Making messages memorable: the influence of rhetorical techniques on information retention

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4. Effects of three concluding retention techniques

Long and informative, short and superficial summaries; rich and vivid, concise and abstract anecdotes; brief organising questions and multiple rhetorical questions in a row: chapter 3 has shown that retention techniques that are recommended in public-speaking textbooks appear in many variants in public-speaking practice. The three types of speakers studied in the previous chapter also appear to prefer different organisation and elaboration techniques or variants thereof, which suggests that the rhetorical situation of a presentation influences the selection of (variants of) retention techniques. However, it is not clear to what extent techniques that are attributed to retention in textbooks, and factors such as content, structure, and style, influence information retention of the audience.

This chapter intends to provide more insight into retention effects of rhetorical techniques. To this end, two experiments that are focused on specific retention techniques in the conclusion were designed. To properly measure retention effects, the experiments in this study were limited to a particular public-speaking situation: the context of an informative presentation. As explained in the introduction (chapter 1), informative presentations are prominent types of presentations in the educational practice of the author of this dissertation: teaching academic communication skills to engineering students (at Delft University of Technology). Engineering lectures and student presentations are usually aimed at informing the audience on, for example, a design, a technology or laboratory results. In informative, educational settings, the purpose of transferring knowledge has priority over the aim to (solely) persuade or inspire.[275]

In public-speaking practice, speakers who mainly aim to inform appear to prefer organising retention techniques rather than elaborating retention techniques (see chapter 3). Furthermore, in public-speaking textbooks the conclusion is considered to be the most important part of a presentation to influence retention (chapter 2). Therefore, the two experiments discussed in this chapter focus on three organising retention techniques related to the conclusion: the first experiment is about the 'announcement of the conclusion' and 'circle technique', the second experiment is about the 'summary'. These three retention techniques are (frequently) described in public-speaking textbooks and their usage in practice was observed in chapter 3, which provides a solid basis for an experimental design.

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[275] The experimental setup of the two experiments discussed in this chapter resembles that of the experiments on self-disparaging humor described in Gagestein, Andeweg, De Jong & Wackers (2014) and Wackers, Andeweg & De Jong (2014). The main difference is that these studies did not focus on measuring retention, but on the speaker's ethos.

Therefore, this chapter answers the following main question:

What are the effects of the rhetorical techniques announcement of the conclusion, circle technique and summary on the audience's information retention of an informative presentation?

The chapter is structured as follows. Section 4.1 deals with the first experiment, aimed at retention effects of the announcement of the conclusion and the circle technique.[276] The second experiment, which revolves around the summary, is discussed in Section 4.2.

4.1 Experiment 1: announcement of the conclusion and circle technique

How do the two organising concluding techniques 'announcement of the conclusion' and 'circle technique' affect the audience's information retention? The first experiment focuses on this question. To refresh the memory, Section 4.1.1 provides a recapitulation of main characteristics of these two retention techniques. Next, Sections 4.1.2 and 4.1.3 concern the experimental setup, after which the results and conclusion of this particular experiment are provided in Sections 4.1.4 and 4.1.5, respectively.

4.1.1 Recapitulation: announcement of the conclusion and circle technique as retention techniques

The characteristics, descriptions and usage of the retention techniques 'announcement of the conclusion' and 'circle technique' have been discussed in Sections 2.5.13, 3.1.2, 3.4.3 and 3.4.4. This section provides a recapitulation as a prelude to the experimental design.

Announcement of the conclusion

The announcement of the conclusion was defined in chapter 3 as an announcing statement of the presentation's final part, with a structure marker such as "to wrap up" or "to conclude". It is a specific kind of transition to the conclusion, which is the part of a presentation that is most prominently linked to impact information retention in ancient rhetoric and modern public-speaking textbooks.

The advice on the announcement of the conclusion is ambivalent. Most modern authors recommend the technique and attribute two functions to it: an attention function (it "alerts" the audience—Osborn & Osborn, 1997, p. 228) and an organisation function (an indication that the presentation has almost come to an end); see Kenny (1982, p. 17) for an explanation of these functions. However, some textbook authors see negative consequences of announcing the conclusion. For example, Laskowksi believes that "most audiences tune you out the second they hear

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[276] Section 4.1 is an adapted version of Andeweg, De Jong & Wackers (2008) and Andeweg, De Jong & Wackers (2009). See the Overview of author's publications for the complete references.

these phrases" (2001, p. 186). Furthermore, raising the expectation that the presentation will soon be finished could also backfire when speakers fail to wrap up quickly or even repeatedly announce the ending. This is a specific warning issued in textbooks known as a "false ending" (see Section 2.6.3).[277]

The analysis of public-speaking practice showed that not all speakers apply an announcement of the conclusion; scholars most often use it (ten out of sixteen speeches), whereas less than half the number of TED speakers and about a third of the politicians apply an explicit announcement (see Section 3.4.1) Most of the announcements that were found were straightforward in their formulation ("I will wrap up"), but some were phrased less convincingly ("Well, then the bit more general conclusion", see Section 3.4.3). Furthermore, examples of 'false endings' were found; in these examples, speakers first announce the conclusion, which suggests that the end is near, but then continue with a long-winded concluding statement. Considering the ambivalent advice and the varied ways in which speakers use the announcement of the conclusion, it is worth while investigating the retention effect of this technique in a particular presentation situation with an informative purpose.

Circle technique
More frequently than the announcement of the conclusion, the circle technique is connected positively to retention by textbook authors (see Section 2.5.13). It can be seen as a specific form of repetition used by the speaker, either explicitly by referring to the introduction of the presentation ("as I said in the beginning…"), or by restating or referring to elements used in the introduction (e.g. an opening anecdote or example) without explicitly marking the speech structure. Next to retention, authors relate positive additional effects to the circle technique: it can increase the audience's appreciation for the presentation, as it is seen as "elegant and satisfying" (Urech, 1998, pp. 28–29). Furthermore, the circle technique can provide a "sense of closure" by creating symmetry (Osborn & Osborn, 1997, p. 233), and it can give the speech "psychological unity" and an "extra touch of class" (Lucas, 1989, p. 183). This way, the circle technique seems to combine an organising function (signalling the end by referring to the beginning) with a more elaborative function (in the form of audience's recognition and possible appreciation of the circular structure of the speech, especially when a circle technique without a structure marker is applied). Textbooks do not indicate whether the alleged increase in appreciation could also contribute to information retention.

Public-speaking practice shows that the circle technique is most popular in the political speeches in this study, compared to its use in the research presentations

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[277] In an earlier study of the peroration function in public-speaking textbooks (Andeweg, De Jong & Wackers, 2008), three other public-speaking textbooks were found that explicitly warn against the use of an announcement of the conclusion: Weller & Stuiveling (1962), Leeds (1991) and Beebe & Beebe (1999). These three textbooks did not meet the selection criteria to be included in the corpora of public-speaking textbooks constructed for this dissertation with a retention focus (see Section 2.2). They do however underline that textbooks can contain different advice about a specific rhetorical retention technique.

and TED talks (see Section 3.4.1). The distinction between circle techniques with and without explicit structure markers that was made by textbook authors was also found in the presentations of these three types of speakers (see Section 3.4.3). Considering the fact that the circle technique is positively connected to retention in textbooks, its assumed influence on appreciation and the varied ways it is applied in public-speaking practice, it was considered valuable to try and test its merits as a retention technique in combination with the announcement of the conclusion.

4.1.2 Experimental design: hypotheses, presentation design and recordings

Based on the characteristics of the announcement of the conclusion and the circle techniques related to retention, an experiment was designed. This subsection deals with the hypotheses formulated, explains the versions of two presentations developed to test these and elaborates on how these presentations were recorded.

Hypotheses

To measure differences, a straightforward 2x2 experimental design was developed (two presentations with two versions each: one version with the two concluding techniques and the other version without these techniques). This way, the effect of the two techniques was tested in two different messages. A consequence of this double message design is that the two techniques are not separately tested, but that they are both included in a presentation version that is compared with a presentation version without any concluding techniques. The combination of both techniques forms a beginning of the presentation's concluding part that would be recommended by most textbook authors. Based on such textbook advice, such a concluding part could function as follows. The announcement of the conclusion is expected to draw the attention and serves as a structure marker to indicate the start of the conclusion, which would cause listeners to better recall the information presented in the concluding part of the speech than when they did not hear such structure marker. The circle technique is expected to strengthen such retention effect and, on top of that, lead to a 'sense of closure'. From these assumptions a retention and appreciation hypothesis follow:

H1: Retention hypothesis
Listeners to a presentation with a combination of an announcement of the conclusion and a circle technique will have a higher retention of the concluding part's content than listeners to a presentation without these two concluding techniques.

H2: Appreciation hypothesis:
Listeners to a presentation with a combination of an announcement of the conclusion and a circle technique will have a higher appreciation of the presentation than listeners to a presentation without these concluding techniques.

The retention hypothesis is the main focus of the experiment, in the light of the dissertation's main question. The appreciation hypothesis was formulated based on the textbook advice about the circle technique's positive effects on appreciation (sense

of closure). It also provides an opportunity to observe the relationship between the retention function and other functions of a speech (such as appreciation).

Presentation design and recordings

The experimental design included two different presentations in order to avoid a so-called one message fallacy (Hamilton & Hunter, 1998; O'Keefe, 2002). The content of the two presentations was in the same field of knowledge: communication advice and rhetoric. The first presentation was about communication theory and involved the effect of various communication techniques on planned and non-planned (automated) behaviour (the CT-presentation; total length 2610 words). The second presentation addressed the use of numbers (statistics); it dealt with the questions whether numbers are more convincing than examples and how to use them in presentations (the NB-presentation; total length 2194 words). The complete presentations texts can be found in Appendix C.1).

Both presentations contained two versions (the 2x2 design): one without concluding techniques (CT0/NB0-versions) and one with concluding techniques (CT1/NB1-versions). These versions only differed in the concluding part, which contained both an announcement of the conclusion and a circle technique in the CT1- and NB1-versions. The differences between the 0 and 1 versions of both presentations are small: the sentences that announce the conclusion and contain a reference to the introduction take up 1.8% of the total length of the CT-presentation, and 1.6% of the NB-presentation's length.

In both presentations, explicit variants of the announcement of the conclusion and the circle technique were formulated. This was done to maximise chances that the audience would notice the intervention, as the differences between the presentation versions are relatively small. Formulations were kept plain and neutral, without any other style figures or linguistic variances. Furthermore, the urgency to recall or remember information was not explicitly indicated in the instruction of the subjects.

The constructed perorations or concluding parts consisted of the following elements, which are indicated with corresponding numbers and letters in table 4.1:

[1]   Announcement ("I will wrap up with the following remarks.") + circle technique ("as mentioned in the introduction..." + reference to the content of the introduction involved)

[2]   Summarising sentence followed by:
[A] New example [not previously in presentation]
[B] New theory [not previously in presentation]

[3]   Summarising / generalising paragraph

[4]   Final sentence including a straightforward stylistic technique: CT with repetition ('communicates'—'communication'); NB with rhyme: accurate [in Dutch: 'accuraat'] rhymes with measure [in Dutch: 'maat']

Table 4.1: The concluding parts of the two presentations. Part [1] represents the combination of the announcement of the conclusion and circle technique; this text does not appear in the CT0/NB0-presentations and constitutes the only difference between the speech variants. See Appendix C.1 for the complete presentation texts in the Dutch language.

Concluding part CT-presentation (communication theory)	Concluding part NB-presentation (numbers)
[1] I will wrap up with the following remarks. As mentioned in the introduction, the communicational campaign to stimulate young people to smoke less drugs and to have saver sex has had barely if any effect. The use of soft drugs among students has risen with 30 percent in the last ten years.**#**	**[1]** I will wrap up with the following remarks. As mentioned in the introduction, according to Mart Smeets over one million people were lined up to watch the cyclists climb the Alpe d'Huez.**##**
[2] The manipulation of the public opinion by means of expensive mass communicational means succeeds seldom, according results from empirical social scientific research. **[A]** Remember for instance two years ago the failed political campaign to persuade people to vote in favour of the new European constitution. Every mass communicational trick was used: political leaders distributed flyers in the street; large debates between political heavyweights were held on tv and Secretary of State of European Affairs Nicolaï started the campaign with the slogan: *Europe: really important*. It was of no avail. **[B]** Manipulation of behaviour is about more than glitter and glamour. The arguments of the opponents have to be paid attention to and also the sequencing of the arguments is important. That is shown in the research of Burgoon. In his experiments he discerned three sequences. The first is called the anti-climax sequence, which means that you present the strongest arguments at first and the weaker arguments at last. The second sequence is the climax sequence: you begin with the weaker arguments and finish with the stronger ones. The third sequence is a mixed sequence: first some	**[2]** Journalists make heavy use of numbers. **[A]** If you can write that there were 500,000 visitors at the summer festival in Rotterdam, than you are more precise and more reliable than when you state that the festival drew 'a large number of spectators'. **[B]** Whether you should better use concrete anecdotal arguments or statistical arguments, depends. According to the Dutch researchers Hoeken and Hustinx it is due to the type of point of view that is substantiated: when you substantiate a general type of argument, for instance 'smoking should be prohibited in all hotels and restaurants' than statistical arguments are found more persuasive by the listeners. If you however substantiate a specific argument like 'smoking should be forbidden in Restaurant *The Old Barrel*', than anecdotal arguments appear to be stronger. When making numbers conceivable to your audience, you have to take several techniques into consideration. To start with, the examples you use have to be identifiable. Furthermore, you should make use of conceivable numbers. Thirdly, you should avoid the creation of undesirable associations. A striking example in this case is the flyer published by the Dutch Department of Environmental some years ago. In this flyer the public was

Concluding part CT-presentation (communication theory)	Concluding part NB-presentation (numbers)
weaker arguments, then the stronger arguments and finishing again with some weaker arguments. Burgoon's research makes clear that the mixed sequence should be avoided. Furthermore he argues that it can be risky to present the strongest arguments last. The attention of the listeners could be vanished by then.	asked to gather tin cans apart from the rest of the garbage. A fragment: "Every year we throw away 1,065 million food cans. That is enough aluminium to build 300 Fokker-100 planes. And enough steel to construct 100,000 cars". Not a very expedient example: the environmentally friendly collected aluminium was recycled to be used for environmentally unfriendly products. The suggestion to recycle the material into the construction of a fire engine, an ambulance or an emergency helicopter would have been better in this case.
[3] On several essential issues in persuasive communication there exists empirical tested social scientific knowledge. When we take advantage of those insights, we increase the chance to achieve the behavioural effects we strive for.	**[3]** Numbers are everywhere: in newspapers, on the news and in reports. There is no getting around using them in our own presentations and articles.
[4] It is a fact that everyone communicates. But that does not mean that everyone has the insight of how communication can be put in effect. Thank you.	**[4]** That is why you should use numbers accurately and make them conceivable! Thank you.

Reference to introduction, in which the remarkable outcome of a study by a Dutch governmental Institute is described)
Reference to introduction, in which a well-known Dutch tv-commentator covers a mountain stage in the cycling course Tour de France)

The constructed conclusions in table 4.1 are not ideal in terms of public-speaking advice. First of all, they contain new information (parts A and B) that was not discussed earlier in the presentation, which goes against traditional advice for conclusions. Furthermore, professional speechwriters probably could have improved the rhythm of the final paragraphs, and the use of (figurative) language.

New information was included in the concluding statements for two reasons. First of all, the inclusion of information was necessary in order to properly test the recall of the concluding part. Secondly, the ecological validity was taken into account when formulating the conclusions; in public-speaking practice, it is not uncommon for speakers to include new material in the final paragraphs (Andeweg & De Jong, 2008, p. 46). This means that the presenter came across as prepared but not as over-rehearsed (as for an occasion with a large audience) and the presentation was more focused on structure and less on style (see chapter 3).

The two presentations (CT/NB) were delivered by an experienced speaker (a lecturer/coach in oral presentation skills) and were recorded against a neutral white background. The speaker alternately looked at a printed text in front of him and at an improvised autocue (a projection screen behind the camera). The presentation was not accompanied by slides; these were believed to create the unintentional effect of emphasising the transitions. The recordings were digitally edited; the only difference between the 0 and 1 versions of the presentations was the inclusion of a few lines at the beginning of the concluding section of the 1 versions (with concluding techniques; see italicised text in table 4.1). The recordings differed some seconds in length: the CT0-version had a length of 17:59 minutes, the CT1-version of 18:13 minutes, the NB0-version of 14:53 minutes and the NB1-version of 15:05 minutes. Figure 4.1 shows a screenshot of the recordings. The recording files can be found in Appendix C.2.

Figure 4.1: Screenshot of the speaker delivering the presentation (representative of all four presentation versions used)

4.1.3   Questionnaire, experimental subjects and procedure

Questionnaire
To test the hypotheses, for each presentation a questionnaire was developed that comprised four parts (see Appendix C.1 for the questionnaires):

1. *Three general statements*, to which subjects indicated on a five-point Likert-scale whether they had prior knowledge of the subject of the presentation (1), whether they believed it was an interesting presentation (2), and whether they deemed the subject useful for their future profession (3).

2. *35 multiple-choice questions* to test whether the listeners would recall the concluding part of the presentation better after the announcement of the conclusion. Seven mc-questions the CT-version and eight mc-questions in the NB-version were specifically related to the new information included in the concluding parts of the presentations (parts A/B in table 4.1). The percentage of correct answers on these specific questions was tabulated and used as measure for the recall of the final section of the presentation.

3. *Ten statements accompanied by a Likert-like five-point scale* to test for a possible difference in appreciation of the presentation. Subjects could indicate how much they agreed/disagreed with the statement. The nine statements were divided in two conceptual factors: the appreciation for the speech content (four statements, e.g. 'the recommendations in the presentation were usable'; $\alpha=.73$) and the 'roundedness' of the presentation (five statements, e.g. 'the presentation was a rounded off story'; $\alpha=.75$). The factor 'roundedness' relates to the esthetical values that some textbook authors attribute to the use of the circle technique (e.g. that it provides a 'sense of closure' or 'completeness'). The mean score on both of the summarised factors was used to characterise the listener's appreciation.

4. *An open question* in which subjects were asked to describe the introduction of the presentation. We expected that the listeners who heard the CT1- or NB1-versions (with the circle technique) would recall the example from the introduction better due to the repetitive character of the circle technique. Two researchers scored the answers and assessed the extent to which the introduction was recalled. An answer to the open question was considered as correctly recalled when it contained one or more key words from the introductory example. The score was 1 for a correct recall and 0 for no or an incorrect recall of the introduction of the speech. Appendix C.1 contains the scoring instructions for the open question. An inter-rater reliability was not calculated.

Experimental subjects and context

The experimental subjects were students from Delft University of Technology (Mechanical Engineering; Technology, Policy and Management) and of the Leiden University (Dutch Language and Culture; Journalism and New Media). A total of 358 subjects were involved in the experiments. The mean age of the subjects was 20.6 years.

The context in which the experiment was conducted was as follows. The recording of one of the possible four versions was shown to a group of students by means of a projector and projection screen. The presentation was included in a regular class on communication skills and was introduced to students as an online instruction that could potentially be used as an addition to their regular lectures (see Appendix C.1 for the instruction students received). After having viewed the recording, subjects immediately received the questionnaire. They were informed that it was an extracurricular activity and that the results of their questionnaires would not influence

their course grade. At a later stage of the communication skills course, the students were debriefed on the purpose of the experiment. Table 4.2 shows the distribution of the subjects over the presentation versions.

Table 4.2: Experimental subjects per condition.

University	No concl. techn. (CT0/NB0)	With concl. techn. (CT1/NB1)	Total
CT-presentation [Communication Theory]			
Delft	40	38	78
Leiden	40	38	78
Total	80	76	156
NB-Speech [Numbers]			
Delft	58	54	112
Leiden	44	46	90
Total	102	100	202

Concl. techn. = concluding techniques (announcement of the conclusion + circle technique)

Regarding the statements in Part 1 of the questionnaire, subjects indicated to have an average prior knowledge on the content of the speech (2.6 on a five-point scale for both speeches). In the CT-speech there was a significant difference between the Leiden and Delft subjects with respect to their prior knowledge on the subject of Communication Theory ($F(1,155)=6,213$, $p<.05$), which can be explained by the expertise of the students (engineering studies in Delft versus humanities in Leiden). The intention was to create two interesting and useful presentations (in the eyes of the expected listeners). However, the NB-presentation was found more usable than the CT-presentation ($F(1, 356)=25,618$, $p<.001$; no difference between Delft/Leiden students). The NB-presentation was also found slightly more interesting than the CT-presentation ($F(1, 356)=3,600$ $p=.056$).

4.1.4   Results
This section discusses the results of the experiment. First, the results for both presentations combined are presented to provide an overall view. Afterwards, the results for each presentation are separately discussed.

Overall view: results of the two presentations combined
Table 4.3 gives an overview of the general results, combining the data of both presentations.

Table 4.3: Results multivariate analysis overall (0- and 1-versions of CT- and NB-presentations combined).

	Condition*	Mean	Sd	N	F-test
Recall of the conclusion†	No concl. techn.	54.02	23.97	181	F(1, 55)=0.661 p=.417
	With concl. techn.	55.92	19.93	176	
	Total	54.95	22.06	357	
Recall of the introduction ‡	No concl. techn.	0.35^a	0.48	181	F(1, 55)=13.718 p<.001
	With concl. techn.	0.55^a	0.50	176	
	Total	0.45	0.50	357	
Appreciation of the content ¥	No concl. techn.	3.49	0.72	181	F(1, 355)=.045 p=.833
	With concl. techn.	3.51	0.67	176	
	Total	3.50	0.69	357	
Sense of roundedness ¥	No concl. techn.	3.11^a	0.69	181	F(1, 355)=12.196 p<.01
	With concl. techn.	3.36^a	0.67	176	
	Total	3.23	0.69	357	

* No concl. techn.: no concluding techniques, CT0/NB0 versions combined;
With concl. techn: with both concluding techniques, CT1/NB1 versions combined
†: percentage of the correctly answered multiple-choice questions
‡: correct recall of the introduction: score of 1 / incorrect or no recall of the introduction: score of 0
¥ : Five-point Likert-scale ranging from 1= 'not at all' to 5 = 'very much'
^{a} : scores differ significantly

A multivariate analysis indicates an overall effect on condition (F(4, 352)=6,983 p<.001). This effect was caused by the factors 'recall of the introduction' and 'sense of roundedness'. Listeners to a presentation version that included an announcement of the conclusion and a circle technique, were better able to reproduce (elements of) the introduction. Repeating the elements of the introduction in the beginning of the conclusion appears to be effective. Moreover, listeners to a presentation version with the concluding techniques feel that the presentation is complete and rounded off. These two effects are probably related to the circle technique. On the other hand, no effects were found regarding 'Recall of the conclusion' and 'Appreciation of the content'. For both presentations combined, the inclusion of an announcement of the conclusion and circle technique did not lead to a better recall of the concluding part, nor to a higher appreciation of the speech content.

The statistical power (1-β) of the performed tests was, considering the sample size (*N*=357) and α = .05, equal to 1.00 for a large effect (*f* = .40), .99 for a medium-size effect ((*f* = .25) and .47 for a small effect (*f* = .10). A post-hoc Power analysis using G*Power (Faul et al., 2007) shows that the effect sizes for recall of the introduction and sense of roundedness are between small and medium-sized (*f* = .20

and $f = .18$, respectively). The statistical power ($1-\beta$) for the effect sizes that were found is .96 and .93, which suggests that the sample size was sufficient.[278]

Results specified for CT- and NB-presentations
The listeners appreciated the two presentations that were used in the experiment differently (see also Section 4.1.3). A univariate analysis of the scores obtained on the factor 'appreciation of the content' with 'presentation' as an independent variable shows that the NB-presentation on 'how to make numbers concrete' leads to a significantly higher appreciation ($F(1, 355)=85,708$ $p<.001$). These results were a reason to check whether there is a possible interaction between the factors 'condition' and 'presentation type'. A multivariate analysis made clear that no interaction was found on 'recall of the introduction', 'appreciation of the content' and 'sense of roundedness', despite of the fact that both presentations differ highly in the way how subjects rate the dependent variables. Subjects who saw the CT-presentation on communication techniques score lower on all the tested variables compared to the subjects who saw the NB-presentation on how to make numbers concrete. The presentation type does not interact with the possible use of concluding techniques. However, an interaction seemed to be present for the factor 'recall of the conclusion' ($F=(1, 354)=3,684$ $p=.056$). Therefore, the dependent variable 'recall of the conclusion' was analysed for each presentation separately. Table 4.4 shows the results.

Table 4.4: Recall of the content of the conclusion per presentation, expressed in the percentage of the correctly answered multiple-choice questions.

Recall of the conclusion							
CT-presentation				NB-presentation			
Condition	Mean	Sd	N	Condition	Mean	Sd	N
No concl. techn.	40.18[a]	19.30	80	No concl. techn.	64.83	21.52	102
With concl. techn.	46.43[a]	18.10	76	With concl. techn.	63.13	18.24	100
Total	43.22	18.92	156	Total	63.99	19.93	202

[a]: Scores differ significantly $p<.05$
No concl. techn.: no concluding techniques (announcement of the conclusion and circle technique)
With concl. techn: with both concluding techniques (announcement of the conclusion and circle technique)

When broken down into the results per presentation, the effect of the concluding techniques on the recall of the concluding information appears to be less straightforward. Subjects who saw the CT-presentation on communication techniques in which the presenter gave a signal that he was about to conclude, answered the multiple-choice questions significantly better than subjects who saw the version of the

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[278] The power analyses were conducted with the program G*Power 3.1.9.4 (Faul, Erdfelder, Buchner, & Lang, 2007). See Cohen (1992) for the standard values for small, medium and large effects.

CT-presentation without that announcing statement (F(1, 154)=4,344 p<.05). However, subjects' scores on the NB-presentation show no differences between the two conditions. Table 4.4 also shows that listeners of the CT-presentation have given significantly more incorrect answers than the listeners of the NB-presentation on numbers (F(1, 356)=99,791 p<.001).

The statistical power (1-β) of the performed tests for the CT-presentation was, considering the sample size (*N*=156) and α = .05, equal to .99 for a large effect (*f* = .40), .87 for a medium-size effect ((*f* = .25) and .24 for a small effect (*f* = .10). The statistical power (1-β) of the performed tests for the NB-presentation was, considering the sample size (*N*=202) and α = .05, equal to .99 for a large effect (*f* = .40), .94 for a medium-size effect ((*f* = .25) and .29 for a small effect (*f* = .10). A post-hoc Power analysis using G*Power (Faul et al., 2007) shows that the effect size for recall of the conclusion in the CT-presentation is between small and medium-sized (*f* = .17) and the statistical power (1-β) for the effect size that was found is .53. This suggests that a larger sample size is recommended to detect such difference.

4.1.5 Conclusion and discussion: effect of announcing the conclusion and circle technique on retention and appreciation

What are the effects of the rhetorical techniques announcement of the conclusion and circle technique on the audience's information retention and appreciation of an informative presentation? To wrap up this section, the retention and appreciation hypotheses are discussed, after which the broader implications of the results are interpreted.

Retention hypothesis

The experiment has shown that the use of an announcement of the conclusion and a circle technique may render higher retention of the final part of a presentation, but not in any given situation. The combined results of both presentations indicate a retention effect caused by the circle technique (a reference to the examples used in the introduction, including a repetition of key words). More than half the number of listeners remembered the example used in the introduction after it was referred to in the first sentences of the concluding statements. The combined results of both presentations do not point to a retention effect caused by the announcement of the conclusion: although subjects better remember the (repeated) introductory examples, the recall of other information mentioned in the concluding statements does not seem to be affected.

However, the announcement of the conclusion did appear to positively influence information retention in the particular case of the CT-presentation. Results show a higher recall of the final words of this presentation's version with concluding techniques (CT1) compared to the version without concluding techniques (CT0). This suggests that the explicit marker of the conclusion increased the audience's attention level and consequently retention of the conclusion's information. Still, as no differences were found in retention of the conclusion between the two condition groups in the case of the NB-presentation on how to make numbers relevant, it is unclear whether the announcement of the conclusion generally performs such an

attentional stimulus. Moreover, based on the power analysis an increased sample size is recommended to confirm this result.

Appreciation hypothesis
The combination of the announcement of the conclusion and circle technique does not seem to influence the appreciation of the listeners for the content of the speech. However, the versions with the concluding techniques were appreciated higher on the aesthetical factor 'sense of roundedness'. Listeners appeared to experience a higher sense of closure and the presentation did not cause any feelings of a sudden ending. This positive effect on 'sense of roundedness' can most probably be attributed to the circle technique, related to public-speaking advice that this technique can lead to a higher sense of closure (see Section 2.5.13).

Audience involvement as a possible factor of influence
The question rises why the announcement of the last part of a presentation appears to affect recall of the concluding information only in one of the two presentations. Possibly, general appreciation factors influence the effect of the announcing statement. Section 4.1.4 showed that the content of the NB-presentation was valued higher and was assessed as potentially more useful than the CT-presentation. Could the attentional stimulus of announcing the conclusion be more effective regarding retention in a presentation that is evaluated as somewhat less interesting or useful in content (from the audience's perspective)? If so, this suggests that the need for an attention marker of the conclusion is higher in a situation in which the audience does not highly value the presentation's contents and therefore is less involved.

This assumption can be supported by considerations on *issue involvement* in the Dual Processing theory of Petty & Cacioppo (1986): in case of a low estimated issue involvement of the audience it is more effective to use concluding techniques that can spark attention, in order to make the audience more attentive for the issues in the concluding parts of the speech. In contrast, a high estimated issue involvement of the audience would then cause a relatively high level of attention throughout the speech, which would make an attention marker for the conclusion less necessary.[279]

This experiment included two messages (presentations) and the effect size of the differences in recall of the conclusion in the CT-presentation was small. Therefore, more research is needed to evaluate whether the effect of concluding techniques is stronger when the issue of the presentation is more complex and less relevant for the audience—if possible with a larger sample size, in the case of an experimental study.

4.2   Experiment 2: retention effects of the summary
"To guarantee your audience walks away remembering the important points from your presentation, give a review or summary at the end of it" (Laskowski, 2001, p. 67):

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[279] The higher percentage of correct answers to the multiple-choice questions for the NB-presentation compared to the CT-presentation supports this explanation. However, it cannot be ruled out that the multiple-choice questions of the NB-presentation were easier to answer compared to those used for the CT-presentation.

according to authors of public-speaking textbooks, the summary is an important organisational retention technique. Hence, the second experiment is focused on this technique. First, Section 4.2.1 gives a brief recapitulation of the main advice about the summary and the way in which summaries are used in public-speaking practice, which is more extensively discussed in chapters 2 and 3; after that, it specifies the definition of the summary as used in this experiment and discusses the types of summaries that were applied in the experimental design. Next, Section 4.2.2 explains the main hypotheses, the presentation variants that were designed and how they were recorded. Section 4.2.3 treats the procedure that was followed: it discusses the questionnaire, the background of the experimental subjects and the context in which the experiment was conducted. The final two sections (4.2.4 and 4.2.5) discuss the results and conclusions.

4.2.1   Retention characteristics and definition of the summary

The summary can be considered as key retention technique, as chapters 2 and 3 have shown. To foreground the choices that were made in the experimental setup, this subsection recapitulates the main characteristics of the summary in ancient rhetoric and modern public-speaking textbooks (see Section 2.5.3) and the way in which summaries are used in public-speaking practice (see Section 3.4.3), complemented with insights from previous studies. After that, the section defines the concept of the summary that is used in this experiment.

The summary in public-speaking textbooks and practice

Ancient rhetoric. In classical rhetoric, the summary is usually considered to be one of the functions of the *peroratio* or 'epilogue', the last part of the speech.[280] In the peroratio, a speaker should include a *recapitulatio* (summary or enumeration of the main points) and *affectus* (influencing the mood of the audience) (Andeweg & De Jong, 2008).[281] Classical authors describe some criteria the summary should fulfil, albeit not systematically. Conciseness of the recapitulation is important according to Quintilian (*Institutio Oratoria* VI, 1.2), "for if we devote too much time thereto, the peroration will cease to be an enumeration and will constitute something very like a second speech." He also indicates that a speaker should avoid a summary that is a "tiresome, dry repetition of facts", should carefully select the points included in the enumeration and can enliven those points with rhetorical figures. According to

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[280] According to Aristotle, the *peroratio* is not an essential part of the speech for an ideal audience. But as a connoisseur of less ideal audiences, he still acknowledges the importance of the recapitulation (*Rhetorica,* III.19).

[281] In this chapter we focus on summaries that occur in the conclusion of speeches and presentations, even though Quintilian (VI,1.8) already stated that a 'provisional' summary could very well be given at any point during a speech: "It is however admitted by all that recapitulation may be profitably employed in other portions of the speech as well, if the case is complicated and a number of different arguments have been employed in the defence […]."A recapitulation in the *peroratio* however is most common and most likely to influence retention. This view is confirmed by the modern textbook advice on the summary, because the conclusion is the part of the speech most frequently connected to retention (see Section 2.4.2).

Aristotle (*Rhetorica* III.19), in the epilogue speakers should summarise the arguments that proved their case; he adds that it is the proper part of the speech to "repeat your points frequently so as to make them easily understood".

Ancient rhetoricians distinguished two main types of recapitulation were distinguished differed with respect to elaboration of information. A summary could consist of a mere 'repetition of the *propositio*' (purpose/proposition): in the *propositio*, often part of the introduction, the speaker announces what he plans to argue; in the closing section the speaker then summarises what he promised to do (Andeweg & De Jong, 2008, p. 35). Another, seemingly more elaborate type would be the 'summary of the confirmation (the arguments) and the refutation (the rebuttal of the counterarguments)', in which the speaker would list the argumentative points in the same order as mentioned in the speech (*Rhetorica ad Herennium* II, 30.47). McCroskey (2001, p. 263) makes a similar distinction between a "general summary" (restatement of the main point or proposition) and a "summary of the individual points".

Modern public-speaking textbooks. In modern public-speaking textbooks, important purposes for a summary are to enable the audience to recall the main points of a speech, which in turn might also bring detailed aspects of these points to mind again, and to tie the speech together (see Section 2.5.3). The summary is considered to be most suitable in informative presentations and less so in, for example, inspirational speeches. Furthermore, the preferred position of a summary is at the end of the presentation (in the conclusion), although intermediate summaries in earlier phases of the speech are not unheard of. It is usually advised to keep the summary short and concise.

Regarding the summary's content, generally two types are distinguished: an outline summary (indicative summary), which restates the speech's structure on a more abstract level, and a main point summary (informative summary), which briefly restates the contents of the main points addressed. An informative summary appears to be more concrete and elaborate. The two types correspond to the distinction of indicative and informative summaries in the field of text comprehension (education studies). Van Eemeren (1975) for example states that the purpose of an indicative summary is to point out the main points addressed in a text, whereas an informative summary focuses on the contents of those main points and therefore has the purpose to present the most important information that was addressed. Both types of summaries can be effective in their own right when texts are concerned, according to Van Eemeren (1975). However, criteria that correspond to the description of the informative summary are used to evaluate the assignment to summarise a text in Dutch secondary school exams (Schoonen, 1997). Wagenaar (1996) reflects on these two summary types in a public-speaking context and believes that a speaker should inform the audience of the main message in the conclusion by repeating or restating it, instead of merely indicating the main points addressed.

Public-speaking practice. The analysis of public-speaking practice in chapter 3 shows that the informative presentations by scholars contained most summaries (nine in sixteen presentations). At the same time, almost half the number of research presentations did not include a recap in the conclusion. The corpus of inspirational TED-talks contained fewer summaries (four in sixteen talks) and no summaries were detected in the corpus of political speeches (see Section 3.4.1). In a study of *peroratios* in speeches given by the minister and state secretary of the Dutch Ministry of the Interior and Kingdom Relations, Andeweg and De Jong (2008) found that nine out of sixteen speeches contained some form of a recapitulation (summary). The speeches in their study were defined to have a mixture of inspirational, informative and policy-oriented (persuasive) goals. So, although summaries are frequently used in public-speaking practice (most often in informative presentations), speeches also regularly lack clear summaries in the conclusion. Such an absence of a summary can be seen as a missed opportunity to impact the audience's information retention.

Furthermore, varieties in content, structure and style of summaries were found in public-speaking practice. Some of these variants do not concur with the main advice that was found in textbooks. Section 3.4.3 showed that summaries in research presentations and TED talks vary a great deal in length and that some summaries do not adhere to the advice to be kept short and concise. Also, both indicative (outline) summaries and more informative (main point) summaries were found; the informative summaries were longer. In speeches of ministers and state secretaries that were analysed by Andeweg and De Jong (2008), most summaries only consisted of a restatement of the main purpose (*propositio*), which—more often than not—was an incomplete version of the message of the speech. In a quarter of the speeches that Andeweg and De Jong (2008) studied, the summary consisted of an overview of the main arguments (comparable to the type of the main point or informative summary). Using incomplete or ill-prepared summaries turn out to be problematic for speakers; a study by De Jong et al. (2004) into the public reception of a corpus of policy speeches shows that the application of such summaries could lead to quite divergent interpretations of the main message by the audience.

Definition: the rhetorical summary
'Summary' and 'recap' are concepts often used in everyday language in various contexts. To properly design an experiment focusing on the summary in an informative presentation, it is necessary to define the concept used in this study. Is a summary in a presentation different from a summary in a text? Is the act of summarising in a presentation different from summarising as a learning strategy or as an assessment to test text comprehension? To do so, it is valuable to consider definitions and ideas about summarising from disciplines such as information sciences and educational psychology, next to public-speaking textbooks and practice. This way, the boundaries and characteristics of a summary in a public-speaking context can be more precisely marked.

In information sciences, a considerable number of studies into automatic text summarisation can be found in which source text is summarised via algorithms

(Spärck Jones, 2007). In this field, a summary is considered to be "a reductive transformation of source text to summary text through content condensation by selection and/or generalisation on what is important in the source" (Spärck Jones, 2007, p. 1450). Although the focus of this research area lies on automatised systems of information selection, Spärck Jones explains that these cannot be 'context free' and also considers 'input factors' (e.g. genre, length, style), 'purpose factors' (intended use and audience) and 'output factors' (reduction and format). A proper evaluation of a summary should take the purpose specifications into account (Spärck Jones, 2007). Generally, a distinction is made between an 'extract', a selection or juxtaposition of information elements (e.g. sentences) derived or copied from the source itself, and an 'abstract', which consists of generalisations or paraphrases of (what is interpreted to be) the main information elements in a source (Antiqueira et al., 2008).

In educational psychology and studies into text comprehension, the interpretation of summarisation appear to correspond to creating an abstract. Summarising a text is a learning strategy that is often applied by students and the skill of summarising a text is often tested in secondary schools. In this context, a summary is not just a selection of the most important information, but new coherent text composed by means of deletion, combination and synthesis of (parts of) this information (Duke & Pearson, 2002; Dole et al., 1991). This makes summarising a complex learning activity for improving text comprehension. A long-lasting discussion in this field of research is about how to evaluate the quality of summaries, not in the least because summarisation is often used as a method to test students' text comprehension. What criteria should a good summary fulfil? According to Van Eemeren (1975, p. 50), a good summary should be a representation of the source text that is as correct, complete, impartial and concise as possible. Criteria as formulated by Van Eemeren have long formed the basis upon which the summary assignment in the final exam of Dutch secondary schools has been evaluated (Schoonen, 1997). However, studies indicate a relatively low inter-rater agreement between school teachers' summary evaluations (Schoonen, 1997). Applying the criteria as stated in definitions of a summary does not seem to be a straightforward activity.

What definition of a summary then fits the informative public-speaking context of this experimental study? Following the classical rhetorical view of the summary and the 'purpose factors' distinguished in information sciences, I here consider the summary to be a rhetorical technique a speaker can intentionally apply. Therefore, in this study I propose to use the concept of the 'rhetorical summary', which has the following properties: (1) it consists of information selected by the speaker and (2) it is part of the conclusion of the speech, which is labelled as such by the speaker (e.g. by a structure marker such as "to summarise…" or "in conclusion…").

A rhetorical summary is not necessarily a correct, complete and impartial representation of a presentation; its key characteristic is that speakers are relatively free to select the main points they consider to be most important to mention, for example the information that they would like the audience to retain. The point of departure here is the speaker's perspective and the rhetorical purpose, as opposed to

listeners' or readers' aims for composing a summary. Correctness, completeness and impartiality are therefore not considered as requirements, but as factors that might influence audience information retention and appreciation of the summary. A rhetorical summary in a presentation can take the shape of any type of recapitulation discussed above (e.g. indicative or informative), depending on the speaker's intentions. However, it is not yet known whether the selection of a specific type of summary influences information retention and appreciation of the presentation.

4.2.2 Experimental design: hypotheses, presentation design and recordings

Based on the textbook advice on the retention effects of the summary, the use of this retention technique in public-speaking practice and the definition of the rhetorical summary as put forward in Section 4.2.1, an experiment was designed. This subsection puts forward the hypotheses and discusses the presentation variants that were developed and recorded to test these hypotheses.

Retention and appreciation hypotheses

The hypotheses are divided into the categories 'retention' and 'appreciation'. The retention hypotheses focus on the retention effect of the use of a summary in general, and two summary types more specifically: the indicative and informative summary, based on the main distinction made in public-speaking textbooks, studies in educational psychology and summaries that were found in public-speaking practice. In the light of the dissertation's main question, the main focus of the experiment is on the retention hypotheses. The appreciation hypotheses are related to the question whether of the use of a (specific type of) summary causes the audience to evaluate the concluding part of a presentation in a different way. The following hypotheses were formulated:

Retention hypotheses
H1:   Listeners to a presentation that contains a summary will have a higher retention of information than listeners to a presentation that does not contain a summary.
H2:   Listeners to a presentation that contains an informative summary will have a higher retention of information than listeners to a presentation that contains an indicative summary.

Appreciation hypotheses
H3:   Listeners to a presentation that contains a summary will have a higher appreciation of the conclusion than listeners to a presentation that does not contain a summary.
H4:   Listeners to a presentation that contains an informative summary will have a higher appreciation of the conclusion than listeners to a presentation that contains an indicative summary.

The hypotheses are aimed at measuring 'effects of a summary in general' (H1 and H3) and 'the effects of specific summary types' (H2 and H4). Regarding the retention hypotheses, H1 postulates that the act of including a summary, regardless of the type, will generate retention effects compared to not including a summary at all. H2 states that listeners to a presentation that includes an informative summary will retain more information mentioned in the summary than the audience of a presentation that included an indicative summary. Retention effects were measured right after the presentation and in a post-test two to three weeks later, to gain insight into retention in the short term and in the longer term. Retention effects visible in the longer term suggest an effect on storage and retrieval of information in the long-term memory (see Section 1.2).

Regarding the appreciation hypotheses, it is expected that a concluding part with a summary will be more appreciated than a version without a summary (H3) and, more specifically, that a concluding part with an informative summary will be more appreciated than the concluding part with an indicative summary (H4). No long-term effects for appreciation were measured; due to limited time available for the post-test, the questions aimed at free recall were prioritised.

Presentation design and recordings
To measure effects of the summary, a presentation was developed with the topic 'Framing as communication strategy'.[282] Three versions of this presentation were written: a version without a summary (V1, duration: 15:38 minutes), a version with an indicative summary (V2, duration: 16:05 minutes) and a version with an informative summary (V3, duration: 16:52 minutes).

The introduction and body part of the presentation, in which the concept of framing and its main effects are explained and supported with examples, was similar in all three versions. The three versions only differed in the way in which the conclusion was constructed. The conclusions consisted of the following elements:

[1] An announcement of the conclusion (in V1, V2 and V3)
[2] An indicative summary (V2) or informative summary (V3)
[3] Final statements and word of thanks to the audience (in V1, V2 and V3)

Table 4.5 shows the three elements of the presentation's conclusion, while indicating the difference between the three versions.

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[282] The presentation's contents included information based on research by Lakoff, Goffmann and Tversky & Kahnemann. The presentation text can be found in Appendix C.4.

Table 4.5: the conclusion of the three presentation versions (see Appendix C.4 for the complete presentation text in the Dutch language)

[1] Let me wrap up	
V2: indicative summary	*V3: informative summary*
[2] In this mini-lecture I intended to provide some insight into framing. I have explained how framing is used. In doing so, I mentioned a few characteristics and 4 effects of framing. I have also paid attention to the formulation of frames. Besides that, I have given some examples of frames in Dutch politics.	**[2]** Framing is an effective way to strengthen the persuasiveness of the message. Everyone uses frames, both consciously and unconsciously. Frames are used frequently in politics—in The Netherlands as well. Frames help us to understand the reality around us. By using specific language, you make the listener or reader see the world through a specific pair of glasses. Frames have four important effects. The first effect is that frames can direct the way we rationally make decisions. Secondly, frames that are formulated intelligently can be very 'sticky', which makes them more memorable. Thirdly, good frames often receive free 'airplay', because they are easily transferred from one person to another. The final effect of frames is the fact that denial of a frame leads to confirmation.
[3] So, when you have finished your studies, don't refer to yourself as 'unemployed' but as 'looking for a job'. Be aware of the power of language. You will notice the difference! Thank you.	

Table 4.5 shows that elements [1] and [3], an announcement of the conclusion and the final sentences, are included of all three versions of the presentation. The conclusion of V1 (no summary) only consisted of these two elements—a fairly brief conclusion for a 15 minute speech, but not uncommon as the analyses of speeches that were discussed in chapter 3 showed.[283] V2 contains an indicative summary, in which the

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[283] In 75% of all presentation texts analysed in chapter 3 (the three speech corpora taken together), no summary was found in the conclusion. In the corpus of research presentations, which have an informative main purpose and are therefore most closely related to the educational presentation used in the experiment, just over half the number of presentations contained a summary. So, in public-speaking practice it is not unusual for a summary not to be included in a conclusion of a presentation. Section 3.4.3 also showed instances of fairly brief conclusions.

speaker gives a rather abstract and superficial description of the information that he has given, but does not repeat or rephrase the main content. The difference between V2 and V3 (informative summary), is perhaps best signified by the way the four framing effects are treated: in V2, the speaker only mentions that four effects were discussed, whereas in V3 the speaker briefly describes those four effects once more. V3 also contains a repetition or rephrase of some other characteristics of framing that were already mentioned in the presentation's middle part, such as the phrase "framing is an effective way to strengthen the persuasiveness of the message". The indicative summary of V2 only superficially refers to those characteristics and features of framing. The informative summary in V3 is longer than the indicative summary in V2.

It is possible that a mere reference to the main points, as is done in V2, could already lead to a higher information retention than not including any reference at all to the main points addressed—as is expressed in H1. The mere reference to and the indication of those points could enable the audience to make a connection with the more elaborate description made in the presentation's middle part. However, a more concrete repetition of the key points as is provided in the informative summary (V3) would probably enable the audience to establish a deeper and stronger connection with the information previously heard, as expressed in H2.

The ecological validity of the presentation text was taken into account. The text was written based on the experiences of the researchers involved with informative and educational presentations as lecturers in communicative skills. According to communication lecturers at Delft University of Technology, the presentation was realistically structured: it corresponded to the structure of average presentations that they observe in practice. The three versions of the presentations were presented by an experienced speaker (a trainer/coach in oral presentation skills) and recorded against a neutral white background. The speaker alternately looked at a printed text in front of him and at an improvised autocue (a projection screen behind the camera). Figure 4.2 presents the display used during the experiment. Appendix C.5 contains the recordings of all three versions.
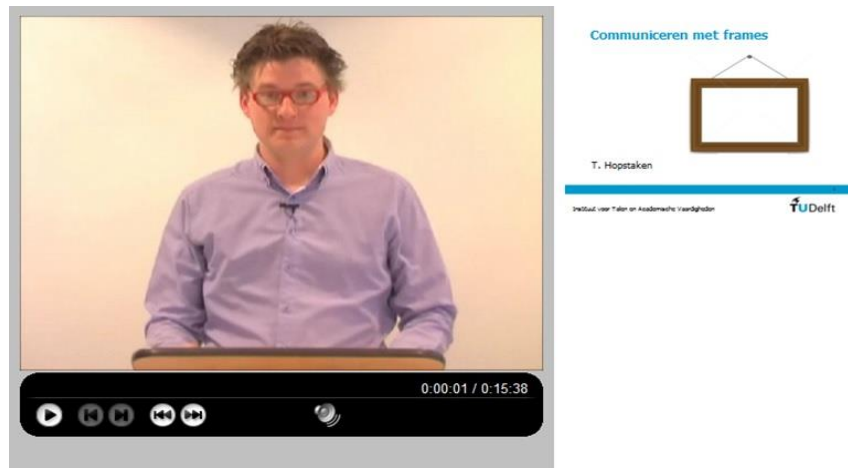
Figure 4.2: Screenshot of the projection displayed during the experiment, with the presenter on the left and the slides on the right. The PowerPoint slide shown contains the title of the presentation ('Communicating with frames'), the name of the speaker and the academic institution responsible for the presentation. All slides are included in Appendix C.4.

The recording of the presenter was projected on the left side of the screen, from an audience's point of view. The presentation was accompanied by some PowerPoint-slides, to create a more realistic presentation context. These slides were shown on the right side of the screen. They did not contain much text, mostly pictures. The fact that both verbal and visual information was offered could have influenced information retention, as the audience could process the information via both the verbal and visual channel (cf. Mayer, 2009). Since the exact same slides were used in all three versions (no new slides were designed to support the indicative and/or the informative summary), it was not expected that the slides would influence a possible difference in retention levels between the three versions.

4.2.3 Questionnaire, experimental subjects and procedure

Questionnaire
To test the hypotheses, a questionnaire was developed that consisted of four parts (see Appendix C.4 for the questionnaire):

Part 1: Two five-point Likert-scale statements on prior knowledge and usefulness of the topic
Part 1 contained statements on prior knowledge and the extent to which subjects deemed the topic useful: "I already knew a lot about this topic" and "I think a lecture on this topic is necessary for an engineer". Subjects indicated the extent to which they agreed with these statements on a five-point Likert scale, ranging from 1 = not at all/very little and 5 = very strongly/very much.

Part 2: Open questions about the recall of the framing effects mentioned in the presentation

Part 2 consisted of the following two open questions: "how many framing effects did the speaker mention?" and "which framing effects did the speaker mention?" The answer to the first question (four effects) was most likely to be recalled better by listeners to both V2 and V3, as the exact number was mentioned in both the indicative and the informative summary (see table 4.5). The second question was aimed at free recall of the framing effects mentioned in the presentation. Only in the informative summary (V3), the speaker concisely described these effects again.

Part 3: 33 multiple-choice questions about the entire presentation

Part 3 consisted of 33 multiple-choice questions. These questions were aimed at information mentioned in the entire presentation. Eight questions specifically addressed information mentioned in the informative summary of V3. Subjects that were exposed to the informative summary were expected to provide more correct answers to those questions, as they had heard a repetition of this information (as opposed to the subjects to whom V1 or V2 were shown).

Part 4: 22 five-point Likert-scale statements to measure appreciation of the speech.

Part 4 contained 22 statements aimed at measuring the audience appreciation for four aspects of the presentation: (1) appreciation of the peroration (concluding part), (2) speaker ethos, (3) captivation/interest in the presentation and (4) the appreciation for the presentation as an educational tool. Subjects were asked to indicate on a Likert-like five-point scale to which extent they fully disagreed (1) or fully agreed (5) with the statement presented. The first aspect was most important in the light of the appreciation hypotheses (H3 and H4). The factor 'peroration appreciation' comprised three statements (Cronbach's α=.79):

- The closing statements made the content of the speech comprehensible
- The closing statements formed a good summary of the entire speech
- The closing statements were clear

These statements were aimed at measuring whether the presence of an informative or indicative summary positively influences the audience's appreciation of the presentation's conclusion. The statements that constituted the other three factors, speaker ethos, captivation/interest in the presentation and appreciation as educational tool, the first place served as distractors in the first place. The statements about 'appreciation of the presentation as an educational tool' corresponded to the context in which the recording of the presentation was shown to the subjects.

Experimental subjects and context

The experimental subjects were students from Delft University of Technology (Mechanical Engineering, Molecular Science and Technology, and Life Science and Technology). Each version was shown to a group of a little over 90 students (N_{total} =

284). The subjects were distributed as equally as possible over the three presentation versions. The mean age of the subjects was nineteen years; the age of the subjects ranged from seventeen to thirty-two years. They were shown one of the three versions of the presentation in a regular presentation skills lecture.

Experimental procedure
Instruction. The recording was introduced to the students by their presentation skills lecturer as "newly developed course material for online use". After having viewed the recording, students were instructed to fill out the questionnaire. They were told that the purpose of the questionnaire was to find out to what extent additional online course materials are useful.

Questionnaire after the recording. After having viewed the recording, subjects received parts 1 and 2 of the questionnaire. They were asked to hand in Parts 1 and 2 after five minutes, after which they received Parts 3 and 4, This way, the answers given to the open questions could not be consulted when answering the multiple-choice questions.[284] Parts 3 and 4 were handed in after 15 minutes.

Post-test. As a final part of the testing procedure, a post-test was performed two to three weeks later to measure retention on the longer term. The open questions that were stated in Part 2 were repeated; due to time constraints, the multiple-choice questions and appreciation statements were not included. The open questions in Part 2 of the questionnaire were deemed most relevant to measure longer term retention effects. The post-test was conducted under a slightly smaller, but still representative group of students (N=233) with an equal distribution over the three variants of the presentation. After all post-tests had been carried out, students were debriefed about the purpose of the experiment in a presentation skills lecture.

4.2.4 Results
This section provides an overview of the results. First, the results on the statements regarding prior knowledge and usefulness of the presentation topic are presented. Next, the results connected to the retention hypotheses are presented, followed by the results regarding the appreciation hypotheses.

Prior knowledge and usefulness of the presentation topic
Table 4.6 shows that no significant differences were found between the subject groups in prior knowledge and views on usefulness of the topic (Part 1 of the questionnaire).

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[284] It is conceivable that the process of attempting to recall information to answer the questions of Part 1 could have influenced the way subjects answered the multiple-choice questions in Part 2, even if they did not have the exact answers of the open questions at their disposal after handing in Part 1 (a testing effect). Kang, McDermott and Roediger III (2007) suggest that a test which required more demanding retrieval processes, such as the short answer test questions in Part 1 of the questionnaire in this experiment, can influence final retention positively.

Table 4.6: Mean scores on prior knowledge and usefulness of the topic, indicated on a five-point Likert scale.

Version	N	Prior knowledge (mean)*	Usefulness subject (mean)*
V1: No summary	92	2.52	3.46
V2: Indicative summary	94	2.35	3.43
V3: Informative summary	98	2.29	3.37

*Five-point Likert scale (1 = not at all / very little and 5 = very strongly / very much)

Information retention

Reproduction and recall of framing effects. First the results of the open questions in Part 2 of the questionnaire and the post-test are presented. These results are closely related, as the questions were aimed at recall of the framing effects mentioned by the speaker in the presentation. Afterwards, the results of the multiple-choice questions in Part 3 of the questionnaire are discussed.

Table 4.7 provides an overview of the results for recall of framing effects. First, the results for the reproduction of the number of effects mentioned by the speaker are presented. The answer of framing effects was scored as 'correct' (1) or 'incorrect' (0) and included in both the indicative and the informative summary. Second, the results for the free recall of the framing effects are shown. The answers were scored using a strict score sheet that contained the required key terms per effect. For each correctly represented effect, raters awarded 1 point. A maximum of four points could be awarded. The results for the post-test, the third category, were scored similarly. Two raters independently scored 91 questionnaires which were filled out immediately after the presentation using the scoring instruction, resulting in a good inter-rater reliability (κ = .82, p<.001).[285] For the post-test, two raters—one of which was not previously involved in the scoring process—obtained moderate agreement using the same scoring instruction ((κ = .57, p<.001).

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[285] For an effect to be described correctly, one of the key terms needed to be included in the answer. For some effects, a combination of key words was required. The score sheet was used in a strict manner; the exact formulations of the key terms needed to be included. In cases in which multiple key terms that were connected to a single effect on the score sheet were presented as different effects on the answer sheet, the effect was counted only once (e.g. for the first effect, 'frames can influence decision making', both 'influence' and 'decision' had to be included in the answer for it to be correct). The scoring instructions are in Appendix C.4.

Table 4.7: Overview of the results related to the retention hypotheses: reproduction of the exact number of effects, recall of the framing effects immediately after the presentation and the post-test (two to three weeks later). Significant differences are indicated with superscript letters and accounted for below the table.

		V1: No summary	V2: Indicative	V3: Informative
Reproduction of the exact number of effects (0 = incorrect, 1 = correct)*	N	81	82	95
	Mean	0.29[ab]	0.56[a]	0.57[b]
	Sd	0.46	0.50	0.50
Recall of framing effects (max. score = 4)**	N	92	94	94
	Mean	0.80[c]	0.73[d]	1.60[cd]
	Sd	0.82	0.71	0.92
Post-test: recall framing effects (max. score = 4)**	N	82	71	80
	Mean	0.44[e]	0.37[f]	0.71[ef]
	Sd	0.65	0.54	0.75

* Scored as 1 (correct number of effect reproduced) or 0 (incorrect or no number of effects reproduced)
** For each correctly represented effect, raters awarded one point. A maximum of four points could be awarded.
[ab] $F_{(2, 256)} = 8,799$ $p<.001$
[cd] $F_{(2, 277)} = 33,418$ $p<.001$
[e] $F_{(2, 230)} = 5,992$ $p<.05$
[f] $F_{(2, 230)} = 5,992$ $p<.01$

First of all, table 4.7 shows that listeners to both the indicative and the informative summary were able to reproduce the exact number of framing effects mentioned significantly better than listeners who viewed the version without a summary. As the exact number was only mentioned by the speaker in V2 and V3 as opposed to V1, this effect was expected.

The results for the recall of framing effects paint a different picture: listeners to V3 (informative summary) were able to recall the framing effects significantly better than listeners to both other versions. They scored an average of 1.6 points on a total of 4, so they were able to recall about 40% of the information requested. The results for V2 are more or less equal to those for V1, which indicates that an indicative summary does not seem to support recall of the requested information: on average, listeners to V1 and V2 could hardly recall a framing effect.

Finally, the results of the post-test that was performed two to three weeks later are in agreement with the results for the recall of framing effects measured directly after the presentation: listeners to V3 were able to reproduce the framing effects significantly better than listeners to V1 and V2. Table 4.7 also shows a decay of 50% or more of the amount of information that was retained after two to three weeks—perhaps that is not unexpected, as recall was tested over a longer period of

time. This decay over time might also explain the moderate inter-rater agreement for the post-test: it was more challenging for subjects to reproduce correct and clear answers using the key words required in the scoring instruction, which might have led to more doubtful decisions for the raters using this scoring instruction. The results of the post-test should therefore be interpreted with more caution.

The statistical power (1-β) of the performed tests was, considering the sample size (*N* varied between 233 and 280) and α = .05, equal to .99 for a large effect (*f* = .40), between .91 and .97 for a medium-size effect ((*f* = .25) and .24 and .30 for a small effect (*f* = .10). A post-hoc Power analysis using G*Power (Faul et al., 2007) shows that the effect size is large (*f* = .48) for the difference in recall of framing effects, and medium-sized for the reproduction of the number framing effects and the post-test and appreciation for the conclusion (*f* = .26 and *f* = .23 and respectively; all effect sizes are according to Cohen's effect size conventions (Cohen, 1992), which suggests that the sample size was sufficient).[286]

Overall, the results for the recall of framing effects show that the use of an informative summary leads to a significantly higher information retention score than the use of an indicative summary or leaving out a summary. The indicative summary does not lead to a higher recall of information compared to the version without a summary.

Multiple-choice questions. Do the results for the multiple-choice questions corroborate the findings on the free recall questions? Table 4.8 shows the results for the multiple-choice questions related to information mentioned in the informative summary. Not all students answered all multiple-choice questions, which accounts for a smaller number of respondents compared to the open questions.

Table 4.8: Results of the multiple-choice questions related to information mentioned in the informative summary.

		V1: No summary	V2: Indicative summary	V3: Informative summary
MC questions about informative summary (percentage answered correctly)	N	75	72	77
	Mean	81.2	82.8	84.4
	Sd	1.50	1.53	1.48

The results in table 4.8 do not indicate any differences between the three versions regarding the multiple-choice questions that were specifically aimed at the informative summary. The answers on all multiple-choice questions are in agreement with the results on the questions related to information in the summary: no differences were found between the three versions. The results of the multiple-choice questions do not correspond with the results on the open recall questions; the latter results

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[286] The power analyses were conducted with the program G*Power 3.1.9.4 (Faul, Erdfelder, Buchner, & Lang, 2007). See Cohen (1992) for the standard values for small, medium and large effects.

showed that listeners to the informative summary recalled significantly more information.

Peroration appreciation
Does the use of an informative summary lead to a higher appreciation of the conclusion or could the investment in repetition on the key points lead to the conclusion being perceived as less attractive than the other versions? Table 4.9 shows the results for the factor 'peroration appreciation'.

Table 4.9: Results for the appreciation of the peroration, divided over the three versions.

Version	N	Mean*	Sd
V1: No summary	53	3.30[a]	0.69
V2: Indicative summary	73	3.51	0.76
V3: Informative summary	89	3.75[a]	0.73

*Five-point Likert scale (1 = not at all / very little and 5 = very strongly / very much)
[a] $F_{(2,212)} = 6,431$ p<.01

Table 4.9 shows that the peroration appreciation for the three versions ranged from 3.30 to 3.75 on a five-point scale, which means that the concluding parts of all versions were rated above average. It also shows that listeners to the informative summary valued the conclusion of that presentation significantly higher than the listeners to the version without a summary.[287] No significant differences were found between the indicative summary and the two other versions. Regarding the other factors measured, speaker ethos, captivation/interest in the presentation and the appreciation for the presentation as an educational tool, no significant differences between the versions were found.

The statistical power (1-β) of the performed test was, considering the sample size ($N = 215$) and α = .05, equal to .99 for a large effect ($f = .40$), .91 for a medium-size effect (($f = .25$) and .24 a for a small effect ($f = .10$). A post-hoc Power analysis using G*Power (Faul et al., 2007) shows that the effect size for the appreciation of the peroration is medium-sized ($f = .28$), according to Cohen's effect size conventions (Cohen, 1992), which suggests that the sample size was sufficient.

4.2.5 Conclusion and discussion: effects of summary variants on retention and appreciation
What are the effects of various forms of the rhetorical technique 'summary' on the audience's information retention and appreciation of an informative presentation? First the conclusions concerning the retention hypotheses are discussed, followed by the conclusions regarding the appreciation hypotheses. After that, limitations and

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[287] Table 4.9 also shows that the group size between the versions differed. Most likely, this difference could be attributed to the fact that the appreciation statements were included in the final part of the questionnaire. Not all subjects were able to finish the entire questionnaire within the time allocated.

considerations of the experimental setup are discussed. The concluding section of this experimental study is wrapped up with a reflection on the overall value of these conclusions for speakers wishing to present a memorable message.

Retention hypotheses

The results on retention scores show that an informative summary seems to affect the recall of information mentioned in the summary significantly better than an indicative summary or no summary at all, both directly after the presentation and on a longer term of two to three weeks. Regarding the free recall of retention effects (the open questions), hypothesis 1 can partly be confirmed, while hypothesis 2 can be confirmed completely.

In hypothesis 1, it was suggested that the mere act of including any kind of summary will influence audience retention. This is only partly supported: listeners to the informative summary recalled significantly more information than listeners to the other two versions, but no differences were found between the version without a summary and the version with an indicative summary. This suggests that the design of the summary matters: labelling a part of the speech as a summary, regardless of its formulation and contents, does not guarantee an increase in information retention by the audience.

Hypothesis 2 appears to be confirmed: the informative summary outperforms the indicative summary concerning recall of information immediately after the presentation and in the post-test two to three weeks later. All in all, for the presentation used in this experiment, the informative summary appeared to be the best choice to influence free recall of information that was mentioned in the conclusion, both in a short term and in a longer term. However, it should be noted that no differences between the versions were found in the answers to the multiple-choice questions (further discussed under 'limitations and considerations experimental setup').

Appreciation hypotheses

Both of the appreciation hypotheses (H3 and H4) cannot be completely confirmed. The results for the appreciation of the peroration indicate that using an informative summary leads to a higher appreciation of the peroration (the concluding part of the presentation) than applying no summary at all. However, no significant differences were found when comparing the appreciation of (1) the informative and indicative summary and (2) the indicative summary and the conclusion without a summary. This means that it can neither be concluded that a conclusion with a summary generally is appreciated more than a conclusion without a summary (H3), nor can it be concluded that the informative summary is appreciated more than an indicative summary (H4).

The concluding parts of all the presentation versions were appreciated above average (a score of 3.30 or higher), which might be related to the fact that all participants deemed the presentation topic useful. Furthermore, no differences were found between the three presentation versions for the factors 'speaker ethos' and 'captivation/interest', which means that the use of an informative summary did not cause a negative view of speaker authority and trustworthiness or a decrease of interest in the presentation.

Based on these results, speakers preparing an informative or educational presentation can be advised to include an informative summary: it increases the audience's appreciation for the conclusion of the presentation compared to a presentation without a summary and does not harm their ethos or the audience's level of interest in the presentation.

Limitations and considerations experimental setup
The results and experimental setup leave two main points for discussion. First of all, no differences between the types of summaries were found in the results for the multiple-choice questions. Several explanations can be offered. To start off, testing via multiple-choice questions differs from testing via open questions: recognition is tested, rather than free recall. It is more difficult to recall and reproduce information than to recognise information from a range of options (cf. Baddeley et al., 2009, p. 371). The contextual information enclosed in the multiple-choice questions and answer options could have aided respondents in choosing the correct answer or eliminating incorrect answers. The recognition effect may have been amplified by the fact that the free recall of information was performed prior to answering multiple-choice questions. Furthermore, the multiple-choice questions might not have been designed effectively enough to distinguish between the different versions. Questions about the informative summary's content are inevitably about key points addressed in the entire presentation, which may generally be remembered better than the more detailed information that the other questions focused on.

Secondly, the experiment was conducted within a single message design, contrary to the experiment on the announcement of the conclusion and the circle technique described in Section 4.1.[288] Retention effects of informative summaries in other presentations, shown to different audiences, should be measured to further generalise the results (cf. O'Keefe, 2002). Because of the focus on an informative purpose, it is unclear if the results also hold for persuasive presentations.

Implications and further research
Overall, this experiment points out the positive effect of the organisational rhetorical technique of the informative summary on both information retention of and appreciation for the concluding remarks of a presentation. While the informative summary turned out to be an effective tool to increase information retention in this experiment, the indicative summary appeared to be just as ineffective as omitting the summary. This means that the way in which the summary is formulated and the type of information that is included in the summary influences its possible retention effect. The variety of ways in which speakers of informative presentations and persuasive speeches phrase their summaries, combined with the scarcity of specific public-

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[288] As the summary experiment entailed the design of three presentation versions as opposed to the two versions in the announcement and circle technique experiment, it was decided that a multiple message design would not be feasible for practical reasons (e.g. arranging a sufficient number of participants).

speaking advice on how to formulate such a summary (see Sections 3.4.3 and 4.2.1), calls for a more detailed investigation of this issue.

Furthermore, the rhetorical definition of a recapitulation or summary is a theoretical avenue to be further explored. In this study, I proposed the concept of the 'rhetorical summary': speakers decide which information is most important to include in the part of the conclusion that is labelled as 'summary', to emphasise the importance of that information to the audience. This way, the summary can be more strategically used to influence audience information retention. From a rhetorical perspective, it is up to the speaker to decide whether the recapitulation should correctly represent (all) the presentation's main points. The results for the appreciation of the concluding part show that relationships between the different summary types appear to be more nuanced than expected. A clear difference was only found between the version with an informative summary and the version without a summary. The question to what extent an informative recapitulation and a 'correct', exhaustive representation of the presentation's key information are strongly connected to the appreciation of the conclusion should be further investigated. As a first step, it can be insightful to study what information a speaker decides to include in and omit from a summary, for example via content analyses and interviews with speakers.