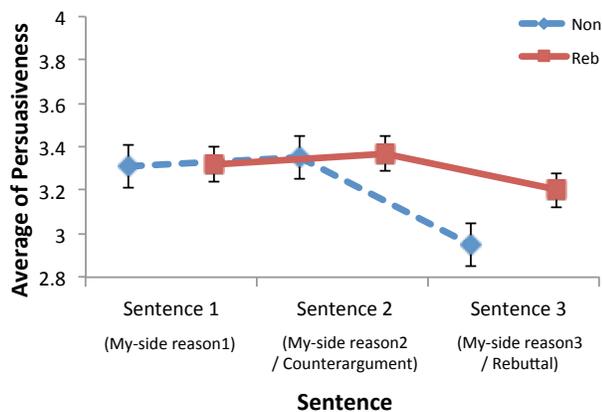
Figure 1 shows the average score of each item of Sentence 1 (my-side reason 1), Sentence 2 (my-side reason 2 /



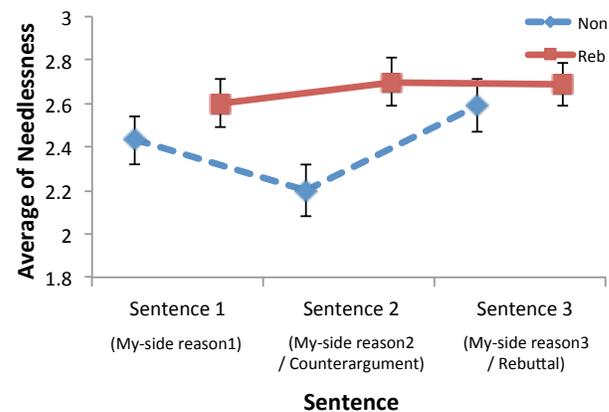
1. Average Score of Importance.



2. Average Score of Interest.



3. Average Score of Persuasiveness.



4. Average Score of Needlessness.

Figure 1. Average Score of Each Items in the Evaluation Task. Error bars represent standard errors. Points are offset horizontally so that error bars are visible.

counterargument), and Sentence 3 (my-side reason 3 / rebuttal), and Table 2 shows the average scores of the evaluation and recognition tasks.

The degree of agreement toward claims might affect each rating score, and there was concern of this becoming a confounding variable when we compared the rating score between the two conditions. Therefore, the agreement rating on claims was used as covariate to compare two conditions' average values in an ANCOVA test. As a result of the analysis, we found a significant difference on "needlessness" in Sentence 2 ( $t(97) = 3.31, p < .01$ ). "Needlessness" toward counterarguments ( $M = 2.70, SD = 0.85$ ) was rated significantly higher than my-side reason 2 ( $M = 2.20, SD = 0.79$ ). Contrary to expectations, the information shown in the counterargument style was evaluated as less necessary information than when it was shown as a supporting reason. There were no differences between other average scores in Sentence 2.

On the other hand, there were significant differences on "importance" ( $t(97) = 2.16, p < .05$ ) and "persuasiveness" ( $t(97) = 2.16, p < .05$ ) in Sentence 3 (see Table 2). "Importance" and "persuasiveness" of rebuttals were rated significantly higher than my-side reasons. Participants perceived rebuttals themselves as being persuasive and also important. There were no differences between the other average scores in Sentence 3.

These results suggest that counterarguments themselves are disruptive for readers, so they perceive the act of countering such obstacles by rebuttals as important and persuasive.

## Evaluation of a Whole Argument

To compare the rating score of persuasiveness between the non-rebuttal and rebuttal conditions, agreement score on claim was used as covariate in ANCOVA test. There was no significant difference in persuasiveness ratings ( $t(97) = 0.78, n.s.$ ). As shown in this result, participants' evaluations of persuasiveness have not changed in spite of the presence or absence of counterarguments and rebuttals in the immediate evaluation task.

Correlation analysis has done to investigate whether persuasiveness of whole argument has relevance to persuasiveness of each sentence. We calculated the partial correlation coefficient that removed the effects of the agreement score on claims to control the effects of participants' degrees of agreement toward claims. In the non-rebuttal condition, there were significant positive correlations between the whole argument persuasiveness and "persuasiveness" of the Sentence 1 ( $r_p = .53, p < .01$ ) and Sentence 2 ( $r_p = .37, p < .05$ ). On the other hand, there were significant positive correlations between the whole argument persuasiveness and "persuasiveness" of the Sentence 1 ( $r_p = .59, p < .01$ ), Sentence 2 ( $r_p = .53, p < .01$ ), and "importance" of Sentence 1 ( $r_p = .32, p < .05$ ) in the rebuttal condition.

To investigate the relevance of Sentence 3 (my-side reason 3 / rebuttal), whole argument persuasiveness, and recognition score, we also calculated the partial correlation coefficient that removed the effects of the agreement score (Table 2). There were significant positive correlations between the "persuasiveness" of Sentence 3 and whole argument persuasiveness in both conditions. On the other

Table 2 Summary of Partial Correlations, Means, and Standard Deviations for Scores on the Sentence 3 and Whole Argument in the Evaluation Task and Recognition Score

	1	2	3	4	5	6	7	Mean	SD
Sentence 3									
1. Importance	—	.34 *	.52 **	-.20	.20	.18	.30 *	3.31	0.69
2. Interests	.42 **	—	.32 *	.10	.01	-.05	.02	3.32	0.68
3. Persuasiveness	.50 **	.53 **	—	.04	.35 *	-.01	.23	2.95	0.68
4. Needlessness	-.22	-.23	-.34 *	—	-.03	-.10	.22	2.59	0.77
Whole argument									
5. Persuasiveness	.28 *	.33 *	.52 **	-.05	—	-.01	.38 *	3.32	0.75
Recognition task									
6. Recognition for Sentence 1	.30 *	.03	.28 *	-.24	.20	—	.48 **	2.81	0.66
7. Recognition for Sentence 3	.35 *	.12	.34 *	-.16	.23	.39 **	—	3.07	0.71
Mean	3.50	3.09	3.20	2.69	3.41	3.21	2.97		
SD	0.68	0.82	0.60	0.73	0.69	0.72	0.71		

Note. Partial correlation coefficients between variables when the controlled variables were agreement rating. Partial correlations for non-rebuttal condition participants ( $n = 48$ ) are presented above the diagonal, and partial correlations for rebuttal condition participants ( $n = 52$ ) are presented below the diagonal. Means and standard deviations for non-rebuttal condition participants are presented in the vertical columns, and means and standard deviations for rebuttal condition participants are presented in the horizontal rows. \*  $p < .05$ . \*\*  $p < .01$

hand, the “importance” and “interest” of Sentence 3 positively correlated with whole argument persuasiveness in the rebuttal condition. These results suggest that the evaluation of rebuttals is associated with the evaluation of whole arguments, so presenting powerful and attractive rebuttals will be important for increasing the persuasiveness of whole arguments.

### **Tendency of Recognition**

To check the accuracy of recognition assurance, we compared the rating score between the true and technically false sentences. If participants distinguished the true sentences clearly from false sentences, the former rating score would be higher than the latter. As a result of the analysis, we found a significant difference ( $t(99) = 8.05, p < .01$ ). The average scores of recognition in true sentences ( $M = 3.02, SD = 0.59$ ) were significantly higher than false sentences ( $M = 2.32, SD = 0.77$ ). This result suggests that participants distinguished true sentences clearly from false ones.

Participants who evaluated the importance of Sentence 1 (my-side reason 1) as being high might memorize Sentence 1 better than participants who did not evaluate the importance of Sentence 1 as being high. The same can be said of Sentence 3 (my-side reason 3 / rebuttal). According to this presumption, the average scores of “importance,” “interest,” and “persuasiveness” in Sentence 1 and Sentence 3 were used as covariates in each ANCOVA test, and the average scores of recognition between non-rebuttal and rebuttal conditions were compared. As a result, there was a significant difference between the average scores of recognition in Sentence 1 ( $t(97) = 2.97, p < .01$ ). Participants in the rebuttal condition remember my-side reason 1 more than in the non-rebuttal condition, but there was no significant difference between the average scores of recognition in Sentence 3 ( $t(97) = -1.18, n.s.$ ). That is to say, participants who read arguments including rebuttals remember my-side reason 1 well.

### **Relevance of Rebuttal and Recognition**

Partial correlation coefficients between the evaluation of Sentence 3 and recognition scores are shown in Table 2. There were significant correlations between “importance” and recognition scores of Sentence 3 in both conditions. As the participants rated the importance of Sentence 3 higher, they remembered Sentence 3 better. Interestingly, the rating scores of “importance” and “persuasiveness” in Sentence 3 were positively correlated with the recognition score of Sentence 1 in the rebuttal condition. This suggests that rebuttals highlight my-side reasons and impress information that supports my-side claims on readers.

## **General Discussion**

The main finding of this study is that rebuttal itself was rated significantly high on importance and persuasiveness.

This might be related to the fact of participants perceiving counterarguments themselves as needless information. Rebutting counterarguments might make needless information into considerable one that support my side claim, so participants evaluated rebuttals as important and persuasive sentences. This easily links to the result of the evaluation of rebuttals being positively correlated with whole argument evaluation. In addition, rebuttal ratings correlated significantly with the recognition assurance of my-side reasons.

These results may suggest us two possible hypotheses. One is that the participants in rebuttal condition were able to memorize my-side reasons better than non-rebuttal conditions, because the structure of material shown was clearer than materials used in non-rebuttal conditions. In the non-rebuttal condition, the participants read three premises supporting a writer’s position, but this structure might obscure target my-side sentences. However, if this hypothesis is true, the participants in rebuttal condition should also remember rebutting sentences too, but they were not, so this hypothesis may be dismissed. The other hypothesis is that rebuttals made my-side information more memorable. In other words, rebuttals themselves are persuasive and also have the function of emphasizing and instilling my-side reasons in readers’ minds. Not only responding to possible counterarguments in advance, but it also highlights my-side reasons, so generating a rebuttal is considered an effective strategy to improve the quality of written arguments. This “highlighting effect” is interesting finding, and we are able to provide new insight into written argument studies.

Contrary to our expectations, no difference was seen in the persuasion evaluations of the whole arguments between the two conditions. This result is different from previous studies’ findings revealing that arguments with rebuttals are more persuasive than arguments with only my-side reasons (e.g., O’Keefe, 1999; Wolfe et al., 2009). This could be explained in terms of the experimental design. In Wolfe et al. (2009), for example, participants compared arguments with rebuttals and those with only my-side reasons in a within-subjects design, but our study used a between-subjects design to prevent participants from making a relativistic evaluation.

In within-subject designs, a whole argument’s persuasiveness might be evaluated by comparing it to other written arguments. The participants in previous studies might have not judged arguments including rebuttals themselves as persuasive, but evaluated them as “relatively-better” than my-side only arguments. On the other hand, a between-subjects design could prevent participants from being able to compare to others, and extract more pure evaluation toward each argument. In this design, we found that there were no differences between the non-rebuttal and rebuttal conditions in immediate evaluation; however, the power of rebuttals appeared a week later. The rebuttals had the power to highlight my-side reasons and make them last in participants’ minds. In daily life, we evaluate the

persuasiveness of a written argument independently and hardly compare it with other written arguments before evaluating the target argument (unless we wanted to read it more critically). Therefore, our finding is consistent with the reality of daily situation.

In future research, we should note that the materials used in our studies were brief arguments, so it is not clear whether these findings are capable of adapting to long written arguments. We need to examine whether we could obtain the same outcomes using long arguments like essays as materials. In addition, we should have to focus on the intrapersonal correlations of ratings toward each sentence and whole argument to determine the functions of rebuttals more accurately.

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### Appendix 1: Examples of Brief Arguments Used in the Evaluation Task

#### Animal Rights (Non-rebuttal condition)

[Claim]

We should prohibit research experiments on animals.

[Sentence 1; My-side reason 1]

Because animals lack the ability to provide informed consent for painful procedures.

[Sentence 2; My-side reason 2]

Some people say both human and animals are living things, and their lives are equally precious.

[Sentence 3; My-side reason 3]

In addition, today destructive animal testing is conducted with high doses of harmless drugs and even cosmetics.

#### Animal Rights (Rebuttal condition)

[Claim]

We should prohibit research experiments on animals.

[Sentence 1; My-side reason 1]

Because animals lack the ability to provide informed consent for painful procedures.

[Sentence 2; Counterargument]

Some people say it is better to use animals for dangerous new drugs than humans because animals' lives are worth less than humans.

[Sentence 3; Rebuttal]

However, today destructive animal testing is conducted with high doses of harmless drugs and even cosmetics.

### Appendix 2: Examples of Sentences Used in the Recognition Task

#### Animal Rights

[Sentence 1; My-side reason 1]

Animals lack the ability to provide informed consent for painful procedures.

[Sentence 3; My-side reason 3 or Rebuttal]

Today destructive animal testing is conducted with high doses of harmless drugs and even cosmetics.