



Universiteit
Leiden
The Netherlands

Dealing with information about complex issues : the role of source perceptions

Mors, E. ter

Citation

Mors, E. ter. (2009, June 10). *Dealing with information about complex issues : the role of source perceptions*. Kurt Lewin Institute Dissertation Series. Retrieved from <https://hdl.handle.net/1887/79668>

Version: Not Applicable (or Unknown)

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/79668>

Note: To cite this publication please use the final published version (if applicable).

Dealing with Information
about
Complex Issues

The role of source perceptions

Proefschrift
ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van Rector Magnificus prof. mr. P.F. van der Heijden,
volgens besluit van het College voor Promoties
te verdedigen op woensdag 10 juni 2009
klokke 16.15 uur
door
Emma ter Mors
geboren te Rockanje
in 1981

Promotiecommissie:

Promotor: Prof. dr. N. Ellemers (Leiden University)
Copromotor: Dr. M. W. H. Weenig (Leiden University)
Referent: Prof. dr. C. J. H. Midden (Technical University
Eindhoven)
Overige Leden: Prof. dr. J. van der Pligt (University of Amsterdam)
Dr. L. R. Pol (Hogeschool Utrecht; Tabula Rasa)
Prof. dr. E. van Dijk (Leiden University)
Dr. D. D. L. Daamen (Leiden University)

This research has been carried out in the context of the Dutch national research program on carbon dioxide capture and storage (CATO). CATO is financially supported by the Dutch Ministry of Economic Affairs (EZ) and the consortium partners.

Cover picture: <http://www.wordle.net/>
Print: Ipskamp Drukkers B.V.
ISBN: 978-90-76269-75-7

Contents

	page
1. General introduction, discussion and conclusions	1
Summary of the main findings	10
Discussion and conclusions	14
2. Credibility and perceived information quality	19
Study 2.1	25
Study 2.2	28
General discussion	34
3. Credibility and information selection	37
Study 3.1	44
Study 3.2	49
Study 3.3	56
General discussion	60
4. Collaboration and perceived information quality	65
Study 4.1	71
Study 4.2	75
Study 4.3	81
General discussion	86
References	89
Nederlandse samenvatting (Summary in Dutch)	95
Acknowledgements (Dankwoord)	101
Curriculum Vitae	102

Chapter 1

General Introduction, Discussion and Conclusions

Nowadays, people have an abundant amount of information at their disposal (e.g., via the Internet, television, newspapers). They use this information, among other things, to gain an understanding of the world around them, to form opinions and to make decisions. In practice, people make a selection of the total amount of information available, in which they pay attention to those pieces of information they expect to be valuable. With familiar topics and issues it is relatively easy for people to evaluate the information provided, because they can use their pre-existing background knowledge to judge the information on its merits. But how will people arrive at information judgments when they cannot rely on such background knowledge to judge the quality of this information themselves, as is the case when they receive information about a complex issue they are not familiar with? This question is central in the present thesis. I argue that in such cases, the way people deal with information depends on their perceptions of information sources.

The complex issue I focus on throughout this thesis is “the large-scale implementation of a novel technology of carbon dioxide capture and storage (CCS) in the Netherlands”. In short, CCS involves the capture of carbon dioxide in power plants, the transportation of the carbon dioxide to underground storage sites (e.g., depleted gas fields), and its subsequent storage in these sites.^a The Dutch government considers the implementation of CCS technology as an important climate change mitigation strategy, in addition to saving on energy consumption and increasing the use of sustainable sources (e.g., solar and wind energy). Currently, the development of CCS enters the stage in which the technology is to be demonstrated in the field. At this point, it is important to

^a Detailed information about CCS is available on the website of the Intergovernmental Panel on Climate Change (IPCC: <http://www.ipcc.ch>), especially recommended is the ‘summary for policy makers’ in the 2005 special report about carbon dioxide and storage (IPCC, 2005). The IEA Greenhouse Gas R & D program also provides resources related to the capture and storage of carbon dioxide on its website (<http://www.co2captureandstorage.info>). Information about CCS in the Dutch context is available on the website of CATO, the Dutch research program on carbon dioxide capture, transport and storage (<http://www.cato-co2.nl>).

consider how information about this technology and its likely consequences can be effectively communicated to the general public.

CCS is a complex issue to judge for people as they lack the necessary knowledge to evaluate information about the technology on its merits (cf. De Best-Waldhober, Daamen, & Faaij, in press; Huijts, Midden, & Meijnders, 2007; Meijnders, Midden, & Wilke, 2001). In addition, CCS is complex as it has many aspects (e.g., technological, environmental, legal, economic, societal) that people can take into consideration when forming an impression of the technology.

When issues are complex, like in the case of CCS, people may experience great difficulty in information processing. Illustrative of this point, when back in 2005 the Dutch government consulted the general public via a referendum about the desirability of participation of the Netherlands in the novel European Constitution, people found it extremely difficult to reach an informed opinion. Citizens felt they lacked the necessary knowledge and background to judge the different aspects (e.g., economic, legal, societal aspects) of the Constitution. This led them to abstain from voting in the referendum or to vote against the Constitution (Flash Eurobarometer, June 2005). Thus, citizens' voting behavior was determined not so much by their evaluations of the Constitution in terms of its content or merits, as by their feelings of lacking the necessary backdrop to judge the issue. What is striking about the case of the EU Constitution is that in the months preceding the referendum citizens *had* been intensively informed by the Dutch government. A TNS NIPO poll conducted in May 2005 for instance indicated that the majority of Dutch citizens consulted the door-to-door leaflet on the EU Constitution that had been provided by the government.^b So how can we explain the public's apparent dissatisfaction with the actual information provided? I argue the answer to this question lies—at least in part—in Dutch citizens' distrust in the Dutch government (cf. Flash Eurobarometer, June 2005). At the time of the referendum, the Netherlands' centre-right coalition government, led by Jan Peter Balkenende, was suffering a lack of popularity and there was widespread disillusion with the country's political elite (TNS NIPO/PM, 2005). Survey data by Elenbaas and De Vreese (2007) indicate that distrust in government indeed may have played a part in citizens' dissatisfaction with the information provided on the EU Constitution: The more citizens distrusted the Dutch government, the less positive their perceptions of the government's information campaign were. Survey

^b Retrieved August 25, 2008, from http://www.tns-nipo.com/pages/nieuws-pers-politiek-referendum2005.asp?file=persvannipo\rtl_referendum_eu_grondwet05.htm.

data also indicate that opposition to the national government or certain political parties played a role in citizens' abstaining from voting and their rejection of the Constitution (Flash Barometer, 2005). It is my expectation that dissatisfaction with the information provided (at least in part) mediated this relationship between trust in government and citizens' voting behavior. In sum, I argue that not so much the issue or information itself, but the way people view the source of this information determines the way people evaluate the information they receive, and their position regarding the complex issue.

The main objective of this thesis is to examine whether the effectiveness of communication about complex issues such as the European Constitution depends on people's perceptions of the source that provides the relevant information. In the present thesis I focus on the complex issue of carbon dioxide capture and storage technology (CCS). I examine whether people's responses to information about CCS depend on a) whether or not they perceive the information source that provides the information to be credible, and b) whether the information originates from collaborating sources or from individual sources. Of course, the topic of potential influence of source perceptions on people's responses to communications is not new; it has been extensively investigated in the literature on persuasive communication. However, as I will explain in the next sections, my work differs fundamentally from this line of research in that I focus on *informative communication* instead of on *persuasive communication*. This also has important implications for the outcome variables I address. In this thesis I focus on information-related outcome variables such as perceived information quality and information selection, while previous research has focused on persuasion-related variables such as attitude-change.

The purpose of this chapter is to provide the contextual and theoretical backdrop for the work carried out in this dissertation, and to discuss the main empirical findings. In the remainder of this chapter I first explain in what ways the present work differs from previous communication research, and I provide the rationale for the hypothesized importance of source perceptions in people's responses to information about complex issues. Next, I will give an overview of the studies that are presented in the different empirical chapters of this thesis, and I will provide a summary of the main empirical findings. Finally, I will end this chapter with conclusions that can be drawn from this research. The remaining three chapters (Chapters 2 tot 4) contain more detailed reports of the empirical work carried out, in which the focus is on how people's perceptions of information quality and their information selection regarding complex issues depend on their perceptions of information sources.

Informative communication

In order for people to gain understanding of a complex issue such as CCS, they need to be informed about the issue. Informing people in a CCS context involves providing them with factual, balanced information about CCS technology and its potential benefits and risks. Such information lets the established facts speak for themselves and allows people to reach their own conclusions about the technology on the basis of the information provided (cf. Fischhoff, 2007). The present analysis does not pertain to persuasive messages that aim to induce public acceptance of the issue. In fact, in the case of CCS the deployment of a persuasive “say-yes-to-CCS” campaign can be expected to backfire, because persuasive campaigns are highly unlikely to fulfill the information needs of involved citizens, and people may show reactance to messages they suspect to be of persuasive intent (Petty & Cacioppo, 1977; Wood & Quinn, 2003). To illustrate this point, in case of the European Constitution the Dutch government’s intensive “yes” campaign regarding the European Constitution caused more harm than good as it was established to contribute to the “no” vote (Flash Eurobarometer, 2005). Moreover, campaigns that aim to persuade people can be considered unethical in the case of CCS, given the potential risks of the technology (e.g., in terms of safety, economic and social costs) for those citizens living near potential storage sites. In sum, communication that aims to inform people—instead of aiming to persuade them—seem indispensable in the context of complex issues such as CCS (cf. Fischhoff, 2007). Hence, it is highly relevant to examine the conditions under which such communication is effective.

In the present thesis I focus on *informative communication*, which refers to communication that aims to create awareness and deeper understanding of the issue of consideration (cf. Kinneavy, 1971; Rowan, 2003), enabling people to form an informed opinion. This in contrast to communication that aims to persuade people (i.e., *persuasive communication*: Kinneavy, 1971; Rowan, 2003). This has implications for the measures I use to assess communication effectiveness. While persuasive communication is considered effective when people change their opinions as a result of the message, informative communication can be considered effective when people regard the information they receive to be valuable for the purpose of their own opinion formation. This is why in the present thesis I address information-related variables such as *perceived information quality* and *information selection* as novel central outcome variables, rather than persuasion-related outcome variables such as attitude change which have been central in previous communication research. I define perceived information quality as indicating the

subjective value and completeness of information, whereas information selection refers to people's tendency to make a selection from the total amount of information they have at their disposal.

To date, surprisingly little is known about the factors that determine the effectiveness of informative communication, while researchers from different fields (e.g., from social psychology, advertising, health science, political science) have devoted a lot of attention on the effectiveness of persuasive communication (cf. Rowan, 2003). It is beyond discussion that an important part of the communications that we encounter in our daily lives aim to change our opinions. Nevertheless, informative communications are around us as well. Examples of such communications are product-comparison websites on the Internet, which provide people with factual information about product features, but leave the decision about which product best meets their needs to the people themselves. Online Encyclopedias such as Wikipedia also exemplify the considerable amount of informative communication that surrounds us. As such, both from an applied and a social-psychological perspective it is highly relevant to examine the factors that may influence people's evaluations of communications that aim to inform them.

First, it is important for designers of information campaigns to understand the conditions under which informative communications are valued. As illustrated by the example of the European Constitution, communications that are perceived to be poor can cause more harm than good in cases such as these. Second, at a more theoretical level, the examination of the effectiveness of informative communication could advance the existing literature on communication in important ways. For instance, previous persuasion studies have not explicitly addressed the question of whether source perceptions can affect people's perceptions of information quality, and neither have they addressed whether source perceptions can affect the information people select. Thus, the examination of people's responses to communications in terms of information selection and perceived information quality can be expected to complement and extend previous findings from research in the area of persuasive communication. One important contribution of the present thesis is that I examine whether source perceptions affect the effectiveness of informative communication.

Source credibility

One of the central questions I pose in this thesis is whether people's responses to information about complex issues depend on their credibility perceptions of the

information source. More specifically, I examine whether source credibility affects people's perceptions of information quality and their information selection. *Source credibility* refers to the perceived expertise and trustworthiness of an information source (e.g., Kelman & Hovland, 1953, see also Pornpitakpan, 2004; Stiff & Mongeau, 2003). That is, source credibility comprises the extent to which an information source "is perceived to be capable of making correct assertions" (*source expertise*: Hovland, Janis, & Kelly, 1953, p. 21), as well as its "perceived honesty, integrity, and believability" (*source trustworthiness*: Erdogan, Baker, & Tagg, 2001, p. 40).

To date, little is known about possible effects of source credibility on perceived information quality and information selection, while research has extensively examined how information about a source's credibility affects persuasion. Researchers in this field have commonly found a highly credible source to induce more persuasion toward the position advocated than a low-credibility one (for an overview see Pornpitakpan, 2004). In addition, research has provided convincing evidence that source credibility can affect persuasion through different mechanisms (Chaiken, 1980, 1987; Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986a, 1986b; Petty & Wegener, 1999). That is, source credibility can serve as a heuristic cue (e.g., Hovland & Weiss, 1951; Petty, Cacioppo, & Goldman, 1981), it can direct the extent of processing (e.g., Heesacker, Cacioppo, & Petty, 1983; Priester & Petty, 1995), it can influence persuasion by biasing thoughts (e.g., Bohner, Ruder & Erb, 2002; Chaiken & Maheswaran, 1994; Tormala, Briñol, & Petty, 2007; Tormala & Clarkson, 2007; Ziegler & Diehl, 2003; Ziegler, Dobre, & Diehl, 2007), by affecting the confidence with which people hold their message-relevant thoughts (e.g., Briñol, Petty, & Tormala, 2004; Tormala et al., 2007; Tormala, Briñol, & Petty, 2006), and by serving as a piece of evidence relevant to the central merits of an issue (Kruglanski & Thompson, 1999). Furthermore, effects of source credibility on persuasion have been found to depend on receiver variables (e.g., issue involvement, need for cognition), message variables (e.g., argument quality, argument ambiguity, timing of source identification in message), on context variables (e.g., distraction, time pressure), and on channel variables (e.g., media modality), for overviews see Eagly and Chaiken (1993) and Pornpitakpan (2004). In sum, source credibility effects on persuasion have been heavily researched and a number of phenomena are well-documented. Nevertheless, these previous persuasion studies do not provide an answer to the questions posed in the present thesis, because previous research has not explicitly addressed whether source credibility can affect people's perceptions of information

quality and their information selection. I will illustrate this point in the next two sections.

Perceived information quality

Persuasion researchers first have not explicitly addressed the question of whether source credibility can affect people's perceptions of information quality. While persuasion researchers have examined the effects of argument quality on persuasion as a means to identify the mechanism through which source credibility affects persuasion (Chaiken, 1980, 1987; Chaiken et al., 1989; Petty & Cacioppo, 1986a, 1986b; Petty & Wegener, 1999), they have seldom treated perceived information quality as a central outcome variable. Relevant for the present work, however, persuasion research in the area of biased information processing does suggest that source credibility can color people's responses to persuasive messages. That is, this line of research has shown that messages by credible sources elicit more favorable (i.e., message-congruent) thoughts than the same messages from less credible sources (e.g., Bohner et al. 2002; Chaiken & Maheswaran, 1994). In the present thesis I systematically examine whether a parallel effect can be observed for perceived information quality. More specifically, I examine whether people perceive information that originates from a highly credible source to be of higher quality than when the same information is provided by a low credible source. In addition, I examine the implications of these information-quality perceptions for people's self-reported understanding of the issue under consideration.

Information selection

Second, persuasion researchers have not addressed the possibility that source credibility can affect the selection of information. In persuasion research participants have commonly been presented with fixed messages from a source presented as either high or low in credibility. As the amount of information conveyed in the source's message typically was limited, it is highly probable that participants in these studies read and processed all information in the message. Nevertheless, in the real world people rarely pay attention to all information that they have access to gain an understanding of the world around them. In today's society there simply is too much information available to consider, and people constantly make a selection from the total amount of information they have at their disposal. In this context, information selection is a topic worthy of consideration. However, the topic of information selection has not been previously addressed in research on persuasive communication.

By contrast, the information people select *has* been central in research on selective exposure. Researchers in this area have convincingly shown that people's initial beliefs, attitudes, and decisions can guide their information selection preferences (for overviews see Frey, 1986; Smith, Fabrigar, & Norris, 2008). An important and consistent finding from this work is that people tend to select information that supports their own views and avoid information that contradicts these (see Frey, 1986; Smith et al., 2008). But how will people decide what information to select in case of complex issues they are not familiar with, and on which they have no pre-existing views? Previous research (Brannon, Tagler, & Eagly, 2007) suggests that in this type of situation it is not very likely that people's own initial attitudes will guide their information selection. In the present thesis I examine the possibility that in this particular situation the credibility of an information source affects people's information selection preferences. To the extent that source credibility affects people's information selection, I argue that this will have important implications for their further thoughts about the issue as well as the attitudes they form. For example, when people predominantly select information in favor of a novel CCS technology, this should probably elicit more positive thoughts and attitudes towards this technology than when they predominantly select information arguing against this technology. The present thesis contributes to the existing literature, by examining whether perceived source credibility affects the way people deal with information about complex issues in terms of information selection.

Collaborating versus individual sources

A second central question I address in this thesis is whether people's responses to information about complex issues in terms of their perceptions of information quality depend on whether this information is provided by collaborating sources (e.g., an oil company and an environmental non-governmental organization that provide information in collaboration) or by individual sources.

Previous studies in the persuasion literature have compared the effectiveness of multiple sources to that of single sources of persuasion (e.g., Harkins & Petty, 1981a, 1981b; 1987; Moore, Reardon, & Mowen, 1987). These studies showed that multiple sources can be more persuasive than single sources. This multiple-source effect was found to depend on factors such as the number of different arguments provided (e.g., Harkins & Petty, 1981a, 1981b) and the perceived (in)dependence of sources (e.g., Harkins & Petty, 1987; Moore et al., 1987). However, the paradigm used in these previous studies was a multi-source-

multi-message paradigm. That is, in the multiple-source conditions in these studies each of the different sources *separately* provided participants with a different persuasive message in favor of the issue under consideration: The sources did not provide a message in collaboration, which is the situation which I examine in the present thesis. Also, the outcome variable in these studies was attitude change, instead of perceived information quality which I focus on in the present thesis. Hence, there was no pure source effect and these previous studies do not provide an answer to the question of how people evaluate information provided by sources that collaborate in providing this information. The present thesis contributes to existing communication literature by examining whether collaboration between information sources affects the way people evaluate the information provided.

Overview of the present thesis

In the present thesis I examine whether people's responses to information about complex issues—in terms of their perception of information quality and their information selection—depend on a) whether they perceive the sources that provide the information to be credible or not, and b) whether the information originates from collaborating sources or from an individual source. As mentioned before, the complex issue I focus on throughout this thesis is “the large-scale implementation of carbon dioxide capture and storage (CCS) in the Netherlands”.

In this thesis I combine different research methodologies and measures. The starting point of this thesis is a field study that measures Dutch citizens' credibility perceptions of different organizations (i.e., *stakeholders*) involved in CCS. Next, I report seven experiments examining whether the way people deal with information about CCS depends on their perceptions of CCS stakeholders that provide such information. I opted for this experimental methodology because it allows for causal inferences and enables me to compare the effectiveness of different possible interventions. The paradigm I use throughout the experimental studies is roughly the same in all studies. Participants are provided with the opportunity to read a report that contains factual information about CCS. Before participants actually read the information, they are presented with background information about who allegedly has written the report (i.e., source manipulation). Then, participants read the report and respond to the information provided.

Participants' expectations of information quality—measured before reading the information—play a key role throughout the present thesis. As I show in the current work, the involvement of stakeholders in communication about CCS evokes expectations regarding the quality of information provided. These

information-quality expectations in turn are highly consequential for the way people respond to the information they receive, both in terms of their information evaluations (Chapters 2 and 4) and in terms of their information selection (Chapter 3).

With regard to my investigation of source credibility, throughout the present thesis I focus more on the trustworthiness dimension of source credibility than on its expertise dimension, following the results of the field study on credibility perceptions of CCS stakeholders among Dutch citizens. That is to say, I examine how variations in stakeholder trustworthiness affect the way people deal with CCS information when relevant stakeholders who serve as information sources are perceived as experts. That participants expect the relevant stakeholders to be experts is not only important for reasons of ecological validity, however; it also prevents that participants would infer the stakeholder's expertise from the trustworthiness information provided.

Now I have outlined the general scope of this dissertation, I will provide the reader with an overview of the structure, the content and the main findings of the empirical chapters.

Summary of the Main Findings

Credibility and perceived information quality

The first empirical chapter (Chapter 2) provides insight in how variations in source credibility affect the way people deal with information about the complex issue of CCS. The first study in Chapter 2 (Study 2.1) was an internet survey ($N = 264$) among members of the Dutch general public designed to examine whether people's credibility perceptions of different CCS stakeholders would vary, and if so, on which dimension of credibility (expertise and/or trustworthiness). I focused on two types of CCS stakeholders in this study: industrial stakeholders versus environmental non-governmental organizations (NGOs). As predicted, it was shown that environmental NGOs involved in CCS are perceived to be more credible than industrial CCS stakeholders. Furthermore, this difference was shown to be grounded in the trustworthiness dimension of stakeholder credibility, but not in its expertise dimension.

Following the results of Study 2.1—which showed that CCS stakeholders de facto are perceived as experts, but that their perceived trustworthiness—Study 2.2 addressed the question of whether variations in stakeholder trustworthiness affect people's responses to CCS information. In this study, both the trustworthy and the untrustworthy stakeholder who provided the CCS information were presented as

experts. As predicted, Study 2.2 showed that people perceive information originating from a trustworthy stakeholder to be of higher quality than when the same information is provided by an untrustworthy stakeholder. Moreover, Study 2.2 showed that as a result of these different information-quality perceptions, people indicate being better able to form an accurate impression of CCS in case of a trustworthy stakeholder compared to with an untrustworthy stakeholder.

Accordingly, the research presented in Chapter 2 indicates that source credibility (and in particular source trustworthiness) plays an important part in the way people evaluate information about complex issues, and as a result affects their understanding of the issue under consideration.

Credibility and information selection

In the second empirical chapter (Chapter 3) I address the idea that even when people are highly motivated and able to process information to form an attitude, they cannot pay attention to all information available. As a result people must make a selection from the total amount of information they have at their disposal. The central idea guiding the studies reported in this chapter is that people's information selection can be source-guided. The key hypotheses in this chapter are that the information people select depends on their perceptions of source credibility, and that people's information selection is consequential for their resulting thoughts about the issue and the attitudes they form. As in Chapter 2 I tested these hypotheses in the context of CCS technology.

Study 3.1 focused on the trustworthiness dimension of source credibility and showed that people's information selection is more source-guided in case of a trustworthy than with an untrustworthy source, as predicted. Furthermore—in line with the recently-proposed evaluation model of information search (Fischer, Jonas, Frey, & Schulz-Hardt, 2005)—this effect of source trustworthiness on the extent of source-guided information selection was shown to be embedded in people's expectations regarding information quality. With an untrustworthy source people more strongly anticipate an asymmetry in information quality (e.g., an untrustworthy proponent of a novel CCS technology can be expected to exaggerate arguments pro, and to discount arguments arguing against the technology) than in case of a trustworthy source. As a result, people's information selection is more source-guided under low than under high source trustworthiness.

Study 3.2 was designed to replicate and extend the findings of Study 3.1. As in Study 3.1, in this study it was found that people's information selection is more source-guided under low than under high source trustworthiness.

Furthermore, in extension of Study 3.1, Study 3.2 showed that under low source trustworthiness people's information selection is characterized by a preference for information that counters the source's expected viewpoint. That is to say, when people expect an untrustworthy source to be a proponent of CCS, they appear to disconfirm the source by selecting more information about the cons than about the pros of this technology. Conversely, when people expect the relevant source to be an opponent of CCS, they show a preference for pros over cons. Finally, Study 3.2 provided initial evidence that biases in information selection under low source trustworthiness indeed (at least in part) explain biases at later stages of attitude formation.

In the third and final study in this chapter (Study 3.3) I further addressed the relationship between information selection, thought favorability and attitudes. In addition, I broadened my examination of how source credibility affects information selection: I explored whether similar conclusions of the first two studies (Studies 3.1 and 3.2) in which I examined the trustworthiness dimension of source credibility can be drawn for its expertise dimension. The results of Study 3.3 indicate that the variations on the expertise dimension of source credibility—unlike its trustworthiness dimension—do not elicit source-guided information selection. Furthermore, Study 3.3 demonstrated that information selection appears to be an important stage in attitude formation indeed: The information people select predicts the favorability of their own thoughts about the issue and the attitudes they subsequently form.

Thus, Chapter 3 provides insight in how source credibility affects information selection, and in this way has the potential to impact on thoughts about the issue and attitudes formed. Especially when sources are not trusted, source-guided information selection occurs, which in turn has important repercussions on the thoughts about the issue people form.

Collaboration and perceived information quality

The three studies reported in Chapter 4 compare people's responses to information provided by collaborating sources (i.e., stakeholders) with their responses to when the same information content is provided by either one of these sources. The central hypothesis guiding the studies in Chapter 4 is that when CCS stakeholders provide information in collaboration, people expect this information to be more balanced and perceive it to be of higher quality than when an individual stakeholder provides the same information, *but only* when these collaborating stakeholders are perceived to be dissimilar. As in the previous chapters, I tested this hypothesis in the context of CCS technology.

In Study 4.1 it was predicted and found that people expect more balanced information (i.e., information that represents a variety of perspectives on CCS) when an oil company and an environmental NGO (i.e., dissimilar stakeholders) provide information about CCS in collaboration than when each of these stakeholders provides the same information separately. In addition, Study 4.1 showed that collaboration between credible and less credible stakeholders does not harm the perceived credibility of individual stakeholders.

Study 4.2 was designed to replicate and extend findings of Study 4.2. As in Study 4.1, it was found that people expect more balanced information from collaborating stakeholders than from individual stakeholders. Moreover, Study 4.2 confirmed findings of Study 4.1 that when divergent stakeholders team up, the credibility perceptions people hold of these stakeholders are not affected in a negative way. Also, in extension of Study 4.1 and as predicted, Study 4.2 demonstrated that people expect information originating from collaborating stakeholders to be of higher quality than when the same information originates from individual stakeholders. This effect was mediated by their expectation of more balanced information content in case of collaborating compared to individual stakeholders. Finally, Study 4.2 showed that people's initial expectations regarding information quality lead them to evaluate the actual information provided by collaborating stakeholders to be of higher quality than when the same information is provided by individual stakeholders.

The third and final study in Chapter 4 (Study 4.3) addressed the processes underlying the collaboration effects observed in Studies 4.1 and 4.2. In this study perceived dissimilarity of collaborating stakeholders (e.g., dissimilarity in perspectives, viewpoints) was found to be an important precondition for the effects observed in Studies 4.1 and 4.2. When two similar stakeholders (e.g., two oil companies) join forces, people have no reason to expect that the information provided by these stakeholders will be more balanced than when each of these stakeholders provides the information individually. As a result people do not expect the quality of information provided to exceed that of the individual stakeholders.

In sum, the three studies reported in Chapter 4 indicate that people's evaluations of information about complex issues depend on whether information originates from either collaborating or from individual stakeholders (i.e., sources). When stakeholders team up, people perceive the information provided to be of higher quality than when each individual stakeholder provides the same information separately, *but only* when collaborating stakeholders are perceived as being dissimilar. Finally, these studies show that stakeholders do not need to

worry that joining forces with other (less credible) stakeholders will harm their own reputation.

Discussion and Conclusions

This section is structured as follows. First, based on the combined findings of this thesis, I discuss what the present findings tell us about the role of source perceptions in the way people deal with information about complex issues. I also discuss how these findings contribute to the existing literature. Second, I discuss the practical implications of this program of research. Finally, I discuss the limitations of the present research along with directions for future research.

Dealing with information about complex issues: The role of source perceptions

The work in the present thesis has shown that the way people deal with information about complex issues depends on their perceptions of the sources that provide the relevant information. The combined findings of the studies reported in Chapters 2 and 3 suggest that in order for communications by single sources to be effective, relevant sources need to be perceived as credible. More specifically, it is important that these sources are trusted. When trust in information sources is lacking, people's information selection and their information evaluations are affected in a negative way, with detrimental consequences for the impressions of the issue they form. Additionally, the present work demonstrates the surplus value of having divergent sources provide information about complex issues in collaboration, instead of separately (Chapter 4).

The contribution of the present findings to the field of communication is threefold. First, this thesis complements and extends current findings in the literature as it focused on *informative communication*, while previous work has mainly addressed *persuasive communication*. A central finding of the present work is that source perceptions play a key role in the way people deal with communications that aim to inform people. Noteworthy, parallel findings have been found in research on persuasion, but for different outcome variables than I addressed in the present thesis. This brings me to the second way in which the present research advances the existing literature, namely by its focus on *information-related* outcome variables such as perceived information quality and information selection, instead of on *persuasion-related* variables such as attitude change. The studies in Chapters 2 and 4 show that the way people evaluate the quality of information provided depends on the identity of information sources that provide the relevant information. Moreover, the studies in Chapter 3 are the

first to show that source credibility can affect which information people select, and in this way impacts on their impressions of the issue. Second, the present findings add to the existing literature by comparing the effectiveness of individual sources with that of collaborating sources. The studies reported in Chapter 4 are the first to show that collaborative communications by dissimilar sources are more effective than when the same information is provided by individual sources.

The present findings also contribute to research in the area of selective exposure. First, the present thesis adds to the literature as it sheds light on the relationship between the information people select, their subsequent thoughts and the attitudes they form. That is, the studies in Chapter 3 show that biases in information selection explain biases at later stages of attitude formation. Second, the studies in this chapter are the first to show that in the case of novel topics people's information selection can be *source-guided*, that is, guided by expectations about the source's viewpoint about the issue under consideration.

Practical implications

The results of the studies reported in this thesis have important practical implications for parties responsible for informing Dutch citizens about carbon dioxide capture and storage technologies (CCS). The message of this thesis for designers of information campaigns is that the way people evaluate factual information about CCS and their resulting position towards CCS depends on their perceptions of the sources that provide the relevant information.

First, this thesis shows that in order for CCS communications to be perceived as valuable, it is important that citizens consider the sources that provide the information about the technology as credible. In particular, these sources need to be trusted, aside from being experts on the topic. Hence, in the context of CCS, trusted stakeholders such as environmental non-governmental organizations (NGOs) or research institutions may be the most suitable sources to inform the public about CCS. The findings of the present thesis also imply that the Dutch government—an obvious stakeholder to provide information to the public—should reconsider its role in communication about CCS, given Dutch citizens' lack of trust in government and politicians (e.g., Dekker & Van der Meer, 2004).

However, this thesis also shows that appointing a single, highly-credible stakeholder as information source may not be the best communication strategy in the context of CCS. First, a shortcoming attached to this strategy is that even in case of a highly credible stakeholder people expect the information provided to be relatively imbalanced, that is, restricted to the stakeholder's own perspective and field of expertise. These imbalance expectations associated with individual

stakeholders in turn have a restraining influence on people's evaluations of the information they receive. Second, relying on the credibility of a single stakeholder may be a risky choice in itself, as stakeholder reputations are easily harmed. For instance, when an environmental NGO that is appointed to communicate about CCS all of a sudden is put in a bad light because of misappropriation of funds, this could have detrimental effects on the way people perceive its CCS communications. Third, in a multi-stakeholder environment as is the case with CCS the strategy of appointing just one highly credible stakeholder as information source may not prove to be very realistic. The many different stakeholders that are involved in CCS each approach the technology from their own background, and each of them likely wishes to have a finger in the pie when it comes to communication about CCS.

So what would be an effective communication strategy? To start with I do not consider it a good idea to have all stakeholders provide information about CCS individually. When information provision is fragmented like this, citizens are likely to lose sight of what CCS entails, and may not be able to see the wood through the trees. According to the present thesis the most promising communication strategy in the context of CCS *would* be to have different stakeholders provide information about the technology in collaboration. When different stakeholders collaborate, citizens will perceive this joint information to be of upmost quality, because they expect such joint communications to represent different perspectives and positions on CCS. As the present thesis has shown, collaborative communications are only evaluated more positively than individual communications to the extent that collaborating stakeholders are perceived to represent divergent perspectives, however. So, the best practice in informing citizens living near CCS demonstration sites may be to have dissimilar stakeholders provide information together, for example a local environmental NGO in combination with an oil company. Joint information provision by two similar stakeholders like two energy companies or two governmental bodies, on the other hand, is unlikely to work. Previous work in the context of CCS on information-choice questionnaires (De Best-Walldober et al., in press) has already shown that it is feasible for different CCS stakeholders to reach agreement on factual information about the technology. In addition, the present thesis shows that stakeholders that are highly trusted by the general public do not need to fear that collaboration with less-trusted stakeholders will harm their own reputation. In sum, the present thesis suggests that collaborative communications are likely to be highly effective, and are harmless for the perceptions people hold of individual

stakeholders. In addition to this, research by De Best-Waldhober et al. (in press) suggests that collaborative communications are feasible.

Finally, I cannot stress enough that the above-mentioned recommendations pertain to the best practices in *informing* people about CCS. In other words, the recommendations relate to the provision of information to the public, not to the provision of messages that aim to persuade the public into the technology. When stakeholders jointly provide CCS information this will not necessarily result in public acceptance of the technology, but at least it is likely to prevent that citizens reject the technology for the wrong reasons (i.e., for reasons unrelated to the technology, such as dissatisfaction with the information provided or distrust in individual CCS stakeholders).

Limitations and future directions

On the pragmatic level, it is worthy to note that the communication results reported in the present thesis were found under experimental conditions with students as participants. I recognize that it would be worth considering the role of recipient characteristics (e.g., education level, involvement, trust in authority) in relation to the present effects in future research. However, I expect that the communication results obtained in the present work will be similar or even larger under real-life conditions with a more representative sample of the Dutch general public (e.g., when the local community is informed by CCS stakeholders about an actual CCS project). For example, the average citizen can be expected to trust authorities and institutions to a lesser extent than the highly-educated sample I used in the present thesis (Tanner & Dekker, 2007). Consequently, collaborative information provision may prove to be an even more important communication strategy among the average citizen than among the student sample I used in the present thesis. However, future research near CCS demonstration sites is needed to monitor whether these (larger) effects under real-life conditions indeed emerge.

More at the theoretical level, I do not believe the findings of the present work are restrained to the topic of CCS; I expect that similar findings can be obtained for other complex topics like the possible installation of a European Constitution and the desirability of the use of medical gene technology. However, I do expect that the issue under consideration needs to be complex to a certain extent in order to obtain the source effects reported in the present thesis. That is, with issues low in complexity people can be expected to have a relatively high ability to judge the issue and information quality themselves. Hence, they do not have to rely as much on their perceptions of the source to judge the quality of the information. As a result, I would expect the added value of high source credibility

and collaboration of sources in communication to be especially strong for issues that are high rather than low in complexity. Future research could test this expectation.

Finally, in the present research I established that in order for collaborative communications to be effective, sources that team-up in information provision should be seen as representing different perspectives on the issue. I suspect more boundary conditions to the collaboration-effects obtained in the present studies can be identified, however. For example, I would expect the present effects to hold true when a limited number of different sources provides information together, but to disappear when the number of collaborating sources exceeds a certain threshold. When too many different sources collaborate, people likely doubt whether the joint information still represents each source's true feelings, which in turn raises doubt about the quality of information provided. Both from a pragmatic and a theoretical perspective it is relevant to address these issues in future research.

Preceding note on Chapters 2–4

The following three chapters are written in first person plural—that is, using “we” rather than “I”—because these chapters are the product of collaboration with my supervisors. It should be noted that all empirical chapters (Chapter 2 to 4) can be read independently of each other as they have been prepared as separate journal articles. As a result there is some overlap between these chapters in terms of their literature review and introduction of ideas. In the empirical chapters I use the terms ‘source’ and ‘stakeholder’ interchangeably.

Credibility and Perceived Information Quality ^c

Climate change is among the biggest challenges the world faces today. Scientists and other experts almost unanimously recognize that recent changes in the climate of the Earth are man-made, caused by ever increasing greenhouse-gas concentrations in the atmosphere (IPCC, 2007; Oreskes, 2004). The greenhouse gas making the largest contribution from human activities in this context is carbon dioxide (CO₂), a gas that is released into the atmosphere through combustion of carbon-containing fossil fuels such as coal, oil and natural gas in power plants, cars, and industrial facilities. Given the far-reaching negative consequences associated with climate change (for an overview see IPCC, 2007), the urge to cut CO₂ emissions is widely recognized, and political leaders from industrialized countries have committed themselves to reduce their CO₂ emissions. Relevant for the present research, the Dutch government has committed itself to an emission reduction target in 2020 that lies 30 percent below the Netherlands' 1990 levels. The Dutch government aims to meet this target by means of an integrated package of three groups of measures (i.e., *trias energetica*). At the core of this portfolio is the reduction of CO₂ emissions through reduction of energy use and switching to renewable energy sources (e.g., wind and solar). However, the combined effect of energy efficiency and renewables cannot yet achieve the required reductions in emissions alone, and therefore the deployment of existing and new technologies that reduce CO₂ emissions is considered as a third category of important measures.

One of these new technologies currently considered by the Dutch government is carbon dioxide capture and storage technology (CCS). In short, CCS involves the capture of CO₂ in power plants, the transportation of the CO₂ to underground storage sites (e.g., depleted gas fields), and its subsequent storage in these sites. ^d Currently, the development of CCS in the Dutch context is

^c This chapter is based on: Ter Mors, Weenig, Ellemers, & Daamen (2008a).

^d Detailed information about CCS is available on the website of the Intergovernmental Panel on Climate Change (IPCC: <http://www.ipcc.ch>), especially recommended is the 'summary for policy makers' in the 2005 special report about carbon dioxide and storage (IPCC, 2005). Information about CCS in the Dutch context is available on the website of CATO, the Dutch research program on CO₂ capture, transport and storage (<http://www.cato-co2.nl>).

transcending from a (laboratory) research phase to a demonstration stage in which the technology is demonstrated in the field. Hence, in the near future members of the Dutch general public—and in particular those citizens living near possible demonstration sites—will need to be informed about the technology. In this context, organizations involved with CCS—in other words *CCS stakeholders*—are obvious sources of information given their expertise on the topic of CCS.

Regarding the provision of information about CCS to the public, it is important that citizens evaluate CCS communications to be valuable and of high quality, in order for them to feel able to form accurate impressions of the technology. Dissatisfaction with the information provided would be highly undesirable, because it could result in resentment of CCS for reasons unrelated to the characteristics of the technology. However, the difficulty with communication about CCS is that people lack the necessary background knowledge to evaluate information about the technology on its merits (cf. De Best-Waldhober, Daamen, & Faaij, in press; Huijts, Midden & Meijnders, 2007; Meijnders, Midden, & Wilke, 2001). This raises the important question of how citizens in this case will decide whether information about CCS is valuable. In the present research we argue that citizens' evaluations of CCS information will depend to a considerable extent on whether or not they perceive the stakeholders that provide the relevant information to be credible.

The main objective of the present research is to examine whether stakeholder credibility affects people's responses to CCS information. More specifically, we examine whether people perceive CCS information that originates from a highly credible stakeholder to be of higher quality than when the same information is provided by a low credible stakeholder. In addition, we examine the implications of potential variations in perceived information quality for people's self-reported ability to form an accurate impression of what CCS entails. Of course, the topic of potential influence of source credibility on people's responses to communications is not new; it has been extensively investigated in the literature on persuasive communication. However, as we will explain in the next section, the present work differs fundamentally from this line of research in that we focus on informative communication instead of on persuasive communication.

Informative communication about CCS

In order for people to gain understanding of CCS and to take a position on the technology, they need to be informed. Importantly, in a CCS context this entails the provision of factual information, enabling people to form an informed opinion about CCS. Such information lets the established facts speak for themselves and recognizes that people may reach different conclusions on the basis of the information provided (cf. Fischhoff, 2007). The present analysis does not pertain to persuasive messages intended to increase public acceptance of CCS. In fact, the deployment of a persuasive “say-yes-to-CCS” campaign can be expected to backfire, because persuasive campaigns are highly unlikely to fulfill the information needs of involved citizens, and people may show reactance to messages they suspect to be of persuasive intent (Petty & Cacioppo, 1977; Wood & Quinn, 2003). Moreover, persuasive campaigns can be considered unethical in the case of CCS, given the potential risks of the technology (e.g., in terms of safety, economic and social costs) for those citizens living near storage sites. In sum, communication that aims to inform people seems indispensable in the context of CCS (cf. Fischhoff, 2007). Hence, it is highly relevant to examine the conditions under which such communication is effective.

In the present research we focus on *informative communication*, which refers to communication that aims to create awareness and deeper understanding of the issue of consideration (cf. Kinneavy, 1971; Rowan, 2003), enabling people to form an informed opinion. This is in contrast to messages that aim to persuade people (i.e., *persuasive communication*: Kinneavy, 1971; Rowan, 2003). This has implications for the measures we use to assess communication effectiveness. While persuasive communications are considered effective when people change their opinions as a result of the communication, informative communications can be considered effective when people regard the information provided to be valuable for the purpose of their own opinion formation. This is why in the present research we address *perceived information quality* as a novel central outcome variable, rather than attitude change which has been central in previous communication research. We define perceived information quality as indicating the subjective value and completeness of information. In addition, we examine the implications of people’s information-quality perceptions for their self-reported understanding of the issue under consideration.

To date, surprisingly little is known about the factors that determine people's perceptions of information quality, let alone about the consequences of people's information-quality perceptions for their perceived ability to form an accurate impression of the issue under consideration. While researchers from different fields (e.g., from social psychology, advertising, health science, political science) have devoted a lot of attention on examining the effectiveness of persuasive communication, the factors that determine the effectiveness of informative communication have remained relatively under examined (cf. Rowan, 2003).

Examining these is highly relevant, both from an applied and a social-psychological perspective. First, it is important for designers of information campaigns to understand the conditions under which information about complex issues such as CCS is perceived to be valuable and worthy of consideration. Poor communication about complex issues can be expected to cause more harm than good: Dissatisfaction with information provided for instance may lead to citizens' rejection of CCS. In this case, citizens' opinions about CCS would not so much be determined by their evaluations of CCS in terms of its content or merits, as by their feelings of lacking the good-quality information to judge the issue. Such a situation in which rejection of CCS is communication-related instead of issue-related can be considered highly undesirable.

Second, at a more theoretical level, the examination of the effectiveness of informative communication could advance the existing literature on communication in important ways. Previous persuasion studies do not explicitly address the question of whether source credibility affects people's perceptions of information quality. Thus, the examination of perceived information quality can be expected to complement and extend previous findings from research in the area of persuasive communication. One important contribution of the present work is that we examine whether source credibility affects the effectiveness of informative communication in terms of perceived information quality.

Stakeholder credibility

The central question posed in this research is whether people's responses to information about CCS depend on their credibility perceptions of the source (i.e., the stakeholder) that provides the relevant information. More specifically, we examine whether the perceived credibility of CCS stakeholders affects people's

perceptions of information quality, and in this way affects their understanding of what CCS entails. *Stakeholder credibility* refers to the perceived expertise and trustworthiness of a stakeholder (e.g., Kelman & Hovland, 1953, see also Pornpitakpan, 2004; Stiff & Mongeau, 2003). That is, source credibility comprises the extent to which a stakeholder “is perceived to be capable of making correct assertions” (*stakeholder expertise*: Hovland, Janis, & Kelly, 1953, p. 21), as well as its “perceived honesty, integrity, and believability” (*stakeholder trustworthiness*: Erdogan, Baker, & Tagg, 2001, p. 40).

To date, in communication research little is known about possible effects of source credibility on perceived information quality. By contrast, previous research has extensively examined how persuasion depends on information about a source’s credibility. Researchers in this field have commonly found a highly credible source to induce more persuasion toward the position advocated than a low-credibility one (for an overview see Pornpitakpan, 2004). In addition, research has provided convincing evidence that source credibility can affect persuasion through different mechanisms (Chaiken, 1980, 1987; Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986a, 1986b; Petty & Wegener, 1999). That is, source credibility can serve as a heuristic cue (e.g., Hovland & Weiss, 1951; Petty, Cacioppo, & Goldman, 1981), it can direct the extent of processing (e.g., Heesacker, Cacioppo, & Petty, 1983; Priester & Petty, 1995), and it can influence persuasion by biasing thoughts (e.g., Bohner, Ruder & Erb, 2002; Chaiken & Maheswaran, 1994; Tormala, Briñol, & Petty, 2007; Tormala & Clarkson, 2007; Ziegler & Diehl, 2003; Ziegler, Dobre, & Diehl, 2007), by affecting the confidence with which people hold their message-relevant thoughts (e.g., Briñol, Petty, & Tormala, 2004; Tormala et al., 2007; Tormala, Briñol, & Petty, 2006), and by serving as a piece of evidence relevant to the central merits of an issue (Kruglanski & Thompson, 1999). Furthermore, effects of source credibility on persuasion have been found to depend on receiver variables (e.g., issue involvement, need for cognition), message variables (e.g., argument quality, argument ambiguity, timing of source identification in message), on context variables (e.g., distraction, time pressure), and on channel variables (e.g., media modality), for overviews see Eagly and Chaiken (1993) and Pornpitakpan (2004). In sum, source credibility effects on persuasion have been heavily researched and a number of phenomena are well-documented. Nevertheless, these previous persuasion studies have not addressed the question of whether source credibility affects people’s perceptions of information quality.

While persuasion researchers have examined the effects of argument quality on persuasion as a means to identify the mechanism through which source credibility affects persuasion (Chaiken 1980, 1987; Chaiken et al., 1989; Petty & Cacioppo, 1986a, 1986b; Petty & Wegener, 1999), they have seldom treated perceived information quality as a central outcome variable. Relevant for the present work, persuasion research in the area of biased information processing does suggest, however, that source credibility can color people's responses to persuasive messages. That is, this line of research has shown that messages by credible sources elicit more favorable (i.e., message-congruent) thoughts than the same messages from less credible sources (e.g., Bohner et al. 2002; Chaiken & Maheswaran, 1994). In the present research we systematically examine whether a parallel effect can be observed for people's perceptions of information quality. That is, we examine whether people perceive CCS information that originates from a highly credible stakeholder to be of higher quality than when the same information originates from a low credible stakeholder. Moreover, we examine the implications of people's information-quality perceptions for their perceived understanding of what CCS entails.

Overview

In the present research we examine whether the way people deal with information about CCS depends on their credibility perceptions of stakeholders (i.e., sources) that provide the relevant information. The first study we report on is a field study in which we examine Dutch citizens' credibility perceptions of different CCS stakeholders (Study 2.1). The results of Study 2.1 form the basis for the research conducted in Study 2.2. In this study we examine by means of an experiment how stakeholder credibility affects the way people deal with CCS information, both in terms of perceived information quality and in terms of their self-reported understanding of what CCS entails. We opted for this experimental methodology in Study 2.2 because it allows for causal inferences and enables us to compare the effectiveness of different possible interventions.

Study 2.1

In Study 2.1 we examined by means of an Internet survey how Dutch citizens perceive different CCS stakeholders in terms of credibility. ^e In this study we focused on two types of CCS stakeholders, namely environmental non-governmental organizations (NGOs) and industrial stakeholders. From prior research it is known that industrial organizations are typically considered to be low-credible sources and that environmental NGOs typically are perceived being the most credible sources (Trumbo & McComas, 2003). In line with research by Huijts et al. (2007) we predicted this finding to also hold true in the context of CCS technology. More specifically, we predicted that environmental NGOs involved with CCS would be considered to be more credible than industrial CCS stakeholders (Hypothesis 1). In addition to a general impression of perceived stakeholder credibility, we also explored whether such potential variations in stakeholder credibility would be grounded in the expertise and/or trustworthiness dimension of stakeholder credibility.

Method

Participants

Two-hundred and sixty-four Dutch citizens were recruited to participate in an Internet survey via advertisements in national newspapers and on the Internet. A lottery for 25 Euros gift vouchers served as an incentive to participate. The age of the participants varied from 17 to 88 years ($M = 38.05$, $SD = 14.34$) and 25.8% of the participants was male. A considerable part of the participants (37.5%) had received higher education (university or higher vocational education), 44.1% had only completed lower education (lower vocational education or high school). The societal position that was most applicable to the participants was “employee” (48.1 %), “scholar/student” (19.3%), and “housewife/houseman” (9.8%). These variables did not influence participants’ perceptions of stakeholder credibility, and will not be discussed any further.

Design and procedure

Participants learned that the main goal of the survey was to measure their perceptions of several Dutch organizations involved in a project regarding CCS

^e This study was conducted as part of a larger research in the context of CCS.

technology. After a brief explanation of CCS we presented participants with six specific CCS stakeholders that represented two types of CCS stakeholders, namely with three industrial stakeholders and three environmental NGOs. For each of these six CCS stakeholders participants indicated whether they had ever heard of the relevant stakeholder. Subsequently, participants were randomly assigned to answer questions about one of the stakeholders they had indicated to be familiar with. As a result of this procedure, 121 participants answered questions regarding their credibility perceptions of a specific industrial stakeholder, while the remaining 143 participants answered questions about a specific environmental NGO. By addressing the perceived credibility of specific stakeholders we aimed to draw general conclusions about the perceived credibility of the two types of CCS stakeholders we examined in this study. While we recognize that credibility perceptions between specific stakeholders also are likely to differ, these differences are not what we focused on in the present research. Hence, we do not compare specific stakeholders in this study. Instead we aggregate perceptions of the six specific stakeholders into two clusters of CCS stakeholders—namely industrial stakeholders versus environmental NGOs—in order to test whether Dutch citizens in general perceive environmental NGOs involved with CCS to be more credible than industrial stakeholders.

Measures

Overall impression of stakeholder in terms of credibility. Participants' overall impression of the relevant stakeholder in the context of CCS in terms of credibility was measured through one item: "To what extent do you consider the organization to be credible" (1 = *not at all* to 7 = *very much*).

Perceived stakeholder expertise. To measure perceived stakeholder expertise in the context of CCS we adapted three items from existing credibility scales (McCroskey, 1966; Newell & Goldsmith, 2001). Participants indicated the extent to which they agreed the stakeholder to be knowledgeable, expert, and to employ experts (1 = *very much disagree*, 7 = *very much agree*). Perceived expertise was computed by averaging participants' responses to the three expertise items ($\alpha = .83$), with higher scores indicating higher perceived expertise of the relevant CCS stakeholder.

Perceived stakeholder trustworthiness. Perceived stakeholder trustworthiness in the context of CCS was measured using five items inferred of existing credibility scales (McCroskey, 1966; Newell & Goldsmith, 2001). Participants indicated on a 7-

point scale ranging from 1 = *very much disagree*, to 7 = *very much agree* the extent to which they agreed the stakeholder to be honest, to tell the truth, not to withhold important information, to have a hidden agenda (recoded) and to state whatever is best for the organization's own interest (recoded). Perceived trustworthiness was computed by averaging the responses to the five trustworthiness items ($\alpha = .90$), with higher scores indicating a higher perceived trustworthiness of the relevant stakeholder.

Results and Discussion

Unless noted otherwise, responses were analyzed at the aggregate level, comparing the cluster of industrial stakeholders to the cluster of environmental NGOs.

Overall impression of stakeholders in terms of credibility

As predicted in Hypothesis 1, participants considered environmental NGOs involved with CCS to be more credible ($M = 5.13$, $SD = 1.49$) than industrial stakeholders ($M = 4.32$, $SD = 1.29$), $t(262) = -4.84$, $p < .001$.

Perceived stakeholder expertise and trustworthiness

Next, we examined whether these differences in overall stakeholder credibility were grounded in the expertise dimension of stakeholder credibility and/or in its trustworthiness dimension. We first performed a principal components analysis (PCA) with varimax rotation on the eight credibility items to confirm that the expertise and trustworthiness items in the present study indeed measured distinct dimensions of stakeholder credibility. This analysis revealed a solution with two orthogonal factors explaining 73.6% of the variance. The first factor comprised stakeholder trustworthiness and explained 44.9% of the variance in the individual items. The second factor captured stakeholder expertise and explained 28.8% of the variance in the individual items. Of importance, the five trustworthiness items loaded exclusively on the first factor, while the three expertise items loaded exclusively on the second factor. Thus, the expertise and trustworthiness items in the present study captured distinct dimensions of stakeholder credibility, as intended.

Subsequent analyses on participants' expertise and trustworthiness scores demonstrated that participants perceived environmental NGOs to be more

trustworthy ($M = 4.72$, $SD = 1.10$) than industrial stakeholders ($M = 3.66$, $SD = 1.06$), $t(262) = -7.94$, $p < .001$.[†] Expertise perceptions did not vary for both types of stakeholders, however, $t(262) = .14$, ns : Participants considered environmental NGOs and industrial stakeholders to be equally expert ($M_{\text{overall}} = 4.55$, $SD = .98$). Further, regression analyses with either perceived stakeholder trustworthiness or stakeholder expertise predicting participants' credibility scores indicated stakeholder trustworthiness to be a better predictor of participants' overall credibility impressions ($\beta = .68$, $p < .001$) than stakeholder expertise ($\beta = .29$, $p = .15$). In fact, when we included both predictors in a regression analysis, only stakeholder trustworthiness was found to predict participants' overall stakeholder credibility impressions ($\beta = .68$, $p < .001$).[§] Thus, the finding that people consider environmental NGOs to be more credible than industrial stakeholders in the context of CCS seems to be grounded more in their trustworthiness perceptions of relevant stakeholders than in their expertise perceptions.

Study 2.2

Study 2.2 builds on the findings of Study 2.1. Study 2.1 showed that stakeholders involved with CCS are perceived to be experts irrespective of their identity, but that people's trustworthiness perceptions of the relevant stakeholders vary. In Study 2.2 we addressed the implications of such variations in perceived stakeholder trustworthiness for the way people respond to CCS information provided by these stakeholders. More specifically, we examined whether people perceive CCS information that originates from a trustworthy stakeholder to be of higher quality than when the same information originates from a low-trustworthy stakeholder. In addition, we examined the implications of these information-quality perceptions for people's self-reported understanding of CCS. While in this

[†] Additional analyses comparing the perceived trustworthiness of each of the three individual NGOs to that of each of the three individual industrial stakeholders showed that even the least trusted NGO still was perceived to be more trustworthy than two of the three of the individual industrial stakeholders, $ps \leq .008$. Moreover, there was a small—but nonsignificant, $p = .187$ —tendency for the *least* trusted NGO to also be perceived as more trustworthy ($M = 4.49$, $SD = .97$) than the third industrial stakeholder ($M = 4.09$, $SD = 1.07$). Thus, also at the level of individual stakeholders we found that industrial stakeholders are perceived to be less trustworthy than environmental NGOs.

[§] Reported analyses were performed for the entire sample. We also performed separate regression analyses for the cluster of industrial organizations and the cluster of environmental NGOs. The findings of these analyses were identical to that of the findings reported. Thus, perceived trustworthiness was found to be the best predictor of overall stakeholder credibility, irrespective of the type of stakeholder involved.

study we varied stakeholder trustworthiness, we kept stakeholder expertise constantly high a) for reasons of ecological validity, building on the findings of Study 2.1, and b) to prevent that participants would infer the stakeholder's expertise from the trustworthiness information provided.

As explained in the general introduction, in parallel to previous research in the area of biased processing (e.g., Chaiken & Maheswaran, 1994) we argued that stakeholder trustworthiness would color people's evaluations of CCS information. More specifically we predicted that participants in the high-trust condition would expect higher-quality information than participants in the low-trust condition (Hypothesis 2). We further predicted these information-quality expectations to influence participants' subsequent perceptions of the actual information provided (Hypothesis 3). That is, we predicted participants in the high-trust condition to perceive the CCS information provided to be of higher quality than participants in the low-trust condition (Hypothesis 3a), and that this effect would be due to their information-quality expectations (Hypothesis 3b).

Finally, in Study 2.2 we addressed the implications of information-quality perceptions for people's self-reported understanding of what CCS entails. We argued that participants would feel more able to form an adequate impression of what CCS entails when they perceive they have high-quality information at their disposal, compared to the situation in which they have serious doubt about the quality of information provided. Consequently, we predicted that the higher perceived information quality in the high than in the low-trust condition would result in better self-reported understanding of what CCS entails in the high than in the low-trust condition. Thus, we predicted a main effect of stakeholder trustworthiness on self-reported understanding of CCS (Hypothesis 4a), that would be mediated by perceived information quality (Hypothesis 4b).

Method

Participants and design

Eighty undergraduate students (8 men, 72 women, mean age = 20.43 years, $SD = 2.47$) from Leiden University participated in this study. Participants were randomly allocated to the high or low stakeholder trustworthiness condition. In addition we controlled for the stakeholder's viewpoint regarding CCS: Half of the participants learned that the stakeholder was an opponent of CCS, whereas the

other half of participants was told the stakeholder was a proponent of CCS. Participants received 4.5 Euros for their participation.

Procedure

On arrival at the laboratory participants were seated in separate cubicles. After having provided informed consent participants read a brief introduction a novel technology of carbon dioxide capture and storage (CCS) in the Netherlands via the computer. In this introduction we told them that the Dutch government was considering the implementation of this technology, and had asked a variety of organizations to write a report about the pros and cons of the technology. Next, we informed participants that they would be given the opportunity to read one of these reports produced. Stakeholder trustworthiness was manipulated by informing participants that the report they were about to read came from an organization (i.e., a stakeholder) that—on basis of behavior in the past that was described in the manipulation— was known to be “*very* trustworthy and honest in the context of greenhouse gasses and technology” (high-trustworthiness condition) or “*not very* trustworthy and honest in the context of greenhouse gasses and technology” (low-trustworthiness condition).^h However, for reasons of experimental validity and to avoid suspicion we stressed that this general reputation would not necessarily imply untrustworthy (low-trustworthiness condition) or trustworthy (high-trustworthiness condition) behavior on the behalf of the stakeholder in the present CCS context. In addition, all participants read that the organization was high in expertise: “The organization has *a lot of* experience and expertise in the context of greenhouse gasses and technology”.^h Importantly, we did not specify which *type* of stakeholder (e.g., industrial stakeholder, environmental NGO, or government) had allegedly written the report, so participants were provided with information about the stakeholder’s trustworthiness and expertise, but no information was provided about the stakeholder’s identity. Finally, we controlled for stakeholder viewpoint by informing one half of the participants that the stakeholder had indicated to favor the implementation of CCS (proponent of CCS) whereas the other half of participants was informed that the stakeholder opposed CCS (opponent of CCS).

After answering questions concerning their expectations of information quality participants read the report. The report was identical in all experimental conditions, and contained information about eight pros and eight cons of the

^h Italics added to highlight the differences between stimulus materials.

implementation of CCS in the Netherlands. After reading the report, participants evaluated the quality of the report and answered questions about their perceived understanding of what CCS entails.

Measures

Manipulation checks. To check the effectiveness of the trustworthiness manipulation we asked participants to indicate whether they perceived the stakeholder to be trustworthy and honest in the context of greenhouse gasses and technology (1 = *not at all*, 7 = *very much*). Perceived stakeholder trustworthiness was computed by averaging participants' responses to the two trustworthiness items ($r = .76$) with higher scores indicating higher perceived stakeholder trustworthiness. To check whether stakeholder expertise in all experimental conditions indeed was perceived as high we asked participants to indicate whether they perceived the stakeholder to be expert and experienced in the context of greenhouse gasses and technology. Perceived stakeholder expertise was computed by averaging the responses to the two expertise items ($r = .71$) with higher scores indicating higher perceived stakeholder expertise.

Further, as indicated by Study 2.1, people associate certain levels of credibility with different stakeholders. Hence, the provision of participants with information about a stakeholder's credibility could induce participants in the low-trust condition to have a different type of stakeholder in mind (e.g., an industrial stakeholder) during the experiment than participants in the high-trust condition (e.g., an environmental NGO). We checked for this, by asking participants to indicate which type of stakeholder they thought had written the report (multiple-choice question: a choice between six different types of stakeholders).

Finally, to check whether participants had perceived the information about the stakeholder's viewpoint regarding CCS accurately, we asked them to indicate whether the organization had indicated 1) *to favor implementation of CCS*, or 2) *to oppose implementation of CCS*.

Expected information quality. Before being exposed to the information we asked participants about the extent to which they expected the information in the report to be valuable and complete (1 = *not at all*, 7 = *very much*). Expected quality information quality was computed by averaging participants' responses to the two items ($r = .55$), with higher scores indicating higher expected information quality.

Perceived information quality. After being exposed to the information in the report participants indicated their quality perceptions of the information that had

been presented to them in terms of correctness, value and completeness (1 = *not at all*, 7 = *very much*). Perceived information quality was subsequently calculated by averaging the responses to the three items ($\alpha = .72$), with higher scores indicating higher perceived information quality.

Self-reported understanding of the issue. As an indicator of their understanding of CCS, participants indicated the extent to which they had been able to form an accurate impression of what CCS entails (1 = *not at all*, 7 = *very much*).

Results

We tested the hypotheses regarding main effects of stakeholder credibility on information processing (Hypotheses 2, 3a, and 4a) by means of ANCOVA, with stakeholder trustworthiness as independent variable and stakeholder viewpoint as control variable. Further, we tested the mediation hypotheses (Hypotheses 3b, and 4b) by means of regression analyses, with stakeholder viewpoint as a control variable next to the independent variable of stakeholder trustworthiness.

Manipulation checks

Participants in the high-trust condition clearly expected the stakeholder that provided the CCS information to be more trustworthy ($M = 5.56$, $SD = .70$) than participants in the low-trust condition did ($M = 3.11$, $SD = 1.16$), $F(1, 77) = 123.70$, $p < .001$, $\eta^2 = .62$, as intended. Thus, the stakeholder trustworthiness manipulation was successful. Also as intended, participants perceived the stakeholder to be an expert ($M = 5.82$, $SD = .82$), regardless of experimental condition, $F(1, 76) < 1$, *ns*. Furthermore, a cross-tabs analysis on the type of stakeholder participants had in mind demonstrated that participants' perceptions of stakeholder type did not vary as a function of stakeholder trustworthiness, $\chi^2(5) = 5.00$, *ns*. Thus, variations in stakeholder trustworthiness do not indicate that participants in the low-trust condition had a different type of stakeholder in mind during the experiment compared to participants in the high-trust condition, as intended. Finally, all participants correctly reported whether the stakeholder had indicated to favor or oppose CCS.

Expected information quality

Participants in the high-trust condition expected the CCS information to be of higher quality ($M = 5.06$, $SD = .98$) than participants in the low-trust condition did ($M = 4.17$, $SD = 1.10$), $F(1, 77) = 13.85$, $p < .001$, $\eta^2 = .15$, as predicted in Hypothesis 2.

Perceived information quality

After participants had read the information in the report, we asked them to evaluate the quality of the actual information provided. The analysis on participants' perceived information quality scores showed that participants in the high-trust condition perceived the information in the report to be of higher quality ($M = 4.80$, $SD = .89$) than participants in the low-trust condition did ($M = 4.38$, $SD = 1.00$), $F(1, 77) = 3.99$, $p = .049$, $\eta^2 = .05$, as predicted in Hypothesis 3a. Next, we examined by means of mediation analyses (Baron & Kenny, 1986) whether the effect of stakeholder trustworthiness on perceived information quality was due to participants' information quality expectations. Providing support for Hypothesis 3b, we found that the effect of the trustworthiness manipulation on perceived information quality ($\beta = .22$, $p = .049$) became nonsignificant and was significantly reduced ($\beta = .06$, $p = .581$, Sobel $Z = 2.74$, $p = .006$) after controlling for expected information quality. Thus, participants' higher information-quality expectations in the low- compared to the high-trust condition explained why the CCS information was evaluated more positively in the high-trust condition than in the low-trust condition.

Self-reported understanding of the issue

In line with predictions (Hypothesis 4a), participants in the high-trust condition indicated they had been more able to form an accurate impression of what CCS entails ($M = 4.47$, $SD = .99$) than participants in the low-trust condition ($M = 3.98$, $SD = 1.20$), $F(1, 77) = 3.93$, $p = .051$, $\eta^2 = .05$. Next, we examined by means of mediation analyses (Baron & Kenny, 1986) whether the effect of stakeholder trustworthiness on perceived understanding of CCS was due to participants' information-quality perceptions. Results showed that the direct effect of the trustworthiness manipulation on self-reported understanding of CCS ($\beta = .22$, $p = .051$) became nonsignificant and was substantially reduced ($\beta = .12$, $p = .257$, Sobel $Z = 1.86$, $p = .063$) after controlling for perceived information quality. Thus, as predicted in Hypothesis 4b, results indicated that participants felt they had a better understanding of what CCS entails with a trustworthy stakeholder compared to a

low-trustworthy stakeholder, an effect that was mediated by their perception that the CCS information was of higher quality with a trustworthy than with a low-trustworthy stakeholder.

Discussion

Study 2.2 shows that stakeholder credibility can affect the way people evaluate information about CCS. That is, people evaluate the same CCS information in a more positive way when it originates from a highly credible stakeholder than when it originates from a stakeholder that is perceived to be low in credibility. Moreover, this study shows that when people feel that information quality is insufficient—as in the case of a low-credible stakeholder—this impairs their ability to form an accurate impression of what CCS entails.

General Discussion

In the present research we examined how variations in stakeholder credibility affect the way people deal with information about CCS. Study 2.1 (a field study) showed that Dutch citizens trust environmental NGOs involved in CCS more than they trust industrial stakeholders, but that perceived expertise does not vary for different types of stakeholders. Study 2.2 subsequently showed that these variations in stakeholder trustworthiness have important implications for people's responses to CCS information. We found that when a highly-trusted stakeholder provides information about CCS, people perceive this information to be of higher quality than when the same information is provided by a low-trustworthy stakeholder. As a result of these differences in perceived information quality, people feel more able to form accurate impressions of what CCS entails in case of a trustworthy compared to an untrustworthy stakeholder. Noteworthy, these effects occurred regardless of the stakeholder's position (proponent versus opponent) towards CCS. In sum, in order for communication about CCS to be effective, it is particularly important that relevant stakeholders that provide information are trusted, besides them being experts on the topic of CCS.

Implications

The results of the two studies reported here have important practical implications for designers of information campaigns about CCS. Our results indicate that the

best practice in informing citizens about CCS may be to provide them with information that originates from those stakeholders they perceive to be credible. In particular, it is important that relevant stakeholders are trusted. The present findings suggest that when trust in CCS stakeholders is lacking, this results in dissatisfaction with information provided and consequently in impairment in people's ability to form accurate impressions of CCS. To avoid that citizens reject CCS because of their dissatisfaction with information provided it is important that trusted stakeholders such as NGOs provide the relevant CCS information. This also implies that government—an obvious stakeholder to provide information to the public—should reconsider its role in communication about CCS, given Dutch citizens' current general lack of trust in government and politicians (e.g., Dekker & Van der Meer, 2004).

Directions for future research

In this research we established that for information provision about CCS to be effective, information sources should be trusted. The communication results reported in the present research were found under experimental conditions with students as participants, a setting that allowed us to examine basic psychological processes. Because of this, we are confident that the same patterns of results obtained in the present studies can be found among different samples of recipients, for example among citizens living near a future CCS demonstration site. However, we recognize that specific circumstances such as previous negative encounters with local authorities could play a role in relation to the present effects. Future research near CCS demonstration sites is needed to monitor whether the present effects indeed emerge under real-life conditions.

Further, more at a theoretical level we expect the stakeholder credibility effect on perceived information quality found in the present research will be especially strong when the issue under concern is complex, as is the case with CCS. With less complex issues, people can be expected to have a relatively high ability to judge the issue and the quality of information themselves. They do not have to rely as much on the credibility of information source to arrive at quality perceptions. Hence, we would expect the added value of stakeholder credibility in informative communication to be especially strong for issues that are high rather than low in complexity.

Finally, given that CCS also is complex in the sense that many different types of stakeholders are involved, it would be interesting to examine how people

would respond to information about CCS provided by a *collaboration* of stakeholders. Possibly, when different stakeholders provide CCS information to the public in collaboration, people perceive this information to be of even higher quality than when a single highly-credible stakeholder provides the same information.

Conclusions

On the basis of these studies we conclude that communication about complex issues such as CCS to the general public is more likely to be effective when provided by credible stakeholders compared to low-credible stakeholders. In the context of CCS, our advice would be to have highly credible stakeholders such as environmental NGOs inform citizens about CCS, rather than low-credible stakeholders such as industrial stakeholders.

Credibility and Information Selection ⁱ

Suppose you are worried about greenhouse gasses and climate change and hence are highly motivated to learn more about and to form an attitude toward a new technology that may contribute to the reduction of greenhouse gasses. When surfing the Internet in search of more information about this technology, you run into a report written by an oil company containing information about the pros and cons of this new technology. You decide to download the entire report and read it. But which part of the report will arouse your interest most, the information about the pros or the cons? Will this depend on how you perceive the oil company in terms of credibility? And how will the information selection you make subsequently affect your thoughts and attitudes about the technology? These questions will be addressed in the present research.

In the present research we focus on situations in which people process information in order to form an attitude towards a novel topic about which they do not yet hold strong attitudes. By combining insights from previous research on persuasion and selective exposure, we aim to provide an answer to the question of whether in such setting source credibility can influence people's thoughts and attitudes through selective exposure to information. Previous research has shown that source characteristics such as credibility can affect persuasion (for an overview see Pornpitakpan, 2004). In this line of research participants typically are presented with fixed messages and are not expected to select information themselves. By contrast, in research on selective exposure participants are encouraged to select information themselves. Researchers in this field have convincingly shown that people's own initial attitudes may guide their information selection (for overviews see Frey, 1986; Smith, Fabrigar, & Norris, 2008). What has remained unexplored in both fields, however, is whether source characteristics such as credibility can affect people's information selection, and in this way exert influence on their own thoughts and the attitudes they form. That is, on the one hand persuasion researchers have not addressed the possibility that effects of source credibility on attitudes can be explained by selective exposure processes. On the other hand, selective exposure researchers have not examined the possibility that source

ⁱ This chapter is based on: Ter Mors, Weenig, Ellemers, and Daamen (2008b)

characteristics can influence information selection (i.e., that information selection can also be source-guided instead of attitude-guided). Moreover, little is known about the implications of selective exposure to information for people's subsequent thoughts about the issue at hand and the attitudes they form (Smith et al., 2008). The present research contributes to previous research on persuasion and selective exposure by examining whether source characteristics such as credibility can influence people's thoughts and the attitudes they form through selective exposure to information.

Information selection

In today's information society the amount of information that people have at their disposal (e.g., via the Internet) is almost unlimited. Hence, even when people are highly motivated and capable to process information in order to form an attitude, they simply cannot pay attention to all information available. As a result, they must make a selection from the total amount of information they have access to. We posit that such information selection is not random. Furthermore, we argue that it has important implications for people's thoughts about the issue at hand and the attitudes they form. For example, if people predominantly select information in favor of a new technology, this should probably elicit more positive thoughts and attitudes towards this technology than when they predominantly select information arguing against this technology. However, we know very little about the way people's information selection affects their resulting thoughts and attitudes. That is, surprisingly few researchers in the area of selective exposure to date have attempted to examine the implications of biases at information selection for later stages of processing or attitude formation (Smith et al., 2008).

In the majority of selective exposure studies the main dependent variable and concurrently the endpoint of investigations is the information that participants select. That is, until now, a great deal of work has been done to examine how people's *own* initial beliefs, attitudes and decisions affect their information selection. An important and consistent finding from this work is that people tend to select information that supports their own views and avoid information that contradicts them (for an overview see Frey, 1986; Smith et al., 2008). Such a preference for supporting as opposed to conflicting information has been referred to as the *self-confirmation bias* (Jonas, Schulz-Hardt, Frey, & Thelen, 2001). In this literature on selective exposure, several preconditions for self-confirming information selection have been detailed (Smith et al., 2008). For instance, the self-

confirmation bias appeared to be more pronounced when people were low versus high in their confidence in defending their initial attitudes (Albarracin & Mitchell, 2004) and when people's initial attitudes were strong rather than weak (Brannon, Tagler, & Eagly, 2007). The only study on selective exposure we know of that did approach information selection as a starting point for further investigations is a study by Smith, Fabrigar, Powell, and Estrada (2007). In this study bias at exposure was found to predict biases at two further stages of information processing, namely attention and memory. Building on the work of Smith and colleagues (2007) in the present research we examine the implications of people's information selection for later stages of processing and attitude formation. Thus, in extension of previous research that focused on implications of people's information selection for attention and memory, we focus on the implications of information selection for further thought favorability and attitude formation. As far as we know, no prior selective exposure research has examined these particular implications. We predict that when people process information in order to form an attitude, their thoughts and the attitudes they form will be based on the information they select.

As stated before, in the present research we focus on situations in which people form an attitude towards a *novel* topic. Previous research (Brannon et al., 2007) suggests that in this type of situation it is not very likely that people's own initial attitudes will guide their information selection. This raises the question of how people in this case will decide what information to select in order to form an attitude. In the present research we examine the possibility that in this particular situation characteristics of an information source can affect people's information selection. More specifically, we examine whether source credibility can lead people to select information that is either more consistent or more inconsistent with the source's expected viewpoint. The possibility that people's expectations concerning *a source's viewpoint* can affect their information selection—as is the case with *their own views*—has not been previously addressed in empirical research. Should source credibility affect people's information selection, this may have important implications for their further thoughts and the attitudes they form. That is, when people select more information consistent than inconsistent with a source's viewpoint, this should result in their own thoughts and attitudes being relatively consistent with the source's viewpoint as well. Thus, we examine the possibility that information selection can be source-guided while previous research has addressed information selection that was attitude-guided.

Source credibility

The source characteristic we focus on is *source credibility*, which refers to the perceived expertise and trustworthiness of an information source (e.g., Kelman & Hovland, 1953). That is, credibility comprises the extent to which a source “is perceived to be capable of making correct assertions” (*source expertise*: Hovland, Janis, & Kelly, 1953, p. 21), as well as its “perceived honesty, integrity, and believability” (*source trustworthiness*: Erdogan, Baker, & Tagg, 2001, p. 40).

Persuasion researchers have a rich tradition in examining how information about a source’s credibility affects persuasion. Researchers in this field have commonly found a highly credible source to induce more persuasion toward the position advocated than a low-credibility one (for an overview see Pornpitakpan, 2004). In addition, research has provided convincing evidence that source credibility can affect persuasion through a number of mechanisms (Chaiken 1980, 1987; Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986a, 1986b; Petty & Wegener, 1999). That is, source credibility can serve as a heuristic cue (e.g., Hovland & Weiss, 1951; Petty, Cacioppo, & Goldman, 1981), it can direct the extent of processing (e.g., Heesacker, Cacioppo, & Petty, 1983; Priester & Petty, 1995), and it can influence attitudes by biasing thoughts (e.g., Bohner, Ruder, & Erb, 2002; Chaiken & Maheswaran, 1994; Tormala, Briñol, & Petty, 2007; Tormala & Clarkson, 2007; Ziegler & Diehl, 2003; Ziegler, Dobre, & Diehl, 2007), by affecting the confidence with which people hold their message-relevant thoughts (e.g., Briñol, Petty, & Tormala, 2004; Tormala, Briñol, & Petty, 2006; Tormala et al., 2007) and by serving as a piece of evidence relevant to the central merits of an issue (Kruglanski & Thompson, 1999). In sum, several effects of source credibility on persuasion have been identified.

Importantly, in this line of research participants have been presented with fixed messages from a source presented as either high or low in credibility. As the amount of information conveyed in the source’s message typically was limited, it is highly probable that in these studies participants read and processed all information in the message. Nevertheless, in the real world people rarely pay attention to all information that is at their disposal in order to form an attitude. In today’s society there simply is too much information available to consider and people constantly make a selection from the total amount of information they have access to. In this context, information selection is a topic worthy of consideration. However, the topic of information selection has not been previously addressed in persuasion research.

The present research

The present research aims to contribute to the existing literature by examining the possibility that source credibility may affect attitude formation through selective exposure processes (i.e., information selection). The possibility that source credibility induces source-guided information selection, and in this way affects attitude formation, has not been examined so far. The current research contributes to existing literature a) by examining whether source credibility affects *the extent* of source-guided information selection occurring; that is, we examine whether information selection is more source-guided under low than under high source credibility, b) by examining whether source credibility affects *the direction* of such source-guided information selection; that is, we examine whether information about a source's credibility leads people to predominantly select information either consistent or inconsistent with the source's expected viewpoint, and c) by examining the implications of people's (source-guided) information selection for their own thoughts about the issue and the attitudes they form.

Source credibility and the extent of source-guided information selection

A central question that we address in the present research is whether the extent to which people's information selection is source-guided depends on their credibility perceptions of the relevant information source. Our prediction is that people's information selection will be more strongly influenced by the information source under low than under high source credibility. Moreover, we predict this effect of source credibility on source-guided information selection to be embedded in people's expectations regarding information quality.

Previous research in persuasion suggests that low-credible sources trigger people to more carefully examine and process the information provided than highly-credible sources do (Priester & Petty, 1995; Ziegler, Diehl, & Ruther, 2002). After all, information provided by a low-credible source can be expected to be more incorrect or incomplete than information that originates from a highly-credible source. That is, a low-credible source that is a proponent of a novel technology may selectively exaggerate pro arguments and discount arguments arguing against the implementation of this technology. With a highly-credible source, by contrast, the quality of arguments pro and con the technology can be expected to be comparable irrespective of the source's viewpoint. We posit that people are more likely to bear in mind that some parts of the source's message may be of higher quality than other parts with a low-credible source compared to a

highly credible source. More specifically, we predict that the mere anticipation of a possible asymmetry information quality with a low-credible source causes people's information selection to be more influenced by the source under low than under high source credibility. This notion that the information that people select can be determined by aspects related to information quality converges with previous research in the selective exposure literature (cf. Blumler & Katz, 1973; Fischer, Greitemeyer, & Frey, 2008; Fischer, Jonas, Frey, & Kastenmüller, 2008; Fischer, Jonas, Frey, & Schulz-Hardt, 2005; Fischer, Schulz-Hardt, & Frey, 2007; Jonas, Graupmann, & Frey, 2006).

In sum, in the present research we predict that people expect a greater asymmetry in information quality (i.e., that the quality of certain pieces of the source's information will exceed that of others) under low than under high source credibility (Hypothesis 1). Secondly, we predict more source-guided information selection under low than under high source credibility (Hypothesis 2a). Moreover, we predict this effect of source credibility on information selection to be mediated by people's expectation of a greater asymmetry in information quality under low than under high source credibility (Hypothesis 2b).

Source credibility and the direction of source-guided information selection

Besides addressing the question of whether source credibility affects the *extent* of source-guided information selection occurring, it is also highly relevant to examine the *direction* of such source-guided information selection, given its potential implications for attitude formation. In the present research we examine whether source credibility leads people to select information either consistent or inconsistent with the source's expected viewpoint.

Previous research on biased information processing in persuasion suggests that people's thoughts and attitudes about issues tend to be more consistent with a source's viewpoint after reading a message from a credible source than from a less credible source (e.g., Chaiken & Maheswaran, 1994). Although these researchers did not examine information selection, we predict source credibility to affect information selection in a parallel way. We predict that in case of a highly credible source, people are likely to prefer information consistent with the source's expected viewpoint over source-inconsistent information. For instance, when people are provided with information about a novel technology by a credible proponent of the technology, we anticipate that they select more information about the technology's advantages than about its disadvantages (and more information

about disadvantages when they expect the credible source to have an adverse attitude towards the new technology).

In case of a low-credible source, by contrast, we expect such *source-confirming* information selection to be less likely. We predict that when a source is perceived to be low in credibility *source-disconfirming* information selection is more probable, in which people prefer information inconsistent with the source's expected viewpoint over source-consistent information. For instance, when people are provided with information about a novel technology by a low-credible source, we anticipate that they select more information about the *disadvantages* than about the advantages of the new technology when they expect this source to be a proponent of the technology (and vice versa in the case of a low-credible source that is expected to be an opponent).

In sum, should information about a source's credibility affect people's information selection, we predict that source-confirming information selection would be most likely in case of a highly-credible source, whereas source-disconfirming information would be most likely in case of a low-credible source (Hypothesis 3).

Implications of (source-guided) information selection for thoughts and attitudes

Should source trustworthiness affect the direction of information selection as predicted in Hypothesis 3, we argue that it likely has important implications for people's subsequent thoughts and the attitudes they form. That is, when a low-credible source causes people to select more information inconsistent than consistent with a source's viewpoint, this is likely to result in subsequent thoughts and attitudes that are also relatively inconsistent with this source's viewpoint. In this way, people's thoughts and the attitudes they form may be explained by their information selection. Following Hypothesis 3 we predict people's thoughts and attitudes to be relatively source-confirming in case of a highly credible source and to be relatively source-disconfirming in the case of a low credible source (Hypothesis 4a). Moreover, we predict that source-(dis)confirming information selection should, at least in part, mediate later biases in thought favorability and resulting attitudes (Hypothesis 4b).

Overview

In sum, in the present research we examine whether source credibility can influence people's information selection, and in this way can have an effect on their

own thoughts and the attitudes they form. Hereby we aim to extend previous work in different ways. The goals of the present research are twofold. First, we aim to examine how two important aspects of a source's credibility—trustworthiness (Studies 3.1 and 3.2) and expertise (Study 3.3)—affect information selection. Our second aim of the present research is to examine the implications of information selection for people's thoughts about the issue at hand and their resulting attitudes (Studies 3.2 and 3.3).

Study 3.1

The aim of Study 3.1 was to examine whether stakeholder credibility affects *the extent* to which people's information selection is source-guided. To examine this, we focused on the trustworthiness dimension of stakeholder credibility and we compared people's self-reported explanations for their information selection under low source trustworthiness with their explanations under higher source trustworthiness. In Study 3.1—as well in the following studies—we focused on the situation in which people process information in order to form an attitude towards a novel topic. The topic under consideration was the potential implementation of a novel technology.

First of all, in Study 3.1 we hypothesized that participants would expect a greater asymmetry in information quality in the low-trust than in the high-trust condition (Hypothesis 1). That is, we predicted that participants would be more inclined to expect the quality of technology-favoring information to deviate from that of technology-opposing information than participants in the low-trust than in the high-trust condition. Furthermore, we hypothesized that participants would be more likely to indicate that their information selection was source-guided in the low-trust compared to the high-trust condition (Hypothesis 2a). Finally, we predicted this source trustworthiness effect on self-reported motives for information selection to be mediated by expectations regarding information quality asymmetries (Hypothesis 2b).

Method

Participants and design

Ninety-one undergraduate students (39 men, 52 women, mean age = 20.64 years) from Leiden University participated in the study. They were randomly allocated to

one of the two source trustworthiness conditions: high or low trustworthiness. Participants received 3 Euros for their participation.

Procedure

On arrival at the laboratory participants were seated in separate cubicles containing a computer. After having provided informed consent, participants learned that the researchers were interested in their attitudes towards “the large-scale implementation of a new technology of carbon dioxide capture and storage (CCS) in the Netherlands”. By selecting a topic that we expected to be perceived as highly interesting and relevant by the student population under investigation, we aimed to induce a setting in which participants would be motivated to process information in order to form an attitude. A pilot study ($N = 30$) confirmed that students consider the topic of CCS to be interesting ($M = 5.43$, $SD = 1.19$) and of personal relevance ($M = 4.83$, $SD = 1.26$).^j

Participants first received a brief introduction about CCS via the computer. Next, we informed them that they would be given the opportunity to read about potential positive and negative consequences of large-scale implementation of CCS in the Netherlands. We told them that the Dutch government had asked a range of stakeholders to individually write a report about potential positive and negative consequences of large-scale implementation of CCS. We pointed out that each stakeholder has its own goals and interests in CCS and that these could influence the content of the stakeholder’s report. Participants then learned that they could inspect one of the reports that had been published and they were told that this report (i.e., the information) had been written by an oil company (i.e., the source). We described this source as being either high or low in trustworthiness. The description of the source in the high- and low-trustworthiness conditions was identical, except for the trustworthiness manipulation. For example, participants read that on basis of acts in the past the oil company had a reputation of being “*very* trustworthy and honest in the context of greenhouse gasses and technology” (high-trustworthiness condition) or “*not very* trustworthy and honest in the context of greenhouse gasses and technology” (low-trustworthiness condition).^k

After this, participants were presented with the CCS information. The information was identical in both experimental conditions and consisted of seven positive and seven negative potential consequences of large-scale implementation

^j Measured on a 7-point scale ranging from 1 = *not at all interesting/relevant*, to 7 = *very much interesting/relevant*.

^k Italics added to highlight the differences between stimulus materials.

of CCS in the Netherlands (based on De Best-Waldhober, Daamen, & Faaij, 2006). We informed participants that they could select a maximum of 10 out of the 14 available consequences and that any number of consequences chosen between 0 and 10 would be adequate. We presented the message to participants by means of a computerized information display board (IDB; Payne, 1976). In this IDB the separate consequences were structured in a matrix and consequences were marked as being either positive or negative. Participants could select the consequences one by one. Each consequence was described in a few catchwords, and after participants selected a consequence the accompanying statement explaining this consequence appeared. At any point in time participants could return to the information matrix and decide whether they wanted to select another consequence or whether they wanted to quit the matrix.¹ After participants had selected and read the CCS information they completed the dependent measures.

Measures

Manipulation check. To check the effectiveness of the trustworthiness manipulation we asked participants to indicate whether they expected the oil company to be trustworthy and honest in the context of greenhouse gasses and technology (1 = *not at all*, 7 = *very much*). Expected trustworthiness was computed by averaging participants' responses to the two trustworthiness items ($r = .85$) with higher scores indicating higher expected trustworthiness.

Expected asymmetry in information quality. Prior to selecting information about CCS, participants indicated their expectations concerning information quality (1 = *very poor*, 7 = *very high*). They did so separately for positive and negative consequences of CCS. In order to examine the extent to which participants expected the quality of information about positive consequences to deviate from that of negative consequences, we calculated the absolute difference between these two measures of expected information quality. Higher scores on this measure indicate a greater expected asymmetry in information quality (i.e., a stronger expectation that the quality of positive and negative consequences would differ).

¹ In research on selective exposure an information search procedure is often used, in which the pieces of information that participants wish to read are not handed out until the selection phase is finished (*simultaneous information seeking*; Jonas et al., 2001). This procedure does not capture critical features of information seeking in real-life situations, however (cf. Jonas et al, 2001). In real-life, people read and process the information they select before they select another piece of information. The IDB technique we used resembles this naturalistic way of information selection more closely, as in this technique selected pieces of information are processed during the selection phase (*sequential information seeking*; Jonas et al, 2001). The IDB also allowed us to keep track of the type and the amount of information that participants consulted, a function we will use in Study 3.2.

Source-guided information selection. We measured the extent to which participants' information selection was guided by expectations regarding the source by means of a series of self-report items. We presented participants with twelve possible motives for their information selection and asked them to indicate the extent to which each applied to their information selection (1 = *not at all*, 7 = *very much*). Of these twelve motives eight were filler items. An example of a filler item was "I selected the information I considered most valuable". Participants' responses to the eight filler items did not depend on the source trustworthiness manipulation, $F(8, 82) = 1.26$, *ns*. The four focal items assessed information selection that was motivated by the source (e.g., "My information choice was affected by the notion that the information originated from an oil company"). The source-guided information selection score was computed by averaging the responses to the four items ($\alpha = .74$), with higher scores indicating more evidence of source-guided information selection.

Results

Manipulation check

Participants in the low-trust condition clearly expected the source to be less trustworthy ($M = 2.70$, $SD = .95$) than participants in the high-trust condition did ($M = 4.49$, $SD = 1.04$), $t(89) = -8.59$, $p < .001$, as intended. Thus, the source trustworthiness manipulation was successful.

Expected asymmetry in information quality

Our prediction (Hypothesis 1) of a greater expected asymmetry in information quality in the low-trust than in the high-trust condition was supported by the data, $t(89) = 3.25$, $p = .002$: Participants in the low-trust condition more strongly expected the quality of positive and negative consequences in the information to differ ($M = 2.11$, $SD = 1.76$) than participants in the high-trust condition did ($M = 1.02$, $SD = 1.39$).^m

^m Participants in both experimental conditions—but in particular in the low-trust condition—expected the quality of positive consequences ($M_{\text{overall}} = 4.67$, $SD = 1.34$) to exceed that of negative consequences ($M_{\text{overall}} = 3.57$, $SD = 1.51$). A plausible explanation for this finding is that participants probably expected the source to be a proponent of CCS, and hence expected the quality of viewpoint-consistent information (i.e., positive consequences) to exceed that of viewpoint-inconsistent information (i.e., negative consequences).

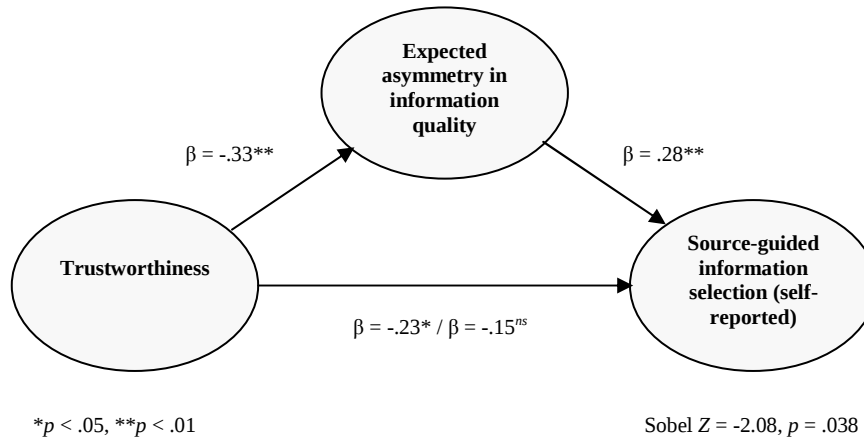
Source-guided information selection

The results for the analysis on the self-report measure of source-guided information selection revealed that participants were more likely to indicate that their information selection was influenced by the source in the low-trust condition ($M = 3.28$, $SD = 1.11$) than in the high-trust condition ($M = 2.75$, $SD = 1.17$), $t(89) = 2.20$, $p = .030$. Thus, as predicted in Hypothesis 2a, information selection was reported to be more strongly source-guided under low than under high source trustworthiness.

Mediation analyses

We used mediation analyses (Baron & Kenny, 1986) to test whether the effect of source trustworthiness on self-reported degree of source-guided information selection was due to expected asymmetry in information quality. The results for these analyses were that the effect of the source trustworthiness manipulation on self-reported degree of source-guided information selection ($\beta = -.23$, $p = .030$) became nonsignificant ($\beta = -.15$, $p = .154$, Sobel $Z = -2.08$, $p = .038$) after controlling for expected asymmetry in information quality (see Figure 3.1). Thus, as predicted in Hypothesis 2b, the greater tendency to display source-guided information selection in the low-trust compared to the high-trust condition was due to a stronger expectation that the quality of positive and negative consequences would vary under low than under high source trustworthiness.

Figure 3.1. Schematic representation of expected asymmetry in information quality mediating the effect of source trustworthiness on the self-report measure of source-guided information selection: Study 3.1.



Discussion

The results of Study 3.1 confirm our predictions. Participants reported more source-guided information selection under low than under high source trustworthiness. Moreover, we found this effect of source trustworthiness on information selection to be embedded in participants' expectations regarding information quality. Study 3.1 shows that people more strongly anticipate an asymmetry in information quality with an untrustworthy than with a trustworthy source, which results in more source-guided information selection under low than under high source trustworthiness.

Study 3.2

Study 3.2 was designed to replicate and extend the findings of Study 3.1. As in Study 3.1, we examined whether source trustworthiness affects the *extent* of source-guided information selection occurring. In Study 3.2, however, we extended our measure of source-guided information selection. In addition to measuring the degree of source-guided information selection occurring by means of a self-report measure (Study 3.1), this time we also examined participants' actual information selection behavior. In line with the findings of Study 3.1, we predicted both measures to reveal more source-guided information selection under low than under high source trustworthiness (Hypothesis 2a).

In extension of Study 3.1, in Study 3.2 we also examined the *direction* of such source-guided information selection. That is, we examined whether source trustworthiness leads people to predominantly select information consistent (source-confirming information selection) or inconsistent (source-disconfirming information selection) with a source's expected viewpoint. We predicted that source-confirming information selection would be most likely in the high-trust condition, whereas source-disconfirming information would be most likely in the low-trust condition (Hypothesis 3).

Finally, also in extension of Study 3.1, in Study 3.2 we examined the implications of source-guided information selection for people's own thoughts about the topic and the attitudes they form. Following Hypothesis 3 we predicted that people's thoughts and attitudes they form should also be relatively source-confirming in case of a highly credible source and relatively source-disconfirming in the case of a low credible source (Hypothesis 4a). Moreover, we predicted that source-(dis)confirming information selection should, at least in part, mediate later biases in thought favorability and resulting attitudes (Hypothesis 4b).

Method

Participants and design

Thirty-six undergraduate students (11 men, 25 women, mean age = 21.58 years) from Leiden University participated in this study. They were randomly allocated to one of the two experimental conditions: high or low source trustworthiness. Participants received 3 Euros for their participation. The design and procedure were almost identical to that of Study 3.1, but there were two key modifications. As in Study 3.1, participants were presented with two-sided information about a novel technology of CCS attributed to a source described being either high or low in trustworthiness. However, unlike in Study 3.1, preceding their information selection participants indicated their expectations regarding the source's viewpoint about CCS. We used this measure to determine whether participants' actual information selection was source-guided, in addition to the self-report measure of source-guided information selection we used in Study 3.1. Also, this expected-viewpoint measure allowed us to determine the direction of such source-guided information selection (i.e., source-confirming or source-disconfirming information selection). Second, in extension of Study 3.1, in Study 3.2 we added a cognitive responses measure and an attitude measure to the design to examine the

implications of participants' information selection for their own thoughts and the attitudes they would form.

Independent variable

The trustworthiness manipulation was essentially identical to that from Study 3.1.

Measures

The manipulation check of source trustworthiness ($r = .88$) and the self-report measure of source-guided information selection ($\alpha = .88$) were comparable to that from Study 3.1.

Source's expected viewpoint. In this experiment, after the source trustworthiness manipulation but prior to selecting information, participants indicated to what extent they expected the oil company to be a proponent or opponent of CCS (1 = *strong opponent*, 7 = *strong proponent*). Given that the source itself did not express a viewpoint concerning CCS in the message provided (but only provided information about an equal number of positive and negative consequences of CCS), this measure purely represents participants' *expectations* concerning the source's viewpoint. Scores on this measure ranged from 1 to 7, and on average participants expected the source to be a proponent of CCS ($M = 4.72$, $SD = 1.78$).ⁿ Importantly, the source's expected viewpoint did not depend on the source trustworthiness manipulation, $t(34) = -.13$, *ns*.

Information selection. An index of preference for pro (positive consequences) versus con (negative consequences) CCS information was calculated by subtracting the number of con-CCS arguments selected from the number of pro-CCS arguments selected. This number was then divided by the total number of arguments selected in order to obtain a proportion of pro to con CCS information selected. Thus, the potential score ranged from -1 (only con choices) to +1 (only pro choices). This index formed the basis for our examinations of source-guided information selection. Basically, a relationship (either positive or negative) between the index and the viewpoint participants expected the source to have would indicate that source-guided information selection had occurred. With regard to the *direction* of such source-guided information selection, a positive relationship between the information selection index and the source's expected viewpoint

ⁿ Note that this finding is consistent with our suggestion that participants in Study 3.1—given that they expected the quality of quality of CCS-favoring arguments to exceed that of CCS-opposing arguments—probably expected the source to be a proponent of CCS (see Footnote m).

would indicate source-confirming information selection, whereas a negative relationship would indicate source-disconfirming selection.

Thought favorability. After participants had read the CCS information and prior to assessing their own attitudes, they were given three minutes to list all thoughts they had had while reading the information. Two independent raters (blind to experimental conditions) classified relevant thoughts as either favoring or opposing large-scale implementation of CCS, or as being neutral towards CCS. Correspondence between raters was high (94.4%) and differences were resolved through discussion. Thought favorability was calculated by subtracting the number of thoughts opposing CCS from those favoring CCS. This number was then divided by the total number of favoring and opposing thoughts in order to obtain a proportion of favoring to opposing CCS thoughts. Thus, the potential scores on the thought favorability measure ranged from -1 (completely opposing CCS) to +1 (completely favoring CCS).

Attitudes. Finally, participants indicated their own attitude towards large-scale implementation of CCS on a 9- point scale (1= *strongly opposed to large-scale implementation of CCS*, 9 = *strongly in favor of large-scale implementation of CCS*).

Results

Manipulation check

Participants in the low-trust condition clearly expected the source to be less trustworthy ($M = 2.32$, $SD = .97$) than participants in the high-trust condition did ($M = 4.88$, $SD = .88$), $t(34) = -8.27$, $p < .001$, as intended. Thus, the source trustworthiness manipulation again was successful.

Source-guided information selection

The results for the analysis on the self-report measure of source-guided information selection revealed that participants were more likely to indicate that their information selection had been influenced by the source in the low-trust condition ($M = 3.54$, $SD = 1.13$) than in the high-trust condition ($M = 2.53$, $SD = 1.45$), $t(34) = 2.34$, $p = .025$. Thus, like in Study 3.1 and as predicted in Hypothesis 2a, information selection was reported to be more strongly source-guided under low than under high source trustworthiness.

Next, we examined whether the findings of participants' *actual* information converged with the findings from the self-report measure. To examine this, we regressed participants' information selection scores onto the viewpoint they had

expected from the information source. We performed separate analyses for each experimental condition. Our prediction was that participants' information-selection scores would be more strongly related to the source's expected viewpoint in the low-trust than in the high-trust condition, indicating more source-guided information selection under low compared to high trustworthiness (Hypothesis 2a). Moreover, with regard to the *direction* of source-guided information selection, we predicted source-confirming information selection in the high-trust condition and source-disconfirming information selection in the low-trust condition (Hypothesis 3).

The regression analysis in the *high*-trust condition first of all demonstrated that participants' information selection was not related to the viewpoint they had expected from the source ($\beta = .01$, *ns*). In other words, in the high-trust condition neither source-confirming nor source-disconfirming information selection occurred. By contrast, the regression coefficient in the low-trust condition did prove significant ($\beta = -.52$, $p = .022$). Thus, findings of the regression analyses converge with participants' self-reported motives for information selection: Information selection appeared to be somewhat more source-guided in the low-trust condition than in the high-trust condition (Fisher's $Z = -1.60$; $p = .055$, one-sided), like in Study 3.1 and as predicted in Hypothesis 2b. ° Moreover, the negative value of the regression coefficient in the low-trust condition indicates that participants' information selection in this condition indeed was source-disconfirming, providing support for Hypothesis 3. That is, the more participants in the low-trust condition expected the source to be a proponent of CCS, the more they preferred information con CCS over information pro CCS. In sum, the findings of Study 3.2 corroborate with our predictions about the influence of

° The number of consequences participants selected was near the maximum value of 10 ($M = 8.28$, $SD = 2.56$) and did not vary with source trustworthiness, $t(34) = -.61$, *ns*. Also in both experimental conditions participants selected a considerable amount of both positive ($M = 3.81$, $SD = 1.56$) and negative ($M = 4.47$, $SD = 1.53$) CCS consequences, which can be interpreted as a relatively balanced information selection.

In this study we also measured participants' initial attitudes to check for the occurrence of attitude-guided information selection. Analyses revealed that participants' information selection in both experimental conditions was unrelated to their pre-measure of attitudes (p -values of regression analyses $\geq .217$). This indicates that attitude-guided information selection did not occur in either of the experimental conditions. Moreover, the source-guided information selection we found in the low-trust condition can not be explained by participants' own attitudes, as the viewpoint participants expected from the source was unrelated to their own initial attitudes ($p = .447$).

source trustworthiness on the extent and direction of source-guided information selection.

Information selection as a determinant of cognitive responses and attitudes

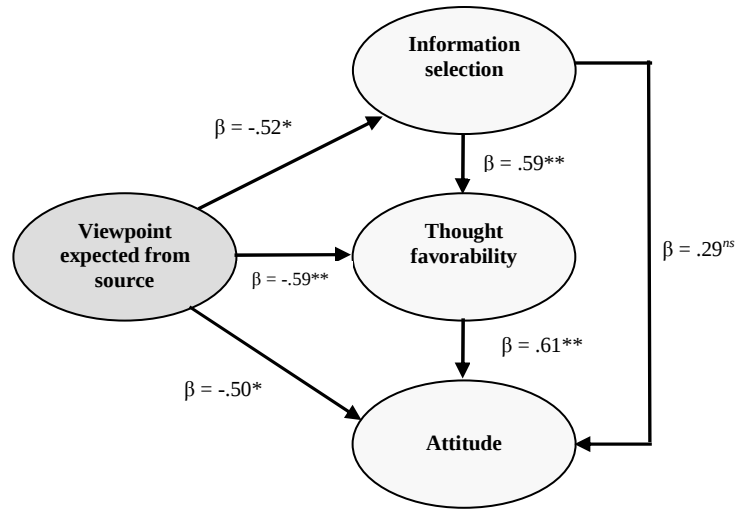
How did this source-disconfirming information selection in the *low-trust* condition influence later stages of attitude formation? As the viewpoint expected from the source was found to be a significant predictor of information selection in the low-trust condition, we first explored whether the source's expected viewpoint also predicted thought favorability and resulting attitudes in this condition. Two separate regression analyses revealed the expected source-disconfirmation bias in thought favorability and resulting attitudes under low trust (see Figure 3.2 for standardized coefficients of the simple regression analyses). That is, in line with Hypothesis 4a, participants' thoughts and the attitudes they formed both countered the source's expected viewpoint in the low-trust condition. The more participants' expected the distrusted source to be a proponent of CCS, the more negative their thoughts and resulting attitudes concerning CCS were. These results indicate that in the low-trust-condition a source-disconfirmation bias occurred not only in information selection, but also in thought favorability and resulting attitudes. But did the bias in information selection account for the biases in thought favorability and resulting attitudes, as predicted in Hypothesis 4b?

We used a regression-based approach to examine this question (see Baron & Kenny, 1986). Figure 3.2 shows the standardized regression coefficients of the regression analyses in the low-trust condition. To start with, mediation analyses confirmed that the information that participants selected accounted for their source-disconfirmation bias in thought favorability. That is, the negative relationship between the viewpoint expected from the source and thought favorability ($\beta = -.59, p = .008$) became less pronounced ($\beta = -.38, p = .097$, Sobel $Z = -1.97, p = .049$) after controlling for information selection. Thus, the observation that participants' thoughts countered the viewpoint they had expected from the source was due to their information selection, as predicted in Hypothesis 4b. The bias in attitudes could not be explained by participants' information selection, however. In sum, we found partial support for Hypothesis 4b, as the source-disconfirmation bias in information selection accounted for the bias in thought favorability, but not for the bias in resulting attitudes

In the high-trust condition no source-confirming or source-disconfirming biases in information selection, thought favorability or attitude formation (significance level of standardized regression coefficients $\geq .333$) were found.

Concerning the relationship between information selection, thought favorability and attitudes in this condition, information selection in itself did not significantly predict thought favorability or attitudes formed (significance level of standardized regression coefficients $\geq .327$). Thought favorability was somewhat related to resulting attitudes ($\beta = .42$, $p = .092$), however, as was the case in the low-trust condition. This is consistent with the notion that participants in both experimental conditions processed information in order to form an attitude.

Figure 3.2. Path diagram representing the simple regression standardized coefficients of the relationship between viewpoint expected from source, information selection, thought favorability and resulting attitudes (low-trust condition): Study 3.2.



* $p < .05$, ** $p < .01$

Discussion

The findings of Study 3.2 replicate and extend those of Study 3.1. As in Study 3.1, we found that people's information selection is more source-guided under low than under high source trustworthiness. In extension of Study 3.1, this result was found to be true both at the self-report and the behavioral level. Furthermore, the regression analyses we conducted in Study 3.2 provided additional evidence that an untrustworthy source triggers people to pay more attention to the information provided compared to a trustworthy source. That is, the results of the regression

analyses revealed significant relationships information selection and thought favorability, and between thought favorability and resulting attitudes in the low-trust condition (indicating information processing, cf. Cacioppo & Petty, 1981), but to a much lesser extent in the high-trust condition. Hence, we have good reason to believe that participants' information selection involved more effort in the low-trust condition than in the high-trust condition.

Also in extension of Study 3.1, Study 3.2 demonstrated that the direction of such source-guided information selection under low source trustworthiness is source-disconfirming. That is, we found that an untrustworthy source causes people to select information that counters the source's expected viewpoint, as predicted. We expect that this disconfirmation bias in information selection reflects that when people do not trust an information source, they test the quality of information provided. That is, under low source trustworthiness people probably examine whether the untrustworthy source indeed provides counterattitudinal information in a biased fashion. An alternative explanation would be that the source-disconfirmation bias obtained in the present research reflects that people rather thoughtlessly disqualify an untrustworthy source's viewpoint in their information selection ("The source's viewpoint is A, so I pay a lot of information to information that is inconsistent with A"). This explanation seems less plausible than the information-quality testing explanation, however, given the considerable amount of information processing that occurred in the low-trust condition.

Finally, the results of Study 3.2 provided initial support for our prediction that biases at early stages of attitude formation (information selection) can account for biases in subsequent stages of attitude formation (thought favorability). That is, when an untrustworthy source leads people to predominantly selection source-inconsistent information, this results in thoughts towards the issue that also are relatively inconsistent with the source's viewpoint.

Study 3.3

Study 3.3 was designed to further address the relationship between information selection, thought favorability and attitude formation. In line with the results of Study 3.2 we predicted information selection to affect later stages of attitude formation (Hypothesis 5). In addition, in Study 3 we further examined how source credibility affects information people's selection. In Studies 3.1 and 3.2 we investigated how the trustworthiness dimension of a source's credibility affects people's information selection. The question we raise in Study 3.3 is whether

similar conclusions of Studies 3.1 and 3.2 can be drawn for source credibility more generally. What about the expertise dimension of source credibility, will it affect people's information selection in a comparable way as trustworthiness? In Study 3.3 we explored whether the impact of source expertise on information selection would be comparable to that of source trustworthiness.

Method

Participants and design

Fifty-four undergraduate students (7 men, 47 women, mean age = 20.56 years) from Leiden University participated in the study. They were randomly allocated to one of the two experimental conditions: high or low source expertise. Participants received 3 Euros for their participation.

Procedure and stimulus materials

The procedure and stimulus materials were similar to those of Study 3.1 and 3.2, except that the source characteristic that we manipulated in Study 3.3 was source expertise. The description of the organization in the high- and low-expertise conditions was identical, except for a few words. For example, participants read that on basis of acts in the past the oil company was known to have "*a lot of experience and expertise in the context of greenhouse gasses and technology*" (high-expertise condition, or "*little experience and expertise in context of greenhouse gasses and technology*" (low-expertise condition).^p

Measures

The source's expected viewpoint, the self-report measure of source-guided information selection ($\alpha = .84$), thought favorability (inter-rater correspondence = 94.0%) and attitude towards CCS were measured identical to that in Study 3.2. Concerning the source's expected viewpoint, scores on this measure ranged from 1 to 7, and on average participants expected the source to be a proponent of CCS ($M = 4.57$, $SD = 1.70$). The source's expected viewpoint did not depend on the source-expertise manipulation, $t(52) = -.41$, *ns*.

Manipulation check. To check the effectiveness of the expertise manipulation we asked participants to indicate whether they expected the oil company to be an expert and to be knowledgeable in the context of greenhouse gasses and technology (1 = *not at all*, 7 = *very much*). Expected expertise was computed by

^p Italics added to highlight the differences between stimulus materials.

averaging the responses to the two expertise items ($r = .93$) with higher scores indicating higher expected expertise.

Results

Manipulation check

Participants in the low-expertise condition clearly expected the source to be lower in expertise ($M = 2.56$, $SD = 1.16$) than participants in the high-expertise condition did ($M = 5.59$, $SD = .81$), $t(52) = 46.39$, $p < .001$. Thus, the source expertise manipulation was successful.

Source-guided information selection

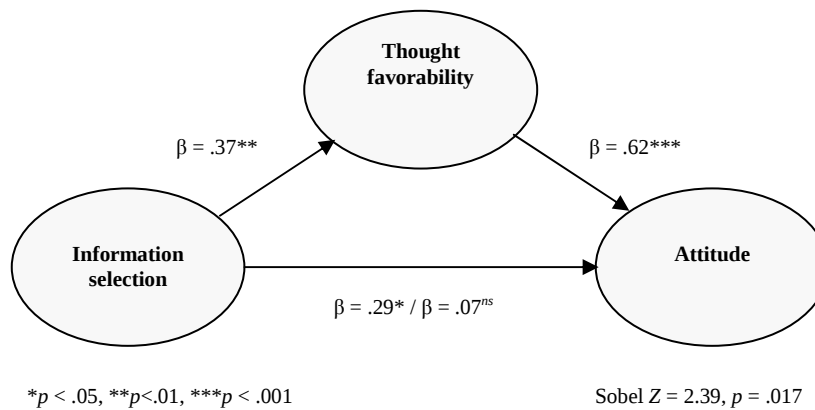
Participants' self-reported source-related motives for their information choice showed no effect of source expertise on information selection strategies, $t(52) = .71$, *ns*. Next, we analyzed participants' actual information selection to determine whether source-guided information selection had occurred. We regressed the information selection index onto the source's expected viewpoint separately for each experimental condition. We found that the regression coefficient did not reach significance in either of the expertise conditions (p -values $\geq .281$), however and that regression coefficients did not vary with source expertise, Fisher's $Z = .30$, *ns*. Hence, we did not obtain any evidence that source expertise affected the extent of source-guided information selection occurring, nor did we find any evidence that source expertise induced source-confirming or source-disconfirming information selection.

Information selection as a determinant of thought favorability and attitudes

In this study no evidence was obtained of source-guided information selection in either the low or the high-expertise condition. Nevertheless, the question how information selection affects later stages of attitude formation is still relevant, since participants did make a selection from the total amount of information available. Hence, we collapsed the data across expertise conditions and examined whether participants' information selection predicted the favorability of their subsequent thoughts and their resulting attitudes. The results for these regression analyses revealed that information selection was a significant and positive predictor of both thought favorability ($\beta = .37$, $p = .007$) and attitudes ($\beta = .29$, $p = .032$). This indicates that, as predicted (Hypothesis 5), a stronger preference for selecting pros rather than cons is followed by more positive thoughts about CCS, and to more positive

resulting attitudes (while a preference for cons is associated with negative thoughts and attitudes). The finding that information selection was significantly related to thought favorability converges with the results from Study 3.2. Further, thought favorability was a significant predictor of attitudes ($\beta = .62, p < .001$), such that more positive thoughts about CCS induce positive attitudes towards CCS. Finally, thought favorability mediated the relationship between information selection and attitudes. That is, the relationship between information selection and attitudes ($\beta = .29, p = .032$) became nonsignificant ($\beta = .07, p = .509$, Sobel $Z = 2.39, p = .017$) after controlling for thought favorability (see Figure 3.3). Thus, even though information selection was not guided by source characteristics in this study, the information that participants selected did influence the favorability of their thoughts about CCS, which in turn explained their attitudes. This provides further support for Hypothesis 5.

Figure 3.3. Schematic representation of thought favorability mediating the effect of information selection on attitude in Study 3.3.



Discussion

The results of Study 3.3 first of all provide further evidence for the validity of our general argument that (biases at) early stages of attitude formation can influence subsequent stages of attitude formation. We found that the information people select affects their subsequent thoughts and the attitudes they form. Second, Study 3.3 shed more light on which dimension of a source's credibility is most likely to affect people's information selection. The results of Study 3.3 indicate that, unlike

the trustworthiness dimension of source credibility (Studies 3.1 and 3.2), its expertise dimension does not induce source-guided information selection. We return to this point in the next section of this paper.

General Discussion

The three studies reported here support our general argument that source credibility can affect later stages of attitude formation through information selection. In Studies 3.1 and 3.2, in which we manipulated the trustworthiness dimension of source credibility, we showed that the information that people select is more strongly related to expectations about the source in case of an untrustworthy than with a trustworthy source. Moreover, we demonstrated this effect is due to the expected quality of information provided by this source. With an untrustworthy source people more strongly expect an asymmetry in information quality (i.e., they anticipate that certain parts of a source's information will be of higher quality than other parts) than with a trustworthy source, hence their information selection is more source-guided. Moreover, with regard to the direction of such source-guided information selection under low source trustworthiness, an untrustworthy source leads people to select more information that is inconsistent than consistent with a source's expected viewpoint. In Study 3.3 we focused on another dimension of source credibility, namely source expertise. In this study we found that source expertise does not affect information selection. Finally, Studies 3.2 and 3.3 confirmed our expectation that information selection has important implications for people's thoughts on the topic of concern and the attitudes they form as a result. Thus, information selection appears to be important for attitude formation indeed.

The present findings advance the literature on selective exposure and persuasion in several ways. First, the studies presented in the current paper have focused on the possibility that expectations concerning a *source's expected viewpoint* can guide information selection, whereas the vast majority of studies conducted in the domain of selective exposure have focused on the influence of people's *own* initial attitudes on information selection (see Smith et al., 2008 for an overview). The present research also extends previous work on selective exposure, as it provides insight in the way people select information when attitude-guided information selection is not likely to occur. We showed that when people form attitudes towards a novel topic, their expectations concerning an information source can guide their information selection.

A second contribution of the present research is that we approached information selection as a starting point of investigations instead of as an end point as is more common in the majority of selective exposure research. To our knowledge, the present research is the first to examine the implications of information selection for thoughts and resulting attitudes. Across studies we found that information selection can account for thought favorability and the attitudes that people form. Thus, the present research corroborates the notion that information selection is an important stage in attitude formation.

A third contribution of the current research is that we explored a possible role of source credibility in attitude formation that has not been previously proposed. That is, we examined the possibility that source credibility can affect the process of attitude formation through selective exposure processes. The findings of the present research indeed indicate that source credibility (i.e., source trustworthiness) can affect information selection, and in this way impacts on the thoughts people form about the issue under consideration. Moreover, it was shown that expectations concerning information quality underlie source-credibility effects on information selection.

Finally, the present research contributes to existing persuasion research as we distinguished between the expertise and trustworthiness dimension of credibility in our studies. We found that source expertise, unlike source trustworthiness, does not affect information selection. At first sight this finding might seem contradictory, as one might expect two dimensions of the same construct—namely source credibility—to affect information selection in a similar way. Nevertheless, we argue that this finding fits with the mechanism underlying source-guided information selection that we uncovered in Study 3.1. That is, results of Study 3.1 indicate that what is needed for source-guided information selection is the expectation that some parts of a source's information will be of higher quality than other parts. We argue that such an asymmetry in expected information quality is more likely to be induced by the trustworthiness dimension of source credibility than by its expertise dimension. As mentioned before, an untrustworthy source leads people to suspect that the source's information may be biased by its viewpoint, hence people's information selection is source-guided. Now consider being provided with information from a source low in expertise. People may expect the accuracy of the information provided by this source to be low *overall*, just as with an untrustworthy source (Priester & Petty, 1995). However, they have no reason to assume the source's low expertise will lead to a difference in quality of arguments pro and con. Hence, there is no rationale for them to select

more pros than cons or vice versa, so that source-guided information selection is less likely to emerge. Unfortunately, in the present research we were not able to test this explanation, however, because in Studies 3.2 and 3.3 we did not measure participants' expectations regarding information quality.

Limitations and directions for future research

Future research should examine differential effects of source trustworthiness and source expertise in information selection in a systematic way, preferably through an experiment in which both dimensions of source credibility are orthogonally manipulated. To start with, such an experiment would allow for direct comparison between effects of source trustworthiness and source expertise on information selection. In addition, such an experiment could test the generalizability of the present findings. For example, it can be argued that in the first two experiments we examined the role of source trustworthiness in information selection *given that source expertise was high*. After all, participants were informed that the oil company was a stakeholder that had been asked by the Dutch government to write a report. Hence, it remains to be seen whether the source trustworthiness effects on information selection obtained in the present research also hold true when source expertise is low. For this reason, it is highly relevant to examine the role of different combinations of expertise and trustworthiness in information selection.

Second, in the present research we measured participants' expectations regarding the source's viewpoint to determine the extent and direction of source-guided information selection occurring. Importantly, the source's expected viewpoint did not depend on our manipulation of source credibility, nor was it informed by participants' own attitudes. Also, our correlational approach to determine biases in information selection is not uncommon in research on selective exposure (cf. Smith et al., 2007). Nevertheless, we recognize that for future research on the role of source credibility in information selection it would be helpful to manipulate both source viewpoint and source credibility.

Third, in our studies we focused on situations in which people form new attitudes and it is unlikely that their initial attitudes will guide their information selection (cf. Brannon et al., 2007). We found that in such situations information selection can be guided by expectations about the information source's viewpoint, instead of being attitude-guided. This raises the important question of how people will select information about less novel topics. In this case both attitude-guided and source-guided information can be expected to occur and it remains to be seen how these would relate to each other. Possibly, in this case source trustworthiness serves as a moderator of both attitude-guided and source-guided information

selection. That is, information selection may be relatively more source-guided with a low-trustworthy source, and relatively more attitude-guided with a highly-trustworthy source. We recommend that future research further addresses the relationship between attitude-guided and source-guided information selection.

Conclusions and practical implications

On the basis of these studies we conclude that source credibility—and in particular source trustworthiness— can affect information selection, and in this way impacts on the process of attitude formation. Information sources that are not trusted by the general public should be aware that the information that they provide can be counterproductive, even when people process information in order to form an attitude.

Collaboration and Perceived Information Quality [¶]

Imagine being responsible for designing a communication strategy aimed at informing citizens about the potential implementation of a complex novel technology designed to store carbon dioxide undergrounds (CCS) in their neighborhood. One communication strategy you consider is to let each of the stakeholders involved in this technology separately—from its own perspective—provide information about the various aspects of this CCS technology. A second strategy you consider is to draw up a ‘wiki’ type of communication about the novel technology on the Internet that allows different stakeholders to collaborate in the formation of information content about CCS technology. Will residents of the area under concern consider information provided by individual stakeholders to be most valuable, or information provided by a collaboration of stakeholders? This question is addressed in the present research.

The aim of the present studies is to identify some of the factors that determine the effectiveness of *informative communication*, which refers to communication that aims to create awareness and deeper understanding of the issue of consideration (cf. Kinneavy, 1971; Rowan, 2003). Such communication lets the established facts speak for themselves and recognizes that people may reach different conclusions on the basis of the information provided (cf. Fischhoff, 2007). Importantly, the present research does not pertain to persuasive messages that aim to induce the adoption of certain beliefs, theories, or lines of action by others. This also has implications for the measures we use to assess communication effectiveness. While persuasive communication is effective when people change their attitudes as a result of the communication, informative communication can be considered effective when recipients regard the information provided as being valuable for the purpose of their own opinion formation. This is why in the present research we address *perceived information quality* as a novel central outcome variable, rather than attitude change which has been central in previous communication research. We define perceived information quality as indicating the subjective value and completeness of information.

[¶] This chapter is based on Ter Mors, Weenig, Ellemers, and Daamen (2008c).

To date, surprisingly little is known about the factors that determine the effectiveness of informative communication, while researchers from different fields (e.g., from social psychology, advertising, health science, political science) have devoted a lot of attention on the effectiveness of persuasive communication. It is beyond discussion that an important part of the communications that we encounter in our daily lives aim to change our opinions. Nevertheless, informative communications are important as well. Examples of such communications are product-comparison websites on the Internet, which provide people with factual information about product features, but leave the decision about which product best meets their needs to the people themselves. Online Encyclopedias such as Wikipedia also exemplify the considerable amount of informative communication that people have at their disposal. As such, it is highly relevant to examine the conditions under which informative communication is perceived to be of high quality. The present studies contribute to previous communication research by examining whether the perceived quality of information depends on who provides this information. More specifically, we compare people's responses to information provided by collaborating sources with their responses to when the same information content is provided by either one of these sources.

We examine information provision in the context of the complex issue of "large-scale implementation of a technology of carbon dioxide capture and storage" (CCS). In short, CCS involves the capture of carbon dioxide in power plants, the transportation of the carbon dioxide to underground storage sites (e.g., depleted gas fields), and its subsequent storage in these sites. CCS is complex in the sense that it be approached from many different perspectives, for example from environmental, economic, legal, or societal perspectives. Further, different stakeholders are involved. Currently, the development of CCS enters the stage in which the technology is to be demonstrated in the field. At this point, it is important to consider how information about this novel technology and its likely consequences can be effectively communicated to the general public. In particular citizens living near possible demonstration sites need to be informed. The difficulty with communication about CCS, however, is that lay people lack the necessary background knowledge to be able to evaluate information about the technology on its merits (cf. De Best-Waldhober et al., in press; Huijts, Midden & Meijnders, 2007; Meijnders, Midden, & Wilke, 2001). This raises the question of how citizens in this case can decide whether CCS information is valuable. In the present research we argue that people's evaluations of the value of CCS information will depend to a considerable extent on who provides the relevant information. In communication about CCS, organizations involved with the technology—in other words CCS

stakeholders—are obvious sources of information given their high level of expertise. Examples of CCS stakeholders include industrial organizations, environmental non-governmental organizations (NGOs) and governmental bodies. In the present research we argue that the perceived quality of CCS communications will depend on the involvement of divergent stakeholders in the provision of information. Specifically, we examine the perceived quality of CCS communications depending on whether (the same) information is provided by divergent collaborating stakeholders (an oil company that collaborates with an environmental non-governmental organization in providing the information) or by individual stakeholders.

Collaborating versus individual sources

Previous studies in the literature on persuasive communication have compared the effectiveness of multiple sources to that of single sources (e.g., Harkins & Petty, 1981a, 1981b; 1987; Moore, Reardon, & Mowen, 1987). These studies showed that information provided by multiple sources can be more persuasive than single sources. This multiple-source effect was found to depend on factors such as the number of different arguments provided (e.g., Harkins & Petty, 1981a, 1981b) and the perceived (in)dependence of sources (e.g., Harkins & Petty, 1987; Moore et al., 1987). However, the paradigm used in these previous studies was a multi-source-multi-message paradigm. That is, in the multiple-source conditions in these studies each of the different sources *individually* provided participants with a persuasive message in favor of the issue under consideration: The sources did not provide a message in collaboration, which is the situation we examine here. Also, the outcome variable in these studies was attitude change, instead of perceived information quality which is the focus of the present research. Hence, these previous studies do not provide an answer to the question of how people evaluate the quality of information from sources that collaborate in providing this information. We aim to examine this in the present research.

Expected (im)balance in information content

In the present research we focus on the role of stakeholder involvement in communication about CCS. We argue that the perceived quality of CCS communications is likely to depend on whether (the same) CCS information is provided by divergent *collaborating* stakeholders or by each individual stakeholder *separately*. That is to say, we argue that CCS information will be evaluated differently when provided in collaboration by an oil company and an

environmental NGO compared to when the same information is provided separately by either the individual oil company or the individual NGO.

Individual stakeholders can be expected to each represent a unique perspective on the issue of CCS, which may be reflected in the information they provide. As established in recent research by Terwel, Harinck, Ellemers, and Daamen (in press), the *motives* people associate with individual CCS stakeholders are also likely to differ. For example, people generally expect environmental NGOs to act out of public-interest (e.g., concern for the environment), whereas they expect oil companies to act out of self-interest (e.g., economic gain). We anticipate these inferred motives to be reflected in people's expectations about information content in case of individual stakeholders. More specifically, people will tend to expect information provided by an environmental NGO to focus on environmental aspects of CCS. Conversely, they are likely to anticipate that information by an industrial stakeholder will focus on economic rather than on environmental aspects of the technology. Hence, we hypothesize that people will expect information provided by individual stakeholders to be relatively *imbalanced*; that is, they will anticipate that it will be somewhat restricted to the stakeholder's own perspective and field of expertise. By contrast, when divergent stakeholders team up to provide information (such as when an industrial stakeholder and an environmental NGO collaborate in providing relevant information) we predict that people will expect the information to be relatively more balanced. We argue that in this case, people will consider it more likely that the communication represents a variety of aspects of CCS, as each collaborating stakeholder can be expected to contribute a unique perspective to the joint communication. In sum, we predict that people will expect more balanced information from collaborating stakeholders than from individual stakeholders (Hypothesis 1)

Perceived information quality

Regarding the implications of these (im)balance expectations for the expected and perceived quality of the information provided, it is yet unclear whether people will evaluate collaborative information to be of higher, lower or equal quality compared to when the same information is provided by individual stakeholders. It is possible that people judge collaborative information to be inferior to the same information provided by individual stakeholders. People may doubt whether joint information from seemingly incompatible stakeholders represents each stakeholder's true feelings, or reflects a weak compromise in which only meaningless information is provided (cf. Harkins & Petty, 1987).

We consider it more likely, however, that people perceive communications from collaborating stakeholders to represent high rather than low quality information. We argue that people will reason that when stakeholders with such divergent perspectives both contribute, the joint information provided by these stakeholders must be complete and of high quality (cf. Harkins & Petty, 1987). In parallel to the multiple-source effect found in persuasion studies (e.g., Harkins & Petty, 1981a, 1981b; 1987; Moore et al., 1987) we predict that people will *expect* information provided by collaborating stakeholders to be of higher quality than when the same information is provided by individual stakeholders (Hypothesis 2). We further predict this effect to be mediated by the expected (im)balance in information content (Hypothesis 3). In addition, we predict these information-quality expectations to guide people's subsequent evaluations of the actual information provided (Hypothesis 4). Previous research on biased information processing in persuasion (e.g., Chaiken & Maheswaran, 1994) has shown that people's pre-message expectations concerning information quality can guide the way they subsequently evaluate this information. Based on this, we predict that people will *perceive* information from collaborating stakeholders to be of higher quality than when the same information is provided by individual stakeholders (Hypothesis 4a), and that this effect is due to their information-quality expectations (Hypothesis 4b). In sum, we predict that the expectations people hold of the quality of communications at least in part explain the way they subsequently evaluate the information provided.

Stakeholder credibility

Stakeholders not only differ in their perspectives on the topic under consideration, but they may also differ in terms of their perceived credibility. Illustrative of this point, recent research (see Huijts et al., 2007; Ter Mors, Weenig, Ellemers, & Daamen, 2008a) shows that the Dutch general public considers environmental NGOs involved in CCS to be more credible than industrial CCS stakeholders. *Stakeholder credibility* refers to the perceived expertise and trustworthiness of a stakeholder (e.g., Kelman & Hovland, 1953). That is, credibility comprises the extent to which a stakeholder "is perceived to be capable of making correct assertions" (*stakeholder expertise*: Hovland, Janis, & Kelly, 1953, p. 21), as well as its "perceived honesty, integrity, and believability" (*stakeholder trustworthiness*: Erdogan, Baker, & Tagg, 2001, p. 40).

The conclusion that there are variations in the perceived credibility of different stakeholders raises the important question of whether collaboration

between stakeholders affects the perceptions people hold of each separate stakeholder. Previous research on multiple versus single sources in the persuasion literature provides little scope in answering this question. Although it may be feasible for different stakeholders to reach agreement on factual information, stakeholders may be unwilling to provide information together when they anticipate such collaboration to harm their reputation. Credible stakeholders may worry that working in partnership with less credible stakeholders reflects negatively on their own credibility. Less credible stakeholders, on the other hand, might expect benefits from joining forces with a more credible stakeholder, because in this case the credibility of the collaborating stakeholder may reflect positively on their own reputation. The present research examines whether collaboration between stakeholders affects credibility perceptions of the individual stakeholders, as the risk of injuring stakeholder reputations may be an important reason for stakeholders to refrain from collaborative information provision, even if such collaboration helps to increase perceived information quality.

Overview

The goal of the present research is fourfold. First, we aim to examine whether people expect more balanced information from diverging collaborating stakeholders than from individual stakeholders (Studies 4.1, 4.2 and 4.3). Second, we aim to examine the implications of (im)balance expectations for expected an perceived information quality (Studies 4.2 and 4.3). Third, we aim to examine whether the effectiveness of joint communications depends on the perceived (dis)similarity of the collaborating stakeholders (Study 4.3). Finally, we assess whether collaboration between stakeholders affects the perceived credibility of individual stakeholders (Studies 4.1 and 4.2).

We use the following paradigm to address these aims. First, we inform participants that they will receive information about a novel carbon dioxide capture and storage (CCS) technology. Next, depending on experimental condition participants are led to believe that this information will be provided by an individual stakeholder (in this case a single oil company or a single environmental NGO) or by two stakeholders that collaborate (in this case an oil company and an environmental NGO that join forces). Finally, we measure participants' responses to the information provided in terms of expected (im)balance in information content (Studies 4.1, 4.2 and 4.3), expected and perceived information quality (Studies 4.2 and 4.3), and the perceived credibility of individual stakeholders (Studies 4.1 and 4.2).

Study 4.1

The main aim of Study 4.1 was to test our prediction that people expect information from collaborating stakeholders to be more balanced than when the same information is provided by individual stakeholders (Hypothesis 1). In this study we told participants that they would receive information about CCS from either an oil company or an environmental NGO (both individual-stakeholder conditions) or from the two stakeholders in collaboration (collaborating-stakeholders condition). We predicted that a) participants in the environmental NGO condition would expect the information to focus more strongly on environmental than on economic aspects of CCS (cf. Terwel et al., in press), whereas b) participants in the oil-company condition would expect a stronger focus on economic aspects than on environmental aspects in the information (cf. Terwel et al., in press). By contrast, we predicted that c) participants in the collaborating-stakeholders condition should expect a more balanced representation of environmental as well as economic aspects of CCS in the information compared to both individual-stakeholder conditions.

Furthermore, Study 4.1 aimed to assess whether collaborative communication by an oil company and an environmental NGO impacts on the perceived credibility (expertise and trustworthiness) of the individual stakeholders. As noted before, people perceive individual environmental NGOs involved in CCS to be more credible than individual industrial CCS stakeholders (Huijts et al., 2007; Ter Mors et al., 2008a). This difference seems to be grounded primarily in the trustworthiness-dimension of stakeholder credibility rather than in its expertise dimension. That is, people trust environmental NGOs to a greater extent than they trust industrial stakeholders, but their expertise perceptions regarding the two types of stakeholders are not that different (see Huijts et al., 2007; Ter Mors et al., 2008a). We expected to replicate these findings in the individual-stakeholder conditions of the present research. The main aim of measuring the perceived credibility of the relevant stakeholders in Study 4.1, however, was to examine whether the relative lack of trust in industrial stakeholders would reflect negatively on the NGO in the collaborating-stakeholders condition. This is why we examined whether the NGO would be seen as less credible in the collaborating-stakeholders condition than in the individual-NGO condition.

Method

Participants and design

Seventy-five undergraduate students (22 men, 53 women, mean age = 20.13 years) from Leiden University participated in this study. They were randomly allocated to one of the three experimental conditions: Information was allegedly provided by an oil company, an environmental NGO (individual-stakeholder conditions), or by an oil company and an environmental NGO together (collaborating-stakeholders condition). Participants received 2.5 Euros for their participation.

Procedure

On arrival at the laboratory participants were seated in separate cubicles. After having provided informed consent, participants read a brief introduction about large-scale implementation of a novel technology of carbon dioxide capture and storage (CCS) in the Netherlands via the computer. In this introduction we told them that the Dutch government was considering the implementation of this technology. Next, we informed participants that they would be given the opportunity to read a report containing additional information about CCS. Depending on experimental condition, participants learned that the report (i.e., the information provided) had been written by an oil company, an environmental NGO, or by an oil company and an environmental NGO together. After answering questions concerning their expectations about information content participants read the actual report. The report approached CCS both from an environmental and an economic perspective, and was identical in all experimental conditions. After reading the information, participants answered questions concerning their credibility perceptions of each stakeholder. Also, a question was included to check the effectiveness of the experimental manipulation of information source.

Measures

Expected information content. Before being exposed to the information in the report we asked participants to indicate the extent to which they expected the report to focus on consequences of CCS for the environment as well as the extent to which they expected the report to focus on economic consequences of CCS (1 = *not at all*, 7 = *very much*).

Stakeholder credibility. After being exposed to the information in the report participants answered questions concerning the perceived expertise and trustworthiness of each stakeholder. In the collaborating-stakeholders condition half of the participants first answered the questions concerning the oil company

and then answered the questions concerning the environmental NGO, and vice versa for the other half of participants (i.e., to counterbalance for stakeholder order). The order in which credibility perceptions were measured in this study did not affect the results. To assess perceived stakeholder expertise participants indicated the extent to which they perceived the stakeholder to be expert and knowledgeable in the context of Greenhouse gasses and technology (1 = *not at all*, 7 = *very much*). To assess perceived stakeholder trustworthiness participants indicated the extent to which they perceived each stakeholder to be trustworthy and honest (1 = *not at all*, 7 = *very much*). A perceived expertise score was computed by averaging participants' responses to the two expertise items ($r = .69$). Likewise, a perceived trustworthiness score was computed by averaging participants' responses to the two trustworthiness items ($r = .62$). Higher scores on these scales indicate higher perceived expertise and trustworthiness.

Manipulation check. At the end of the experiment we asked participants to indicate in a multiple choice format whether information had been provided by a) *an oil company*, b) *an environmental NGO*, or c) *an oil company and an environmental NGO together*.

Results

Manipulation check

Almost all participants (93.3%) correctly reported which stakeholders allegedly had written the report about CCS. Five participants answered incorrectly to the manipulation check. These participants were equally distributed across conditions. Because excluding these participants from the analyses did not alter the results we decided to retain them.

Expected (im)balance in information content

A repeated measures ANOVA with expected information content (a focus on economic consequences versus a focus on environmental consequences) as within-subjects variable and information source as between-subjects variable revealed a significant Expected Information Content x Information Source interaction, $F(2, 72) = 21.72$, $p < .001$, $\eta^2 = .38$. As predicted, in both individual-stakeholder conditions participants expected the information provided to be relatively imbalanced. That is, participants expected a greater focus on economic consequences ($M = 5.46$, $SD = 1.35$) than on environmental consequences ($M = 3.63$, $SD = 1.81$) in the oil-company condition, $t(23) = 3.88$, $p = .001$, and a greater focus on environmental consequences ($M = 6.17$, $SD = 1.03$) than on economic consequences ($M = 3.65$, $SD = 1.85$) in the

environmental NGO condition, $t(22) = -4.80$, $p < .001$. By contrast, in the collaborating-stakeholders condition participants expected the information to be more balanced as they expected it to focus equally on economic ($M = 4.89$, $SD = 1.34$) and environmental consequences ($M = 5.36$, $SD = 1.06$), $t(27) = -1.23$, *ns*. Thus, when stakeholders provide information about CCS in collaboration, people expect this information to be more balanced than when the information is provided by either one of these stakeholders independently, just as predicted in Hypothesis 1.

Stakeholder credibility

First, we compared expertise and trustworthiness perceptions in both individual-stakeholder conditions. As anticipated we found that expertise perceptions did not vary between the oil-company condition and the NGO condition, $t(45) = -.95$, *ns* (overall $M = 4.70$, $SD = 1.33$), but that trustworthiness perceptions did, $t(45) = -2.30$, $p = .026$. Participants trusted the oil company to a lesser extent ($M = 3.54$, $SD = 1.34$) than they trusted the NGO ($M = 4.37$, $SD = 1.11$), which is consistent with previous research (see Huijts et al., 2007; Ter Mors et al., 2008a).

Next, we tested whether the collaboration between both stakeholders affected participants' perceptions of the *oil company* in terms of expertise and trustworthiness. Two t-tests comparing perceived expertise and trustworthiness of the oil company in the collaborating-stakeholders condition to that in the oil-company condition proved nonsignificant, p -values $\geq .189$. This result indicates that the collaboration between the oil company and the NGO did not affect participants' perceptions of the oil company. Similar analyses on perceptions of the *environmental NGO* revealed that the collaboration between the oil company and the NGO did not affect the way participants perceived the NGO in terms of expertise, $t(49) = .93$, *ns*. However, acting as a team with the oil company did positively affect the trustworthiness perceptions of the NGO, $t(49) = -2.64$, $p = .011$. In the collaborating-stakeholders condition the NGO was seen to be even more trustworthy ($M = 5.16$, $SD = 1.03$) than in the individual-NGO condition ($M = 4.37$, $SD = 1.11$), indicating a contrast effect in perceived stakeholder credibility.

Discussion

Study 4.1 shows that people expect information from collaborating stakeholders to be balanced, whereas they expect information from individual stakeholders to be relatively imbalanced. Apparently, when individual stakeholders provide information separately, people expect this information to reflect the stakeholder's own motives and perspectives. Study 4.1 suggests that this expected imbalance in

information content can be overcome when stakeholders provide information in collaboration. However, this first study does not reveal whether the information provided in this way is actually perceived to be of higher quality. We will examine this in Study 4.2.

Furthermore, stakeholders will not be prepared to engage in collaborative information provision, unless they are assured this will not harm their own reputation. Relevant to this concern, Study 4.1 demonstrates that credible stakeholders do not need to worry that teaming up with another (less credible) stakeholder will negatively affect the way people perceive them in terms of credibility. For stakeholders that are considered credible, credibility perceptions may even increase, as a result of contrast effects in stakeholder perceptions. The results of this study also suggest that the reputation of less credible stakeholders is not affected by joint communications.

Study 4.2

Study 4.2 was designed to replicate and extend findings of Study 4.1. As in Study 4.1, we compared participants' responses to information provided by collaborating stakeholders (an oil company and an environmental NGO) with their responses to the same information when it was provided by either one of the stakeholders individually (oil company *or* environmental NGO).

In extension of Study 4.1, in Study 4.2 we measured expected information quality. In Study 4.1 we found that participants in the collaborating-stakeholders condition expected more balanced information content (i.e., a more equal focus on environmental and economic aspects of CCS in the information provided) than participants in both individual-stakeholder conditions. In Study 4.2 we examined the implications of these (im)balance expectations for expected information quality. We predicted that participants in the collaborating-stakeholders condition would expect the information to be of higher quality than participants in both individual-stakeholder conditions would (Hypothesis 2). We further predicted this effect to be mediated by their expectations regarding (im)balance in information content (Hypothesis 3).

Second, in extension of Study 4.1, Study 4.2 addressed how these pre-information quality expectations would influence participants' subsequent evaluations of the actual information provided. Previous research on biased information processing in persuasion (e.g., Chaiken & Maheswaran, 1994) has shown that people's pre-information expectations concerning information quality can guide the way they subsequently evaluate this information. Accordingly, we

predicted the *perceived* quality of information provided to parallel the results regarding information-quality *expectations* (Hypothesis 4). That is, information provided by collaborating stakeholders should be perceived as being of higher quality than the same information provided by individual stakeholders (Hypothesis 4a). We also predicted participants' information-quality expectations to mediate this effect (Hypothesis 4b).

Finally, in Study 4.2 we also extended our measure of stakeholder credibility. In Study 4.1 the collaboration between an oil company and an environmental NGO did not harm the way participants perceived each of the individual stakeholders in terms of their expertise and trustworthiness. However, in Study 4.1 stakeholder credibility was measured after participants had actually read the information in the report, and it could be that the (high quality) information we presented to participants affected their perceptions of the stakeholders (cf. Böhner, Ruder, & Erb, 2002). To exclude this possibility, in Study 4.2 we measured stakeholder perceptions twice: Before and after participants read the information from the alleged report.

Method

Participants and design

Sixty-six undergraduate students (27 men, 39 women, mean age = 19.97 years) from Leiden University participated in this study. They were randomly allocated to one of the three experimental conditions: Information was allegedly provided by an oil company, an environmental NGO (both individual-stakeholder conditions), or by an oil company and environmental NGO working together (collaborating-stakeholders condition). Participants received 2.5 Euros for their participation.

Procedure

The procedure was comparable to that in Study 4.1. After participants read the short introduction about CCS, they learned that they would read a report about potential consequences of large-scale implementation of CCS in the Netherlands. As in Study 4.1, we told them that this report had allegedly been written by either an oil company, an environmental NGO or by an oil company and an environmental NGO together. After answering questions regarding the content and quality of information, and their initial perceived credibility of the stakeholders, participants read the report. The content of information was similar to that in Study 4.1. After reading the report, participants were asked to rate the quality of the information they had received and to indicate how credible they

thought the stakeholders to be. Finally, a question was included to check the effectiveness of the manipulation.

Measures

Stakeholder credibility. Before (t1) and after (t2) being exposed to the information participants were asked to rate the expertise and trustworthiness of the stakeholders. We measured perceived stakeholder expertise ($rt1 = .81$, $rt2 = .79$) and perceived stakeholder trustworthiness ($rt1 = .71$, $rt2 = .75$) with the same questions as in Study 4.1.

Expected information content. Expected content of the information in terms of focus on economic versus environmental consequences was measured in the same way as in Study 4.1.

Expected information quality. In extension of Study 4.1, before being exposed to the information in the report we asked participants to what extent they expected the information in the report to be valuable and complete (1 = *not at all*, 7 = *very much*). Quality expectations were computed by averaging the responses to the scales ($r = .45$), with higher scores indicating higher expected information quality.

Perceived information quality. Also in extension of Study 4.1, after being exposed to the information in the report participants were asked to rate the information that had been presented to them in terms of its value and completeness (1 = *not at all*, 7 = *very much*). Perceived-quality scores were subsequently calculated by averaging the responses to the two items ($r = .45$), with higher scores indicating higher perceived information quality.

Manipulation check. We checked the effectiveness of the information source manipulation in the same way as in Study 4.1.

Results

Manipulation check

The large majority of participants (87.9%) correctly reported which stakeholders allegedly had written the report about CCS. Eight participants answered the manipulation check incorrectly. These participants were equally distributed across conditions. Excluding them from the analyses did not alter the results so they were retained for the main analyses.

Expected (im)balance in information content

A repeated measures ANOVA with expected information content (a focus on economic consequences versus a focus on environmental consequences) as within-

subjects variable and information source as between-subjects variable revealed a significant Expected Information Content $\times$ Information Source interaction, $F(2, 63) = 47.66$, $p < .001$, $\eta^2 = .60$. As in Study 4.1, participants in both individual-stakeholder conditions expected the information to be relatively imbalanced. That is, participants in the oil-company condition expected a greater focus on economic consequences ($M = 5.81$, $SD = 1.25$) than on environmental consequences ($M = 3.10$, $SD = 1.51$), $t(20) = 6.06$, $p < .001$, whereas participants in the NGO condition expected a greater focus on environmental consequences ($M = 6.48$, $SD = .93$) than on economic consequences ($M = 2.67$, $SD = 1.56$), $t(20) = -7.47$, $p < .001$. By contrast, in the collaborating-stakeholders condition participants expected the information to be balanced, that is equally focusing on economic ($M = 5.13$, $SD = 1.43$) and environmental consequences ($M = 5.71$, $SD = 1.27$), $t(23) = -1.36$, *ns*. Thus, providing further support for Hypothesis 1 and replicating the results of Study 4.1, we found that participants expected more balanced information when stakeholders jointly provided the information than when each stakeholder provided the same information individually.

Expected information quality

ANOVA on the expected information quality measure demonstrated a main effect of information source, $F(2, 63) = 7.68$, $p = .001$, $\eta^2 = .20$. To answer whether the expected balance in information content in the collaborating-stakeholders condition was also reflected in the expected information quality we performed a contrast-analysis that compared information-quality expectations in the collaborating-stakeholders condition (2) to the two individual-stakeholder conditions (-1). This analysis confirmed that participants in the collaborating-stakeholders condition expected the information to be of higher quality ($M = 5.19$, $SD = .67$) than participants in both individual-stakeholder conditions did, ($M = 4.25$, $SD = 1.16$), $p = .001$, as predicted in Hypothesis 2. Thus, when two stakeholders provide information together, people expect the information to be of greater value than when each of these stakeholders provides this information separately.

Subsequently, we conducted mediation analysis (Baron & Kenny, 1986) to examine whether the effect of information source on expected information quality was indeed due to the greater expected balance of information in the collaborating-stakeholders condition. In order to test this, we combined the two individual-stakeholder conditions and compared this with the collaborating-stakeholders condition. Also, we created a single expected (im)balance measure to be able to test for mediation. We did so by calculating the absolute difference between expected

focus on economic versus environmental consequences, with higher scores indicating a greater expected imbalance in environmental and economic consequences reported in the information.

Mediation analysis revealed that the direct relationship between information source and expected information quality ($\beta = .41, p = .001$) was reduced ($\beta = .28, p = .032$) after controlling for expected (im)balance in information content. The Sobel test (Sobel $Z = 2.80, p = .005$) indicates that there was a reliable indirect effect of information source on expected information quality *through* expected information (im)balance. Thus, as predicted in Hypothesis 3, the observation that participants expected the information from collaborating stakeholders to be of higher quality than in case of information from individual stakeholders was caused by their expectation that the information would be more balanced when provided by collaborating stakeholders instead of by individual stakeholders.

Perceived information quality

After participants had read the information, we asked them to evaluate the quality of the actual information provided. A contrast analysis comparing the collaborating-stakeholders condition (2) to both individual-stakeholder conditions (-1) provided evidence for our prediction in Hypothesis 4a. That is, participants in the collaborating-stakeholders condition perceived the information to be of higher quality ($M = 4.94, SD = 1.07$) than participants in both individual-stakeholder conditions did ($M = 4.37, SD = 1.12, p = .049$).

Next, we conducted mediation analysis (Baron & Kenny, 1986) to check whether the effect of information source on perceived information quality was due to participants' pre- information quality expectations. When we compared the two individual stakeholder conditions (coded as -1) with the collaborating-stakeholders condition (coded as 2), the direct relationship between information source and perceived information quality ($\beta = .24, p = .048$) became nonsignificant and was significantly reduced ($\beta = .09, p = .485, \text{Sobel } Z = 2.57, p = .01$) after controlling for expected information quality. Thus, as predicted in Hypothesis 4b, participants' expectations concerning information quality accounted for the way they subsequently evaluated the actual information provided.

Stakeholder credibility

In Study 4.2, we assessed perceived stakeholder credibility both before and after participants read the information in the report to exclude the possibility that perceived credibility in Study 4.1 was influenced by the information participants had received. To examine this, we performed a series of repeated measures

ANOVAs in which we compared participants' stakeholder credibility perceptions at t1 with their perceptions at t2. These analyses revealed that overall, post-information credibility perceptions did not differ from pre-information perceptions, all $F_s(2,63) \leq 1.68$, *ns*. These findings rule out that the information provided by the stakeholders accounted for participants' post-information credibility perceptions, which was a potential problem in Study 4.1. Consistent with Study 4.1, in our further description of the results we will focus on the post-information credibility perceptions reported by participants.

First, we compared stakeholder expertise and trustworthiness perceptions in both individual-stakeholder conditions. Consistent with findings of Study 4.1, we found that participants trusted the NGO to a greater extent ($M = 4.43$, $SD = 1.02$) than they trusted the oil company ($M = 3.45$, $SD = 1.12$), $t(40) = -2.95$, $p = .005$. In addition, we found that expertise perceptions of the two stakeholders did not differ, as in Study 4.1, $t(40) = -1.57$, *ns*.

Subsequently, we examined whether the collaboration between the oil company and the NGO affected expertise and trustworthiness perceptions of the individual stakeholders. First, two t-tests comparing perceived expertise and trustworthiness of the oil company in the collaborating-stakeholders condition to that in the oil-company condition proved nonsignificant, p -values $\geq .784$. We obtained similar findings when we compared expertise and trustworthiness perceptions of the NGO in the collaborating-stakeholders condition to that in the NGO-only condition, p -values $\geq .778$. The finding that collaboration between credible and less credible stakeholders does not harm either of the stakeholder's reputations converges with findings of Study 4.1. Unlike in Study 4.1, however, we did not find any indications that the reputation of the most credible stakeholder (i.e., the NGO) benefited from the collaborative communication.

Discussion

In sum, the findings of Study 4.2 replicate and extend those of Study 4.1. In Study 4.2 we again addressed expected information content as a function of information source. The results clearly converge with and complement findings of Study 4.1: Participants expected information from collaborating stakeholders to be more balanced in terms of content than when information was provided by individual stakeholders.

In extension of Study 4.1, Study 4.2 further demonstrated that these (im)balance expectations associated with stakeholder involvement are consequential for the quality of information people expect from these stakeholders.

That is, we found that participants expected higher information quality from collaborating compared to individual stakeholders as a result of expected (im)balance in information content, as predicted. These quality expectations in turn lead participants to perceive the actual quality of information as higher in the collaborating-stakeholders condition than in the individual-stakeholder conditions. Thus, when stakeholders join forces to provide information, people expect and perceive the information to have surplus value.

Finally, in Study 4.2 we found that participants' post-information credibility perceptions did not differ from their pre-information perceptions. This enables us to exclude the possibility that disappointment with the actual information provided or the perception that the information was actually better than expected accounted for the results obtained for perceived stakeholder credibility in Study 4.1. As in Study 4.1, we found that collaboration between different stakeholders does not harm the perceived expertise or trustworthiness of either stakeholder.

Study 4.3

In Study 4.3 we further addressed the processes underlying the collaboration effects observed in Studies 4.1 and 4.2. More specifically, we examined whether the perceived dissimilarity of collaborating stakeholders (e.g., dissimilarity in trustworthiness, in perspectives) is an important precondition for the effects observed in Studies 4.1 and 4.2. In Study 4.3 we compared people's responses to information provided by collaborating stakeholders who are dissimilar (an oil company together with an environmental NGO, as in Studies 4.1 and 4.2) and collaborating stakeholders who are similar (two oil companies), with their reactions to the same information provided by an individual stakeholder (one oil company).

We argued that when similar stakeholders collaborate people have no reason to assume that the collaborative information provided by these stakeholders will be more balanced than when each of these stakeholders provides information separately (Hypothesis 5a), as the similar stakeholders will share the same perspective on the issue. Furthermore, based on findings of Study 4.2, we predicted that people's anticipation that information is imbalanced will lead them to suspect that the information provided by collaborating similar stakeholders will not be of very high quality. In sum, we predicted that only when dissimilar stakeholders collaborate, people will expect the information provided to be of higher quality than in case of an individual stakeholder (Hypothesis 5b). We

further predicted this effect to be mediated by expected (im)balance in information content (Hypothesis 5c).

Method

Participants and design

Seventy-nine undergraduate students (8 men, 71 women, mean age = 19.72 years) from Leiden University participated in this study. They were randomly allocated to one of the three experimental conditions: Information was allegedly provided by one oil company (individual stakeholder), by two oil companies working together (collaborating similar stakeholders) or by an oil company and environmental NGO working together (collaborating dissimilar stakeholders). Participants received 2.5 Euros for their participation.

Procedure

The procedure was comparable to that in Studies 4.1 and 4.2. After participants read the short introduction about CCS, participants learned that they would be given the opportunity to read a report about potential consequences of large-scale implementation of CCS in the Netherlands. This time we told them that this report had been written by either an individual oil company, by two oil companies (collaborating similar stakeholders), or by an oil company and an environmental NGO (collaborating dissimilar stakeholders). The individual-stakeholder condition and the collaborating-dissimilar-stakeholders condition replicated the manipulations in Studies 4.1 and 4.2. The collaborating-similar-stakeholders condition was added in Study 4.3. After answering questions concerning their expectations about information content and information quality participants read the report. The information we used in the report was similar to that in Studies 4.1 and 4.2. Afterwards, participants answered the manipulation checks.

Measures

Expected information content. Expected content of the information in terms of attention for economic versus environmental consequences was measured in the same way as in Studies 4.1 and 4.2.

Expected information quality. We improved the expected information quality measure used in Study 4.2. This time participants indicated with three rating scales the extent to which they expected the information in the report to be valuable and complete (1 = *not at all*, 7 = *very much*) and of high or low quality (1 = *very low quality*, 7 = *very high quality*). Quality expectations were computed by averaging

participants' responses to these items ($\alpha = .86$), with higher scores indicating higher expected information quality.

Manipulation checks. At the end of the experiment we asked participants to indicate in a multiple-choice format whether the information had been provided by a) *an oil company*, b) *two oil companies together*, or c) *an oil company and an environmental NGO together*. In extension of Studies 4.1 and 4.2, as a second check for our experimental manipulation we asked participants to indicate whether or not they had received information from the relevant stakeholders a) *yes*, or b) *no*. To check the perceived (dis)similarity of the two stakeholders in the two experimental conditions with collaborating stakeholders, four items asked participants in these conditions to indicate the extent to which they expected the stakeholders to be alike, to be equally trustworthy, to have similar interests concerning CCS and Greenhouse gasses, and to have similar viewpoints concerning large-scale implementation of CCS (1 = *not at all* 7 = *very much*). Expected stakeholder-(dis)similarity was computed by averaging participants' responses to these items ($\alpha = .83$), with higher scores indicating greater expected similarity of collaborating stakeholders.

Results

Manipulation checks

Almost all participants (97.5%) correctly indicated which stakeholders allegedly had written the report about CCS. Two participants answered the manipulation check incorrectly. Because these two participants did accurately answer to the dichotomous manipulation check that followed, we decided to retain them for the main analyses. Concerning stakeholder-(dis)similarity perceptions in the two collaboration conditions, the collaborating stakeholders were perceived as more similar in the (similar) two-oil-companies condition ($M = 5.18$, $SD = .82$) than in the (dissimilar) oil-company-and-NGO condition ($M = 3.09$, $SD = .94$), $t(51) < .001$, as intended.

Expected (im)balance in information content

A repeated measures ANOVA with expected information content (a focus on economic consequences versus a focus on environmental consequences) as within-subjects variable and information source as between-subjects variable revealed a significant two-way interaction, $F(2, 76) = 10.05$, $p < .001$, $\eta^2 = .21$. As in Studies 4.1 and 4.2, participants in the oil-company-and-NGO condition expected the information to be balanced, that is equally focusing on economic ($M = 4.85$, $SD =$

1.35) and environmental consequences ($M = 5.15$, $SD = 1.38$), $t(22) = -.56$, *ns*. This in contrast to the oil-company condition as well as the two-oil-companies condition. In both these conditions participants expected the information to be imbalanced. That is, participants expected a greater focus on economic consequences ($M = 5.15$, $SD = 1.41$) than on environmental consequences ($M = 3.85$, $SD = 1.64$) in the oil-company condition, $t(25) = 3.00$, $p = .006$, as well as in the two-oil-companies condition ($M_{\text{economic}} = 5.78$, $SD = .93$; $M_{\text{environmental}} = 3.52$, $SD = 1.53$), $t(26) = 6.14$, $p < .001$. Thus, as predicted in Hypothesis 5a, only when two stakeholders that are perceived as dissimilar provide information together, do people expect the information to be balanced.

Next, we calculated a single expected (im)balance measure by calculating the difference between expected focus on economic versus environmental consequences. Higher scores on this measure indicate a greater expected *imbalance* in information content. ANOVA on this measure demonstrated a reliable effect of information source, $F(2, 76) = 9.09$, $p < .001$, $\eta^2 = .19$. Participants in the oil-company-and-NGO condition expected a more balanced report ($M = -.26$, $SD = 2.22$) than did participants in the individual-oil-company condition ($M = 1.04$, $SD = 2.22$), $p = .033$, as in Studies 4.1 and 4.2. By contrast, participants in the two-oil-companies condition did not expect the report to be more balanced than in the individual-oil company condition. More than that, participants in this condition expected the report to be *even more imbalanced* ($M = 2.29$, $SD = 1.94$) than participants in the individual-oil-company condition, $p = .031$. These findings provide additional support for Hypothesis 5a as they indicate that people expect more balanced information from collaborating stakeholders than from individual stakeholders, but only when they perceive the collaborating stakeholders to be dissimilar. Finally, participants in the oil-company-and-environmental-NGO conditions expected a more balanced report than participants in the two-oil-companies conditions did, $p < .001$.

Expected information quality

ANOVA on the expected information quality measure revealed a significant effect of information source, $F(2, 76) = 6.05$, $p = .004$, $\eta^2 = .14$. Participants in the oil-company-and-NGO condition first of all expected a higher quality report ($M = 4.51$, $SD = .92$) than participants in the individual-oil company condition ($M = 3.69$, $SD = 1.30$, $p = .009$), as was the case in Study 4.2. By contrast, there was no difference in information-quality expectations between the two-oil-companies condition and the individual-oil-company condition, $p = .569$. Thus, as predicted in Hypothesis 5b, only when two stakeholders that are perceived as being dissimilar provide

information together, do people expect the information to be of higher quality than in case of an individual stakeholder. Finally, information-quality expectations in the oil-company-and-NGO condition exceeded that of in the two-oil-companies condition ($M = 3.52$, $SD = 1.06$), $p = .002$.

Mediation analysis

We conducted mediation analysis (Baron & Kenny, 1986) to examine whether the effect of information source on expected information quality was caused by the expectation that the information would be more balanced in the oil-company-and-NGO condition than in the two-oil-companies condition. In order to examine this prediction, we specifically compared the two collaborating-stakeholders conditions.

Mediation analyses revealed that the direct relationship between information source on expected information quality ($\beta = .43$, $p = .001$) became less pronounced ($\beta = .28$, $p = .06$) after controlling for expected (im)balance in economic versus environmental consequences of CCS in the report. The Sobel test indicates significant mediation (Sobel $Z = 2.72$, $p = .007$). Thus, as predicted in Hypothesis 5c, participants expected the information to be of higher quality in the case of dissimilar collaborating stakeholders compared to collaborating similar stakeholders, due to their expectation that information would be more balanced in the case of dissimilar stakeholders.

Discussion

The results of Study 4.3 replicate and extend findings of the two previous studies. As in Studies 4.1 and 4.2 we found that when dissimilar stakeholders join forces, people expect more balanced information content than in the case of individual stakeholders. In addition, we found these (im)balance expectations to result in higher quality expectations regarding information provided by collaborating similar stakeholders compared to individual stakeholders. Thus, when an oil company and an NGO provide information in collaboration people expect more divergent perspectives to be represented in the information, and as a result they expect the information to be of higher quality than when each stakeholder provides the same information separately.

In extension of Study 4.2, we found dissimilarity of collaborating stakeholders to be an important precondition for this collaboration effect. When similar stakeholders (in this case two industrial stakeholders) join forces, people do not expect the information provided to represent a broader range of perspectives

(i.e., to be more balanced) than when an individual stakeholder serves as an information source. As a result they do not expect the information provided to be of higher quality. In sum, as in the previous studies, Study 4.3 shows that people perceive information from collaborating stakeholders to be of higher quality than when the same information is provided by an individual stakeholder. Additionally, this third study shows that this effect only occurs when collaborating stakeholders are expected to represent different perspectives on the issue.

General Discussion

In the present research we examined the conditions under which communication about complex issues is perceived to be of high quality. The three studies reported here indicate that the perceived quality of such communications depends on whether the information originates from either collaborating (i.e., an oil company that collaborates with an environmental non-governmental organization) or from individual sources. We consistently found that when divergent stakeholders (i.e., sources) provide information in collaboration, this information is perceived to be of higher quality than when each individual stakeholder provides the information separately, even though the actual content of the information provided was identical in both cases. In addition, our studies show that this collaboration effect is due to a stronger expectation that the information represents different perspectives when different stakeholders are involved. In further support of this claim, dissimilarity of collaborating stakeholders appears to be an important boundary condition for the collaboration effect to occur: Only when collaborating stakeholders are perceived to represent different perspectives are collaborative communications evaluated to be of higher quality than individual communications. Finally, the present studies indicate that credibility perceptions of separate stakeholders are not negatively affected by their collaboration with other stakeholders in the provision of information.

Practical implications

The results of these three experiments also have important practical implications for parties responsible for informing the public about complex issues. Our results indicate that the best practice in informing people about complex issues such as carbon dioxide capture and storage (CCS) technology would be to provide them with factual information that results from the collaboration between different stakeholders. Initially, an oil company and an environmental NGO may be hesitant to join forces due to the adversarial relation that binds them to noncooperation.

However, our results indicate that such collaboration is likely worth the effort for both stakeholders, as citizens will perceive joint CCS communications to be more valuable (i.e., to be of higher quality) than communications from the separate stakeholders. Moreover, the present findings suggest that the reputations of the stakeholders in question will not be harmed when they collaborate in information provision.

Limitations and directions for future research

In this research we established that for collaborative communications to be effective, the stakeholders involved should be seen as representing different perspectives on the issue. We suspect more boundary conditions can be identified that determine whether collaborative communications are more effective than individual communications. For example, we would expect the present effects to hold true when a limited number of different stakeholders provides information together, but to disappear when the number of different collaborating stakeholders exceeds a certain threshold. When too many different stakeholders collaborate, people likely doubt whether the collaborative information still represents each stakeholder's true feelings, which in turn raises doubt about the quality of information provided. Additionally, an important question to address may be whether the present effects also hold over time; that is, when the same set of stakeholders *repeatedly* provides information in collaboration.

We further expect that joint communications can be of surplus value for stakeholders, not just because these communications are perceived to be of superior quality, but also because they are more likely to instigate feelings of a fair procedure being followed in recipients. We think that collaboration between dissimilar stakeholders signals to recipients that these stakeholders sincerely care about fully informing them. As a consequence, recipients may be more receptive to the information provided and may be more likely to take new ideas presented to them into consideration.

It is also worth considering the role of recipient characteristics (e.g., education level, involvement, trust in authorities) in relation to the present effects. In the experimental setting of the present studies, recipients of information consisted of a rather homogeneous sample of undergraduate university students. A question that could be addressed in future research is whether a more diverse sample of the general public also will perceive collaborative communications to be of higher quality than when the same communications provided are by individual stakeholders. Possibly, less-educated recipients will consider collaborative communications to be needlessly complicated. We consider it more likely,

however, that especially recipients who lack the background knowledge and ability to judge information about complex issues on its merits by themselves will rely on information provided by collaborating stakeholders. A related question that could be addressed in future research is whether the conclusion that stakeholders need not be concerned about reputational effects holds equally for audiences that hold strong versus weak attitudes about these stakeholders and their motives.

At a theoretical level, we think the findings of the present work are not only of interest for the topic of CCS: We would argue that similar findings can be obtained for information provision about other complex topics like the use of biomass. Nevertheless, we expect the collaboration effect in communication to be especially strong when the issue under concern is complex. With less complex issues, such as the use of energy-efficient light bulbs, people can be expected to have a relatively high ability to judge the issue, and the quality of information provided about the issue, for themselves. They do not have to rely as much on the identity of those who provide them with information to arrive at information quality perceptions. Moreover, it may be less feasible to view issues low in complexity from many different perspectives. Hence, in the case of less complex issues the added value of having a representation of diverse perspectives in the information provided might be limited. Thus, we would expect the collaboration effect in communication to be stronger for issues that are high than low in complexity. Exploring these issues represents useful direction for future research.

Conclusions

On the basis of these studies we conclude that communications by collaborating stakeholders are more effective than when the same communications are offered by individual stakeholders. The present research suggests that joint communications do not harm the way people perceive each individual stakeholder in terms of credibility. Returning to the situation outlined in the outset of this paper, when informing citizens about the possible implementation of a novel technology in their neighborhood, our advice would be to create a 'wiki' type of communication that allows different stakeholders to contribute to the information provided, rather than to let each stakeholder provide information separately.

References

- Albarracin, D. & Mitchell, A. L. (2004). The role of defense confidence for proattitudinal information: How believing that one is strong can sometimes be a defense weakness. *Personality and Social Psychology Bulletin*, 30, 1565–1584.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Blumler, J. G., & Katz, E. (1973). *The uses of mass communication*. Newbury Park, CA: Sage.
- Bohner, G., Ruder, M., & Erb, H. P. (2002). When expertise backfires: Contrast and assimilation effects in persuasion. *British Journal of Social Psychology*, 41, 495–519.
- Brannon, L. A., Tagler, M. J., & Eagly, A. H. (2007). The moderating role of attitude strength in selective exposure to information. *Journal of Experimental Social Psychology*, 43, 611–617.
- Briñol, P., Petty, R. E., & Tormala, Z. K. (2004). Self-validation of cognitive responses to advertisements. *Journal of Consumer Research*, 30, 559–573.
- Cacioppo, J. T., & Petty, R. E. (1981). Social psychological procedures for cognitive response assessment: The thought listing technique, In T. Merluzzi, C. Glass, & M. Genest (Eds.), *Cognitive assessment* (pp. 309–342). New York: Guilford.
- Chaiken, S. (1980). Heuristic versus systematic information processing and the use of source versus message cues in persuasion. *Journal of Personality and Social Psychology*, 39, 752–766.
- Chaiken, S. (1987). The heuristic model of persuasion. In M. P. Zanna, J. M. Olsen, & C. P. Herman (Eds.), *Social influence: The Ontario Symposium* (Vol. 5, pp. 3–39). Hillsdale, NJ: Erlbaum.
- Chaiken, S., Liberman, A., & Eagly, A. H. (1989). Heuristic and systematic information processing within and beyond the persuasion context. In J.S. Uleman, & J. A. Bargh (Eds.), *Unintended thought* (pp. 212–252). New York: Guilford Press.
- Chaiken, S., & Maheswaran, D. (1994). Heuristic processing can bias systematic processing: effects of source credibility, argument ambiguity, and task importance on attitude judgment. *Journal of Personality and Social Psychology*, 66, 460–473.

- De Best-Waldhober, M., Daamen, D. D. L., & Faaij, A. P. C. (2006). *Public perceptions and preferences regarding large- scale implementation of six CO₂ capture and storage technologies: Well-informed and well-considered opinions versus uninformed pseudo-opinions of the Dutch public*. Leiden University, Faculty of Social Sciences. Research report.
- De Best-Waldhober, M., Daamen, D. D. L., & Faaij, A. P. C. (in press). Informed and uninformed public opinions on CO₂-capture and storage technologies in the Netherlands. *International Journal of Greenhouse Gas Control*.
- Dekker, P., & Van der Meer, T. (2004). Politiek vertrouwen 1997-2004 [Political trust 1997-2004]. *Tijdschrift voor de Sociale Sector*, 12, 33–35.
- Eagly, A. H. & Chaiken, S. (1993). *The psychology of attitudes*. New York: McGraw-Hill.
- Elenbaas, M. & De Vreese, C. H. (2007). Effecten van strategisch nieuws op politiek cynisme en stemkeuze onder jonge kiezers in een referendum [The effects of strategic news on political cynism and vote choice among young voters in a referendum]. *Tijdschrift voor Communicatiewetenschap*, 35, 307–325.
- Erdogan, Z. B., Baker, M. J., & Tagg, S. (2001). Selecting celebrity endorsers: The practioner perspective. *Journal of Advertising Research*, 41, 39–48.
- Fischer, P., Greitemeyer, T., & Frey, D. (2008). Self-regulation and selective exposure: The impact of depleted resources on confirmatory information processing. *Journal of Personality and Social Psychology*, 94, 382–395.
- Fischer, P., Jonas, E., Frey, D., & Kastenmüller, A. (2008). Selective exposure and decision framing: The impact of gain and loss framing on confirmatory information search after decisions. *Journal of Experimental Social Psychology*, 44, 312–320.
- Fischer, P., Jonas, E., Frey, D., & Schulz-Hardt, S. (2005). Selective exposure to information: The impact of information limits. *European Journal of Social Psychology*, 35, 469–492.
- Fischer, P., Schulz-Hardt, S., & Frey, D. (2008). Selective exposure and information quantity: How different information quantities moderate decision makers' preference for consistent and inconsistent information. *Journal of Personality and Social Psychology*, 94, 231–244.
- Flash Eurobarometer (2005). *The European constitution: Post- referendum survey in the Netherlands*. Brussels, June. Retrieved August 25, 2008, from http://ec.europa.eu/public_opinion/flash/fl172_en.pdf.
- Frey, D. (1986). Recent research on selective exposure to information. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Volume 19, pp. 41–80). New York: Academic Press.

- Fischhoff, B. (2007). Nonpersuasive communication about matters of greatest urgency: Climate change. *Environmental Science and Technology*, 41, 7204–7208.
- Harkins, S. G., & Petty, R. E. (1981a). Effects of source magnification of cognitive effort on attitudes: An information-processing view. *Journal of Personality and Social Psychology*, 52, 401–413.
- Harkins, S. G., & Petty, R. E. (1981b). The multiple source effect in persuasion: The effects of distraction. *Personality and Social Psychology Bulletin*, 7, 627–635.
- Harkins, S. G., & Petty, R. E. (1987). Information utility and the multiple source effect. *Journal of Personality and Social Psychology*, 52, 260–268.
- Heesacker, M. H., Petty, R. E., & Cacioppo, J. T. (1983). Field dependence and attitude change: Source credibility can alter persuasion by affecting message-relevant thinking. *Journal of Personality*, 51, 653–666.
- Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion: psychological studies of opinion change*. New Haven: Yale University Press.
- Hovland, C. I., & Weiss, W. (1951). The influence of source credibility on communication effectiveness. *Public Opinion Quarterly*, 14, 635–650.
- Huijts, N. M. A., Midden, C. J. H., & Meijnders, A. L. (2007). Social acceptance of carbon dioxide storage. *Energy Policy*, 35, 2780–2789.
- IPCC (2005). Summary for policy makers. In B. Metz, O. Davidson, H. C. De Coninck, M. Loos, & L. A. Meyer (Eds.), *IPCC Special Report: Carbon Dioxide Capture and Storage, Prepared by Working Group III of the Intergovernmental Panel for Climate Change* (pp. 1–16). Cambridge, UK: Cambridge University Press.
- IPCC (2007). Summary for policymakers. In M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. Van der Linden, & C. E. Hansen (Eds.), *Climate Change 2007: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 7–22). Cambridge, UK: Cambridge University Press.
- Jonas, E., Graupmann, V., & Frey, D. (2006). The influence of mood on the search for supporting versus conflicting information: Dissonance reduction as a means of mood regulation? *Personality and Social Psychology Bulletin*, 32, 3–15.
- Jonas, E., Schulz-Hardt, S., Frey, D., & Thelen, N. (2001). Confirmation bias in sequential information search after preliminary decisions: An expansion of dissonance theoretical research on selective exposure to information. *Journal of Personality and Social Psychology*, 80, 557–71.
- Kelman, H. C., & Hovland, C. I. (1953). “Reinstatement” of the communicator in delayed measurement of opinion change. *Journal of Abnormal and Social Psychology*, 48, 327–335.
- Kinneavy, J. L. (1971). *A theory of discourse*. Englewood Cliffs, NJ: Prentice Hall.

- Kruglanski, A. W., & Thompson, E. P. (1999). Persuasion by a single route: A view from the unimodel. *Psychological Inquiry*, 10, 83–109.
- McCroskey, J. C. (1966). Scales for the measurement of ethos. *Speech Monographs*, 33, 65–72.
- Meijnders, A. L., Midden, C. J. H., & Wilke, H. A. M. (2001). Role of negative emotion in communication about CO₂ risks. *Risk Analysis*, 21, 955–966.
- Moore, D. J., Reardon, R., & Mowen, J. C. (1987). Source independence in multiple source advertising appeals: The confederate effect. *Advances in Consumer Research*, 16, 719–721.
- Newell, S. J., & Goldsmith, R. E. (2001). The development of a scale to measure corporate credibility. *Journal of Business Research*, 52, 235–247.
- Oreskes, N. (2004). Beyond the ivory tower: The scientific consensus on climate change. *Science*, 306, 1686.
- Payne, J. W. (1976). Task complexity and contingent processing in decision making: An information search and protocol analysis. *Organizational Behavior and Human Performance*, 16, 366–387.
- Petty, R. E., & Cacioppo, J. T. (1977). Effects of forewarning of persuasive intent and involvement on cognitive responses and persuasion. *Personality and Social Psychology Bulletin*, 5, 173–176.
- Petty, R. E., & Cacioppo, J. T. (1986a). *Communication and persuasion: Central and peripheral routes to attitude change*. New-York: Springer-Verlag.
- Petty, R. E., & Cacioppo, J. T. (1986b). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (pp. 123–205). New York: Academic Press.
- Petty, R. E., Cacioppo, J. T., & Goldman, R. (1981). Personal involvement as a determinant of argument-based persuasion. *Journal of Personality and Social Psychology*, 41, 847–855.
- Petty, R. E., & Wegener, D. T. (1999). The elaboration likelihood model: Current status and controversies. In S. Chaiken, & Y. Trope (Eds.), *Dual Process Theories in Social Psychology* (pp. 41–72). New York: Guilford Press.
- Pornpitakpan, C. (2004). The persuasiveness of source credibility: A critical review of five decades' evidence. *Journal of Applied Social Psychology*, 34, 243–281.
- Priester, J. R., & Petty, R. E. (1995). Source attributions and persuasion: Perceived honesty as a determinant of message scrutiny. *Personality and Social Psychology Bulletin*, 21, 637–654.

- Rowan, K. E. (2003). Informing and explaining skills: Theory and research on informative communication. In J. O. Greene & B. R. Burleson (Eds.), *The handbook of communication and social interaction skills* (pp. 403-438). Mahwah, NJ: Erlbaum.
- Smith, S. M., Fabrigar, L. R., & Norris, M. E. (2008). Reflecting on six decades of selective exposure research: Progress, challenges and opportunities. *Social and Personality Psychological Compass*, 2, 464-493.
- Smith, S. M., Fabrigar, L. R., Powell, D. M., & Estrada, M. J. (2007). The role of information processing capacity and goals in attitude-congruent selective exposure effects. *Personality and Social Psychology Bulletin*, 33, 948-960.
- Stiff, B. J., & Mongeau, P. A. (1994). *Persuasive communication*. New York: Guilford Press.
- Tanner, T. & Dekker, P. (2007). Het opinieklimaat [The opinion climate]. In R. Bijl, J. Boelhouwer, & E. Pommer (Eds.), *De sociale staat van Nederland 2007 [The social state of the Netherlands 2007]* (pp. 57-84). Den Haag: Sociaal en Cultureel Planbureau.
- Ter Mors, E., Weenig, M. W. H., Ellemers, E., & Daamen, D. D. L. (2008a). Information provision about carbon dioxide capture and storage (CCS): The importance of stakeholder credibility. Manuscript submitted for publication.
- Ter Mors, E., Weenig, M. W. H., Ellemers, E., & Daamen, D. D. L. (2008b). The influence of source trustworthiness on information selection: A source-disconfirmation bias. Manuscript submitted for publication.
- Ter Mors, E., Weenig, M. W. H., Ellemers, E., & Daamen, D. D. L. (2008c). Effective communication about carbon dioxide capture and storage (CCS): Perceived information quality depends on collaboration of stakeholders. Manuscript submitted for publication.
- Terwel, B. W., Harinck, F., Ellemers, N., & Daamen, D. D. L. (in press). How organizational motives and communications affect public trust in organizations: The case of carbon dioxide capture and storage. *Journal of Environmental Psychology*.
- TNS NIPO/PM (2005). Tussenstand Balkenende II [The current state of affairs of Balkenende II]. *PM*, 1, 25-28.
- Tormala, Z. L., Briñol, P., & Petty, R. E. (2006). When credibility attacks: The reverse impact of source credibility on persuasion. *Journal of Experimental Social Psychology*, 42, 684-691.
- Tormala, Z. L., Briñol, P., & Petty, R. E. (2007). Multiple roles for source credibility under high elaboration: It's all in the timing. *Social Cognition*, 25, 536-552.

- Tormala, Z. L., & Clarkson, J. J. (2007). Assimilation and contrast in persuasion: The effects of source credibility in multiple message situations. *Personality and Social Psychology Bulletin*, 33, 559–571.
- Trumbo, C. W. & McComas, K. M. (2003). The function of credibility in information processing for risk perception. *Risk Analysis*, 23, 342–353.
- Wood, W., & Quinn, J. (2003). Forewarned and forearmed? Two meta-analytic syntheses of forewarnings and persuasive appeals. *Psychological Bulletin*, 129, 119–138.
- Ziegler, R., & Diehl, M. (2003). Is politician A or B more persuasive? Recipients' source preference and the direction of biased message processing. *European Journal of Social Psychology*, 33, 623–627.
- Ziegler, R., Dobre, B. & Diehl, M. (2007). Does matching versus mismatching message content to attitude functions lead to biased processing? The role of message ambiguity. *Basic and Applied Social Psychology*, 29, 269–278.
- Ziegler, R., Diehl, M., & Ruther, A. (2002). Multiple source characteristics and persuasion: Source inconsistency as a determinant of message scrutiny. *Personality and Social Psychology Bulletin*, 28, 496–508.

Nederlandse samenvatting (Summary in Dutch)

Omgaan met Informatie over Complexe Onderwerpen: De Rol van Bronpercepties

In het dagelijkse leven hebben mensen een enorme hoeveelheid informatie tot hun beschikking (bijv. via het internet, televisie, kranten), welke ze onder meer gebruiken om de wereld om hen heen te begrijpen, om meningen te vormen en beslissingen te nemen. In de praktijk maken mensen een selectie van alle informatie die beschikbaar is, waarbij in het bijzonder aandacht wordt besteed aan informatie die van hoge kwaliteit is. Bij bekende onderwerpen is het voor mensen relatief gemakkelijk om te bepalen of de geboden informatie waardevol is, omdat ze af kunnen gaan op hun achtergrondkennis bij het beoordelen van de informatie. Maar hoe bepalen we nu of informatie over een onderwerp de moeite waard is als deze basiskennis ontbreekt, bijvoorbeeld in de situatie waarin we informatie gepresenteerd krijgen over een complex onderwerp waar we niet bekend mee zijn? Deze vraag staat centraal in het huidige proefschrift. Ik beargumenteer dat de manier waarop mensen om gaan met informatie over complexe onderwerpen afhangt van de percepties van de bronnen die hen de desbetreffende informatie verstrekken. Meer specifiek beargumenteer ik dat de waardering van geboden informatie en de informatie die mensen selecteren in het geval van complexe onderwerpen afhangt van a) de waargenomen geloofwaardigheid van informatiebronnen en b) of informatie verstrekt wordt door samenwerkende bronnen of door individuele bronnen.

In het inleidende hoofdstuk van dit proefschrift (Hoofdstuk 1) wordt de theoretische en empirische achtergrond geschetst waartegen het huidige onderzoek is uitgevoerd. Ik introduceer allereerst het complexe onderwerp waarop ik me in heel dit proefschrift richt, namelijk de grootschalige invoering van een nieuw koolstofdioxide afvang en opslag technologie (CCS) in Nederland. Hierna beargumenteer ik waarom ik verwacht dat bronpercepties een belangrijke rol spelen in hoe mensen omgaan met informatie over complexe onderwerpen zoals CCS. Ik leg uit dat het idee dat bronkenmerken mogelijk een rol kunnen spelen bij de effectiviteit van communicatie niet nieuw is; dit idee is uitgebreid onderzocht binnen de literatuur over persuasieve communicatie. Echter, en dit licht ik toe, verschilt het huidige proefschrift op fundamenteel van deze onderzoekstraditie. Zo richt het huidige proefschrift zich op *informatieve communicatie*—oftewel

communicatie die gericht is op het informeren van mensen om zo bekendheid met en begrip van een onderwerp te creëren—terwijl eerder onderzoek zich meer op *persuasieve communicatie* richtte, dat wil zeggen communicatie die er op gericht is om mensen te overreden. Ook onderscheidt dit proefschrift zich van eerder onderzoek omdat ik me richt op *informatiegerelateerde* variabelen zoals waargenomen informatiekwaliteit en informatieselectie, waar eerder onderzoek zich richtte op *overredinggerelateerde* variabelen zoals attitudeverandering.

Tenslotte geef ik in Hoofdstuk 1 een overzicht van de inhoud van de empirische hoofdstukken en vat ik de belangrijkste resultaten samen. Ik geef aan wat de inzichten die de studies in het huidige proefschrift toevoegen aan bestaande literatuur. Ook geef ik een aantal praktische implicaties aan van het huidige proefschrift, waaronder dat partijen die betrokken zijn bij communicatie over CCS zouden moeten overwegen om de informatie over CCS aan het publiek te laten verstrekken door een combinatie van verschillende CCS organisaties. Ik sluit het hoofdstuk af met suggesties voor vervolgonderzoek.

Hoofdstuk 2: Geloofwaardigheid en waargenomen informatiekwaliteit

In Hoofdstuk 2 van dit proefschrift richtte ik me op de vraag hoe de geloofwaardigheid van bij CCS betrokken organisaties—oftewel *CCS organisaties*—de waargenomen kwaliteit van informatie over CCS beïnvloedt. In Studie 2.1 liet ik middels een internetvragenlijst ($N = 264$) zien dat milieuorganisaties die betrokken zijn bij CCS door mensen als meer geloofwaardig worden gezien dan industriële CCS organisaties. Ook liet deze studie zien dat verschillen in waargenomen geloofwaardigheid van CCS organisaties gegrond zijn in de betrouwbaarheidsdimensie van geloofwaardigheid, maar niet in de expertisedimensie.

In Studie 2.2 ging ik door op de bevindingen van Studie 2.1. In deze experimentele studie manipuleerde ik bronbetrouwbaarheid, terwijl ik bron-expertise constant (hoog) hield. Ik voorspelde en vond dat identieke informatie over CCS beter gewaardeerd wordt als deze afkomstig is van een betrouwbare CCS organisatie dan van een niet-betrouwbare CCS organisatie. Bovendien laat deze studie zien dat als gevolg hiervan, mensen zich meer in staat achten om een accuraat beeld van CCS te vormen in het geval van een betrouwbare CCS organisatie dan in het geval van een niet-betrouwbare CCS organisatie. Uit de resultaten van de studies in Hoofdstuk 2 concludeerde ik dat bij communicatie over complexe onderwerpen zoals CCS het belangrijk is dat betrokken organisaties die als informatiebron fungeren als betrouwbaar worden gezien.

Hoofdstuk 3: Geloofwaardigheid en informatieselectie

Het achterliggende idee van Hoofdstuk 3 was dat zelfs als mensen heel erg gemotiveerd en in staat zijn om informatie te verwerken, het ze in de praktijk niet lukt om aandacht te besteden aan alle informatie die op hen afkomt. Mensen maken dus een selectie uit de totale hoeveelheid informatie die beschikbaar is. In Hoofdstuk 3 richtte ik me op de vraag of de geloofwaardigheid van een informatiebron de informatieselectie van mensen beïnvloedt, en op deze wijze een stempel drukt op impressie van CCS die mensen vormen.

In Studie 3.1 richtte ik me op de betrouwbaarheidsdimensie van brongeloofwaardigheid. Deze studie liet zien dat brongerelateerde informatieselectie met name optreedt als een bron niet als betrouwbaar wordt gezien. Ook liet Studie 3.1 zien dat—in lijn met het evaluation model of information search (Fischer, Jonas, Frey, & Schulz-Hardt, 2005) en zoals voorspeld—effecten van bronbetrouwbaarheid op informatieselectie gegrond zijn in verwachtingen over informatiekwaliteit. Bij een niet-betrouwbare bron verwachten mensen een sterkere asymmetrie in informatiekwaliteit (bijv. van een niet-betrouwbare *voorstander* van CCS kan verwacht worden dat deze de voordelen van CCS overdrijft en de nadelen afzwakt) dan bij een betrouwbare bron. Als gevolg hiervan is de informatieselectie van mensen meer brongerelateerd in het geval van een niet-betrouwbare dan in het geval van een betrouwbare bron.

Het doel van Studie 3.2 was om de resultaten van Studie 3.1 te repliceren en aan te vullen. Net als in Studie 3.1 vond ik in deze studie dat bij lage bronbetrouwbaarheid de informatieselectie van mensen meer brongerelateerd is dan bij hoge bronbetrouwbaarheid. In aanvulling op Studie 3.1 liet Studie 2 ook zien dat in het geval van een niet-betrouwbare bron mensen bij voorkeur informatie selecteren die *tegen* het verwachte standpunt van deze bron in gaat. Als mensen dus verwachten dat een niet-betrouwbare bron een *voorstander* van CCS technologie is, besteden ze vooral aandacht aan informatie over de *nadelen* van CCS. Anderzijds besteden mensen vooral aandacht aan de *voordelen* van CCS als ze verwachten dat de bron een *tegenstander* is. Tenslotte toonde Studie 3.2 aan dat de informatie die mensen selecteren doorwerkt in de gedachten die ze hebben over CCS, zoals voorspeld. Als mensen in hun informatieselectie voornamelijk aandacht besteden aan de voordelen van CCS, dan resulteert dit in relatief positieve gedachten over de technologie.

In Studie 3.3 ging ik tenslotte dieper in op de relatie tussen informatieselectie en de gedachten en impressies die mensen over CCS vormen. Ook onderzocht ik in deze studie of de bevindingen van Studies 3.1 en 3.2 ook op

gaan voor de expertise dimensie van brongeloofwaardigheid. Studie 3.3 suggereert echter dat bronexpertise—in tegenstelling tot bronbetrouwbaarheid—de informatieselectie van mensen niet beïnvloedt. Verder vond ik in aanvulling op Studie 3.2 dat de informatie die mensen selecteren over CCS voorspellend is voor zowel de gedachten die ze hebben over de technologie, alsmede voor de attitude die ze vormen. Informatieselectie lijkt dus een belangrijke fase in attitudeformatie te zijn.

Kortom, Hoofdstuk 3 biedt inzicht in hoe de geloofwaardigheid van een informatiebron de informatieselectie van mensen beïnvloedt, en op deze wijze bepalend is voor de meningvorming over CCS. Aansluitend bij Hoofdstuk 2, concludeerde ik dat het bij communicatie over complexe onderwerpen zoals CCS belangrijk is dat informatiebronnen als betrouwbaar worden waargenomen.

Hoofdstuk 4: Samenwerking en waargenomen informatiekwaliteit

In de drie studies die ik rapporteer in Hoofdstuk 4 onderzoek ik of de manier waarop mensen reageren op informatie over CCS afhangt van of samenwerkende of individuele CCS organisaties de informatie over CCS verstrekken. Studie 4.1 laat zien dat mensen meer gebalanceerde informatie verwachten (i.e., informatie die diverse aspecten van CCS belicht) wanneer een oliemaatschappij en een milieuorganisatie gezamenlijk informatie verstrekken dan wanneer dezelfde informatie verstrekt wordt door een van beide organisaties. Studie 4.1 laat ook zien dat een samenwerking tussen twee verschillende CCS organisaties geen negatieve gevolgen heeft voor de waargenomen geloofwaardigheid van de afzonderlijke organisaties.

De resultaten van Studie 4.2 repliceren die van Studie 4.1. Bovendien laat Studie 4.2 zien dat door samenwerkende CCS organisaties verstrekte informatie beter gewaardeerd wordt dan wanneer dezelfde informatie door een van beide organisaties wordt verstrekt, een effect dat gemedieerd wordt door de verwachting dat informatie van samenwerkende organisaties meer gebalanceerd is dan informatie van individuele organisaties.

In Studie 4.3 leg ik tenslotte een belangrijke randvoorwaarde voor het optreden van de samenwerkingseffecten zoals gevonden in Studies 4.1 en 4.2 bloot: Deze samenwerkingseffecten treden alleen op als samenwerkende CCS organisaties als *verschillend* beschouwd worden (bijv. qua gezichtspunten, perspectieven). Als twee vergelijkbare CCS organisaties (bijv. twee oliemaatschappijen) gezamenlijk informatie over CCS verstrekken verwachten mensen *niet* dat deze informatie meer gebalanceerd vergeleken met de situatie

waarin de organisaties afzonderlijk informatie verstrekken. Als resultaat hiervan wordt de gezamenlijk verstrekte informatie niet beter gewaardeerd dan de afzonderlijk verstrekte informatie. Kortom, Hoofdstuk 4 laat zien dat informatieve communicatie over complexe onderwerpen zoals CCS effectiever is wanneer verschillende organisaties gezamenlijk informatie verstrekken, dan wanneer organisaties dit afzonderlijk doen.

Acknowledgements (Dankwoord)

This dissertation could not have been written without the support of many individuals and I want to express my deepest appreciation to them.

First, I would like to thank my colleagues at Leiden University. Thank you all for your support and friendship during the past four years, and for your feedback on my work. I especially want to thank the members of the Leiden University CATO group, it was really a pleasant and valuable experience working with you all. My even more special thanks go to Bart, who has been my roommate and friend for more than four years now. I hope we will continue to work together as a “dynamic duo” in the future. Thank you for your companionship and of course for all the fun we had during conferences! Finally, I want to thank Joyce and Anne Marike for their constant support and friendship. Joyce, I remember with great pleasure the good talks we had during tea-breaks and conferences. Anne Marike, it is beyond the scope of this dissertation to describe the many ways in which you can light up an average day at the office.

Second, outside work-life (but surely facilitating it) I would like to thank my friends Diana and Peter; Evelien, Karen, and Ilse (a.k.a. “de chickens”); Camille; my little friends Lara, Lotje[†], and Pivo; and less recently Thijs, Kim, Jeroen, and Martijn. Your contribution to this dissertation is huge, even though you may not have the faintest notion of what it is about (or even of what a PhD-project entails). Meeting you all at various occasions energized me to complete this dissertation. Thank you!

Last, but not least I would like to thank my family. I want to thank my parents Anneke and Ferry; my siblings Bastiaan, Mieke, and Lisette; and my favorite in-laws Paul, Kirsten, and Johan for their ongoing love and support. In the past few months my life has been turned upside down, and you helped me to get back on my feet again. Thank you so much!

Emma

Leiden, September 2008

Curriculum Vitae

Emma ter Mors was born on March 20, 1981 in Rockanje, the Netherlands. After graduating from the Jacob van Liesveldt secondary school in Hellevoetsluis in 1999, she studied psychology at Leiden University. Emma's interest in becoming a researcher matured during her internship at a service company and writing her Master's thesis, the latter supervised by Prof. dr. Eric van Dijk. Emma received her Master's Degree in Social and Organizational Psychology (*cum laude*) in December 2003. In September of 2004 she started her PhD project under the supervision of Mienieke Weenig, Naomi Ellemers, and Dancker Daamen, resulting in the present dissertation. Emma currently works as a post-doctoral researcher at Leiden University.



Emma ter Mors werd geboren op 20 maart 1981, in Rockanje, Nederland. Zij behaalde in 1999 haar VWO diploma aan het Jacob van Liesveldt in Hellevoetsluis, waarna ze psychologie aan de Universiteit Leiden ging studeren. Haar interesse in het doen van onderzoek ontwikkelde zich tijdens haar stage bij een dienstverlenend bedrijf, en tijdens het schrijven van haar afstudeerscriptie bij Prof. dr. Eric van Dijk. In december 2003 studeerde Emma (cum laude) af in de Sociale- en Organisatiepsychologie. In september 2004 begon zij haar promotieproject onder begeleiding van Mienieke Weenig, Naomi Ellemers en Dancker Daamen, wat geresulteerd heeft in het huidige proefschrift. Emma is momenteel werkzaam als post-doctoraal onderzoeker bij de Universiteit Leiden.

The 'Kurt Lewin Institute Dissertation Series' started in 1997. Since 2007 the following dissertations have been published:

- 2007-1: Nils Jostmann: *When the going gets tough... How action versus state orientation moderates the impact of situational demands on cognition, affect, and behavior.*
- 2007-2: Belle Derks: *Social identity threat and performance motivation: The interplay between ingroup and outgroup domains.*
- 2007-3: Helma van den Berg: *Feeling and thinking in attitudes.*
- 2007-4: Karin C.A. Bongers: *You can't always get what you want! Consequences of success and failure to attain unconscious goals.*
- 2007-5: Lotte Scholten: *Motivation matters: Motivated information processing in group and individual decision-making.*
- 2007-6: Debra Trampe: *Social influence: Social comparison, construal, and persuasion processes.*
- 2007-7: Clemens Wenneker: *Processes underlying biased language use.*
- 2007-8: Yaël de Liver: *Ambivalence: on the how and when of attitudinal conflict.*
- 2007-9: Erik de Kwaadsteniet: *Uncertainty in social dilemmas.*
- 2007-10: Hugo Alberts: *Processes of self-control and ego depletion.*
- 2007-11: Loran Nordgren: *Thinking about feeling: The nature and significance of the hot/cold empathy gap.*
- 2007-12: Stefan Thomas Mol: *Crossing borders with personnel selection from expatriates to multicultural teams.*
- 2007-13: Hilbrand Oldenhuis: *I know what they think about us: Metaperceptions and intergroup relations.*
- 2007-14: Arnaud Wisman: *New directions in terror management theory.*
- 2007-15: Gert Homsma: *Making errors worthwhile: Determinants of constructive error handling.*
- 2007-16: Elianne van Steenbergen: *Work-family facilitation: A positive psychological perspective on role combination.*
- 2007-17: Unna Danner: *By force of habit: On the formation and maintenance of goal-directed habits.*
- 2007-18: Maureen Tumewu: *The social psychology of gender differences and procedural justice in close relationships.*
- 2007-19: Wokje Abrahamse: *Energy conservation through behavioral change: Examining the effectiveness of a tailor-made approach.*
- 2008-1: Marijke van Putten: *Dealing with missed opportunities. The causes and boundary conditions of inaction inertia.*
- 2008-2: Marjolein Maas: *Experiential social justice judgment processes.*
- 2008-3: Lonneke de Meijer: *Ethnicity effects in police officer selection: Applicant, assessor, and selection-method factors.*

- 2008-4: Frederike Zwenk: *Voice by representation.*
- 2008-5: Margreet Reitsma: *The impact of linguistically biased messages on involved receivers.*
- 2008-6: Marcus Maringer: *Feeling one thing, seeing another: Emotion comparison effects in person judgments.*
- 2008-7: Hanneke Heinsman: *The competency concept revealed: Its nature, relevance, and practice.*
- 2008-8: Joris Lammers: *Toward a more social social psychology of power.*
- 2008-9: Daniël Fockenberg: *Between good and evil: Affective priming in dynamic context.*
- 2008-10: Arne van den Bos: *Why we stereotype influences how we stereotype: self-enhancement and comprehension effects on social perception.*
- 2008-11: Lidewij Niezink: *Considering others in need, on altruism, empathy and perspective taking.*
- 2008-12: Aad Oosterhof: *Better together: Antecedents and consequences of perceived expertise dissimilarity and perceived expertise complementarity in teams.*
- 2008-13: Femke ten Velden: *Negotiation in dyads and groups: The effects of social and epistemic motives.*
- 2008-14: Maike Wehrens: *How did YOU do? Social comparison in secondary education.*
- 2008-15: Kyra Luijters: *Making diversity bloom: Coping effectively with cultural differences at work.*
- 2008-16: Ilona de Hooge: *Moral emotions in decision making: Towards a better understanding of shame and guilt.*
- 2008-17: Lindred L. Greer: *Team composition and conflict: The role of individual differences.*
- 2008-18: Sezgin Cihangir: *The dark side of subtle discrimination: How targets respond to different forms of discrimination.*
- 2008-19: Giel Dik: *On the contagiousness of others' goals: The role of perceiving effort.*
- 2008-20: Lotte van Dillen: *Dealing with negative feelings: The role of working memory in emotion regulation.*
- 2008-21: Marijn Poortvliet: *Information exchange examined: An interpersonal account of achievement goals.*
- 2008-22: Sjoerd Pennekamp: *Dynamics of disadvantage: Uncovering the role of group-based anger.*
- 2008-23: Chris Reinders Folmer: *Cooperation and communication: Plastic goals and social roles.*
- 2009-1: Marijke Leliveld: *Ethics in economic decision-making.*
- 2009-2: Monique Pollmann: *Accuracy and bias in person perception.*
- 2009-3: Krispijn Faddegon: *Regulatory focus in group contexts.*

- 2009-4: Lieven Brebels: *Mirror, mirror on the wall... Procedural fairness as an evaluative and regulatory looking-glass self.*
- 2009-5: Daphne Wiersema: *Taking it personally: Self-esteem and the protection of self-related attitudes.*
- 2009-6: Judith D.M. Grob: *Dial E for emotion: Context and consequences of emotion regulation.*
- 2009-7: Katherine Stroebe: *Is this about me? Responding to subtle discrimination - beyond an individual versus group perspective.*
- 2009-8: Menno Vos: *Identity patterns in diverse work groups: Improving social integration outcomes through relational identities.*
- 2009-9: Lennart Renkema: *Facing death together: Understanding the consequences of mortality threats.*
- 2009-10: Michael Vliek: *Group-based social comparison processes: An intragroup level of analysis.*
- 2009-11: Karlijn Massar: *Unconscious rivals: The automatic evaluation of rivals in jealousy-evoking situations.*
- 2009-12: Bart Terwel: *Origins and consequences of public trust: Towards an understanding of public acceptance of carbon dioxide capture and storage.*
- 2009-13: Emma ter Mors: *Dealing with information about complex issues: The role of source perceptions.*