

ISSA Proceedings 2002 - A Normative And Empirical Approach To Petty And Cacioppo's 'Strong' And 'Weak' Arguments



What makes a persuasive message persuasive? According to the Elaboration Likelihood Model (Petty & Cacioppo 1986), argument quality plays an important role in the answer to this question. The present study takes a close look at this factor. First, background information will be given about the Elaboration Likelihood Model (ELM).

Subsequently, the role of argument quality in the ELM will be discussed. After that, the results will be presented of a normative and empirical study of Petty and Cacioppo's research material containing strong and weak arguments. These results will provide insight into the role of argument quality in the persuasion process [i].

1. Petty & Cacioppo's Elaboration Likelihood Model

According to the Elaboration Likelihood Model, people can be persuaded into adopting a claim by walking two different routes. The first route is called the central route. At this route, people systematically examine the quality of the given arguments. If they agree with these arguments, they adopt the claim. If they disagree with the arguments, they reject the claim. The second route is called the peripheral route. At this route, people are persuaded by peripheral cues. Peripheral cues are all non-argumentative features of a message that are capable of influencing the formation or change of the receiver's attitude. Commonly used peripheral cues are rules of thumb, such as 'If this authority says so, it must be true' or 'If hundreds of people used this product before me, it must be a good product.'

Which route is being taken is determined by two factors: motivation and ability. Motivation is about *wanting* to process the persuasive message. If people want to be very sure of the correctness of their attitude, they will be very motivated to examine the given arguments carefully. So, for example, motivation is higher when a house is to be bought than a detergent. The second factor is about *being*

able to process the message. The easier it is for people to examine the given arguments, the quicker they will perform this task. Motivation as well as ability is required in order to follow the central route. If these conditions are not met, the peripheral route will be taken. 2. *Argument quality*

Petty and Cacioppo claim that highly involved people are more persuaded by strong than by weak arguments. Many studies have used Petty and Cacioppo's research material to - successfully - test this claim (e.g., Burnkrant & Howard 1984; Heesacker, Petty & Cacioppo 1983; Petty & Cacioppo 1979, 1984). However, Petty and Cacioppo manipulated argument quality in their research material by means of an *empirical* definition. They define 'a "strong message" as one containing arguments such that when subjects are *instructed* to think about the message, the thoughts that they generate are predominantly favorable. [...] the arguments in a weak message are such that when subjects are instructed to think about them, the thoughts that they generate are predominantly unfavorable' (Petty & Cacioppo 1986: 32).

O'Keefe (1990: 110) aptly notes on this subject that if, 'in a given investigation, an argument-strength manipulation did *not* influence persuasive effects under conditions of high elaboration [...], the conclusion would *not* be "This result disconfirms the ELM's prediction," but instead "The manipulations were somehow defective; either the study didn't effectively manipulate argument strength, or it didn't effectively manipulate elaboration likelihood conditions, because *by definition* stronger arguments lead to greater persuasion under conditions of higher elaboration." To say that under conditions of high elaboration, strong arguments have been found to be more effective than weak arguments" is rather like saying "Bachelors have been found to be unmarried." We didn't need empirical research to find these things out'.

Furthermore, Petty and Cacioppo have left aside the specific cause of the difference between their strong and weak arguments. O'Keefe (1990, 1995) therefore proposes to further conceptualise and concretise the concept of argument quality. He suggests the use of 'some independently-motivated account of argument quality' (1995: 14) by means of which Petty and Cacioppo's research material can be analysed. This 'normatively-guided analysis of these messages may offer some insights into just what aspects of the messages may be contributing to the observed effects.' (O'Keefe 1995: 14). For example, it may be the case that it is the argument not linking up with the given claim that causes the weakness of the argument.

The analysis and evaluation method of Schellens and Verhoeven (1994) is an example of such an independently-motivated account of argument quality. Schellens and Verhoeven have developed several argument types, of which 'Explanation' is an example:

B is (in general) explained by A.

B is the case.

Hence: (probably) A.

Each argument type is accompanied by a set of evaluation questions. Examples of evaluation questions belonging to the argument type 'Explanation' are:

Are there reasons to doubt B?

Is A a necessary condition for B?

Are there other possible explanations for B imaginable and plausible?

Evaluation questions address for example the correctness of the relationship between a claim and its argument or the desirability of an argument. A positive answer to an evaluation question means that the argumentation is strong on this part. A negative answer means that the argumentation is weak on this part.

Areni and Lutz (1988) also address Petty and Cacioppo's argument quality. They divide argument quality into two components: argument strength and argument valence. *Argument strength* is defined as the 'subjective probability that the attitude object is associated with some outcome or consequence'. *Argument valence* is the 'audience's evaluation of that consequence' (1988: 198) or, in other words, the desirability of this outcome or consequence. For example, in the argumentation 'Studying harder leads to an increase of the grade point average', argument strength addresses the probability that studying harder (the attitude object) is associated with the increase of the grade point average (the outcome or consequence). Argument valence deals with the desirability of this increase.

Areni and Lutz carried out an experiment in which participants had to determine the argument strength and valence in Petty and Cacioppo's research material. The results only showed a difference between the strong and weak arguments in argument valence, but not in argument strength. These results led to their conclusion that Petty and Cacioppo only manipulated argument valence instead of the broader argument quality.

Areni and Lutz suggest research in which argument strength is also manipulated. They suggest that people have to be more motivated and able to find weaknesses in argument strength than in argument valence. This is because judging the

argument strength means judging probability and logical coherence. This task is more demanding than judging the argument valence, the desirability of an attribute.

The present study consists of two parts: an analytical and an experimental part, inspired by O'Keefe (1990, 1995) and Areni and Lutz (1988). The purpose of the analytical part was to examine whether Petty and Cacioppo's strong and weak arguments differ from each other normatively. To accomplish this, the arguments in their research material were analysed by means of Schellens and Verhoeven's method, which can be used normatively. Furthermore, this analytical part concentrates on the specific characteristics in which the strong arguments differ from the weak arguments.

The aim of the experimental part was to observe whether there is an effect of argument strength on the persuasiveness of a message, as suggested by Areni and Lutz. Are highly involved people more persuaded by strong than by weak arguments when argument strength is manipulated, while argument valence is kept constant?

3. Petty and Cacioppo's Research Material: Analysis and Evaluation

Petty and Cacioppo's research material consists of eighteen short arguments, all in favour of implementing the so-called 'Senior Comprehensive Exam' (SCE) at universities in the United States. The Senior Comprehensive Exam is 'a requirement for graduation; the exam would be a test of what the student had learned after completing the major, and a certain score would be required if the student was to graduate' (Petty, Harkins & Williams 1980: 87). Nine of the arguments are strong; the other nine are weak or very weak. As mentioned, the division into strong and weak is based on Petty and Cacioppo's empirical definition.

Hypothesis. It was hypothesized that Petty and Cacioppo's strong arguments are stronger than their weak arguments not only empirically, but also normatively. Support for this hypothesis is given by O'Keefe, among others: 'if one examines the "strong-argument" and "weak-argument" messages, it's apparent that these do differ in normative quality - the "strong-argument" messages in fact do make normatively better arguments than do the "weak-argument" messages' (O'Keefe 1995: 13). Schellens and Verhoeven's method was used to test the hypothesis.

Question. A question was asked about the possible cause of the difference

between Petty and Cacioppo's strong and weak arguments. Petty and Cacioppo barely touched upon this issue themselves. They only mentioned (Petty, Cacioppo & Goldman 1981: 850) that their strong arguments contain persuasive evidence in the form of statistics and data and that their weak arguments contain quotations, personal opinions and examples. Furthermore, O'Keefe found a difference between the strong and weak arguments in '(for example) the relevance of the evidence to the conclusions drawn, in the apparent self-interest of cited evidence sources, in the desirability of the benefits claimed to attach to the advocated position, and so on' (O'Keefe 1995: 13-14). And we already know that Areni and Lutz found a difference in desirability (i.e. argument valence) between the strong and weak arguments. This latter finding was the reason for the present study to answer the question by looking in the research material at argument strength and argument valence specifically.

Procedure. Two judges performed the analysis and evaluation, one of them being a lecturer in argumentation. Mr Verhoeven advised them on some global problems. Each argument was analysed by charting the argument types used[**ii**].

Analysis. Each of the 18 arguments contains a claim plus several argumentations. Each claim consists of the attitude object (i.e., the introduction of the SCE) and an attribute varying per argument. Examples of these attributes are:

A sharper increase of the grade point average (strong argument 1)

Higher starting salaries (strong argument 8)

An increase of students' anxiety (weak argument 1)

More parental support (weak argument 3)

Et cetera

The object and attribute are linked by a cause-effect relationship: the introduction of the Senior Comprehensive Exam is the cause of the attribute. Hence, the claims are formulated as follows: 'The introduction of the SCE leads to (for example) higher starting salaries.'

On a global level of analysis, all claims can be seen as arguments. The argument type 'Advantage' links these arguments to the general overlapping claim 'The introduction of the SCE is desirable':

A leads to B: The introduction of the SCE leads to the attribute.

B is desirable: The attribute is desirable.

Thus, A is desirable: The introduction of the SCE is desirable.

It is 'Advantage' that is used here, because this argument type points to the positive or negative effects of a possible action or measure, which is the case here. The attribute of the first strong argument 'An increase of the grade point average' can for example be seen as a positive effect of the introduction of the Senior Comprehensive Exam.

This 'Advantage' interpretation is supported in the literature. O'Keefe (1995: 13-14) and Areni and Lutz (1988: 198) mention for example that the introduction of the SCE is accompanied by very positive attributes ('higher starting salaries') in the case of the strong arguments and by less positive ('more parental support') or even negative ('an increase of the students' anxiety') attributes in the case of the weak arguments.

The analysis per argument - on a lower level - is illustrated by the first strong argument:

The National Scholarship Achievement Board recently revealed the results of a five-year study conducted on the effectiveness of comprehensive exams at Duke University. The results of the study showed that since the comprehensive exam has been introduced at Duke, the grade point average of undergraduates has increased by 31%. At comparable schools without the exams, grades increased by only 8% over the same period. The prospect of a comprehensive exam clearly seems to be effective in challenging students to work harder and faculty to teach more effectively. It is likely that the benefits observed at Duke University could also be observed at other universities that adopt the exam policy. (Petty & Cacioppo 1986: 54-55)

'Explanation' is one of the argument types that supports the claim 'The introduction of the Senior Comprehensive Exam leads to a sharper increase of the grade point average of undergraduates'. This argument type explains the sharper increase of the grade point average: students are working harder and faculty is teaching more effectively. The scheme looks as follows:

B is (in general) caused by A: A sharper increase of the grade point average is caused by students working harder and faculty teaching more effectively.

B is the case: The grade point average has increased more sharply.

Thus, (probably) A: The students worked harder and faculty taught more effectively.

Evaluation. After the 18 arguments were analysed, the evaluation questions

belonging to the argument types found were answered. To illustrate, three 'Explanation' questions and their answers are given:

Are there reasons to doubt the increase of the grade point average? No

Are the students' hard work and faculty teaching more effectively necessary conditions for the increase of the grade point average? No

Are there other possible explanations for the increase imaginable and plausible? *Yes, for example, the students do not waste time studying irrelevant subjects anymore.*

Subsequently, the answers were evaluated as positive, negative or neutral. As said before, 'positive' means that the argumentation is strong on this part; 'negative' means that the argumentation is weak on this part. The neutral answers were not relevant for testing the hypothesis and were therefore left aside.

To answer the question about the cause of the possible difference between the strong and weak arguments, the evaluation questions were divided into argument strength and argument valence. If an evaluation question addressed the *probability* of the link between the attitude object (i.e., the SCE) and the attribute (e.g., higher starting salaries), it was classified as an argument *strength* question. For example: 'Is the occurrence of A in general a necessary condition for B?' If a question addressed the *desirability* of the attribute, it was classified as an argument *valence question*. For example: 'Is B really desired?'

Table 1 Average percentages of positive and negative answers, in total and subdivided into 'argument strength' and 'argument valence'.

	Total		Argument Strength		Argument Valence	
	Positive	Negative	Positive	Negative	Positive	Negative
Strong	89,66	3,10	54,83	2,99	34,84	0,00
Weak	71,41	25,30	35,31	14,58	36,10	10,73

Table 1

Results. The answers were analysed by means of a multivariate one-way analysis of variance. The data in *Table 1* show that the hypothesis is confirmed: Petty and Cacioppo's strong arguments are in fact normatively stronger than their weak arguments. The percentage of positive answers is higher for the strong arguments than for the weak arguments ($89.66 > 71.41$; $F(1, 16) = 27.42, p < .01$). Hence, the strong arguments yielded more positive answers than the weak arguments.

Furthermore, the percentage of negative answers is higher for the weak arguments than for the strong arguments ($25.30 > 3.10$; $F(1, 16) = 80.14$, $p < .01$). The weak arguments yielded more negative answers than the strong arguments.

Table 1 also reveals the answer to the question about the possible cause of the difference between the strong and weak arguments: they differ from each other in argument strength as well as in argument valence. For argument strength, the percentage of positive answers is higher for the strong arguments than for the weak arguments ($54.83 > 35.31$; $F(1, 16) = 9.62$, $p < .01$). With regard to argument strength, the strong arguments thus yielded more positive answers than the weak arguments and are therefore stronger than the weak arguments. Also, the percentage of negative answers is higher for the weak arguments than for the strong arguments ($14.58 > 2.99$; $F(1, 16) = 12.35$, $p < .01$). Hence, the weak arguments yielded more negative answers than the strong arguments and are therefore weaker than the strong arguments.

For argument valence, the analysis led to the following picture: the percentage of positive answers for the strong arguments equals the percentage for the weak arguments ($34.84 = 36.10$; $F(1, 16) < 1$). Hence, there is no difference between the strong and weak arguments in the amount of positive answers; the strong and weak arguments are equally strong as far as the amount of positive answers is concerned. But the weak arguments do get more negative answers than the strong arguments ($10.73 > 0.00$; $F(1, 16) = 9.08$, $p < .01$). The weak arguments thus yielded more negative answers than the strong arguments and are therefore weaker than the strong arguments.

Conclusions. When using an independently-motivated account of argument quality, there turns out to be an overall difference between Petty and Cacioppo's strong and weak arguments: their strong arguments are in fact stronger than their weak arguments, not only empirically but also normatively. Furthermore, the results show that Petty and Cacioppo's strong and weak arguments differ from each other in argument strength as well as in argument valence. In other words, both argument strength and valence cause the normative difference between the strong and weak arguments.

The latter result seems to contradict Areni and Lutz's claim that Petty and Cacioppo only manipulated argument valence. This seeming contradiction can be solved as follows: Areni and Lutz used participants who only registered

weaknesses in argument valence and not in argument strength. However, this does not mean that there were no weaknesses in argument strength; the participants just did not see them.

4. Experiment

Petty and Cacioppo claim that argument quality plays an important role when people are highly involved: these people are more persuaded by strong than by weak arguments. But the participants in Areni and Lutz's experiment only saw weaknesses in argument valence and not in argument strength. This may suggest that it is argument valence that is responsible for the persuasiveness of strong arguments instead of argument quality (that consists of argument valence and argument strength). But we do not know this for sure, because Petty and Cacioppo manipulated argument strength as well as argument valence, as our analysis has shown.

Question. An experiment was set up to answer the following question: are highly involved people still more persuaded by strong than by weak arguments when argument strength is manipulated and argument valence is kept constant?

Material. The research material in the present study was comparable with Petty and Cacioppo's. It was also about introducing some kind of Senior Comprehensive Exam. In Dutch, it was called the MEA, the 'Mondeling Eindexamen voor Afstudeerders' (Oral Examination for Graduates).

The following two variables were manipulated in the experiment:

1. Issue Involvement: high or low
2. Argument Strength: strong or weak

The first variable 'Issue Involvement' influences the motivation to carefully examine the given arguments. 'As the personal consequences of an advocacy increase, it becomes more important for people to form a veridical opinion because the consequences of being incorrect are greater. Because of these greater personal consequences, people should be more motivated to engage in the cognitive work necessary to evaluate the true merits of the proposal' (Petty & Cacioppo 1986: 82).

To manipulate issue involvement, two versions of a text were created. In the first version the MEA was to be introduced at the participants' own university (the University of Nijmegen) in the following year. It was expected that the

participants reading this version would feel highly involved and motivated. This would lead to a careful examination of the text. In the second version, the MEA was to be introduced at the University of Leiden in about ten years. It was expected that participants reading this version would feel less involved and motivated. This would lead to a more superficial examination of the text.

The second variable to be manipulated was 'Argument Strength'. Three advantages of the introduction of the MEA were given in each version of the text. The strong arguments correspond to Petty and Cacioppo's strong arguments, except for the removal of some weaknesses discovered in the analytical part of this study. Subsequently, weak arguments were composed by weakening one supporting argumentation per advantage on argument strength. Schellens and Verhoeven's evaluation questions were used for this.

The first advantage was an increase of the grade point average by 34%. Argument strength was manipulated by adding the following sentence in the weak version: 'All lectures are replaced by tutorials at this university in the same period.' This extra sentence could lead to the conclusion that it was this introduction of tutorials instead of the MEA that caused the increase of the grade point average. The second advantage was that the MEA led to an improvement of teachers' qualities. In the strong version, this was supported by the Ministry of Education. In the weak version, this was supported by a teacher of Ghent University. This is weak because a teacher is an unreliable source for stating that the MEA has led to an improvement of his or her own qualities. Finally, the third advantage was that graduates of universities with MEA received higher starting salaries. In the strong version, this was supported by examples from the universities of Brussels and Leuven. In the weak version, this was supported by a single example from the hotel and catering school in Brussels, which is not even a university.

Four conditions were derived from a crossing of the two variables:

1. High issue involvement /strong arguments
2. High issue involvement /weak arguments
3. Low issue involvement /strong arguments
4. Low issue involvement /weak arguments

The material consisted of four versions; each of which covered one of the four conditions.

Note that there is a normative difference between the strong and the weak arguments in the present study. According to O'Keefe (1995: 14), an

independently-motivated account of argument quality supplies us with general criteria to construct normatively good arguments. With the help of these criteria, the persuasiveness of normatively strong versus weak arguments can be empirically examined. The arguments were therefore constructed by means of Schellens and Verhoeven's method instead of Petty and Cacioppo's empirical definition. Because of this approach, the strong arguments are normatively strong in argument strength and the weak arguments are normatively weak in argument strength, whereas argument valence is kept constant.

Pilots. The material was extensively tested in a series of pilots. It was tested whether weaknesses in argumentation were seen and whether the strong arguments were really judged as strong. The research material was adjusted if needed.

Participants. A total amount of 60 participants joined the experiment, 41 female, 19 male. All of them were students at the University of Nijmegen at one of the following studies: Law, History, Dutch, Psychology, Pedagogics or Physics. All participants were between 17 and 24 of age and got approximately EUR 2,27 for their participation in the experiment.

Design. The participants were randomly assigned to one of the four conditions. Each version was read by 15 participants. Both variables had a between-participants design.

Procedure. The participants first read the message. Subsequently, they were asked to list their thoughts on the subject of the message for about three minutes. Afterwards, the participants had to categorize their thoughts into positive, negative or neutral. The neutral reactions were later left aside. The participants' categorization was the only categorization made. This is because Cacioppo, Harkins and Petty (1981: 44-45) found that participants and independent judges largely put responses in the same categories.

The participants' thoughts can be seen as 'cognitive reactions'. The notion of cognitive reactions stems from the Cognitive Response Model (Greenwald 1968). Cognitive reactions reflect the way in which someone processes information. Cognitive reactions to a persuasive message from a political party could be for example: 'How nice that they support the elderly', 'I find it unlikely that they will succeed in solving the traffic jams', et cetera.

Finally, the participants had to fill in scales to measure their level of attitude and involvement. As for attitude measurement, the participants were asked to judge the introduction of the MEA by taking position on five-point scales in between four couples of opposing adjectives: wanted - unwanted, bad - good, nice - unpleasant and insensible - sensible. The attitude was determined on the basis of the scores on these scales. As for involvement measurement, the participants had to indicate to what amount they felt involved with the introduction of the MEA. They had to answer the following questions on a five-point scale from 'Not at all' to 'To a very great extent':

- *To what extent does the introduction of the MEA occupy you personally?*
- *Do you find the introduction of the MEA of great interest to your own life?*

Manipulation checks. The attitude scales appeared to have sufficient coherence to be treated together ($\alpha = .70$). The involvement scales showed enough coherence as well ($\alpha = .76$).

Subsequently, a t-test for independent measurements was used to test whether the manipulation of issue involvement led to a difference in involvement. This was indeed the case: the high issue involvement versions led to a higher score on the involvement scales than the low issue involvement versions ($t(58) = 1.82, p < .05$). Because of this outcome, it is justified to use the terminology of high and low involvement.

Table 2 Average cognitive reactions per subject, subdivided into positive, negative and neutral and average attitude per subject, both subdivided into high and low involvement and strong and weak arguments.

		High Involvement		Low Involvement	
		Strong Arguments	Weak Arguments	Strong Arguments	Weak Arguments
Cognitive Reactions	Positive	1,47	1,00	2,07	1,93
	Negative	2,13	1,80	1,87	2,07
	Neutral	1,73	1,87	1,20	1,00
Attitude		4,57	4,62	4,63	4,50

Note to sixth row: 1 = very negative attitude; 5 = very positive attitude

Table 2

Results. Petty and Cacioppo claim that strong arguments are more persuasive than weak arguments when people are highly involved, while argument quality does not have an effect when people are less involved. When people are highly involved, strong arguments should lead to more positive cognitive reactions and subsequently to a more positive attitude than weak arguments. Weak arguments

should lead to more negative reactions and subsequently to a more negative attitude than strong arguments. Our question was whether this is still the case when argument strength is manipulated and argument valence is kept constant.

Univariate two-way analyses of variance were used to test whether there was an effect on the participants' attitude and cognitive reactions. As for the participants' attitude, no interaction effect was obtained ($F(1, 56) < 1$) nor a main effect of 'Argument Strength' or 'Issue Involvement' (both $F(1, 56) < 1$). Furthermore, no interaction effects were obtained on respectively the participants' positive and negative cognitive reactions ($F(1, 56) < 1$; $F(1, 56) = 1.07, p = .57$). 'Argument Strength' did not have an effect on the amount of positive nor negative reactions (both $F(1, 56) < 1$). In addition, there was no effect of 'Issue Involvement' on the amount of negative cognitive reactions ($F(1, 56) < 1$). The only effect found was a main effect of 'Issue Involvement' on the amount of positive cognitive reactions ($F(1, 56) = 5.77, p < .05$). The less involved participants generated more positive cognitive reactions than the highly involved participants.

Pearson's correlation coefficients were used to test whether there was a relationship between cognitive reactions (positive or negative) and the attitude. For each subject, the amount of negative cognitive reactions was subtracted from the amount of positive reactions. The results confirmed the presence of this relationship ($r = 0.59, p < .01$). Hence, positive reactions led to a positive attitude and negative reactions led to a negative attitude.

Conclusions. According to the Elaboration Likelihood Model, highly involved people should be more persuaded by strong than by weak arguments. The results of the present study show us otherwise. The strong arguments did not lead to a more positive attitude than the weak arguments and the weak arguments did not lead to a more negative attitude than the strong arguments. Furthermore, the strong arguments did not lead to more positive cognitive reactions than the weak arguments and the weak arguments did not lead to more negative reactions than the strong arguments. Because of these negative results, it has become irrelevant that positive reactions did lead to a positive attitude and that negative reactions did lead to a negative attitude, just as the fact that less involved people saw no difference between strong and weak arguments.

A remark has to be made about the main effect of issue involvement on the amount of positive cognitive reactions; highly involved participants generated less positive cognitive reactions than less involved participants. There may have been

an effect of involvement with the introduction of the MEA on the *desirability* of the introduction of this exam. The MEA was presented as a heavy exam with a lot of extra pressure. Therefore, the highly involved participants (who had to do the exam) may have found the MEA less desirable than the less involved people who were not to encounter the exam. Measurements on separate attitude scales support this suggestion; some highly involved participants did find the MEA sensible and good, but also unwanted and unpleasant.

5. General Conclusion

Petty and Cacioppo claim in their Elaboration Likelihood Model that argument quality determines the persuasiveness of a persuasive message when people are walking the central route to persuasion. This claim was largely built upon their research material about the Senior Comprehensive Exam. The research material was based on an empirical definition: arguments are strong when people generate mainly positive reactions to them and arguments are weak when people generate mainly negative reactions to them.

The analytical part of our research was executed to find out whether the arguments in Petty and Cacioppo's research material differ from each other normatively to empirically. It appears that this is the case; Petty and Cacioppo's strong arguments are normatively stronger than their weak arguments, based on Schellens and Verhoeven's method. Furthermore, we found out that Petty and Cacioppo's arguments differ normatively from each other in argument strength as well as in argument valence. In other words, Petty and Cacioppo's strong arguments are more probable and more desirable than their weak arguments.

We have seen in the experimental part of the study that manipulation of argument strength did not lead to a difference in persuasiveness between strong and weak arguments when people were highly involved. This contradicts Petty and Cacioppo's claim that the broad argument *quality* determines persuasiveness at the central route. It seems to be the case that only the more narrow argument valence is responsible for this effect. But it may also be the case that the participants in the present study were not motivated or able enough to register the weaknesses in argument strength. After all, Areni and Lutz tell us that judging argument strength instead of argument valence requires a higher level of elaboration.

The question presents itself as to whether highly involved people see the weaknesses in argument strength. They may not see them or they may see them

but are not influenced by them. In the present study, only 2 out of 302 cognitive reactions discuss the weaknesses. The first option therefore seems to be the case: people do not see the weaknesses in argument strength, not even when the subject is personally relevant to them. As opposed to this, Areni and Lutz found that weaknesses in argument valence are seen. It must be the case then that the weaknesses in argument valence are not only seen but also cause the difference between the persuasiveness of the strong and weak arguments.

6. Suggestions for further research

Judging by the results of Areni and Lutz's and the present study, one would tend to say that it is argument valence that is responsible for the persuasiveness of strong arguments when people are highly involved. But Petty and Cacioppo have manipulated argument valence unconsciously and their strong and weak arguments differ from each other in argument strength as well as in argument valence. It therefore deserves recommendation to conduct an experiment, comparable with the present one, in which argument valence is manipulated and argument strength is kept constant. This kind of research is necessary to find out whether it is really argument valence that is responsible for the difference in persuasiveness.

The ideas of the ELM seem simple: people are more convinced by strong than by weak arguments on the central route, whereas argument quality is of no importance on the peripheral route. The present study reveals that the persuasion process is far more complicated. Petty and Cacioppo (1986: 8) speak rightly of a continuum: 'We view the extent of elaboration received by a message as a continuum going from no thought about the issue-relevant information presented, to complete elaboration of every argument'. They nevertheless choose to describe the model in terms of the central and peripheral route: 'it's also important to note that these different theoretical processes can be viewed in their extreme cases as specifying just two qualitatively distinct routes to persuasion' (Petty & Cacioppo 1986: 11).

It must be sorted out which weaknesses in argument quality are detected at which elaboration levels. The results of the present and Areni and Lutz's study suggest that motivated and able people are capable of detecting weaknesses in argument valence, whereas these people do not see weaknesses in argument strength. According to Areni and Lutz, this is because judging the argument strength is a more demanding task than judging the argument valence. But how motivated and able does someone need to be to detect flaws in argument

strength? Not to mention the differences within the argument strength level: some weaknesses are more transparent than others. The present study showed that the weaknesses in argument strength were still not seen, in spite of their high transparency. Very subtle and obscure weaknesses in argument strength may possibly just be detected by very motivated argumentation experts.

NOTES

[i] The present study was performed within the framework of Van Dijk's MA thesis.

[ii] You can contact one of the authors for more information on the analysis.

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