Origins and consequences of public trust : towards an understanding of public acceptance of carbon dioxide capture and storage

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Preface

This thesis is the result of four years of research that has been carried out as part of CATO, the Dutch national research program on carbon dioxide (CO_2) capture and storage (CCS) technologies. A range of organizations participate in this program, including environmental NGOs, organizations from the oil and gas industry, electricity companies, government bodies, and scientific institutions. These organizations, which I will refer to as "CCS stakeholders", consider large scale implementation of CCS a key strategy to mitigate climate change. In addition to research on the technological issues surrounding CCS, it is recognized within the CATO program that research on public perceptions and acceptance of this technology is of crucial importance. That is, public acceptance is imperative in order to avoid the situation that millions of euros are invested in development of a technology that, in the end, cannot be employed because of public opposition to implementation of the technology in society. The social psychological research within the CATO program therefore examines factors that are relevant to establish and predict future public acceptance of CCS.

This thesis focuses on the role of public trust in CCS stakeholders with regard to public acceptance of CCS. It consists of four chapters.[1] Chapter 1 paints a picture of climate change and the importance of CCS in mitigating it, followed by a discussion of the origins of public trust as well as potential ways to instigate trust in the general public. Additionally, this chapter provides an overview of the main research results and an integrative discussion of the value and implications of the research. The remaining three chapters (Chapters 2, 3, and 4) contain more detailed reports of the empirical work carried out on the origins of public trust and the relationship between public trust in CCS stakeholders and public acceptance of CCS. More specifically, Chapter 2 focuses on how indicators of organizational integrity and organizational competence affect people's sense of trust in organizations as well as on how people's trust affects their tendencies to go along with or oppose organizational positions regarding CCS. Chapter 3 focuses on organizational motives and organizational communications in order to develop an

[1] Chapters 2, 3, and 4 are based on papers that have either been published or that have been submitted for publication. As a consequence thereof, these chapters can be read independently from each other and some overlap exists between the introductory sections of these chapters.

understanding of why some CCS stakeholders are trusted more than others and how these organizations can instigate trust through communication. Chapter 4 addresses the issue of how characteristics of the political decision-making process regarding implementation of CCS affect people's trust in CCS decision makers and their acceptance of the decisions made.

Chapter 1

Decision making about carbon dioxide capture and storage: The role of trust in stakeholders

Climate change is among the most important issues on the current political and scientific agenda. Scientists and other experts in the field almost unanimously recognize that climate change is caused by ever-increasing greenhouse gas concentrations in the atmosphere.[2] In its 2007 report, the intergovernmental panel on climate change (IPCC) concludes that "most of the observed increase in the globally averaged temperature since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations" and that there is sufficient evidence "to conclude with high confidence that anthropogenic warming over the past three decades has had a discernable influence on many physical and biological systems" (IPCC, 2007, p. 9). In this report, the IPCC also discusses the far-reaching (and primarily negative) consequences of climate change, including consequences for ecosystems (e.g., extinction of plant and animal species), industry and society (e.g., economic and social costs of more intense and/or more frequent extreme weather events), and human health (e.g., increased casualties due to heat waves, floods, etcetera). While there are some benefits associated with climate change as well (e.g., fewer deaths from cold exposure, reduced demand for heating), the net effect will be decidedly negative (IPCC, 2007). Therefore, political and scientific attention is increasingly being directed to develop climate change mitigation strategies.

Carbon dioxide (CO_2) is the primary greenhouse gas, which is increasingly being released into the atmosphere due to the extensive use of fossil fuels in energy generation. Industrialized countries, the main contributors to increased carbon dioxide concentrations in the atmosphere, need to lower their emissions of carbon

[2] Media coverage tends to contrast a single representative of those who are convinced that climate change is caused by increased carbon dioxide emissions (the overwhelming majority of experts) to a single representative of those who do not believe in this causal relationship (a small minority of experts). As a result, a considerable number of people are falsely under the impression that there still is extensive debate and uncertainty on this issue.

dioxide to be able to mitigate climate change effectively. For this reason, the European Commission has formulated the aim to reduce carbon dioxide emissions in industrialized countries by 20% in 2020 compared to 1990. The Dutch government has committed to an even more stringent target of reducing carbon dioxide emissions in the Netherlands by 30% in 2020 compared to 1990. Policymakers are in search of strategies to reach these goals.

One of the most obvious strategies to decrease carbon dioxide emissions is to save on energy consumption. The problem with this strategy is that it requires a behavioral change that is not easily realized (De Young, 1993), not in the least because people attach great value to their current level of prosperity and are reluctant to take a step back. Moreover, because newly industrialized countries (e.g., India, China) aim to achieve higher standards of living, global energy use and concomitant carbon dioxide emissions will increase rather than decrease. A second strategy is to increase the use of sustainable energy sources (e.g., solar and wind energy). This option in isolation, however, will not generate enough energy to meet the existing energy demand. Because in the short run measures taken to stimulate use of sustainable energy sources and saving on energy consumption will be insufficient to prevent climate change from happening, more immediate measures need to be taken in addition to these more long-term climate change mitigation strategies.

Carbon dioxide capture and storage

Implementation of recently developed carbon dioxide capture and storage (CCS) technology is currently considered a relevant climate change mitigation strategy. This technology involves the capture of carbon dioxide (either pre or post combustion) in power plants or other major industrial organizations, the transport of the carbon dioxide to underground sites (e.g., depleted gas fields), and the subsequent injection and storage of the carbon dioxide in these sites. Once implemented, CCS will make a significant contribution to the decrease of carbon dioxide emissions. For that reason, policymakers regard CCS as the third central climate change mitigation strategy. Environmental NGOs also recognize the carbon dioxide reducing potential of CCS but some are, for a variety of reasons, somewhat more ambiguous (e.g., some have the concern that CCS may go at the expense of money and effort invested in development of more long-term and sustainable solutions).

Public acceptance of CCS will be crucial for the realization of this technology as a strategy to mitigate climate change. The need for public acceptance of policy initiatives such as CCS is illustrated, among other examples, by the 1995 Brent Spar case. In this instance, industrial organization Shell preferred the deep-sea disposal over the onshore disposal of Brent Spar, its decommissioned oil storage and loading structure. Shell had assessed the environmental risks of deep-sea disposal and concluded that these were negligible. Nevertheless, environmental NGO Greenpeace portrayed the deep-sea disposal option as highly risky, which instigated considerable public opposition to Shell's position on the issue. Ultimately, this lack of public acceptance and the political commotion it elicited forced Shell to develop an alternative to the deep-sea disposal of Brent Spar (for a more detailed description of the Brent Spar case, see Löfstedt and Renn, 1997). In a similar vein, the lurking danger concerning CCS is that members of the general public can mobilize political resistance against CCS implementation, which would severely reduce the viability of this technology. Accordingly, it is highly relevant to further examine how people decide to accept or oppose CCS.

The importance of public trust

The central proposition in this thesis is that public acceptance of CCS will depend on people's trust in CCS stakeholders rather than on specific qualities of the technology. Underlying this idea is the fact that members of the general public are not able to accurately judge CCS on its merits. After all, it is beyond doubt that a high level of expert knowledge and scientific training as well as a huge cognitive effort is required to be able to adequately judge such a complex technology. At the same time, most people simply are unable to access or judge relevant information (or do not have the opportunity or motivation to do so). In situations such as these, people's positions on the subject often do not result from in-depth analysis of the issue at hand, but more likely result from rules of thumb, so-called heuristics (see Kahneman, Slovic, & Tversky, 1982). In line with the position taken by Earle and Cvetkovich (1995) that trust can be thought of as "a tool for the reduction of cognitive complexity" (p.33), I propose that people will rely on their sense of trust in CCS stakeholders when they decide whether to accept or oppose CCS implementation. Thus, instead of considering the effects of specific qualities of *CCS technology* on public acceptance of this technology, this thesis focuses on how the (perceived) qualities of *CCS stakeholders* affect people's trust in these stakeholders and their subsequent acceptance of CCS.

There already is some empirical support for the general importance of public trust with regard to public acceptance of modern technologies. For example, Siegrist's (2000) research on public acceptance of gene technology suggests that trust in organizations that are responsible for the management and use of this technology serves as a guide in lay attitude formation. He hypothesized and found that people associated greater benefits and smaller risks with gene technology to the extent that they trusted the organizations involved. As a consequence, people were more accepting of this technology when trust was high rather than low. These results are consistent with the idea that people's sense of trust in organizations can function as a "guiding principle" in their decisions to accept or oppose complex technologies. Nevertheless, due to the correlational nature of Siegrist's research, the assumed causal direction of the psychological process (i.e., trust affects perceived risks and benefits, which in turn affect public acceptance) is subject of debate (see e.g., Eiser, Miles, & Frewer, 2002; Poortinga & Pidgeon, 2005). In addition, there are no conclusive empirical data indicating how organizations can instigate trust in the general public.

Origins of public trust

The identification of key factors that may build or destroy trust in CCS stakeholders requires some understanding of the concept of trust. Nowadays, the (cross-disciplinary) definition of trust provided by Rousseau and colleagues (Rousseau, Sitkin, Burt, & Camerer, 1998) is widely used. These authors conceptualize trust as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (p. 395). At the core of this definition are the terms "vulnerability", which refers to a degree of dependency, and "expectations", which implies some degree of uncertainty about another's intentions and future actions. These core elements, Rousseau and colleagues (1998) note, are recognized in many alternative definitions of trust and apply regardless of the type of party that is (not) trusted – another person or an organization. At the same time, despite extensive theorizing on the subject, trust has remained a rather fuzzy concept in the literature. For example, notwithstanding apparent consistencies across definitions, a fair amount of disagreement remains about whether trust is a unidimensional or multidimensional concept and, if multidimensional, what constitute these different dimensions.

Narrowing the scope from the broadest level of analysis to the specific concept of public trust in organizations (the central topic of the current thesis) does not provide an instant solution for this conceptual problem. That is, several scholars have argued that public trust in organizations should be thought of as a multidimensional concept, but some argue that it consists of five distinct dimensions (e.g., Renn & Levine, 1991), while others argue for four (e.g., Kasperson, Golding, & Tuler, 1992), three (e.g., Peters, Covello, & McCallum, 1997), or two (e.g., Jungermann, Pfister, & Fischer, 1996; Metlay, 1999). Illustrative in this regard is the paper by Metlay (1999) with the telling title "Institutional trust and confidence: A journey into a conceptual quagmire".[3] Herein, Metlay reviews some literature on the basis of which he identifies seven possibly distinct dimensions of trust. These included openness, consistency, honesty, credibility, fairness, concern, and competence. Nevertheless, Metlay's test to verify whether these dimensions could indeed be distinguished empirically indicated a two-factor solution rather similar to results obtained by Jungermann and colleagues (1996). The first factor represented what Jungermann and colleagues call the "honesty" dimension of trust and what Metlay refers to as the "affective" component of trust (which included all items except those that assessed organizational competence). The second factor represented the "competence" component of trust (which only consisted of items assessing organizational expertise). Based on this research, Metlay's conclusion is that trust is not very complex, but refers to a rather straightforward two-dimensional concept. In this thesis, I will focus on these two primary dimensions of trust.

My aim is to identify how CCS stakeholders can instigate trust in the general public and to show how trust affects public acceptance of CCS rather than to solve issues surrounding proper definition or measurement of the trust concept. The literature reviewed above suggests that interventions aimed at building trust can only be successful to the extent that they elevate perceptions of organizational integrity (i.e., the affective or honesty dimension of trust) and/or organizational competence. After all, most scholars recognize that the origins of public trust

[3] Metlay (1999) did not distinguish between trust and confidence, but some authors argue that conceptual differences exist (Earle & Siegrist, 2006; Siegrist, Earle, & Gutscher, 2003). According to Siegrist and colleagues (2003), the difference is that trust involves risk and vulnerability (cf. Rousseau et al., 1998), while confidence does not. Moreover, these authors note that the objects of trust are person-like entities (including organizations), while one can have confidence in about anything (e.g., confidence that an event will occur as planned).

consist of indicators of organizational integrity and organizational competence (regardless of whether these indicators are considered separate dimensions or part of one of these two overarching categories). Given the objective to understand people's current trust in CCS stakeholders and to develop strategies to raise it, I will address people's perceptions of stakeholder integrity and competence as bases for public trust in CCS stakeholders, which in turn may be used to predict and explain public acceptance of CCS.

Instigating trust through communication

Beliefs regarding the intentions of an organization constitute an important determinant of public trust (cf. Rousseau et al., 1998). Therefore, assessing people's expectations about the reasons for organizations to be involved in CCS is relevant to understand current levels of public trust in these organizations. For instance, CCS stakeholders may be seen by the general public as being motivated by a prospect of economic gain, or as being motivated by a prospect of a cleaner natural environment. I will refer to reasons such as these that are seen to underlie organizational policy and actions as *organizational motives*. I argue that people's inferences about organizational motives are likely to affect the level of public trust in CCS stakeholders.

Two principal types of motives can be distinguished: Motives reflecting concern for public interests and motives reflecting concern for organizational interests. In the literature, various labels have been used to refer to these two types of motives, including altruistic versus egoistic motives (e.g., Batson, 1994, 1996), other-centered versus self-centered motives (e.g., Ellen, Mohr, & Webb, 2000), societal interest versus self-interest (e.g., Funk, 2000), and external goals versus internal goals (e.g., Nilsson, Von Borgstede, & Biel, 2004). In this thesis, these two classes of motives are referred to as *public-serving* motives and *organization-serving* motives because this terminology best matches the organizational level of this thesis. Public-serving motives reflect organizational concern for public welfare and benefits of people outside the organization (i.e., members of the general public), while organization-serving motives refer to a focus of the organization on economic gain and maximization of benefits for the organization itself (cf. Forehand & Grier, 2003). I propose that an important factor that affects people's trust in CCS stakeholders is the extent to which these organizations are perceived to be concerned with public interests.

If environmental NGOs are trusted more than industrial organizations due to the public-serving motives that they are believed to act upon, then industrial organizations may raise trust by expressing such public-serving motives. In that sense, industrial stakeholders may benefit from communicating the positive impact that CCS will have on preservation of the natural environment. After all, members of the general public are likely to positively value the content of the motive communicated, not in the least because preservation of the natural environment serves public interests rather than that it directly serves the industrial stakeholders' interests. Hence, at first glance, expressing public-serving motives may be a relevant strategy to instigate trust in the general public for CCS stakeholders that are seen to act upon organization-serving motives.

On the other hand, an industrial stakeholder that communicates concern for the natural environmental runs the risk of being perceived as failing to acknowledge its "true" organizational motives and hence of being deemed dishonest. Previous research on corporate societal marketing (CSM) and corporate social responsibility (CSR) activities indeed suggests that while people generally appreciate companies that are sensitive to the societal effects of their activities, simply claiming concern with public interests may harm company evaluations (Ellen, Webb, & Mohr, 2006; Forehand & Grier, 2003; Yoon, Gürhan-Canli, & Schwarz, 2006). That is, people may be doubtful as to whether the concern that is expressed by the organization reflects its true organizational motives or whether it is invoked to mask ulterior organization-serving motives. In case of the latter, the content of the motive communicated is valued positively, but at the same time it will be seen as incongruent with the organizational motive, causing the organization to be perceived dishonest and untrustworthy. By contrast, to the extent that perceived organizational honesty affects people's trust in organizations, an alternative strategy for industrial stakeholders to consider is to disclose their concern for the organization-serving qualities of CCS. While its content is not very much valued, an organization-serving motive that is communicated (e.g., economic gain) is likely to be seen as congruent with the organizational motive, indicating honesty.

In sum, expressing concern for public interests may instigate trust in CCS stakeholders to the extent that public-serving motives are valued over organization-serving motives. This strategy may backfire, however, when communications are seen as an attempt to mask ulterior organization-serving motives. In that case, communicating public-serving motives will reduce rather than enhance perceptions

of organizational integrity and public trust. Thus, there may be a tradeoff between value and congruency that is relevant with regard to the instigation public trust. This thesis aims to show that it is the degree of congruency between inferred organizational motives and organizational communications rather than the sole content of organizational communications that determines public trust in organizations. I will address these communication issues in Chapter 3.

Political decision making and the instigation of trust

In addition to public perceptions of individual stakeholders, people's perceptions of the decision-making process are also relevant for the creation of public trust and acceptance of policy decisions concerning CCS. I propose that people who learn that the decision-making process has been proper and fair should be more inclined to trust the decision maker and, as a result, should be more likely to accept the decisions made. For this reason, communicating how decisions regarding CCS are reached may constitute an important tool for political decision makers to instigate trust in the general public. But what are important characteristics of proper decision making and do these actually help to raise public trust?

It is a well-established phenomenon that people often base their evaluations of decisions on whether or not they have received an opportunity to express their opinions in decision-making processes rather than on the specific outcomes or nature of the decisions made. This characteristic of decision-making processes is often referred to as "voice" (Folger, 1977). Why people care about personal voice in decision making is often explained by referring to instrumental and relational concerns (Tyler & Lind, 1992). From an instrumental perspective, an individual cares about opportunities to voice his or her opinion in decision-making processes because expressing one's view on an issue may persuade the decision maker to provide this person with more favorable outcomes. At the relational level, an individual values voice in decision making because being denied or provided with voice conveys self-relevant information concerning the extent to which the decision-making authority values and respects the individual in question. As such, both these perspectives on voice in decision making consider personal voice important because of the self-oriented implications of particular treatment.

It is important to note that in most previous research on voice individuals whose personal outcomes were at stake were personally involved in the decision-making process. Less attention has been paid to whether voice can also be considered an important characteristic of decision making when people are not

directly personally involved in the decision-making process, which is more likely to be the case in public decision making. In cases such as these, the effects of allowing for voice cannot as easily be explained by the traditional self-oriented explanations mentioned above, given that in this case personal implications of voice procedures are not as straightforward as they are with personal voice (cf. Lind, Kray, & Thompson, 1998). Nevertheless, I argue that people also consider voice an important characteristic of decision-making procedures when they are not directly personally involved in the decision-making process. That is, the provision of voice to parties involved in public decision making may indicate fair decision making and signals that the decision maker can be trusted for its integrity and openness to inputs from different parties. Accordingly, in this thesis I aim to show that political decision makers are likely to instigate trust and facilitate public acceptance of the decisions they make when they provide interest groups with an opportunity to voice opinions in CCS decision making (i.e., group voice). I will address this decision-making issue in Chapter 4. The next section summarizes the results of the empirical research per chapter.

Overview of empirical findings

Effects of integrity-based and competence-based trust

In Chapter 2, a distinction is made between trust based on indicators of organizational integrity and trust based on indicators of competence in order to examine how these two types of trust affect public acceptance of CCS implementation. Siegrist's (2000) research served as the starting point for these studies. Siegrist proposed a model in which lay judgments concerning risks and benefits associated with modern technologies mediate the influence of trust in organizations on public acceptance of such technologies. Eiser and colleagues (Eiser et al, 2002) have referred to this model as the *causal chain account of trust*. The causal chain account has neither been subjected to experimental testing, nor has previous research examined its validity for competence-based trust and integrity-based trust separately. Chapter 2 reports on two experimental studies that were designed to test the causal chain account for both competence-based trust and integrity-based trust.

The argument for the relevancy of distinguishing between competence-based trust and integrity-based trust stems from findings in person-perception research. Research in this area suggests that people tend to weigh positive

information about competence more heavily than negative information about competence, but tend to weigh negative information about integrity more heavily than positive information about integrity (Skowronski & Carlston, 1989). Based on this asymmetry principle, I predicted positive rather than negative information about the competence of an organization to affect public acceptance of CCS. By contrast, I expected negative rather than positive information about integrity to affect public acceptance of CCS. I further tested whether perceptions of risks and benefits associated with CCS mediated these effects.

Study 2.1 focused on organizational competence and followed a 2 (competence-based trust: high vs. low) by 2 (organizational position regarding CCS: pro vs. con) between-subjects factorial design. The first hypothesis was that organizational position would affect acceptance of CCS when competence-based trust was high, but not when competence-based trust was low. The second hypothesis was that perceptions of the risks and benefits associated with CCS would mediate the effect of competence-based trust and organizational position on acceptance of CCS (i.e., the causal chain model). Results indicated that people were indeed more positive about CCS when the organization was portrayed as a proponent compared to an opponent of CCS, but only in the case of high competence-based trust (organizational position did not affect acceptance of CCS in the case of low competence-based trust). Moreover, results showed that people's perceptions of the benefits associated with CCS (but not their perceptions of risks) mediated this effect. Thus, this study largely confirmed the hypotheses and indicates support for the causal chain account.

Study 2.2 focused on organizational integrity and followed a 2 (integrity-based trust: high vs. low) by 2 (organizational position regarding CCS: pro vs. con) between-subjects factorial design. The first hypothesis was that organizational position would influence acceptance of CCS only in the case of low integrity-based trust. Consistent with the causal chain model, the second hypothesis was that perceptions of risks and benefits would mediate the effect of integrity-based trust and organizational position on people's willingness to accept CCS. This time, results revealed that, in the case of low integrity-based trust, people were more *negative* about CCS when the organization was portrayed as a proponent compared to an opponent of CCS, while in the case of high integrity-based trust no reliable effects of organizational position were observed. Results did not provide support for the causal chain account because neither perceived benefits nor perceived risks

mediated the effect of integrity-based trust and organizational position on people's acceptance of CCS.

Organizational motives and communications

Chapter 3 focuses on public trust in CCS stakeholders as a function of inferred organizational motives and organizational communications. It provides insight into how inferred organizational motives affect trust and further suggests that organizational communications should at least in part match inferred motives to instigate trust. Study 3.1 was an internet survey among members of the general public designed to examine whether public trust in CCS stakeholders depends on people's inferences of organizational motives. The survey consisted of questions to assess public trust in CCS stakeholders as well as people's inferences of organizational motives. Respondents first indicated their familiarity with each of the CCS stakeholders. Subsequently, they completed a version of the questionnaire that asked them about their perceptions of one of these organizations (either one of three industrial stakeholders or one of three environmental NGOs). The hypothesis was that public trust in NGOs would be higher than trust in industrial organizations due to differential inferred motives of these organizations (i.e., public-serving motives in the case of NGOs and organization-serving in the case of industrial organizations). As expected, results of this study revealed that people thought environmental NGOs to be involved in CCS out of public-serving motives (e.g., public health, concern for the natural environment), whereas they thought that industrial organizations were involved in CCS out of organization-serving motives (e.g., economic gain, image). In turn, these different motives accounted for the higher level of public trust in environmental NGOs than in industrial organizations. Important to note is that perceived level of organizational competence did not differ between the types of organizations and thus cannot account for differences in trust.

Study 3.2 tested the hypothesis that it is the *congruency* between organizational communications and inferred organizational motives rather than the objective *content* of organizational communications that leads to public trust in organizations. It followed a 2 (type of organization: environmental NGOs vs. industrial organizations) by 2 (communicated argument: environmental argument vs. economic argument) between-subjects factorial design. In line with hypotheses, results showed that congruence between inferred motive and communicated motive (e.g., an industrial organization communicating an economic argument) instigated

more trust in organizations than incongruence (e.g., an industrial organization communicating an environmental argument) and that this effect was mediated by perceived organizational honesty.

Study 3.3 was designed to replicate the abovementioned congruency effect and to examine how trust would be affected by communications consisting of both a congruent and an incongruent argument. The design of this study was a 1 (type of organization: industrial organization) by 3 (communicated arguments: two environmental arguments vs. two economic arguments vs. an environmental argument and an economic argument) between-subjects factorial. Results replicated those of Study 3.2 in that congruence instigated more trust than incongruence, but also showed that communicating an argument incongruent with the inferred organizational motive (i.e., an environmental argument) does not necessarily undermine trust as long as an argument that is congruent with the inferred motive (i.e., an economic argument) is communicated simultaneously. Again, perceived organizational honesty mediated this effect.

Group voice and acceptance of political decisions

In Chapter 4, I focus on how the involvement of CCS stakeholders in decision making about CCS influences people's trust in the decision maker and acceptance of decisions made. Study 4.1 followed a 2 (procedure: group voice vs. no voice) by 2 (advice regarding CCS implementation: pro vs. con) between-subjects factorial design to test the hypothesis that a group-voice procedure would lead to higher levels of trust in the decision maker and greater acceptance of the decision made than a no-voice procedure. In the group-voice conditions, both environmental NGOs and industrial organizations had an opportunity to express their opinions about CCS to the decision maker (i.e., a political board that had been assigned the task to formulate an advice concerning CCS), while these organizations did not have such an opportunity in the no-voice conditions. Results supported the predictions in that participants in the group-voice conditions indicated to have more trust in the decision maker and, as a consequence, accepted the outcome to a greater extent than those in the no-voice condition, regardless of whether it was for or against CCS implementation.

Study 4.2 aimed to extend results of Study 4.1 by investigating whether the effects of the decision-making procedure on inferred trustworthiness and acceptance of the decision made were due to procedural features (i.e., the presence or absence of group voice) or due to the involvement of specific parties in the

decision-making process. The study followed a 3 (procedure: voice for NGOs only vs. voice for industrial organizations only vs. voice for both NGOs and industrial organizations) by 2 (advice regarding CCS implementation: pro vs. con) between-subjects factorial design. As expected, results replicated those of Study 4.1 in that inferred trustworthiness mediated the effect of decision-making procedure on acceptance of the advice. In addition, results showed that equal-voice procedures instigated more trust than unequal-voice procedures, regardless of the type of organizations that had received an opportunity to voice their opinions.

Study 4.3 focused on the influence of participants' knowledge level concerning CCS on their preference to include members of the general public in CCS decision making (i.e., public voice). The study followed a 2 (information about CCS: yes vs. no) by 2 (procedure: public voice vs. public no voice) between-subjects factorial design. Providing half of the participants with information about CCS created a relatively knowledgeable group of participants and a relatively unknowledgeable group of participants. The hypothesis was that people who had some knowledge about CCS would respond differently to public-voice procedures than people who had no knowledge about CCS. That is, knowledgeable people were expected to report higher trust in the decision maker and greater acceptance of decisions in the case of public-voice procedures than in the case of public-no-voice procedures, while no such differences were expected among unknowledgeable people. Results indicated support for this prediction.

Discussion and conclusions

As mentioned before, capture and storage of carbon dioxide (CCS) is considered an important strategy to mitigate climate change, but public acceptance of this technology will be critical for successful implementation of CCS in society. In this thesis, I argue that people's trust in CCS stakeholders (e.g., environmental NGOs, industrial organizations, governmental organizations) is a significant determinant of whether people accept or oppose CCS implementation. I further argue that people's perceptions of organizational integrity and organizational competence are central to understand trust in CCS stakeholders. By addressing processes that build or destroy trust in CCS stakeholders, this thesis has both important theoretical and practical value.

This thesis yields an interesting contribution to existing literature on the causal chain account of trust by showing that effects of competence-based trust and

integrity-based trust on acceptance of CCS are different. Whereas previous tests of the causal chain model (e.g., Siegrist, 2000; Tanaka, 2004) did not explicitly distinguish between competence-based trust and integrity-based trust, the research reported in Chapter 2 shows that it is important to make this distinction. This research sheds new light on the validity of the causal chain account of trust because it suggests that the causal model holds true for competence-based trust, but not for integrity-based trust. Furthermore, research in this chapter indicates that perceived lack of organizational integrity is detrimental for people's trust in CCS stakeholders and their subsequent willingness to cooperate with these organizations (i.e., go along with the organizational position). An organization that is seen to lack integrity instigates distrust rather than trust in the general public, which as a result causes people to oppose rather than to go along with the position advocated by the organization in question. Accordingly, for those who consider CCS implementation a good climate change mitigation strategy it is imperative to avoid being perceived as lacking integrity to be able to build trust and facilitate acceptance of CCS.

Indicators of organizational integrity

One element of organizational integrity is the extent to which organizations are perceived to be concerned with public interests instead of organizational interests. In this regard, it seems that perceived lack of integrity is less of a problem for environmental NGOs than it is for industrial organizations. Indeed, Chapter 3 indicates that inferred organizational motives constitute the basis for differential levels of public trust in environmental NGOs and industrial organizations. Industrial stakeholders are trusted less because they are expected to be involved in CCS out of organization-serving motives such as economic opportunities rather than out of public-serving motives such as concern for preservation of the natural environment. Thus, industrial organizations must act in ways that signal higher levels of organizational integrity than the currently perceived levels of integrity.

An obvious strategy that industrial stakeholders may utilize to elevate public perceptions of organizational integrity is to communicate the environmental benefits of CCS, thereby expressing their concern for public interests. If it were effective, this strategy would seem to attack people's negative thoughts concerning the organization-serving motives underlying actions of industrial organizations most directly. Research discussed in Chapter 3 reveals, however, that there are important drawbacks to this type of strategy. That is, people seem to expect ulterior organization-serving motives, causing industrial stakeholders to be seen as

dishonest. In the case that people suspect such a hidden agenda, this type of strategy, aimed to raise existing perceptions of organizational integrity, is likely to backfire in that it seems to reduce rather than increase perceived organizational integrity and public trust. This chapter further shows that a better strategy to instigate trust is to acknowledge the organization-serving benefits of CCS technology in addition to emphasizing its public-serving benefits. If industrial stakeholders are open in communicating that CCS also has qualities that may serve organizational interests, then this type of strategy signals that the organization is acting honestly. Perceived openness and honesty indicate organizational integrity and instigate trust. It therefore seems that organizations benefit most from communicating those qualities of CCS that are congruent with inferred organizational motives.

In a similar vein, distrust in government bodies is often associated with public suspicion of "backroom politics", indicating that people perceive a lack of openness in political decision-making processes. One way to tackle this problem is to write out referenda, so that all members of the general public have personal voice and are personally in charge of policy decisions. Such a strategy will reduce feelings of backroom politics and hence may instigate trust, but the difficulty is that members of the general public have little personal knowledge about chemical constructs such as carbon dioxide, let alone about how to judge CCS on its merits. Moreover, compared to members of the general public, it may be that people living nearby actual storage sites are more negative about CCS to the extent that they worry about personal risks and safety that are probably less relevant considerations for most other people. Therefore, a national referendum does not seem to be the most appropriate tool with regard to the issue of CCS, although this is not to say that policy makers can disregard public concerns about CCS.

This thesis suggests an alternative and rather simple strategy that may avoid public suspicion of backroom politics: Communicating how decisions about CCS will be or even have been reached. While relevant considerations that lead to particular decision preferences are often communicated (CCS should be implemented because…), the process that is used to arrive at such decisions is often not communicated explicitly. This is important to recognize because providing a rationale for decisions can only be done after decisions have been made, while communicating how decisions concerning CCS will be (or even have been) reached can already start in the early stages of CCS decision making, thereby building trust and reducing the conviction that backroom politics play a role.

Imperative in this regard is to stress that multiple parties with different identities and interests are involved in CCS decision making and that each of these organizations is heard before policy decisions will be made. Communicating that parties that are trusted by members of the general public (e.g., environmental NGOs) are involved in decision making about CCS is not sufficient to instigate trust, because decision-making procedures are only considered proper and fair to the extent that all parties involved receive an opportunity to voice their opinions about CCS. Fairness in and openness about decision making indicates integrity, instigating trust in the general public and creating greater willingness to accept the decisions made.

Informing the public about CCS

It is important to recognize the process through which provision of information about CCS influences public trust and acceptance of CCS with an eye to identify how people can best be informed on this issue. At this point in time, members of the general public have little knowledge about CCS. Therefore, it is relevant to think about how people can best be informed about CCS. In such matters, a great deal of attention is often paid to the content of the information to be provided (e.g., difficulty, scope, completeness), but only little to factors that influence how people perceive information (e.g., the source) or how responses to information may be different for informed compared to uninformed people. Some people may find it sufficient to know how parties that they trust think about CCS or that the decision-making process is accurate. Others may be more inclined to look for information to judge CCS on its merits on their own. But also in the latter case, source characteristics such as organizational integrity and organizational competence will affect how people perceive the information; information is not only judged on its objective content, but also on the source providing the information. For example, the same information is evaluated differently depending on whether or not the source is considered competent, which in turn affects whether people think CCS should be implemented (see Chapter 2). Similarly, when information about the environmental benefits of CCS is provided by an industrial stakeholder, this information instigates less trust than when the same information is provided by an environmental NGO (see chapter 3). Based on the research in this thesis [and on related research by Ter Mors (2008), and de Best-Waldhober and colleagues (de Best-Waldhober, Daamen, & Faaij, in press)] I would conclude that providing factual information about CCS is one aspect of informing the public, but one

should also be aware that public acceptance of CCS does not solely depend on the quality of the information provided, but on the source providing the information and the process of decision making as well.

Experimental simulations in an applied context

Except for the first study in Chapter 3, all studies reported in this thesis used experimental designs to test specific relationships between the variables of interest. This methodology offers excellent opportunities to study psychological processes on the basis of which future public acceptance of CCS can be predicted. For example, it enables the examination and identification of processes through which stakeholder communications affect public trust without contaminating the target population for future communications. Before CCS stakeholders start to inform members of the general public about their positions on the issue, with the insights derived from this thesis it has become possible to tailor their organizational communications accordingly. This type of research is important to conduct particularly in the early stages of CCS decision making, as it helps to predict factors that facilitate public acceptance rather than explaining afterwards what went wrong. The use of experimental paradigms makes it possible to try different types of communication strategies and to compare their effectiveness ahead of time, without interfering with real-life decision-making procedures concerning CCS at potential demonstration sites.

A potential point of concern is whether the undergraduate student samples that have been examined in this thesis provide knowledge that can be generalized to broader populations. Indeed, there may be differences between students and members of the general public concerning their psychological properties that may cause members of the general public to respond differently to the stimuli examined in the current research than students did. In the current research, potentially relevant differences between samples of undergraduate students and broader samples of the general public may represent differences in average intelligence and general knowledge of scientific constructs relevant to CCS, such as carbon dioxide. In addition, compared to the general public, undergraduate students are likely to be more politically active implying that they might care more about how political decisions are made.

While it is important to take such differences into account, they do not seem to represent significant barriers with regard to generalizing the current findings. Chapter 4 on group voice in CCS decision making shows that

undergraduate students who did not receive explicit information about CCS were clearly not able to answer questions about CCS correctly, indicating that knowledge about CCS among undergraduate students is as little as it is among the rest of the general public (see de Best-Waldhober et al., in press). Moreover, the importance of group voice in decision making seems independent of the research population in question because fairness and trustworthiness represent quite basic human values that are important to all and sundry. After all, people's willingness to cooperate with authorities has previously been found to depend on the fairness of decision-making procedures, regardless of whether the research sample consisted of employees receiving unfair treatment from their supervisors (e.g., Bies & Shapiro, 1988), citizens thinking of their encounters with the police (Tyler & Folger, 1980) or undergraduate students not receiving voice in the amount of lottery tickets that they think they should receive (e.g., Van den Bos, Wilke, & Lind, 1998). All in all, at this stage of CCS decision making, the advantages of the experimental approach used in this research outweigh its disadvantages.

Further research is needed to more specifically monitor and examine how the processes addressed in this thesis affect opinions of people living nearby an actual carbon dioxide storage site, as additional concerns are likely to play a role for this specific group. That is, participants in the current studies as well as members of the general public are more likely to accept CCS to the extent that they associate societal benefits with this technology. On-site residents, however, may be much more concerned with the personal risks that they associate with CCS than with the global or national benefits associated with CCS. At the same time, they may be especially sensitive to potential regional benefits (e.g., increased employment opportunities) that may be of less value to other people.

Another difference between the general public and on-site residents is that it seems likely that people living nearby storage sites are inclined to put even more weight on their trust in CCS stakeholders than members of the general public who are less directly affected by these measures. For the current research, I primarily focused on environmental NGOs and organizations in the oil and gas industry as it was considered important to select nationwide operating organizations that are known by many people and that are expected to act upon different motives. Because CCS will have significant environmental and economic consequences, focusing on environmental NGOs and industrial organizations was ideal in this regard. For on-site residents, however, other CCS stakeholders will also be relevant. For instance, in addition to industrial stakeholders and environmental

NGOs, trust in local (instead of national) government may be crucial to create acceptance of CCS. For these reasons, some of the current findings (for instance the finding that people's judgments of the benefits associated with CCS correlated more strongly with acceptance of CCS than judgments of associated risks; see Chapter 2) should predict what happens with public acceptance in general, but priorities may be different for on-site residents.

Concluding remarks

One of the main messages of this thesis is that public acceptance of CCS will not solely depend on the content of the information that is provided regarding the specific *qualities of CCS*, but also will depend to a considerable extent on the *type of information* (e.g., risks or benefits, environmental consequences or economic consequences), the *source providing information* (e.g., industrial stakeholders, environmental NGOs, government bodies), and the nature of the *decision-making process* (e.g., whether or not interest groups receive an opportunity to voice opinions). That is, people's judgments of the magnitude of benefits associated with CCS depend upon whether they learn about these benefits from a source that they consider trustworthy or from a source that they do not consider trustworthy. Moreover, environmental NGOs seem to instigate more trust than industrial organizations because they are perceived to serve public rather than organizational interests. Industrial organizations may overcome being perceived as untrustworthy, however, by communicating a two-fold message that acknowledges their organizational interests while at the same time showing concern for public interests. Finally, members of the general public do not necessarily call for personal voice in CCS decision making as long as relevant parties such as environmental NGOs and industrial organizations are heard in the decision-making process. Such group-voice procedures instigate trust in decision-making authorities, which in turn leads to greater acceptance of decisions made, regardless of whether these decisions are in favor of or against CCS implementation. This finding indicates the importance of informing members of the general public about the way decisions about CCS are reached.

In the mean time, global warming is becoming more and more apparent (e.g., the melting of the North Pole) and steps need to be taken to take away its cause: Ever-increasing carbon dioxide emissions into the atmosphere. An important strategy to reduce emissions of this greenhouse gas is to implement CCS on a large scale, but this strategy can only work if people do not oppose CCS implementation.

One thing may be clear from this thesis: Public acceptance of this complex and novel technology is highly dependent on the level of public trust in CCS stakeholders. I have outlined a number of factors that influence public trust in CCS stakeholders. Now it is their turn to use these insights for the public good.

Chapter 2

Competence-based and integrity-based trust[4]

Preventing climate change is among the greatest environmental challenges facing the world today. In addition to saving on energy consumption and increasing the use of sustainable energy sources, implementation of recently developed carbon dioxide capture and storage technology (CCS) is currently considered an important option to achieve climate change mitigation. This technology involves the capture, transport, and long-term storage of carbon dioxide in underground sites, such as depleted gas fields.

Interested organizations (e.g., industrial organizations, environmental NGOs) associate several environmental and economic risks and benefits with CCS (Huijts, Midden, & Meijnders, 2007). These organizations will take into account their assessments of these risks and benefits to determine their organizational positions on CCS implementation. Members of the general public, on the other hand, lack individual expertise about CCS (de Best-Waldhober, Daamen, & Faaij, in press; see also Chapter 4 of this thesis) and about scientific constructs such as carbon dioxide in general (Meijnders, Midden, & Wilke, 2001) to be able to accurately assess the risks and benefits of this new technology. As a consequence, and in line with previous research on other complex technological advancements (Siegrist & Cvetkovich, 2000), people will base their attitudes toward CCS on their assessments of the organizations having an involvement in CCS rather than on their personal knowledge about the issue.

Lay attitudes toward CCS are relevant because a lack of public acceptance can severely reduce the viability of CCS. The 1995 case of Brent Spar illustrates this point. In this instance, industrial organization Shell preferred the deep-sea disposal over the onshore disposal of Brent Spar, its decommissioned oil storage and loading structure. Shell had assessed the environmental risks of deep-sea disposal and concluded that these were negligible. Environmental organization Greenpeace, however, portrayed the deep-sea disposal option as highly risky,

[4] This chapter is based on Terwel, Harinck, Ellemers, and Daamen (2009a) and has therefore been written in first-person plural.

which instigated considerable public opposition to Shell's position on the issue. Ultimately, this lack of public acceptance forced Shell to develop an alternative to the deep-sea disposal of the Brent Spar (for a more detailed description of the Brent Spar case, see Löfstedt and Renn, 1997). In a similar vein, public acceptance will be crucial for the realization of CCS as a strategy to mitigate climate change. As such, it is highly relevant to examine how people decide to accept or oppose CCS. This chapter addresses this issue.

Trust in organizations

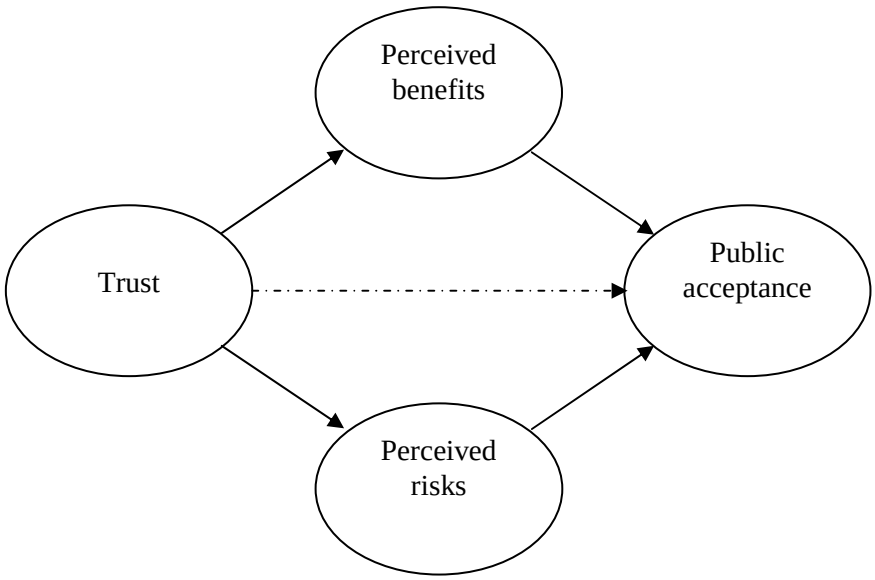
Siegrist's work on public acceptance of gene technology (Siegrist, 2000) served as a starting point for our inquiry. In this work, Siegrist showed that people's trust in organizations that are responsible for the management and use of gene technology affected their perceptions of the risks and benefits associated with this technology. He further showed that individual perceptions of risks and benefits affected acceptance of the technology. In other words, Siegrist's research suggests a causal model in which lay judgments concerning risks and benefits associated with modern technologies are expected to mediate the influence of trust in organizations on public acceptance of such technologies. Eiser and colleagues (Eiser, Miles, & Frewer, 2002) have referred to this model as the *causal chain account of trust* (see Figure 2.1).

To be able to understand how trust in CCS stakeholders affects lay perceptions of risks, perceptions of benefits, and acceptance of CCS, we first need to identify the factors that may cause people to trust these organizations in the first place. It stands to reason that this issue has received considerable scholarly attention in the field of risk research. Risk researchers have shown that people's trust in organizations that are responsible for the management of hazardous activities and complex technologies may depend upon several factors, including whether organizations are perceived to be accurate and objective, concerned with the public interest, consistent and predictable, honest and fair, and to have expertise relevant to the issue at hand (for an overview, see Poortinga & Pidgeon, 2003).

It has been suggested that these factors can roughly be classified into two overarching categories (Jungermann, Pfister, & Fischer, 1996; Metlay, 1999), the first comprising of indicators of organizational competence and the second comprising of indicators of organizational integrity. This perspective on trust recognizes that people may trust an organization because they think it has a lot of expertise about and experience with the issue under consideration, and/or because

they consider it to be open and honest in its communications and concerned with the public interest. Accordingly, trust based on organizational experience and expertise can be referred to as competence-based trust; trust based on organizational honesty, openness and concern can be referred to as integrity-based trust.

Figure 2.1 The causal chain account of trust



Distinguishing between competence-based trust and integrity-based trust may yield important insights into how trust in organizations affects public perceptions of new technologies such as CCS. Previous research has already suggested the relevance of distinguishing between these types of trust (Kim, Dirks, Cooper, & Ferrin, 2006; Kim, Ferrin, Cooper, & Dirks, 2004). For example, Kim and colleagues (Kim et al., 2004) showed that the success of strategies to repair trust depends on the type of trust that was initially violated. Trust was more successfully repaired by means of apologizing than by denial when the trust violation concerned a matter of competence. When the trust violation concerned a matter of integrity, however, trust was more successfully repaired by denying instead of apologizing. These findings suggest that considering different bases for

trust can have important implications for subsequent evaluations of persons and organizations. Thus far, however, it has remained unclear whether distinguishing between competence-based trust and integrity-based trust has implications for people's judgments of the risks and benefits associated with new technologies and their acceptance of these technologies. The goal of the present research was to address this issue.

Drawing a distinction between competence-based trust and integrity-based trust is important, we argue, to be able to understand the process through which trust affects lay attitudes toward new technologies. This argument has its roots in findings from person-perception and impression-formation research, which suggest that people tend to weigh positive information about competence more heavily than negative information about competence (Reeder, Hesson-McInnis, Krohse, & Scialabba, 2001), but tend to weigh negative information about integrity more heavily than positive information about integrity (Trafimow, Bromgard, Finlay, & Ketelaar, 2005). In other words, positivity biases are more likely to occur in the ability domain, while negativity biases are more likely to occur in the integrity domain (Reeder & Brewer, 1979; Skowronski & Carlston, 1989).

In line with the abovementioned information asymmetry, we predict *positive* rather than negative information about the competence of an organization to affect lay attitudes toward CCS. More specifically, we expect people to pay attention to the organizational position concerning CCS when the organization is seen as competent, which implies that knowledge of the organizational position is more relevant when competence-based trust is high rather than low. In the case of high competence-based trust, we anticipate people to become more positive about CCS when the organization is a proponent than when it would have been an opponent. In the case of low competence-based trust, however, the organizational position is less likely to influence lay attitudes toward CCS.

By contrast, we predict *negative* rather than positive information about the integrity of an organization to influence lay attitudes toward CCS. Thus, compared to the way people are expected to use competence-based trust in the attitude formation process, we predict the reverse relation to hold true for integrity-based trust. When an organization is seen to lack integrity, people are likely to be skeptical about the position advocated by the organization and will tend to run counter to rather than go along with this position. In other words, when integrity-based trust is low, people will become less positive when the organization is a proponent (compared to an opponent) of CCS implementation. Consistent with the

information asymmetry principle, the effects of organizational position on people's attitudes toward CCS should be less pronounced in the case of high as opposed to low integrity-based trust.

Overview of the current studies

The goal of the present research was to test the causal chain account of trust for both competence-based and integrity-based trust in the context of CCS. The vast majority of previous research that focused on public acceptance of new technologies and hazardous activities in relation to the variables in the causal chain model (i.e., trust in organizations, perceived risks, and perceived benefits) has relied on correlational data (e.g., Maeda & Miyahara, 2003; Poortinga & Pidgeon, 2005; Siegrist, 1999, 2000; Tanaka, 2004; Tokushige, Akimoto, & Tomoda, 2007). To complement this previous work, we used an experimental approach suited to test our predictions with regard to the differential implications of competence-based trust and integrity-based trust for acceptance of CCS.

In two experiments, we manipulated the provision of trust-related information about an organization involved in CCS decision making as well as the position of this organization regarding CCS, but the nature of the trust-related information was different in the two studies. In Study 2.1, which focused on competence-based trust, information about the competence of the organization was manipulated by informing participants about its (lack of) experience with and expertise about issues concerning carbon dioxide. In Study 2.2, which addressed integrity-based trust, information about (lack of) integrity of the organization was manipulated by informing participants about organizational honesty, openness, and concern for public interests. In both studies, we tested whether the causal chain model accurately explained people's acceptance of CCS.

Study 2.1

Study 2.1 aimed to examine the prediction that organizational position concerning CCS implementation (pro versus con) more strongly affects people's acceptance of CCS in the case of high competence-based trust than in the case of low competence-based trust (Hypothesis 1). In accordance with the causal chain account, we further predicted people's perceptions of the magnitude of risks and benefits associated with CCS to mediate the effect of competence-based trust and organizational position on acceptance of CCS (Hypothesis 2).

Method

Participants and design

The sample consisted of 73 undergraduate students from Leiden University (38 male and 35 female). These participants were randomly assigned to one of the four experimental conditions of the 2 (competence-based trust: high vs. low) by 2 (organizational position regarding CCS implementation: pro vs. con) between-subjects factorial design.

Procedure

Participants read a brief description about recently developed CCS technology and about "Organization A", an organization involved in the decision-making process concerning the implementation of this technology. We gave the organization this name in order to exclude the possibility that the actual identity of the organization or previous knowledge about this organization would interfere with the manipulations. We informed participants that the organization really existed, but that is was denoted in this way for the purpose of ensuring the anonymity of the organization. Next, we provided participants with some information about organization A allegedly to give them some general background information. This information contained the experimental manipulations.

Participants in the high competence-based trust condition read: "Organization A is an organization that has *quite a lot of* knowledge about and experience with issues concerning carbon dioxide (CO_2). In fact, the information that Organization A provides on this topic is often accurate". Participants in the low competence-based trust condition read: "Organization A is an organization that has *limited* knowledge about and experience with issues concerning carbon dioxide (CO_2). In fact, the information that organization A provides on this topic is not always accurate" (italics added to highlight the differences between the two stimulus materials).

Next, we manipulated the position of Organization A regarding CCS. Dependent upon experimental condition, participant read that Organization A is a proponent or that Organization A is an opponent of CCS implementation. After these manipulations, participants read that, when Organization A was asked to evaluate CCS, it referred to two risks and two benefits associated with CCS. Participants read about these risks and benefits, which included an environmental benefit, an economic benefit, an environmental risk, and an economic risk. For example, the environmental benefit provided was that CCS would help to mitigate

climate change, while the environmental risk was that CCS would go at the expense of more sustainable solutions. We varied the order of presentation of the risks and benefits to rule out order effects. Finally, participants completed a questionnaire including the main dependent variables and manipulation checks.

Dependent variables

Manipulation checks. The manipulation check for trust in Organization A consisted of three items (α = .95), "To what extent do you think Organization A is trustworthy?", "To what extent are you willing to rely on the judgments of Organization A?", and "To what extent do you trust Organization A?" (1 = *not at all*, 7 = *very much*). The manipulation check for the position of Organization A with regard to CCS consisted of the question "Is Organization A an opponent or a proponent of CCS technology?" (1 = *proponent*, 2 = *opponent*). We asked these manipulation checks at the end of the questionnaire.

Acceptance of CCS. Acceptance of CCS was assessed with four items (α = .91). Examples of items were "I will support the actual implementation of this recently developed CCS technology." and "I am willing to pay more for a product if CCS is applied during the production process." (1 = *completely agree*, 7 = *completely disagree*).

Perceived magnitude of risks and benefits. Perceived magnitude of the risks associated with CCS was assessed for the environmental risk and the economic risk separately. For each risk, participants answered the questions: "Can you give an indication about how you judge the size of this risk associated with CCS?" (1 = *no risk at all*, 7 = *great risk*), and "Can you give an indication about how you judge the importance of this risk associated with CCS?" (1 = *not important at all*, 7 = *very important*). We used an identical procedure to assess perceived benefits associated with CCS. Scores on these questions were averaged into a single index for perceived risk (α = .67) and an index for perceived benefit (α = .83).

Results

Manipulation checks

We conducted analysis of variance (ANOVA) with organizational competence (high vs. low) and organizational position (pro vs. con) as independent variables and trust in Organization A as dependent variable in order to check whether the information about organizational competence indeed affected trust in the

organization. This analysis revealed a strong main effect for organizational competence, $F(1, 69) = 94.31$, $p < .001$, $\eta^2 = .58$. Participants who read that the organization had knowledge and experience concerning issues related to carbon dioxide reported more trust in the organization ($M = 5.24$, $SD = 0.82$) than participants who read that the organization had only limited knowledge and experience ($M = 3.52$, $SD = 0.71$). This analysis also revealed a marginally significant main effect for organizational position, $F(1, 69) = 3.88$, $p < .06$, $\eta^2 = .05$, indicating that participants who read that the organization was a proponent of CCS implementation had slightly less trust in the organization ($M = 4.20$, $SD = 1.20$) than participants who read that the organization was an opponent of CCS ($M = 4.58$, $SD = 1.10$). There was no interaction effect on this manipulation check, $F(1, 69) = 0.25$, *ns*. As such, we successfully manipulated the level of competence-based trust in Organization A independent of organizational position.

With regard to the organizational-position manipulation, all participants in the pro-CCS condition correctly answered that Organization A was a proponent of CCS implementation. All participants in the con-CCS condition correctly answered that the organization was an opponent of CCS implementation.

Acceptance of CCS

We conducted an ANOVA with competence-based trust (high vs. low) and organizational position (pro vs. con) as independent variables and acceptance of CCS as dependent variable. This analysis revealed main effects of competence-based trust, $F(1, 69) = 4.98$, $p < .03$, $\eta^2 = .07$, and organizational position, $F(1, 69) = 7.87$, $p < .01$, $\eta^2 = .10$. These effects were qualified by a significant Competence-based Trust by Organizational Position interaction, $F(1, 69) = 21.18$, $p < .001$, $\eta^2 = .24$. As predicted, simple main effect analyses revealed that, in the case of high competence-based trust, participants accepted CCS to a greater extent when the organization was a proponent ($M = 4.71$, $SD = 0.79$) than when it was an opponent of CCS ($M = 3.28$, $SD = 0.76$), $F(1, 70) = 26.75$, $p < .001$. In the case of low competence-based trust, however, participants' acceptance of CCS did not depend on whether the organization was a proponent ($M = 4.25$, $SD = 1.00$) or an opponent ($M = 4.60$, $SD = 0.73$), $F(1, 70) = 1.51$, $p > .22$. These results support the prediction formulated in Hypothesis 1 and indicate that people use high rather than low competence-based trust as a guide in attitude formation about CCS.

Perceived magnitude of risks and benefits

We also performed ANOVA to test whether competence-based trust and organizational position affected people's perceptions of the magnitude of risks and benefits referred to by the organization. With regard to perceived magnitude of risks, the analysis revealed a main effect of organizational position, $F(1, 69) = 7.98$, $p < .01$, $\eta^2 = .10$, qualified by a significant Competence-based Trust by Organizational Position interaction, $F(1, 69) = 11.09$, $p < .001$, $\eta^2 = .14$. Simple main effect analyses revealed that, in the case of high competence-based trust, participants who had read that the organization was a proponent of CCS judged the risks associated with CCS to be smaller ($M = 4.22$, $SD = 0.83$) than participants who had read that the organization was an opponent of CCS ($M = 5.12$, $SD = 0.53$), $F(1, 70) = 19.44$, $p < .001$. As predicted, in the case of low organizational competence, participants' judgments of risks did not depend on whether the organization was a proponent ($M = 4.59$, $SD = 0.49$) or an opponent ($M = 4.52$, $SD = 0.60$), $F(1, 70) = 0.13$, $p > .70$. Thus, in line with predictions, perceptions of risks were only influenced by organizational position when competence-based trust was high.

The reversed pattern of results appeared with regard to perceived magnitude of benefits associated with CCS. The analysis revealed a significant main effect of organizational position, $F(1, 69) = 14.11$, $p < .001$, $\eta^2 = .17$, and a main effect of competence-based trust, $F(1, 69) = 4.12$, $p < .05$, $\eta^2 = .06$, which were qualified by a significant Competence-based Trust by Organizational Position interaction, $F(1, 69) = 31.42$, $p < .001$, $\eta^2 = .31$. Simple main effect analyses revealed that, in the case of high competence-based trust, participants judged the benefits of CCS to be larger when the organization was a proponent ($M = 5.56$, $SD = 0.45$) compared to an opponent of CCS ($M = 4.15$, $SD = 0.58$), $F(1, 70) = 43.02$, $p < .001$. In the case of low competence-based trust, participants' judgments of the benefits did not depend on whether the organization was a proponent ($M = 5.02$, $SD = 0.86$) or an opponent ($M = 5.30$, $SD = 0.62$), $F(1, 70) = 1.61$, $p > .21$. Thus, in line with predictions, perceptions of benefits were only influenced by organizational position when competence-based trust was high. These findings support the causal relationship between trust and perceptions of risks and benefits as predicted on the basis of the causal chain model.

Mediation analysis

We used the stepwise procedure recommended by Baron and Kenny (1986) to test whether perceptions of the magnitude of risks and benefits mediated the Competence-based Trust by Organizational Position interaction on people's acceptance of CCS (i.e., the causal chain account as formulated in Hypothesis 2). First, mediation requires a significant effect of the predictor variable (i.e., the interaction effect) on the outcome variable (i.e., acceptance of CCS) as well as a significant effect of the predictor variable on the proposed mediator(s). Both these requirements were met, as indicated by the results reported above. Mediation further requires a significant association between the proposed mediator(s) and the outcome variable after controlling for the independent variables and their interaction. Whereas perceived magnitude of benefits associated with CCS was significantly related to acceptance of CCS ($\beta = .64$, $p < .001$), perceived magnitude of the risks was not ($\beta = -.09$, $p > .43$). Note that the zero-order correlation between risk judgments and acceptance of CCS was not significant as well ($r = -.18$, *ns*). As such, only perceived benefits can potentially mediate the Competence-based Trust by Organizational Position interaction on people's acceptance of CCS. Finally, mediation requires a significant reduction of the direct effect on acceptance of CCS after including perceived magnitude of benefits as a mediator in the equation. Consistent with the mediation model, the interaction effect dropped to nonsignificance after introduction of perceived benefits in the equation ($\beta = .23$, $p > .17$). A Sobel test (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Sobel, 1982) confirmed that the reduction of the direct effect was significant ($z = 4.03$, $p < .001$), indicating mediation. Hence, mediation analysis supported the causal chain account of trust with perceived magnitude of benefits as a mediator (the second element in the chain), but not with perceived magnitude of risks as a mediator.[5]

[5] Preacher and colleagues (Preacher, Rucker, & Hayes, 2007) recently launched an alternative method (using bootstrapping) to test for mediation when two independent variables interact to influence the proposed mediator, as is the case in our study. We also used this method of analysis and found that when competence-based trust was high, the conditional indirect effect of organizational position on acceptance of CCS through perceived benefits was significant, because the 95% confidence interval (0.57; 1.46) did not include zero (0). When competence-based trust was low, however, the conditional indirect effect was not significant, because the 95% confidence interval (-0.66; 0.12) did include zero (0). These results provide additional support for the mediation model.

Discussion

Study 2.1 has focused on the impact of competence-based trust in (and the position of) an organization involved in CCS decision making on people's risk and benefit perceptions and their acceptance of CCS. Results confirmed our reasoning about the higher diagnostic value of high competence-based trust relative to low competence-based trust: People's perceptions of the magnitude of risks and benefits as well as their acceptance of CCS were influenced by the organizational position in the case of high competence-based trust, but not in the case of low competence-based trust. Results also largely supported the causal chain account of trust, although perceptions of risks did not affect people's acceptance of CCS.

Study 2.2

The aim of Study 2.2 was to examine our predictions regarding the effects of *integrity-based trust*. We hypothesized people to *run counter to* rather than to go along with the organizational position in the case of low integrity-based trust, while effects of the organizational position would be less pronounced in the case of high integrity-based trust (Hypothesis 3). In accordance with the causal chain model, we further hypothesized that perceptions of risks and benefits would mediate the relationship between integrity-based trust and the organizational position on the one hand, and people's acceptance of CCS on the other (Hypothesis 4). We used an experimental design that paralleled that of Study 2.1 to test these hypotheses, with the only difference that participants in Study 2.2 were informed about organizational integrity (in terms of honesty and concern) instead of organizational competence as in Study 2.1.

Method

Participants and design

The sample consisted of 75 undergraduate students from Leiden University (36 male and 39 female). These participants were randomly allocated to one of the four experimental conditions of the 2 (integrity-based trust: high vs. low) by 2 (organizational position regarding CCS implementation: pro vs. con) between-subjects factorial design.

Procedure

The procedure of Study 2.2 largely followed that of Study 2.1. Participants first read a brief description about recently developed CCS technology, after which Organization A was introduced. This time, however, the information about Organization A contained the manipulation of organizational integrity. Participants in the high integrity-based trust condition read:

> "Organization A is known as rather *honest*. In the past, the organization turned out *to offer* objective information at all times, *in spite of* the organizational interests. Furthermore, the organization has recently been proclaimed to be one of the *most* reliable organizations by the Board of Journalism. According to the Board's report, one of the reasons for this proclamation was the organization's virtually *constant* willingness to be open about their activities and to answer critical questions. Furthermore, information offered by the organization has hardly ever been misleading."

Participants in the low integrity-based trust condition read:

> "Organization A is known as rather *dishonest*. In the past, the organization turned out *not to offer* objective information at all times, *dependent on* the organizational interests. Furthermore, the organization has recently been proclaimed to be one of the *least* reliable organizations by the Board of Journalism. According to the Board's report, one of the reasons for this proclamation was the organization's *seldom* willingness to be open about their activities and to answer critical questions. Furthermore, information offered by the organization has *often* been misleading." (italics added to highlight the differences between the two texts).

Next, we manipulated the position of Organization A regarding CCS, after which participants read the risks and benefits associated with CCS that the organization referred to. Finally, participants completed the questionnaire that included the dependent variables (acceptance of CCS, α = .89; perceived

magnitude of risks, α = .73; perceived magnitude of benefits, α = .83) and the manipulation checks (trust, α = .97; organizational position).

Results

Manipulation checks

We performed an ANOVA with organizational integrity and organizational position as independent variables and trust in the organization as dependent variable. This analysis revealed a strong main effect for organizational integrity only, $F(1, 71) = 65.83$, $p < .001$, $\eta^2 = .48$. As intended, participants in the high-integrity condition ($M = 5.11$, $SD = 0.87$) trusted the organization more than participants in the low-integrity condition ($M = 3.05$, $SD = 1.24$). Thus, we successfully manipulated integrity-based trust in Organization A.

With regard to the organizational-position manipulation, all participants in the pro-CCS condition correctly answered that Organization A was a proponent of CCS implementation, whereas all participants in the con-CCS condition correctly answered that Organization A was an opponent of CCS implementation.

Acceptance of CCS

We conducted an ANOVA with integrity-based trust (high vs. low) and organizational position (pro vs. con) as independent variables and acceptance of CCS as dependent variable. This analysis revealed the predicted Integrity-based Trust by Organizational Position interaction, $F(1, 71) = 9.56$, $p < .01$, $\eta^2 = .12$. No main effects were observed. Additional simple main effect analyses revealed that, in the case of low integrity-based trust, participants accepted CCS more when the organization was an opponent ($M = 4.72$, $SD = 1.10$) compared to a proponent of CCS ($M = 3.59$, $SD = 1.31$), $F(1, 72) = 8.07$, $p < .01$. As expected, there was no reliable effect of organizational position on participants' acceptance of CCS in the case of high integrity-based trust, $F(1, 72) = 2.77$, $p = .10$, although participants tended to accept CCS to a greater extent when the organization was a proponent ($M = 4.78$, $SD = 1.23$) compared to an opponent of CCS implementation ($M = 4.11$, $SD = 1.39$). These results support Hypothesis 3, which stated that people would run counter to the organizational position in the case of low integrity-based trust, while effects of the organizational position would be less pronounced in the case of high integrity-based trust.

Perceived magnitude of risks and benefits

We performed ANOVA to test whether integrity-based trust and organizational position affected perceptions of the risks and benefits communicated by the organization. With regard to perceived magnitude of risks, the analysis revealed a main effect of organizational position only, $F(1, 69) = 4.27$, $p < .05$. Surprisingly, participants who read that the organization was a proponent of CCS judged the risks associated with CCS to be somewhat higher ($M = 4.87$, $SD = 0.92$) than participants who read that the organization was an opponent of CCS ($M = 4.36$, $SD = 1.21$), regardless of integrity-based trust. This result is inconsistent with the causal chain account, on the basis of which we predicted to find a significant Integrity-based Trust by Organization Position interaction.

With regard to perceived magnitude of benefits associated with CCS, no reliable main effects were observed, but the Integrity-based Trust by Organizational Position interaction was marginally significant, $F(1, 71) = 2.77$, $p = .10$. $\eta^2 = .04$. The pattern of means was in line with predictions though, in that participants tended to run counter to the position of an untrustworthy organization.

Mediation analysis

We used the stepwise procedure recommended by Baron and Kenny (1986) to test whether perceptions of the magnitude of benefits mediated the Integrity-based Trust by Organizational Position interaction on acceptance of CCS (Hypothesis 4). As reported above, we found the Integrity-based Trust by Organizational Position interaction effect on perceived magnitude of the benefits (i.e., the proposed mediator), although it only reached marginal statistical significance ($\beta = .34$, $p = .10$). We entered the predictor variables and their interaction together with perceived benefits in a regression analysis with acceptance of CCS as the outcome variable. Although we obtained the required effect of the proposed mediator on acceptance of CCS ($\beta = .65$, $p < .001$), the direct effect of Integrity-based Trust by Organization Position on acceptance remained significant ($\beta = .38$, $p < .02$) and was not significantly reduced (Sobel $z = 1.63$, $p = .10$).[6] We disregarded perceived risks as a potential mediating variable in this study because we did not find the required interaction effect. As such, we conclude that the effect of integrity-based

[6] The bootstrapping procedure recommended by Preacher and colleagues (2007) confirmed these results: When integrity-based trust was low, the conditional indirect effect of organizational position on acceptance of CCS through perceived benefits was not significant ($p = .13$) because the 95% confidence interval (-1.00; 0.09) included zero (0), while the same holds true for high integrity-based trust ($p = .46$).

trust in interaction with organizational position on acceptance of CCS was neither mediated by the perceived magnitude of risks nor by the perceived magnitude of benefits.

Discussion

Study 2.2 has focused on the impact of integrity-based trust in (and the position of) an organization involved in decision making about CCS on people's risk and benefit perceptions and their acceptance of CCS. In line with predictions, people ran counter to the organizational position in the case of integrity-based trust, while the effect of organizational position on acceptance of CCS was only marginal in the case of high integrity-based trust. We did not find evidence for the causal chain model's prediction that perceived risks and benefits mediated the relationship between integrity-based trust and organizational position on the one hand, and people's acceptance of CCS on the other.

General discussion

Carbon dioxide capture and storage technology (CCS) is currently considered an important climate change mitigation option, but public acceptance will be crucial for successful implementation of this technology. On the basis of the causal model proposed by Siegrist (2000) we hypothesized people's trust in organizations involved in CCS decision making to affect their perceptions of the magnitude of risks and benefits associated with CCS, which in turn were expected to affect their acceptance of CCS. We extended the causal chain model by distinguishing between competence-based trust in organizations (i.e., trust based on organizational experience and expertise) and integrity-based trust in organizations (i.e., trust based on organizational honesty and concern). Moreover, we tested the causal chain account of trust for both these types of trust by means of experimental designs, thereby complementing previous work that used correlational data to test this model.

Our research demonstrates the importance of public trust in CCS stakeholders by showing that competence-based trust and integrity-based trust in organizations affect people's acceptance of CCS differently. Study 2.1 showed that people's judgments about the magnitude of risks and benefits as well as their acceptance of CCS were affected by the organizational position only in the case of high competence-based trust. That is, when competence-based trust was high,

people followed the organizational position in that they accepted CCS to a greater extent when the organization was a proponent rather than an opponent of CCS. Study 2.2 further supported our reasoning by showing that reversed effects occur in the case of integrity-based trust: Organizational position reliably affected people's responses only when integrity-based trust was low. In this case, that is, people ran counter to the organizational position and became more negative about CCS when the organization was a proponent compared to an opponent of CCS. These studies support our reasoning based on the information asymmetry principle in ability and integrity judgments.

The current experimental research offers support for the causal chain account of trust, but this was only the case for competence-based trust. As predicted, perceived benefits (but not perceived risks) mediated the interaction effect of competence-based trust and organizational position on people's acceptance of CCS. In the case of integrity-based trust, however, people seemed to arrive at their attitudes toward CCS through a different process. Consistent with Ajzen (2001) who noted that attitudes can either be cognition-based or emotion-based, we argue that competence-based trust may have activated a cognitive response mode that is relevant for judging the magnitude of prespecified risks and benefits (which is a cognitive task). Accordingly, people's acceptance of CCS can be considered the result of cognitive judgments (i.e., perceived risks and benefits) in the case of competence-based trust.

Integrity-based trust, on the other hand, may have activated an emotional response mode that is less likely to affect cognitive judgments about risks and benefits. Maybe people's level of acceptance of CCS can be considered a more immediate response on the basis of emotions activated by integrity-based trust, using judgments of benefits as a way to retrospectively justify their own position about CCS. People may have reasoned like: "I do not trust this organization. Because it is a proponent of CCS, I oppose its position and will reject CCS because…the benefits of CCS are not that great after all.".[7] Future research may

[7] Baron and Kenny's (1986) procedure revealed support for this reasoning. The marginal Integrity-based Trust by Organizational Position interaction on perceived benefits (i.e., the outcome variable) dropped to nonsignificance ($\beta = -.09$, $p = .60$) when people's acceptance of CCS (i.e., the newly proposed mediator) was included in the analysis. The reduction of the direct effect was significant, Sobel $z = 2.87$, $p < .01$, indicating mediation. Moreover, tests of the conditional indirect effects (Preacher et al., 2007) showed that acceptance of CCS mediated the effect of organizational position on perceived magnitude of the benefits in the case of low integrity-based trust (95% confidence interval: -1.27; -0.22; $p < .01$), but

more explicitly test the validity of this post hoc explanation, for example by also assessing the emotions that people experience in addition to their more cognitive judgments about risk and benefits.

The differences observed in the current studies between competence-based and integrity-based trust yield an interesting addition to the debate about the most accurate order of variables related to public acceptance of new technologies and hazardous activities (i.e., trust in organizations, perceived risks, and perceived benefits). On the one hand, our research supports the (cognitive) causal chain account for competence-based trust, but it also suggests that alternative (more emotion-based) processes may play a role in the case of integrity-based trust. The processes that we propose (i.e., justification of one's willingness to accept CCS by means of judgments about benefits) resembles the *associationist view* of trust (Eiser et al., 2002; Poortinga & Pidgeon, 2005) in that in this view perceptions of the magnitude of benefits are also considered to be the result rather than the cause of a general attitude toward CCS. Accordingly, distinguishing between competence-based and integrity-based trust may help to resolve the debate between the two competing theoretical accounts of trust. Both accounts may be valid, but for different forms of trust.

The current results suggest that the perceived benefits dominate people's level of acceptance of CCS implementation, regardless of the potential downsides. Trust affected people's risk perceptions in Study 2.1, but in both studies perceived risks were less relevant to people's acceptance of CCS. Nevertheless, by no means do we claim that people's perceptions of risks have no predictive value for their acceptance of CCS. After all, we cannot rule out the possibility that the results regarding the marginal role of risk perceptions in our studies can be attributed to, for example, specific characteristic of the risks presented (e.g., lack of catastrophic potential) or the fact that we had participants judge prespecified risk (rather than their own intuitive thoughts about potential risks). Note, however, that results of the current research are in line with previous research suggesting that public acceptance of new technologies (including CCS) more strongly relates to perceived benefits than to perceived risks (Siegrist, 2000; Tokushige et al., 2007). Identifying the conditions under which perceptions of benefits outweigh the importance of

not in the case of high integrity-based trust (95% confidence interval: -0.12; 0.99; $p = .14$). These results suggest that people directly display negative reactions to organizational positions when integrity-based trust is low, and may use judgments of the magnitude of benefits associated with CCS to legitimize their negative reactions.

perceived risks or vice versa is an issue to address in future research. For example, an interesting possibility for future on-site research is to examine whether risk perceptions may be a more potent determinant of acceptance of CCS among residents living nearby a storage site, while benefits associated with CCS may be a key factor for acceptance of those residing at a larger distance.

All in all, our research highlights the role of public trust in CCS stakeholders in the process of creating public acceptance of CCS. Accordingly, CCS is promising as a strategy to achieve climate change mitigation, but whether or not it will actually be employed does not solely depend on specific characteristics of this technology but on characteristics of the organizations involved as well.

Chapter 3

Organizational motives and communications[8]

Preventing climate change is among the greatest environmental challenges facing the world today. Experts agree that climate change has important (negative) consequences for environments and societies (see, e.g., IPCC, 2007; Sundblad, Biel, & Gärling, 2007), and that the increase of carbon dioxide in the atmosphere is related to climate change. An important potential strategy to mitigate climate change is through implementation of recently developed carbon dioxide capture and storage technology (CCS). This technology involves 1) the capture of carbon dioxide in power plants at release, 2) the transport of the carbon dioxide captured to underground sites, such as depleted gas fields, and 3) the long-term storage of the carbon dioxide in these sites. Although CCS is potentially promising, successful implementation of CCS will depend on public acceptance of this technology. In turn, public acceptance of such new technologies depends to a considerable extent on people's trust in the organizations involved in the development, decision making, and use of these technologies (Siegrist, 2000; see also Chapter 2 of this thesis). In the case of CCS, these organizations include environmental NGOs, industrial organizations, scientific institutions, and government bodies.

Imagine you are part of the management of an industrial profit organization involved in the development of CCS technology. You are positive that CCS will help to mitigate climate change and, therefore, you think it should be implemented on a large scale. Because you are aware that your organization may be seen by the general public as focusing on economic gain rather than anything else, you instruct your PR-staff to prepare information to communicate the environmental benefits of this technology. The idea underlying this strategy is that the communication of public-serving arguments may create a more favorable impression of the organization. The present research examines the likelihood that such communications have positive effects on company evaluations, which is important to achieve public support for the introduction of CCS technology.

[8] This chapter is based on Terwel, Harinck, Ellemers, and Daamen (in press) and has therefore been written in first-person plural.

We designed this research to examine trust in organizations involved in CCS as a function of inferred organizational motives and organizational communications. We aim to show that inferred public-serving motives instigate more public trust in organizations than inferred organization-serving motives. Moreover, we aim to show that it is the degree of *congruency* between organizational communications and inferred motives rather than the objective *content* of organizational communications that leads to public trust in organizations. Finally, we aim to demonstrate that this relationship is mediated by perceived honesty. To achieve these goals, we first assessed how inferred organizational motives relate to public trust in organizations in a field study, and then conducted two experimental studies to examine the effects of different communications on trust in organizations in more detail.

Trust

Public trust is important because the effective functioning of organizations in society depends on the extent to which people trust these organizations (Fukuyama, 1995). Research in the field of risk perception and risk communication indeed suggests that under conditions in which personal knowledge about an issue is lacking, public opinions depend on the extent to which members of the general public trust the organizations involved in the issue (Siegrist & Cvetkovich, 2000). For example, previous research showed that people are more willing to accept the use of gene technology to the extent that they trust those responsible for regulating and using this technology (Siegrist, 1999, 2000).

Trust is often defined as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (following Rousseau, Sitkin, Burt, & Camerer, 1998, p. 395). Thus, whether people have positive expectations about the intentions of an organization influences their trust in this organization. This process is illustrated by research on the relationship between trust and organizational reputations (e.g., De Ruyter, Wetzels, & Kleijnen, 2001; Jarvenpaa, Tractinsky, & Vitale, 2000). For example, research by Jarvenpaa and colleagues (2000) indicates that assessments of the trustworthiness of internet book- and travel stores depended upon the reputations of these stores. The more a person perceived a positive organizational reputation, the more this organization was trusted. In fact, people were more willing to buy products from these organizations as a result of higher levels of trust. These findings show the benefits of achieving public trust. Similarly, in the light of

environmental issues such as decision making about CCS implementation, public trust in CCS stakeholders is important to consider and depends upon how people perceive these organizations.

Organizational motives

We propose that people decide whether or not to trust an organization on the basis of the motives that they think underlie the policy and actions of the organization. Organizational motives can be thought of as the reasons why an organization engages in certain actions and initiatives. For example, CCS stakeholders may be seen by the general public as being motivated by a prospect of economic benefits, or by a prospect of contributing to a cleaner environment. Because members of the general public will tend to value certain motives over others, they can be expected to trust certain organizations more than others, based on the inferences they make about the motives underlying the policy and actions of these organizations.

When examining organizational motives, two principal types of motives can be distinguished. *Public-serving* motives reflect organizational concern for public welfare and benefits of people outside the organization (i.e., members of the general public). *Organization-serving* motives refer to a focus of the organization on economic gain and maximization of benefits for the organization itself (Forehand & Grier, 2003). In the literature, various other labels have been used to refer to these two types of motives, such as altruistic versus egoistic motives (e.g., Batson, 1994, 1996), other-centered versus self-centered motives (e.g., Ellen, Mohr, & Webb, 2000), societal interest versus self-interest (e.g., Funk, 2000), and external goals versus internal goals (e.g., Nilsson, Von Borgstede, & Biel, 2004). We adopt the terminology proposed by Forehand and Grier (2003) to distinguish between public-serving and organization-serving motives because this terminology best matches the organizational level of the research.[9]

We anticipated public trust to be higher for organizations that are perceived to be guided by public-serving motives than for organizations that are perceived to act upon organization-serving motives. Although it seems likely that public-serving motives (such as concern for environmental issues, public health and safety) and organization-serving motives (such as increasing organizational profits, improving organizational image) have a major impact on public perceptions of the organization, it is yet unknown how these different motives

[9] Forehand and Grier (2003) originally used the term firm-serving motives instead of organization-serving motives.

influence public trust in organizations. In Study 3.1, we examined the effect of inferred public-serving and organizational-serving motives on public trust in CCS stakeholders. In Study 3.2 and Study 3.3, we further examined how organizational communications about public-serving and organization-serving motives affect levels of public trust in organizations.

Study 3.1

Study 3.1 examined whether people tend to ascribe particular motives to particular CCS stakeholders. Moreover, we assessed how these motive inferences affect public trust in these organizations, which included three environmental NGOs and three industrial stakeholders. As argued above, we hypothesized that trust in these CCS stakeholders would depend on people's beliefs about whether these organizations act upon public-serving motives or act upon organization-serving motives. Specifically, we predicted that members of the general public would generally expect environmental NGOs to be concerned with CCS out of public-serving motives (Hypothesis 1a). At the same time, we predicted that members of the general public would generally expect industrial organizations to be involved in CCS out of organization-serving motives (Hypothesis 1b). Second, we hypothesized that the overall level of trust in NGOs would be higher than the level of trust in industry (Hypothesis 2). Third, we hypothesized that higher levels of trust in NGOs would be due to the nature of the inferred organizational motive (Hypothesis 3). Because differences in public trust may also be caused by differential levels of perceived competence of the organizations in question (see Chapter 2 of this thesis), we measured perceived organizational competence to rule out the possibility that different levels of trust were caused by differences in perceived organizational competence (instead of inferred organizational motives, as predicted).

Method

Participants

A sample of 264 Dutch citizens completed a questionnaire on the World Wide Web in which they answered questions concerning either an environmental NGO or an industrial organization. Advertisements in national newspapers and on the internet served to make people aware of the questionnaire. A lottery for 25 euros gift vouchers served as an incentive to participate. The sample consisted of individuals

between 18 and 88 years of age (M = 38.05, SD = 14.35) of which 25.8 percent was male. We asked respondents about several demographics (e.g., highest level of education completed), and checked whether these demographics affected participants' responses to our central measures. Because these variables did not significantly influence the pattern of the results they will not be discussed any further.

Procedure and dependent variables

For the study, we selected three environmental NGOs and three industrial stakeholders. After a brief introduction about CCS technology, respondents answered to the question whether they had ever heard of each of the organizations selected for the study. These were real organizations that are currently active in the Netherlands. Then, respondents answered questions concerning their opinions about either an environmental NGO or an industrial organization, depending on the experimental condition they were randomly assigned to. The specific organization that was selected for further inquiry was randomly selected from the organizations that participants had acknowledged to be familiar with. As a result of this procedure, 143 respondents answered questions about one of three environmental NGOs and 121 respondents responded to questions about one of three industrial organizations. The first question assessed public trust in the organization and subsequent questions assessed inferred organizational motives and organizational competence.

Public trust. In this study, we assessed public trust with a single question "To what extent do you trust *the organization*?"[10] (1 = *not at all*, 7 = *very much*). This question parallels the item used in previous work to assess trust in risk regulators (Miles & Frewer, 2003).

Inferred organizational motives. Six questions asked respondents about their perceptions of the reasons for the organization in question to be involved in CCS. For each of these six possible motives, respondents had to indicate the extent to which they agreed that these were likely to lead the organization to participate in the CCS project (1 = *completely disagree*, 7 = *completely agree*). Principal components analysis (PCA) with varimax rotation on these six items revealed a solution with two orthogonal factors explaining 78.6% of the variance. The first factor comprised organization-serving motives (e.g., economic gain, organizational

[10] Instead of "*the organization*" in the items reported in the current report, respondents actually read the name of one of the six organizations.

image) and explained 41.1% of the variance in the individual items. The second factor captured public-serving motives (e.g., concern for the environment, concern for public well-being) and explained 37.4% of the variance in the individual items (see Appendix at the end of this chapter for individual items and factor loadings). We calculated standardized factor scores and subsequently created a single "inferred organizational motive" score by subtracting the organization-serving motive score from the public-serving motive score. Scores above zero (0) on this variable point to the dominance of public-serving motives over organization-serving motives; scores beneath zero (0) indicate the dominance of organization-serving motives over public-serving motives.[11]

Organizational competence. Three items assessed perceived organizational competence ($\alpha = .81$), "*The organization* has a lot of knowledge about greenhouse gasses and technologies.", "*The organization* has the ability to apply relevant knowledge.", and "*The organization* has a lot of experience with regard to greenhouse gasses and technologies." (1 = *completely disagree*, 7 = *completely agree*).

Results

Public trust

Analysis of variance (ANOVA) with type of organization as between-subjects factor and public trust as dependent variable revealed a significant effect of type of organization, $F(1, 262) = 19.27$, $p < .001$, $\eta^2 = .07$. Respondents reported to trust environmental NGOs ($M = 5.02$, $SD = 1.41$) more than industrial organizations ($M = 4.27$, $SD = 1.34$). This result was consistent with the hypothesis that members of the general public have more trust in environmental NGOs than in industrial organizations.

[11] We also assessed inferred organizational motives by means of an open-format question which read "Why do you think *the organization* participates in the carbon dioxide capture and storage project?". Responses to this question were largely comparable to the concerns that we formulated in the six closed-format inferred organizational motives questions. The dominant response with regard to NGOs was that these organizations were believed to participate in the project out of concern for the public interest (e.g., "In order to protect the environment, that is, the health of the earth as well as mankind."). The dominant response with regard to industrial organizations pointed at organizational interest as the reason to participate in the project (e.g., "It will probably benefit from it."). Thus, we were successful in tapping inferred organizational motives by means of closed-format questions, which we preferred for use in the analyses.

Inferred organizational motives

We conducted ANOVA with type of organization as independent variable and the inferred organizational motive score (the difference between the two factor scores) as dependent variable to test the hypothesis regarding inferred organizational motives. This analysis revealed a significant effect of type of organization, $F(1, 262) = 190.69$, $p < .001$, $\eta^2 = .43$. The effect indicated that members of the general public ascribed different motives to the two types of organizations. In fact, the inferred organizational motive score for both types of organizations significantly differed from zero, indicating that respondents thought that environmental NGOs acted primarily upon public-serving motives ($M = 0.85$, $SD = 1.03$), $t(142) = 9.82$, $p < .001$, and that industrial organizations acted primarily upon organization-serving motives ($M = -1.01$, $SD = 1.12$), $t(120) = -9.97$, $p < .001$. These results supported the hypotheses concerning inferred organizational motives.

Organizational competence

In order to exclude the possibility that differential organizational competence (instead of inferred motives) accounted for the effect on public trust, we performed an ANOVA to check whether perceived organizational competence differed for environmental NGOs and industrial organizations. This analysis revealed no significant differences, $F(1, 264) = .08$, *ns*. Environmental NGOs ($M = 4.67$, $SD = 0.89$) and industrial organizations ($M = 4.65$, $SD = 0.94$) were considered equally competent with regard to the issue under consideration. Hence, differential inferred organizational competence cannot account for the effect on public trust that we found in this study.

Mediation analysis

Hypothesis 3, which stated that the difference in public trust between environmental NGOs and industrial organizations would be due to the nature of inferred motives, received support from mediation analysis. We followed the stepwise procedure specified by Baron and Kenny (1986) to test for mediation. Support for the hypothesis that respondents trusted NGOs more than the industrial organizations implied that the predictor affected the dependent variable ($\beta = .26$, $p < .001$). Support for the hypothesis that respondents expected NGOs and industrial organizations to act upon different motives indicated that the predictor impacted upon the proposed mediator ($\beta = .65$, $p < .001$). Another requirement for mediation is a significant association between the proposed mediator (i.e., inferred

organizational motive) and the dependent variable (i.e., public trust). We established that the inferred organizational motive score correlated significantly with the public trust measure after controlling for the type of organization ($\beta = .56$, $p < .001$), as required. The final requirement is a significant reduction of the direct effect of type of organization on trust after inclusion of the proposed mediator in the analysis. The effect of type of organization on public trust was no longer significant after inclusion of the inferred organizational motive score as a mediator in the analysis ($\beta = -.10$, $p = .15$). A Sobel test (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Sobel, 1982) confirmed that the reduction of the direct effect was significant, $z = 6.86$, $p < .001$, indicating mediation. Furthermore, we followed the bootstrapping procedure recommended by Preacher and Hayes (2004) for estimating indirect effects. This procedure also supported the mediation model because zero (0) was not included in the 95% confidence interval (0.18; 0.35). See Figure 3.1 for a schematic representation of the mediation model.[12] Thus, Study 3.1 showed that the difference in public trust between environmental NGOs and industrial organizations can be accounted for by inferred organizational motives.

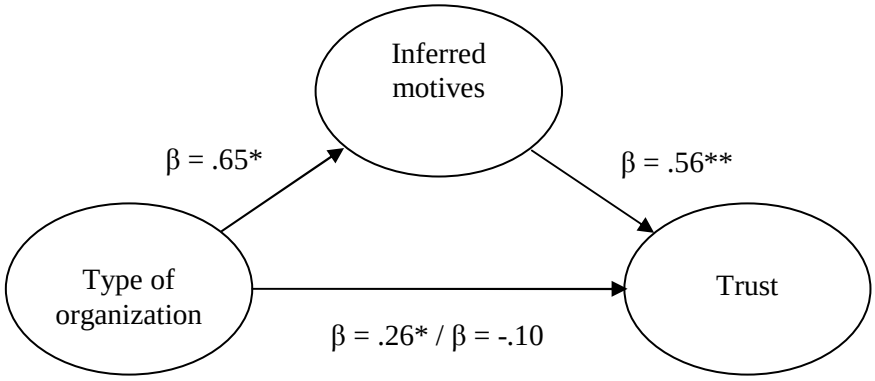
Discussion

Study 3.1 has shown that people expect NGOs to act upon public-serving motives and expect industrial organizations to act upon organization-serving motives. Moreover, on the basis of Study 3.1 we were able to substantiate the claim that NGOs are generally more likely to be trusted than industrial organizations as a result of these inferred organizational motives. Beliefs about the competence of the organizations did not cause these differences in trust. As such, Study 3.1 provided support for all three hypotheses.

The use of a single item to measure trust in CCS stakeholders may be raised as a possible limitation of this study. Single-item measures make it impossible to test internal consistency reliability (Wanous, Reichers, & Hudy, 1997). We concur with Selnes (1998), however, that trust can be thought of as a unidimensional construct that is directly accessible to the respondent and, for this reason, it makes sense to use a single-item measure of trust.

[12] Note that both the organization-serving motive ($r = -.23$, $p < .001$) and the public-serving motive ($r = .46$, $p < .001$) correlated significantly with the level of trust in organizations in the expected direction, and that using both these variables as separate covariates in the analysis revealed similar results: Both covariates were significant ($p < .001$), whereas the effect of type of organization on public trust again dropped to non-significance ($p = .28$) when these separate motive scores were included as mediators.

Figure 3.1 Schematic representation of inferred organizational motives mediating the effect of type of organization on trust in organizations.



*$p < .001$ Sobel $z = 6.86$, $p < .001$

Study 3.1 is important because it provided empirical evidence that inferred organizational motives are an important determinant of the level of trust in organizations. We found support for this idea by comparing NGOs and industrial organizations in terms of organizational motives and public trust. This first study was correlational in nature, however, as it assessed naturally occurring motivational inferences among the general public in relation to specific existing organizations. Thus, even though we randomly assigned participants to rate either environmental NGOs or to assess industrial organizations, we relied on their preexisting views of these organizations. In the next two studies, we use an experimental approach to examine whether and how organizations can instigate trust through communications.

Study 3.2

Organizational communications

Study 3.2 addressed the question of whether organizations that are seen to act upon organization-serving motives can elevate public trust by expressing (more positively valued) public-serving motives. Organizational communications provide an organization with the possibility to create a different and more positive impression, which may help to instigate public trust in the organization. An industrial organization that aims to increase public support for its actions faces a

communication dilemma, however. That is, when the industrial organization communicates public-serving motives (such as concern for a clean environment), the content of the statement is positively valued but incongruent with public inferences about the organizations' motives. By contrast, when an industrial organization communicates that the organizational position and actions stem from organization-serving motives (such as economic benefits), the content of the statement is less positively valued but congruent with public inferences about the organizations' motives. There may be a trade-off between value and congruency of organizational motives concerning the instigation of trust. We examined this issue in Study 3.2.

Despite that some motives are more highly valued than others, we expected that incongruence between inferred organizational motives and communicated motives would instigate less trust than congruence. The reason for this prediction was the idea that people do not only respond to the objective content of organizational communications, but also are aware that organizations may engage in strategic communications. That is, organizations may communicate exactly those motives that they expect the general public values. When arguments are incongruent with expectations, this may lead the general public to think that the motive communicated does not represent a genuine concern of the organization. Indeed, research on corporate societal marketing (CSM) and corporate social responsibility (CSR) activities has shown that while people generally appreciate organizations that are sensitive to the societal effects of their activities, expressing public-serving motives does not necessarily benefit organizational reputations. To be precise, expressing public-serving motives may even harm the way the organization is evaluated when people infer ulterior organization-serving motives (Ellen et al., 2000; Ellen, Webb, & Mohr, 2006; Forehand & Grier, 2003; Yoon, Gürhan-Canli, & Schwarz, 2006). For example, Yoon and colleagues (2006) found that CSR activities only improved company evaluations when people believed that sincere public-serving motives were the reason for companies to be involved in CSR activities. This reasoning aligns with prior work by Frewer and colleagues (Frewer, Howard, Hedderley, & Shepherd, 1996) who suggested that a priori trust in industry as a source of information may be relatively low "because the public believes the source is protecting its own interests rather than providing good information out of concern for public welfare" (p. 484).

Based on this reasoning and previous research, we expected people to perceive an industrial organization to be dishonest when it communicates an

environmental argument for CCS implementation because it will be seen as failing to acknowledge its "true" organization-serving motive. By comparison, we predicted communicating arguments congruent with inferred organizational motives to result in greater perceived honesty of the organization. In other words, a gas company that advocates CCS on the basis of its merits for the environment (i.e., expression of a public-serving motive) may be seen as dishonest and hence may be trusted less than when the same organization invokes an organization-serving (e.g., economic) argument to support its position. Thus, we hypothesized that – instead of the nature of the motives communicated in itself – it would be the *congruency* between organizational communications and inferred organizational motives that determined trust, with congruence leading to more trust than incongruence (Hypothesis 4). Furthermore, we hypothesized that perceived honesty of organizations would mediate the relationship between congruency and trust (Hypothesis 5). We tested these predictions by means of an experimental design, which allowed us to cross organizational communications with organizational motives.

Method

Participants and design

Seventy-eight undergraduate students from Leiden University participated in the study (20 men and 58 women). Participants were randomly allocated to one of the conditions of the 2 (communicated argument: environmental argument vs. economic argument) by 2 (source: environmental NGOs vs. industrial organizations) between-subjects design. Participants each received € 3,-upon completion of the experiment.

Procedure

Participants arriving at the laboratory were seated in separate cubicles containing a personal computer to provide the instructions and questionnaires. In order to inform them about the topic under consideration, participants first read an introductory text about energy producing systems, greenhouse gasses, global warming and CCS technology (this text contained information derived from de Best-Waldhober, Daamen, and Faaij, 2006). Then, dependent upon the experimental condition, participants read that a group of environmental NGOs or a group of industrial organizations had written a report about CCS. After asking participants to what extent they thought that the group of organizations (NGOs or

industry) based their opinion about CCS either on environmental concerns or on economic concerns (indicative of the inferred organizational motive), they read what was presented as a part of the report. This text contained either an environmental or an economic argument in favor of CCS implementation (see below). Finally, participants completed a questionnaire containing assessments of their trust in the organizations in question and their perceptions of organizational honesty.

Public-serving and organization-serving arguments

The arguments communicated were pretested in a pilot study in which participants (N = 30 undergraduate students from Leiden University, 9 male and 21 female) read the same introductory text as used in the actual study and then rated ten arguments in favor of CCS technology. These arguments also included environmental and economic arguments. The different arguments were presented in random order to rule out order effects. The objective of the pilot study was to select arguments for the main studies that were seen as equally credible and predictable because differential credibility and predictability of the arguments could affect the level of public trust in the organizations.

Participants rated the arguments on the statements "I consider this argument in favor of new CCS technology to be credible.", and "I consider this argument in favor of new CCS technology to be predictable." (1 = *not at all*, 7 = *very much*). Based upon the results of repeated measures ANOVA, we selected two arguments for use in Study 3.2. The environmental argument selected for Study 3.2 stated that power plants suited to capture carbon dioxide will cause less acidification than current power plants, which is beneficial for the environment. The economic argument stated that CCS implementation would stimulate the growth of Dutch export and service provision in the future, which is beneficial for the economy. We selected these arguments because repeated measures ANOVA with type of argument as within-subject factor neither revealed a significant difference between the two arguments with regard to credibility, $F(1, 29) = 1.22$, *ns*, nor with regard to predictability, $F(1, 29) = 1.28$, *ns*. Hence, the pilot study showed that participants perceived these environmental and economic arguments as equally credible and predictable and therefore we selected these for use in Study 3.2.

Dependent variables

Source manipulation check. One question served to assess the adequacy of the manipulation of the source of communication. The item asked "Which group of organizations has written the report?". Participants had to choose one of three alternatives, 1) a group of environmental NGOs, 2) a group of industrial organizations, or 3) another group of organizations.

Inferred organizational motives. Two questions, posed prior to the manipulation of the argument, assessed inferred organizational motives: "To what extent do you expect the position of the group of organizations to result from environmental considerations?" and "To what extent do you expect the position of the group of organizations to result from economic considerations?" (1 = *not at all*, 7 = *very much*). These questions allowed us to determine congruency between the argument communicated and the inferred motive of the source.

Trust. Trust was assessed with three items (α = .84), "To what extent do you trust *the group of organizations*?", "To what extent does the argument that *the group of organizations* provides inspires trust?", and "To what extent do you consider *the group of organizations* to be trustworthy?" (1 = *not at all*, 7 = *very much*).

Perceived honesty. Perceived honesty was assessed with three items (α = .85), "To what extent do you consider *the group of organizations* to be honest?", "To what extent do you think that *the group of organizations* speaks the truth?" and "To what extent do you think that *the group of organizations* has a hidden agenda?" (reverse coded; 1 = *not at all*, 7 = *very much*).

Results

Source manipulation check

All seventy-eight participants responded to the check of the source manipulation correctly. Participants in the NGOs condition answered that a group of environmental NGOs had written the report. Participants in the industry condition answered that a group of industrial organizations had written the report.

Inferred organizational motives

We conducted an ANOVA with type of organization as between-subjects variable and inferred environmental concern as dependent variable. This analysis revealed a significant effect for type of organization, $F(1, 75) = 87.80$, $p < .001$, $\eta^2 = .54$. Consistent with Study 3.1, participants expected environmental NGOs (M = 5.78,

SD = 1.21) more than industrial organizations (*M* = 2.95, *SD* = 1.45) to base their position about CCS on environmental concerns. A similar analysis performed on economic concern revealed a significant effect for type of organization as well, $F(1, 75) = 119.03$, $p < .001$, $\eta^2 = .61$. Participants expected industrial organizations (*M* = 6.13, *SD* = 0.99) more than environmental NGOs (*M* = 2.90, *SD* = 1.55) to base their position about CCS on economic concerns. Thus, we successfully created conditions in which the provision of an environmental argument was consistent with the inference of environmental concerns associated with the public-serving motive (in the case of NGOs) and in which the provision of an economic argument was consistent with the inference of economic concerns associated with the organization-serving motive (in the case of industrial organizations).

Trust

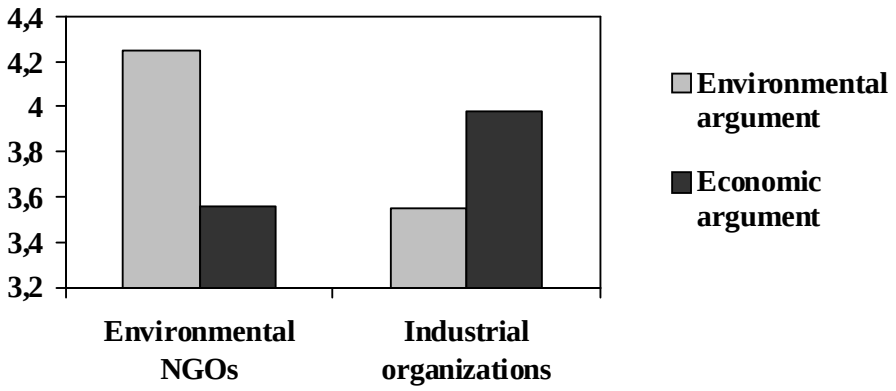
Hypothesis 4 stated that congruence between type of organization and type of communicated argument would lead to higher levels of trust in the organizations than incongruence We conducted an ANOVA with type of organization and type of communicated argument as between-subject factors and trust as the dependent variable to test this prediction. The analysis revealed no main effects for type of organization and type of communicated argument, only the interaction predicted, $F(1, 74) = 3.81$, $p = .055$, $\eta^2 = .05$. Planned contrasts between the congruent conditions (1) and the incongruent conditions (-1) showed that the mean level of trust in the congruent conditions differed from the level of trust in the incongruent conditions, $F(1, 76) = 3.90$, $p = .052$. Consistent with the hypothesis, participant had more trust in organizations in the congruent conditions (*M* = 4.12, *SD* = 1.24) than in the incongruent conditions (*M* = 3.55, *SD* = 1.28). See Figure 3.2 for a schematic representation.

Perceived honesty

We performed an ANOVA with type of organization and type of communicated argument as between-subject factors and perceived honesty as dependent variable, which revealed a main effect for type of organization, $F(1, 74) = 10.94$, $p = .001$, $\eta^2 = .13$, qualified by a significant interaction, $F(1, 74) = 7.44$, $p < .01$, $\eta^2 = .09$. Planned contrasts between the congruent conditions (1) and the incongruent conditions (-1) showed that the mean level of perceived honesty in the congruent conditions differed from the level of perceived honesty in the incongruent conditions, $F(1, 76) = 6.28$, $p < .02$. Perceived honesty was higher in the congruent

conditions (*M* = 4.13, *SD* = 1.06) than in the incongruent conditions (*M* = 3.45, *SD* = 1.35).

Figure 3.2 Trust in environmental NGOs and industrial organizations as a function of type of argument.



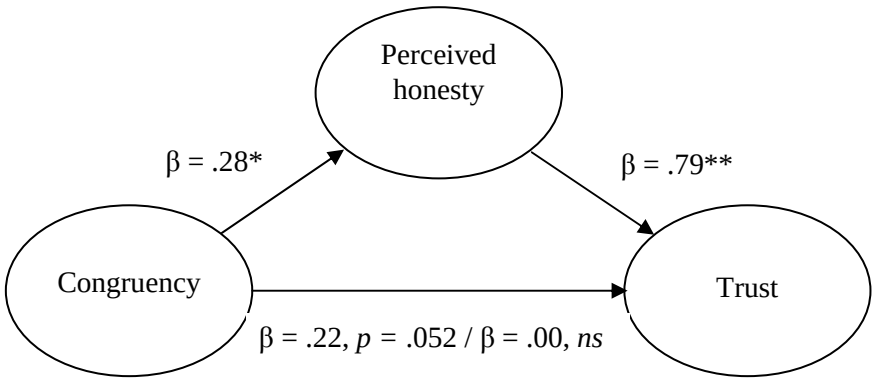
Mediation analysis

Hypothesis 5 stated that perceived honesty would mediate the relationship between congruency and trust in organizations. To test for mediation, we again followed the procedure recommended by Baron and Kenny (1986). As noted above, we already found the required congruency effect on the dependent variable, trust (β = .22). We also found the congruency effect on the proposed mediator, perceived honesty (β = .28). The third requirement for mediation is a significant correlation between the proposed mediator (perceived honesty) and the dependent variable (trust) after controlling for congruency, which we found (β = .79, $p < .001$).[13] Finally, we found that the effect of congruency on trust dropped to nonsignificance after inclusion of the proposed mediator (perceived honesty) in the equation (β = .00, *ns*). The decrease of this effect was significant (Sobel $z = 2.44$, $p < .02$), indicating

[13] There is good theoretical reason to assume that honesty and trust are highly correlated but different concepts. We used structural equation modeling to test whether the two-factor model (trust and honesty as separate factors) fitted the data better than the single-factor model. The two-factor model fitted the data better (χ^2 (8) = 11.03; NNFI = .98; CFI = .99; RMSEA = .07) than the single-factor model (χ^2 (9) = 22.02; NNFI = .93; CFI = .96; RMSEA = .14). This difference was significant, $\Delta\chi^2 = 10.99$, $p < .001$, indicating support for distinguishing between trust and honesty despite their high correlation.

mediation. Again, we applied the bootstrapping method recommended by Preacher and Hayes (2004) for estimating indirect effects. Because zero (0) was not included in the 95% confidence interval (0.06; 0.51), this procedure also supported the mediation model represented in Figure 3.3.

Figure 3.3 Schematic representation of perceived honesty mediating the effect of congruency on trust in organizations.



*p < . 05, **p < .001 Sobel z = 2.44, p < .05

Discussion

Study 3.2 has shown that CCS organizations that are believed to act upon organization-serving motives (industrial organizations) cannot build trust by simply communicating that their position is based on more positively valued public-serving motives. The central prediction in this study was that the degree of congruence between inferred organizational motives and organizational communications would determine perceived honesty of the organizations in question and, in turn, would affect trust in these organizations. Results offered support for this reasoning, indicating that incongruence between organizational communications and inferred organizational motives induces less trust than congruence. As such, Study 3.2 complements previous research that showed that people sometimes negatively evaluate firms that are involved in CSR activities, despite the public-serving character of these activities (e.g., Forehand & Grier, 2003; Yoon et al., 2006). That is, our results suggest that members of the public

may easily suspect firms involved in such activities to pursue some organization-serving motive, instead of acting out of genuine concern for the public welfare.

Study 3.3

In Study 3.3, we examined whether organizations that are believed to act upon organization-serving motives can preserve public trust by expressing a combination of public-serving motives and organization-serving motives. This study extends Study 3.2 in which has been shown that organizations that are perceived to act upon organization-serving motives cannot simply elevate public trust by communicating public-serving motives in support of their positions. That is, Study 3.3 focuses on whether organizations can raise trust by expressing public-serving motives in addition to conveying their "true" organization-serving motives (which is considered diagnostic of the true reason for the organizational position).

Based on findings in Study 3.2 one might expect people to mistrust an industrial organization that communicates an environmental argument, regardless of whether the incongruent argument is accompanied by a seemingly more truthful organization-serving argument. After all, communicating such a public-serving argument is incongruent with inferred organizational motives. Nevertheless, we predicted that an industrial organization would elicit more trust by communicating a public-serving (environmental) argument in combination with an organization-serving (economic) argument, as the latter is likely to be seen as revealing true organizational motives. This prediction is consistent with the idea that perceptions of honesty mediate the effect of communication on trust (as shown in Study 3.2) because expressing economic concerns (that industrial organizations are expected to have) decreases the possibility that people will question the truthfulness of communicated motives. This reasoning is also consistent with previous findings by Ellen and colleagues (2006) showing that profit organizations engaging in CSR activities are rated more positively when consumers perceive both public-serving and organization-serving motives for engagement in these activities compared to when consumers perceive only public-serving motives.

The aim of Study 3.3 was twofold. First, we aimed to replicate the finding of Study 3.2 that congruency impacts upon perceived honesty and, consequently, affects organizational trust. Second, we aimed to examine whether the negative effects of an incongruent argument on organizational trust can be attenuated when this argument is communicated together with an argument that is congruent with

organizational motives. Again, we hypothesized that industrial organizations would instigate more trust when they communicate arguments that are congruent rather than incongruent with inferred motives (Hypothesis 6a). Additionally, we hypothesized that a combination of congruent and incongruent arguments would instigate more trust than the provision of an incongruent argument by itself (Hypothesis 6b).

Method

Participants and design

Fifty-one undergraduate students from Leiden University participated in the study (17 men and 34 women). Participants were randomly allocated to one of three conditions (communicated arguments: environmental argument vs. economic argument vs. mixed) between-subjects design. Upon completion of the experiment participants each received € 3,-.

Procedure and dependent variables

Study 3.3 largely followed the procedure used in Study 3.2, except that Study 3.3 focused on industrial organizations only (instead of comparing these to NGOs) and included an experimental condition in which both an environmental and an economic argument were provided. To ensure that equal amounts of information about the organization were available in all three experimental conditions, in Study 3.3 we also provided two arguments in the two single-motive conditions (whereas one argument was provided for each experimental condition in Study 3.2). Thus, participants received two public-serving (environmental) arguments, two organization-serving (economic) arguments, or one public-serving (environmental) and one organization-serving (economic) argument.

With these differences included, the procedure was as follows. First, participants received the introductory text about energy producing systems, greenhouse gasses, global warming and CCS technology. Then, participants read that a group of industrial organizations had written a report about CCS and received what was presented as a part of the report. Dependent upon experimental condition, this text either contained two environmental arguments, two economic arguments, or an environmental argument and an economic argument in favor of CCS implementation. Finally, participants completed the questionnaire (which was the same as in Study 3.2) containing measures of trust in the industrial organizations (α = .73), perceived honesty of these organizations (α = .70) and the

manipulation check, which consisted of the item "What type(s) of arguments in favor of CCS were in the report that was written by the group of industrial organizations?" (1 = *two environmental arguments*, 2 = *two economic arguments*, 3 = *one environmental and one economic argument*).

Results

Manipulation check

All participants answered to the check of the manipulation as intended. Participants in the public-serving arguments condition answered that environmental arguments were provided in the report written by the industrial organizations, participants in the organization-serving arguments condition answered that economic arguments were provided in the report, and participants in the mixed arguments condition answered that one environmental argument and one economical argument were provided in the report.

Trust

We conducted an ANOVA with type of argument as between-subject factor and trust as dependent variable to test whether the type of argument influenced people's trust in the organizations. This analysis revealed a significant effect, $F(1, 48) = 7.88$, $p = .001$, $\eta^2 = .25$. Replicating the results of Study 3.2 and in support of Hypothesis 6a, contrast analysis revealed a significant difference in trust in the organizations, depending on whether organizations provided economic arguments ($M = 3.84$; $SD = 1.12$) or environmental arguments ($M = 2.84$, $SD = 0.96$), $p < .01$. In correspondence with Hypothesis 6b, this analysis also revealed that a mixed communication, including both types of arguments, instigated significantly more trust ($M = 4.10$, $SD = 0.82$) than the communication of environmental arguments alone, $p < .001$. Moreover, communication instigated trust equally in the organizations in the mixed-arguments condition and the economic arguments condition, $p = .45$. Thus, complementing Study 3.2, we obtained support for the prediction that incongruence between communicated arguments and inferred organizational motives instigates less trust than inference-congruent communications. The results of this study additionally indicate that when a positively valued but incongruent (public-serving) argument is provided together with more negatively valued but congruent (organization-serving) argument, organizational trust can be preserved.

Perceived honesty

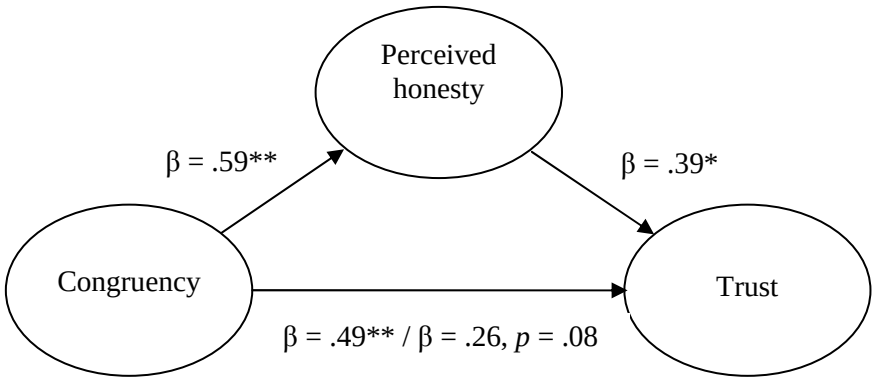
We conducted ANOVA with type of argument as between-subject factor and perceived honesty as dependent variable to test whether the type of argument that was communicated influenced perceived honesty. This analysis revealed a significant effect, $F(1, 48) = 13.56$, $p < .001$, $\eta^2 = .36$. In line with Study 3.2, contrast analysis revealed a significant difference in perceived honesty, depending on whether organizations provided economic arguments ($M = 4.29$, $SD = 0.83$) or environmental arguments ($M = 2.92$, $SD = 0.78$), $p < .001$. This analysis also revealed that participants reported higher perceived honesty after mixed communication ($M = 4.00$, $SD = 0.82$) than after communication of public-serving (i.e., environmental) arguments alone, $p < .001$. Moreover, perceived honesty did not differ between the mixed-arguments condition and the condition in which, in line with inferred motives, organization-serving (i.e., economic) arguments were communicated, $p = .30$.

Mediation analysis

Again, we tested whether perceived honesty mediated the relationship between communications of and trust in organizations (Hypothesis 5). A Sobel test is not possible with all three levels of the predictor variable included in the analysis, however. Therefore, we used the most relevant contrast as the predictor variable in the analysis: The provision of arguments incongruent with inferred organizational motives (-2) versus the provision of mixed arguments (1) and the provision of arguments congruent with inferred organizational motives (1). This procedure allowed us to assess whether the magnitude of the direct effect of communications on trust was significantly reduced after introduction of perceived honesty (the proposed mediator) in the equation. We found the required effect on the outcome variable (i.e., trust; $\beta = .49$, $p < .001$) and on the proposed mediator (i.e., perceived honesty; $\beta = .59$, $p < .001$). Third, there was a significant positive correlation between the proposed mediator and the outcome variable after controlling for the predictor variable ($\beta = .39$, $p < .01$). The final requirement for mediation is a significant reduction of the effect of the predictor variable on the outcome variable after introduction of the proposed mediator in the equation. The effect of organizational communications on trust in organizations remained marginally significant after including perceived honesty as a covariate in the analysis ($\beta = .26$, $p = .08$). Nevertheless, the reduction of this direct effect was significant (Sobel $z = 2.40$, $p < .02$), indicating (partial) mediation. Again, the 95% confidence interval

(-0.38; -0.01) obtained by bootstrapping (Preacher & Hayes, 2004) did not include zero (0) and therefore supports the mediation model represented in Figure 3.4. Thus, Study 3.3 replicated and extended the findings obtained in Study 3.2.

Figure 3.4 Schematic representation of perceived honesty mediating the effect of communicated arguments on trust in organizations.



General discussion

Recently developed CCS technology, which involves the capture of carbon dioxide in industrial processes and the subsequent storage in underground sites such as depleted gas fields, is an important strategy to mitigate climate change. Public acceptance is important for successful implementation of this technology. Trust in organizations responsible for the development and use of modern technologies such as CCS is considered an important determinant of public acceptance of such technologies (Siegrist, 2000). That is, when people trust CCS stakeholders, they will be more willing to accept this technology as a climate change mitigation option than when people mistrust the organizations in question. This work considered the impact of inferred organizational motives and organizational communications on trust in CCS stakeholders.

The current research, which consisted of a field study and two experimental studies, indicates that inferred organizational motives play an important role with regard to public trust in organizations. Study 3.1 showed that

people expected industrial organizations to act primarily upon organization-serving motives, which was negatively related to trust, whereas people expected environmental NGOs to act more upon public-serving motives, which was positively related to trust. Indeed, inferred motives accounted for the difference in trust accorded to industrial organizations and environmental NGOs. These findings led us to conclude that inferred organizational motives are an important determinant of public trust in organizations.

Study 3.2 and Study 3.3 further indicate that it is the level of congruency with inferred organizational motives rather than the specific content of communications that determines whether or not organizational communications instigate public trust in organizations. Study 3.2 showed that NGOs communicating an environmental argument and industrial organizations communicating an economic argument (i.e., congruent with inferred motives) were judged as more honest than NGOs communicating economic considerations and industrial organizations communicating environmental considerations (i.e., incongruent with inferred motives). This difference in perceived honesty, in turn, caused differential trust in these organizations involved in CCS. Thus, an industrial organization may attempt to improve its image by communicating a pro-environmental argument, but this communication strategy may backfire in that it is likely to reduce rather than increase trust in the organization. Study 3.3 extended the results of Study 3.2 by showing that trust in organizations could be preserved when the provision of an argument incongruent with inferred organizational motives was accompanied by a seemingly more truthful argument congruent with inferred organizational motives.

The current research contributes to existing literature in several ways. First, it provides empirical evidence that people's ideas about why organizations act like they do influence the extent to which they trust these organizations. Specifically, we have shown that differences in trust between industrial organizations and environmental NGOs can be accounted for by inferred organizational motives. Previous research on acceptance of policies related to climate change linked policy endorsement to organizational motives (in terms of internal versus external organizational goals; Nilsson et al., 2004). Consistent with the current research, this previous work showed that different organizational motives were attributed to public-sector organizations than to private-sector organizations. Whereas Nilsson and colleagues (2004) considered the views of decision makers working at these organizations, our research considered the views of members of the general public. Moreover, previous consumer research on inferred organizational motives

predominantly focused on perceptions of either nonprofit organizations or profit organizations (e.g., Forehand & Grier, 2003; Yoon et al., 2006; Ellen et al., 2006), without trying to explain potential differences between these organizations in terms of organizational motives and evaluations of organizations. The current research provided empirical evidence that trust in organizations differs as a function of inferred organizational motives (at least in the context of CCS).

Another important addition to existing literature is that trust can be preserved by communicating public-serving motives in combination with seemingly more truthful organization-serving motives. Previous consumer research showed that expressions of public-serving motives by companies (i.e., through their stated engagement in CSR programs) may fail to improve company evaluations when people doubt the genuineness of the positive intent (Forehand & Grier, 2003; Yoon et al., 2006). In a similar vein, our research revealed that industrial organizations that communicate public-serving motives are considered less honest and consequently instigate less trust than industrial organizations communicating organization-serving motives, even though the latter type of motives are generally valued less. Important is that we additionally showed that trust in organizations can be preserved by communicating public-serving motives in combination with acknowledging "true" organization-serving motives.

We used a combination of field survey data and experimental data to test our ideas. Study 3.1 used an internet survey among members of the general public to examine the relationship between motive inferences and public trust in organizations. This method of examination suits the objective of determining whether such a relationship exists in real life, but relies on correlational data. In Study 3.2 and Study 3.3, we used an experimental design to be able to draw firmer conclusions about causality in the relationship between communicated and inferred motives on the one hand and public trust in organizations on the other. In these studies, however, we asked a more homogeneous student sample to respond to our manipulations and measures, which raises questions about whether these results generalize to other populations. Results from these different studies and methodologies showed convergent support for our central prediction that inferred motives influence public trust. This consistency in results between the different studies and methodologies increases our confidence in the robustness of our findings. Moreover, the similarities between the inferred motives in the field study and in the experimental studies suggest that our results obtained with student participants also apply to the general public.

One could question whether our results can be generalized to organizations in general or whether they are limited to the specific organizations we used in our research. We think our results are not limited to the specific NGOs and industrial organizations in our studies. In Study 3.1, respondents were randomly assigned to answer questions about a specific organization, either one of three existing environmental NGOs or one of three real industrial organizations. In Study 3.2, participants were either asked about a group of unspecified environmental NGOs or about a group of unspecified industrial organizations. Thus, even though we asked participants to consider existing industrial or environmental organizations they were familiar with, we did not rely on their knowledge about a specific organization, as different participants were asked about different organizations (in Study 3.1) or considered a group of organizations at the same time (in Study 3.2 and Study 3.3). Therefore, we think the results of the current research should apply more broadly to different types of organizations (e.g., industrial organizations, environmental NGOs) and are not limited to some specific organization (e.g., Shell) participants thought about.

The current research raises interesting questions for further theory development as well as future applications. For instance, knowledge of the current research may be applied in the context of communications about CCS in order to avoid the problems that arose with regard to public support for the disposal of the decommissioned oil storage and loading structure Brent Spar in 1995 (Löfstedt & Renn, 1997). In the Brent Spar case, industrial organization Shell UK communicated that environmental risks of the deep-sea disposal of the Brent Spar were negligible and, as such, should be preferred over onshore disposal of the Brent Spar. There was considerable pressure from NGO Greenpeace, however, which portrayed deep-sea disposal as a cheap option compared to onshore disposal of the structure, emphasizing Shell's organizational interest in pursuing this option. As a result, Shell's position was not accepted by the general public, although deep-sea disposal probably was a better option than onshore disposal. On the basis of the current research, we would argue that people had more likely accepted Shell's position to a greater extent when Shell had also truthfully communicated its economic interest in deep-sea disposal of the Brent Spar. Thus, we think that the issues addressed in this research and the results obtained are relevant considerations in the context of other environmental issues as well. Nevertheless, CCS organizations should be aware of the processes identified in this research when they inform members of the general public about CCS.

Moreover, now that we have established that inferred motives determine the likelihood that a communicated concern with the public interest is seen as honest and trustworthy, it would seem important to assess whether there is a way for organizations to influence spontaneous motive inferences made by the general public, or to redress inappropriate expectations. Organizations trying to influence public trust through communication run the risk that their communications may be perceived as superficial and insincere. Organizations trying to influence public trust via concrete action displays may be more effective in increasing organizational trust. For instance, organizations may decide to donate money to plant trees in order to compensate for carbon dioxide emissions that result from business trips. By actually investing in pro-environmental measures, perhaps organizations can more effectively override inferences about organization-serving motives of organizations, and hence increase public trust. On the other hand, even in the case of concrete pro-environmental actions, people may believe that organizations engage in these initiatives for the mere reason of improving the organizational image. Future research is needed to examine whether (and under which conditions) it is indeed possible to induce greater trust in organizations by engaging in pro-environmental activities.

We conclude that people neither automatically reject organizations that act upon organization-serving motives, nor do they automatically trust those organizations that they perceive as acting out of public-serving motives. Whereas motive inferences guide judgments of trust in CCS stakeholders, greater trust is instigated when organizational communications are congruent (rather than incongruent) with inferred organizational motives. This congruency effect holds true for environmental NGOs and industrial organizations involved in CCS. As such, the industrial profit organization in the outset of this article may communicate that CCS implementation is beneficial for the environment, but it should acknowledge that its position is guided by organizational interests as well.

Chapter 4

Group voice and acceptance of decisions[14]

Political decision makers often have to propose new policies and make decisions on issues that are too complex to judge for members of the general public. These days, one of the most important issues on the political agenda concerns policymaking related to the prevention of climate change. The implementation of recently developed carbon dioxide capture and storage technology (CCS), in addition to saving on energy consumption and increasing use of sustainable energy, is currently considered as an important strategy to mitigate climate change. If political decision makers make decisions about CCS, then it is critical that members of the general public approve of this decision. After all, public opposition to decisions can result in severe protest behavior and decisions being reversed (see, for example, the 1995 case of Brent Spar; Löfstedt & Renn, 1997). As such, it is important to understand how people come to accept or oppose such policy decisions.

In the current research, we focus on how public acceptance of policy decisions is affected by whether or not interest groups receive an opportunity to express their opinions in the decision-making process. Such an opportunity to express opinions in decision-making processes is commonly referred to as "voice" (cf. Folger, 1977) and represents an important element of procedural justice in individual-level decision-making processes as well as national-level policymaking (Lind & Tyler, 1988). The large majority of research in the procedural justice domain has focused on *personal* voice in decision making (i.e., the opportunity for individuals to state their opinion about the preferred outcome distribution). This research, for instance, has shown that personal voice affects procedural fairness judgments (e.g., Bies & Shapiro, 1988; Folger, 1977; Van den Bos, Vermunt, & Wilke, 1996), as well as satisfaction with and acceptance of decision-making outcomes (e.g., Peterson, 1999; Ståhl, Van Prooijen, & Vermunt, 2004; Van den Bos, Wilke, & Lind, 1998). Such personal-voice effects have often been explained in terms of self-oriented instrumental and relational concerns, referring to the

[14] This chapter is based on Terwel, Harinck, Ellemers, and Daamen (2009b) and has therefore been written in first-person plural.

conviction that personal voice can modify the outcome distribution (instrumental) or conveys how the decision maker values and respects the parties involved (relational; Lind & Tyler, 1988; Tyler & Lind 1992).

We aim to expand current insights on voice in decision making from the individual level to the group level. That is, in the current research we examine how voice for *interest groups* involved in national-level policymaking impacts on evaluations of decision makers and acceptance of the decisions made. We refer to opportunities for interest groups to express their opinions in decision-making processes as "group voice". We propose that people care about group voice in decision-making processes, but for different reasons than why they care about personal voice in decision making. Specifically, we propose that people care about group voice because they use this procedural characteristic to indicate the trustworthiness of decision makers. In turn, we propose that inferred trustworthiness determines whether people tend to accept or oppose the policy decisions made. Finally, we propose that people's knowledge level about an issue can influence their preferences for specific decision-making procedures as well as their willingness to accept resulting decisions. We examine these predictions in the context of decision making about CCS.

Voice in decision making

Procedural justice research has demonstrated that people consider voice an important aspect of decision-making processes. Why people care about voice in decision making is often explained in terms of instrumental and relational reasons (see Lind & Tyler, 1988; Tyler & Lind, 1992). From an instrumental perspective, an individual values voice in decision-making processes because expressing one's views on an issue may persuade the decision-making authority to provide this person with more favorable outcomes. Early research on dispute resolution by means of third-party interventions has illustrated this point by showing that people's satisfaction with procedures and outcomes depends on the extent to which procedures provide people with an opportunity to present all relevant information to the decision maker (e.g., LaTour, 1978, Walker, LaTour, Lind, & Thibaut, 1974). From a relational perspective, an individual values voice in decision making because voice indicates the quality of treatment by decision makers, which conveys important self-relevant information, including information about whether the decision maker values and respects the individual in question (e.g., Smith, Tyler, Huo, Ortiz, & Lind, 1998; Tyler, Degoey, & Smith, 1996; Tyler & Lind, 1992).

Research by Lind and colleagues (Lind, Kanfer, & Early, 1990) has shown that voice effects indeed can involve both instrumental and relational concerns. Participants in this study were allowed to voice their opinion either before or after the authority made the decision, or they were not allowed to voice their opinion at all. Fairness judgments were highest in the case of predecision-voice procedures (satisfying instrumental and relational concerns), second highest in the case of postdecision-voice procedures (satisfying relational concern only), and lowest in the case of no-voice procedures (satisfying neither instrumental nor relational concerns). Accordingly, both instrumental and relational concerns may be used to explain why people respond more positively to personal-voice procedures than to no-voice procedures.

Thus far, however, studies on voice have almost exclusively focused on personal voice in decision-making processes. Some notable exceptions are early studies on dispute resolution by means of third-party interventions, in which perceptions about procedural fairness were assessed among people observing the dispute-resolution process (LaTour 1978; Walker et al., 1974). In addition, more recent studies have focused on how people respond to situations in which another individual is denied (unfair treatment) an opportunity to voice (De Cremer & Van Hiel, 2006; Kray & Lind, 2002; Lind, Kray, & Thompson, 1998; Van den Bos & Lind, 2001). While the strength of the impact of injustice experienced by others on people's own judgments and emotions differed across studies, they all seem to indicate that people are to some extent sensitive to the unfairness experienced by others. The results of these studies are interesting, considering that self-oriented implications of unfair treatment by authorities (i.e., instrumental and relational concerns) are less clear for people who do not personally experience the unfair treatment than for people who do experience this unfairness personally (Lind et al., 1998).

National policy decisions are often made without the direct participation of individual members of the general public in the decision-making process. Nevertheless, the decisions made do affect them and hence their acceptance of these decisions is important. Interest groups (representing the general public) may be directly involved and consulted in the decision-making process, however. For example, individual citizens have no personal involvement in the decision-making process regarding CCS implementation, but different interest groups, including environmental NGOs and industrial organizations, are involved in CCS decision making. Applying the logic of Lind and colleagues (1998) with regard to self-

oriented instrumental and relational concerns to national policymaking, one would predict only modest group-voice effects. After all, when a person is not directly involved in decision making, decision-making procedures do not convey information relevant to this person's relational standing (i.e., whether this person is valued and respected by the decision maker). Moreover, without personal involvement in decision making people do not have the opportunity to exert control over the decision-making process and/or outcome (i.e., instrumental concern), regardless of the decision-making procedure used. Indeed, recent research suggests that this is one of the reasons why responses to political decision making cannot be fully predicted from existing research on the effects of procedural justice in interpersonal decision making (Leung, Tong, & Lind, 2007). As a result, a focus on self-oriented concerns cannot directly explain why people would value group-voice procedures over no-voice procedures in national policymaking.

We anticipate group-voice effects in national policymaking to relate to the implications for the decision maker at the group level (i.e., "The decision maker uses this procedure; what does that say about the decision maker?"), instead of the self-relevant implications of procedures that occur at the personal level (i.e., "The decision maker uses this procedure; what does this imply for me?"). Because members of the general public often have insufficient expertise to personally judge the merits of proposed national-level policies on their own, trustworthiness is among the most important characteristics of policymakers. In support of this thought, research on trust in hazard managers (Siegrist & Cvetkovich, 2000) has indicated that the level of trust in authorities that manage complex technologies influences public perceptions about the risks and benefits associated with these technologies. These findings are important because perceptions of risks and benefits have been found to influence public acceptance of complex technologies (Siegrist, 1999, 2000). In that sense, people are likely to use their trust in policymakers as a guide to decide whether to accept or reject policies on complex issues such as CCS. The perceived trustworthiness of the decision maker is likely to be determined by information about group voice in the decision-making process.

We carried out three experiments to test 1) whether group voice (i.e., an opportunity for certain interest groups to voice their opinions in the decision-making process) impacts public inferences regarding the trustworthiness of the political decision maker, and 2) whether inferred trustworthiness in turn influences people's acceptance of the decision made. We have designed these experiments in the context of decision making about the implementation of recently developed

CCS technology, which is an issue on the current political agenda. Several interest groups are involved in the issue, including environmental NGOs and industrial organizations. The central prediction in our studies is that people determine the trustworthiness of decision makers on the basis of whether or not decision makers provide interest groups an opportunity to voice their opinion in the decision-making process and, subsequently, that they decide to accept or oppose decisions regarding CCS implementation on the basis of inferred trustworthiness.

Study 4.1

In Study 4.1, we examined whether public acceptance of political decisions is affected by the way political authorities treat interest groups. Participants observed whether or not a political authority allowed environmental NGOs and industrial organizations an opportunity to voice their opinion in the decision-making process. Subsequently, participants indicated their support for the decision made by the political authority. We hypothesized that participants would consider the political authority to be more trustworthy when a group-voice procedure was used (i.e., allowing input from interest groups) compared to a no-voice procedure (i.e., unilateral decision making) to arrive at the decision (Hypothesis 1). We further hypothesized that participants would more readily accept decision made on the basis of a group-voice procedure compared to a no-voice procedure (Hypothesis 2). Finally, we hypothesized that the proposed relationship between the decision-making procedure and acceptance of decisions made would be mediated by inferences regarding the trustworthiness of the political decision maker (Hypothesis 3).

Method

Participants and design

Forty undergraduate students from Leiden University participated in the study (33 women and 7 men). We randomly allocated each of them to one of the four conditions of the 2 (procedure: group voice vs. no voice) by 2 (advice regarding CCS implementation: pro vs. con) between-subjects experimental design. Upon completion of the experiment they were each paid 3 euros (approximately U.S.$4) for participating in the experiment.

Procedure

Upon arrival at the laboratory participants were led into separate cubicles, each equipped with a personal computer. On the computer screen they read an introductory text about energy production, greenhouse gasses and global warming, and the new CCS technology. This text contained factual information only. After reading the text, participants indicated the extent to which they considered CCS implementation to be a good idea. Next, they read that multiple parties were involved in CCS and that a so-called "CCS board" had been assigned to advise the national government about whether or not CCS should be implemented. Then, participants read that the CCS board had provided both environmental NGOs and industrial organizations with an opportunity to voice their opinion about CCS implementation (group-voice condition) or that the CCS board had not provided environmental NGOs and industrial organizations with such an opportunity (no-voice condition). Subsequently, participants completed a questionnaire that asked them about the trustworthiness of the CCS board and the fairness of the decision-making procedure employed by the CCS board (this measure was included as a manipulation check for the procedure manipulation). After filling out the questionnaire, participants either read that the CCS board had given an advice for (pro condition) or against (con condition) implementation of CCS. Then, participants completed a second questionnaire assessing their acceptance of this advice and further containing the controls of the manipulations. Finally, participants were debriefed, paid and thanked for their participation.

Dependent variables

Manipulation checks. To check whether the procedure manipulation affected procedural fairness judgments as intended, we assessed these judgments by means of two questions at the end of the first questionnaire. The questions read "To what extent do you consider the decision-making procedure to be fair?" and "To what extent do you think the CCS board handled this decision fairly?" (1 = *not at all*, 7 = *very much*), r = .66. In addition, we checked participants' perceptions of the decision-making procedure by means of two questions at the end of the study. These questions read "Did environmental NGOs have an opportunity to express their opinion about CCS technology?" and "Did industrial organizations have an opportunity to express their opinion about CCS technology?" (1 = *yes*, 2 = *no*). We also checked participants' awareness of the content of the decision made by the authority at the end of the questionnaire. This check consisted of the question "Was

the advice of the CCS board for or against implementation of CCS?" (1 = *for implementation*, 2 = *against implementation*).

Trustworthiness. Before participants were informed about the decision made, inferred trustworthiness of the CCS board was assessed with two questions, "To what extent do you trust the CCS board?" and "To what extent do you consider the CCS board to be trustworthy?" (1 = *not at all*, 7 = *very much*), $r = .74$.

Acceptance. Acceptance of the advice of the CCS board was measured with two questions, "To what extent do you intend to respect the advice of the CCS board?" and "To what extent do you accept the advice of the CCS board?" (1 = *not at all*, 7 = *very much*), $r = .82$.

Results

Manipulation checks

In order to check whether the procedure manipulation had an effect on procedural fairness judgments (which we assessed prior to the manipulation of advice), we conducted analysis of variance (ANOVA) with procedure (group voice vs. no voice) as independent variable and procedural fairness judgments as dependent variable. As intended, participants judged the group-voice procedure to be fairer ($M = 5.26$, $SD = 0.97$) than the no-voice procedure ($M = 3.61$, $SD = 1.56$), $F(1, 38) = 16.62$, $p < .001$, $\eta^2 = .30$. Moreover, participants answered to the questions intended to check their awareness of the procedure manipulation as expected. Participants in the group-voice condition indicated that both NGOs and industrial organizations received an opportunity to voice, whereas participants in the no-voice condition indicated that NGOs and industrial organizations did not receive voice in the decision-making process. With regard to the advice manipulation, participants in the pro-advice condition indicated that the CCS board gave an advice for CCS implementation, whereas participants in the con-advice condition indicated that the board gave an advice against CCS implementation. Thus, the manipulations were perceived as intended.

Trustworthiness

Inferred trustworthiness of the CCS board was assessed prior to the advice provided and therefore analyzed as a function of decision-making procedure only. We performed an ANOVA with procedure (group voice vs. no voice) as independent variable and inferred trustworthiness of the CCS board as dependent variable, which showed a significant effect, $F(1, 38) = 6.39$, $p < .02$, $\eta^2 = .14$. In

accordance with Hypothesis 1, participants judged the CCS board to be more trustworthy after it employed a group-voice procedure (M = 4.71, SD = 0.99) relative to a no-voice procedure (M = 3.82, SD = 1.25).

Acceptance

We conducted an ANOVA with procedure (group voice vs. no voice) and advice (pro vs. con) as independent variables and acceptance of the advice of the CCS board as dependent variable. This analysis revealed a main effect of procedure only, $F(1, 36) = 6.66$, $p < .02$, $\eta^2 = .16$. In line with Hypothesis 2, participants more readily accepted the advice of the CCS board when the interest groups had been provided with an opportunity to voice their opinions about CCS (M = 5.62, SD = 0.96) than when these had not been provided with such an opportunity (M = 4.61, SD = 1.45). Neither an effect of the advice given nor an interaction was observed, indicating that the effect of group voice was obtained regardless of the nature of the advice given by the CCS board.

In addition, we were able to rule out that participants' own preferences regarding CCS implementation affected these results. That is, we checked whether inclusion of participants' attitudes towards CCS (assessed directly after they read the text about CCS) as a covariate in the analysis changed the pattern of results on acceptance of the advice. This was not the case, thus participants' outcome preferences did not affect the impact of group voice and advice on acceptance. This finding corroborates the reasoning that decision acceptance depends on characteristics of the decision-making procedure, rather than on whether the decision matches one's own decision preference.[15]

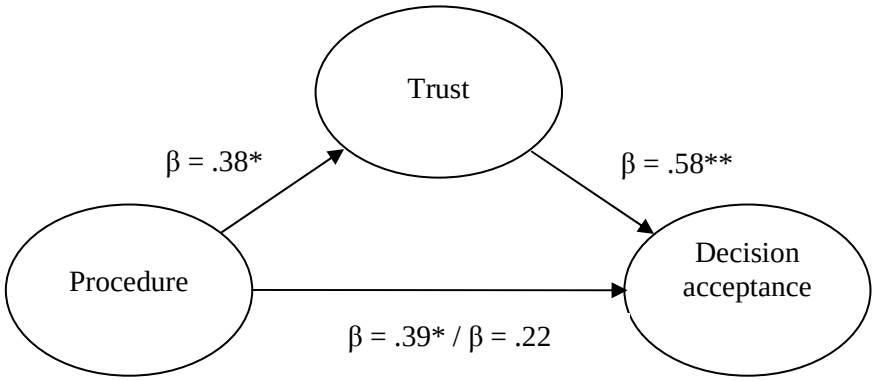
Mediation analysis

Following Baron and Kenny's (1986) procedure to test for mediation, we performed a series of regressions to examine whether trustworthiness of the CCS board mediated the effect of decision-making procedure on acceptance of the advice. The effect of the predictor (i.e., procedure) on the outcome variable (i.e., acceptance of the advice) was significant ($\beta = .39$, $p < .02$), as was the effect of the predictor on the proposed mediator (i.e., trustworthiness of the CCS board; $\beta = .38$, $p < .02$). We also observed the required significant association between the proposed mediator (i.e., trustworthiness of the CCS board) and the outcome variable (i.e., acceptance of the advice; $\beta = .54$, $p < .001$). In the final regression,

[15] We also examined this idea in Study 4.2 and obtained similar results.

the direct effect of decision-making procedure on acceptance of the advice dropped to nonsignificance after including trustworthiness of the CCS board as a covariate in the analysis (β = .22, p = .14). A Sobel test (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Sobel, 1982) confirmed that the reduction of the direct effect was significant, z = 2.16, p < .04, indicating mediation. Thus, and consistent with Hypothesis 3, mediation analysis indicated that the effect of decision-making procedure on acceptance of the decision can be explained by the way the procedure affects inferences regarding the trustworthiness of the political decision maker (see Figure 4.1 for a schematic representation of the mediation model).

Figure 4.1 Schematic representation of trust mediating the effect of decision-making procedure on decision acceptance in Study 4.1.



Discussion

The findings of Study 4.1 yield initial support for our reasoning. We showed that people judge an authority as more trustworthy when it provides interest groups with an opportunity to voice their opinions in decision making (compared to not providing them with such opportunity). We also showed that people more readily accept the decision made by the authority in the case of a group-voice procedure relative to a no-voice procedure. Additional analyses supported the hypothesis that inferences of trustworthiness mediate the effect of decision-making procedure on acceptance of the decision. As such, Study 4.1 indicates that even when people are

not personally involved in decision making, the presence (versus absence) of group voice affects people's reactions to decision-making authorities and the decisions that these authorities make.

What remains unclear, however, is whether the effects of decision-making procedure on inferred trustworthiness and acceptance of the decision made were due to procedural features (i.e., the presence or absence of group voice) or due to the involvement of specific parties in the decision-making process. For example, these effects may have been caused by the mere fact that environmental NGOs either received or did not receive an opportunity to voice their opinion, regardless of whether industrial organizations received such an opportunity too. We examine this possibility in Study 4.2.

Study 4.2

The aim of Study 4.2 was threefold. The first goal was to replicate the main finding of Study 4.1 that group voice in political decision making affects decision acceptance and that inferred trustworthiness mediates this relationship. A second goal was to examine whether inferred trustworthiness depends on whether or not voice is given (even if just to one interest group) or whether inferred trustworthiness depends on the fairness of the decision-making procedure in that both interest groups are given equal voice. Finally, this study enabled us to examine an alternative explanation for the findings obtained in Study 4.1 by investigating the possibility that inferred trustworthiness of the decision maker depends on whether voice is given to a specific but trusted type of interest group (i.e., environmental NGOs).

Previous research suggests that not the provision of voice per se, but that equal voice is crucial to instigate trust. That is, work by Van den Bos and Lind (2001) indicates that people are sensitive to the unfairness implicit in unequal treatment. In fact, sometimes participants rated procedural fairness to be less after unequal treatment (even if they personally received a fair procedure, but another participant did not) than after unfair but equal treatment (when both received unfair treatment). When only one type of interest group receives the opportunity to voice opinions in decision making, parties are treated unequally; hence the procedure is likely to be perceived as unfair, which may prevent people from seeing decision makers as trustworthy. Thus, for the second study we predict that unequal-voice

procedures induce relatively low perceived trustworthiness of decision makers because of people's sensitivity to unequal treatment (Hypothesis 4).

As indicated above, it may also be the case that trustworthiness is already established when decision makers provide voice to an interest group that the general public trusts and identifies with. Research has shown that, in the context of CCS, the general public tends to trust the environmental NGOs more than the industrial organizations (see Chapter 3 of this thesis). This raises the question whether people value voice for relatively trustworthy interest groups more highly than voice for relatively untrustworthy interest groups. In a similar vein, people may perceive environmental NGOs to be more likely to represent their own views or interests and, therefore, consider voice for these organizations to be more important as a proxy for their own input than voice for industrial organizations. Thus, voice for an interest group that is trusted and is seen as best representing one's own views may instigate greater trustworthiness in the decision-making authority than voice for an interest group that is less trusted and/or is less likely to represent one's own position.

In line with the results of Study 4.1, we predict that characteristics of the decision-making procedure determine decision acceptance, and that inferred trustworthiness of decision makers mediates the relationship between the decision-making procedure and acceptance of the decision (Hypothesis 3). Furthermore, we compare two unequal-voice procedures (voice for environmental NGOs but not for industrial organizations, or vice versa) with an equal-voice procedure (both interest groups received voice) in order to examine the possibility that additional concerns play a role (e.g., equal treatment, or voice for specific interest groups). We predicted that an equal-voice procedure would instigate more trust than an unequal-voice procedure (Hypothesis 4a), although we cannot rule out beforehand that giving voice to trusted NGOs might lead to higher levels of inferred trustworthiness than voice given to less trusted industrial organizations (Hypothesis 4b).

Method

Participants and design

Eighty undergraduate students from Leiden University (58 women and 22 men) participated in the study and were randomly allocated to one of the six conditions of the 3 (procedure: voice for environmental NGOs only vs. voice for industrial organizations only vs. voice for both environmental NGOs and industrial

organizations) by 2 (advice regarding CCS implementation: pro vs. con) between-subjects experimental design. Upon completion of the experiment they were each paid 3 euros for participating in the experiment.

Procedure and dependent variables

Upon arrival at the laboratory participants were subjected to nearly the same procedure as in Study 4.1. They read the introductory text after which the parties concerned with CCS (i.e., environmental NGOs and industrial organizations) and the CCS board were introduced. The only difference with Study 4.1 was that, depending on experimental condition, participants in Study 4.2 either read that only environmental NGOs *or* only industrial organizations had received voice, *or* they were informed that both environmental NGOs and industrial organizations had received an opportunity to voice opinions before the CCS board gave an advice to the national government regarding the implementation of CCS. Controls of the manipulation and dependent variables were identical to those of Study 4.1 (procedural fairness, $r = .81$; trustworthiness, $r = .65$; acceptance, $r = .71$).

Results

Manipulation checks

We conducted an ANOVA with procedure as independent variable and procedural fairness judgments (assessed prior to the manipulation of the advice) as dependent variable to check whether the procedure manipulation had an effect on procedural fairness judgments, which appeared to be the case, $F(2, 77) = 17.38$, $p < .001$, $\eta^2 = .31$. Additional t-tests served to examine which means significantly differed from each other. The t-test comparing the two unequal-voice conditions was not significant, $t(50) = 0.14$, *ns*. Thus, which type of organization received voice and which type did not receive voice did not affect procedural fairness ratings. The t-tests that compared the unequal-voice conditions with the equal-voice condition were significant in both cases, $t(53) = 5.31$, $p < .001$ for the NGOs-voice condition compared to the equal-voice condition, and $t(51) = 5.47$, $p < .001$ for the industry-voice condition compared to the equal-voice condition. Thus, the two unequal-voice procedures were considered equally fair ($M_{\text{NGOs voice}} = 3.02$, $SD = 1.48$ and $M_{\text{industry voice}} = 2.96$, $SD = 1.46$), but both were considered significantly less fair than the equal-voice procedure ($M = 4.82$, $SD = 0.99$).

Moreover, we checked participants' perceptions of the decision-making procedure and awareness of the nature of the advice with questions at the end of

the study. Participants in the equal-voice condition indicated that both NGOs and industrial organizations received an opportunity to voice, participants in the NGOs-voice condition indicated that NGOs received voice and industrial organizations did not, and participants in the industry-voice condition indicated that industrial organizations received voice and NGOs did not. Furthermore, participants in the pro-advice condition indicated that the CCS board gave an advice for CCS implementation, whereas participants in the con-advice condition indicated that the board gave an advice against CCS implementation. Thus, participants perceived the experimental manipulations as intended.

Trustworthiness

Hypothesis 4a stated that inferences regarding the trustworthiness of the CCS board would be lower after it used unequal-voice procedures than after it used an equal-voice procedure. As in Study 4.1, inferred trustworthiness was assessed prior to the manipulation of the advice. We conducted an ANOVA with procedure as independent variable and inferred trustworthiness of the CCS board as dependent variable. This analysis revealed the predicted effect, $F(2, 77) = 6.27$, $p < .01$, $\eta^2 = .14$. Additional t-tests indicated no difference between the two unequal-voice conditions, $t(50) = 0.58$, *ns*, but revealed significant differences between the NGOs-voice condition on the one hand and the equal-voice condition on the other, $t(53) = 2.83$, $p < .001$, as well as between the industry-voice condition and the equal-voice condition, $t(51) = 3.58$, $p < .001$. Inspection of the relevant means revealed that participants in the unequal-voice conditions reported to have less trust in the board ($M_{\text{NGOs voice}} = 3.72$, $SD = 1.29$ and $M_{\text{industry voice}} = 3.52$, $SD = 1.24$) than participants in the equal-voice condition ($M = 4.55$, $SD = 0.85$). These results indicate that unequal-voice procedures instigate less trust (regardless of the type of organization that received voice) than equal-voice procedures and, therefore, these results provide support for Hypothesis 4a. Importantly, at the same time these results rule out the possibility formulated in Hypothesis 4b that the higher level of trustworthiness in the group-voice condition relative to the no-voice condition obtained in Study 4.1 was caused by the fact that a specific type of organization (e.g., environmental NGOs) received voice in the decision-making process, regardless of whether other organizations received an opportunity to voice their opinion.

Acceptance

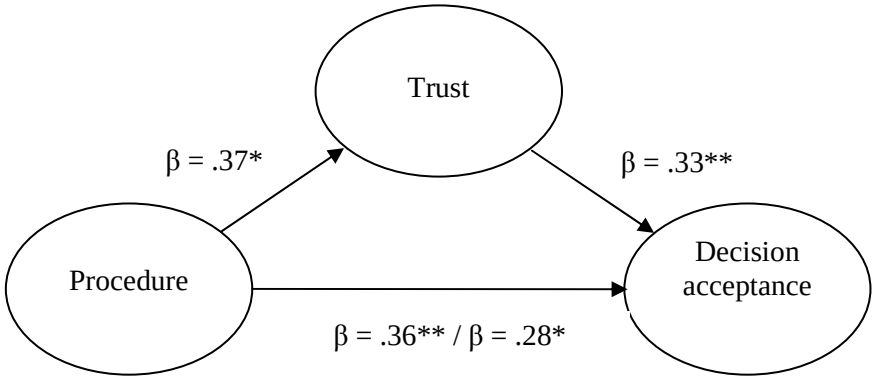
We performed an ANOVA with procedure and advice (pro vs. con) as independent variables and acceptance of the advice of the CCS board as dependent variable, which revealed a significant effect of procedure, $F(2, 74) = 6.65$, $p < .01$, $\eta^2 = .15$, as well as a significant effect of advice, $F(1, 74) = 7.14$, $p < .01$, $\eta^2 = .09$. Importantly, we did not observe an interaction, indicating that the effect of the procedure did not depend on the content of the advice that was given. The effect of advice showed that participants in this study accepted an advice for CCS implementation ($M = 5.23$, $SD = 0.98$) more readily than an advice against CCS implementation ($M = 4.56$, $SD = 0.98$). More relevant to our predictions, however, is the effect of decision-making procedure. Additional t-tests indicated no difference between the two unequal-voice conditions, $t(50) = 0.14$, *ns*, but again indicated significant differences between the NGOs-voice condition and the equal-voice condition, $t(53) = 2.89$, $p < .001$, as well as between the industry-voice condition and the equal-voice condition, $t(51) = 3.27$, $p < .001$. Participants accepted the decision made less easily when this resulted from unequal-voice procedures ($M_{\text{NGOs voice}} = 4.59$, $SD = 1.41$ and $M_{\text{industry voice}} = 4.54$, $SD = 1.23$) than when this resulted from an equal-voice procedure ($M = 5.54$, $SD = 0.98$).

Mediation analysis

Again, we followed the procedure specified by Baron and Kenny (1986) to test by means of regression analyses whether inferred trustworthiness of the CCS board mediated the effect of procedure on acceptance of the advice (Hypothesis 3). First, however, we collapsed the two unequal-voice conditions in order to create a dichotomous independent variable (i.e., equal versus unequal group voice), as the two unequal-voice conditions did not differ from each other in terms of inferred trustworthiness or acceptance. This procedure allowed us to assess by means of a Sobel test whether the magnitude of the direct effect was significantly reduced after introduction of the proposed mediator in the equation. The first regression analysis showed that the effect of the predictor variable (i.e., procedure) on the outcome variable (i.e., acceptance of the advice) was significant ($\beta = .36$, $p = .001$). The second regression analysis showed that the effect of the predictor variable (i.e., procedure) on the proposed mediator (i.e., trustworthiness of the CCS board) was significant too ($\beta = .37$, $p < .001$). The relationship between the proposed mediator (i.e., trustworthiness of the CCS board) and the outcome variable (i.e., acceptance of the advice) was also significant ($\beta = .33$, $p < .01$). The final requirement is a

significant reduction of the direct effect of the predictor variable on the outcome variable after introduction of the proposed mediator in the equation. Although the effect of decision-making procedure on acceptance of the advice remained significant after including trustworthiness of the CCS board as a covariate in the analysis (β = .28, $p < .05$), the reduction of the direct effect was significant, Sobel $z = 2.31$, $p = .02$, indicating mediation. Thus, we replicated and extended the findings obtained in Study 4.1, namely that fair decision making (rather than the involvement of a specific type of interest group, or the provision of voice to some but not all parties involved) enhances trust in authorities, and in this way fosters the acceptance of decisions made by this authority (see Figure 4.2 for a schematic representation of the mediation model).

Figure 4.2 Schematic representation of trust mediating the effect of decision-making procedure on decision acceptance in Study 4.2.



*$p < .05$, **$p < .01$ Sobel $z = 2.31$, $p = .02$

Discussion

Study 4.1 and Study 4.2 indicate that when relevant interest groups receive voice in political decision making, this procedure enhances the perceived trustworthiness of the decision-maker. Trustworthiness of the decision maker in turn makes people more willing to accept the decisions made. Critically, Study 4.2 also showed that an authority did not instigate much trust when it provided only NGOs or only industrial organizations with an opportunity to voice their opinion in the decision-

making process. This finding rules out the possible alternative explanation for the results of Study 4.1 that trustworthiness is already established when decision makers provide voice to specific interest groups, for instance because these are seen as most likely to represent one's own views. That is, Study 4.2 demonstrated that equality of treatment for different interest groups raises trustworthiness of decision makers and increases acceptance of decisions, independently of the identity of the parties involved in the decision-making process. Therefore, the results of Study 4.2 support the validity of our theoretical analysis and increase our confidence that people's responses to the decision-making procedure and outcome depend on features of the decision-making process (rather than the features of the specific parties involved).

Study 4.3

In Study 4.1 and Study 4.2, we have examined how people react to voice for specific parties in decision making about CCS implementation. An important aspect of these studies was that people were informed about CCS prior to learning about the decision-making procedure and completing the questionnaires that we used to assess inferred trustworthiness of decision makers and acceptance of decisions made. As such, people possessed a reasonable amount of knowledge about CCS. Some individuals are likely to be better informed than others about a specific policy issue, however. In Study 4.3, we therefore examined whether well-informed individuals compared to uninformed individuals respond differently to decision-making procedures. Specifically, we examined whether consulting members of the general public in decision making has effects on perceived trustworthiness of decision makers and decision acceptance similar to the effects obtained in the previous two studies.

Previous research on self-esteem and reactions to voice (Brockner et al., 1998) gives an indication of how knowledge on the topic may affect reactions to voice. According to Brockner and colleagues (1998), one determinant of people's motivation to express opinions in decision-making processes is whether they consider their input to be meaningful. People who are not able to provide meaningful input, for instance because they lack the necessary knowledge to be able to do so, will be less motivated to voice their opinion than those who feel that they have the knowledge to provide meaningful input. Consequentially, people who lack the knowledge to provide meaningful input will be less affected by

whether or not they receive an opportunity to voice than people who have knowledge to do so. The research by Brockner and colleagues (1998), however, addressed individuals' own opportunities to voice and concerned their direct personal involvement in a decision-making process.

We extend this reasoning to decision-making processes in which individuals do not have personal involvement. When individuals are not personally involved in decision making, they have to judge whether the input of other parties can contribute to the quality of decision making, instead of considering whether or not their own input is likely to be meaningful. In this case, people who have a reasonable amount of knowledge of the issue may be more acutely aware of the different concerns and interests that are relevant and need to be taken into account. By contrast, these complexities are likely to be less salient for those with little knowledge of the issue, who then should attach less importance to whether or not different parties are involved in the decision-making procedure. Thus, extending the reasoning proposed by Brockner and colleagues (1998) on personal voice to predict the effects of group voice, we argue that individuals with some knowledge of the issue at hand care more about group voice than individuals who lack such knowledge.

We manipulated participants' knowledge level about CCS by means of providing versus not providing them with information about CCS, instead of measuring preexisting interpersonal differences in knowledge about CCS. Manipulating knowledge in this way reduces the likelihood of a possible confound of knowledge level with other variables such as care for the environment. Thus, to test our predictions we crossed the nature of the decision-making procedure (whether or not members of the public received voice in the decision-making process) with the amount of information about CCS provided (whether or not participants received additional information about CCS). We hypothesize that informed individuals care more about public voice in decision making than uninformed individuals (Hypothesis 5), and that variations in procedures elicit stronger effects on inferred trustworthiness and decision acceptance among informed individuals than among uninformed individuals (Hypothesis 6). Furthermore, we examine this different type of group voice to obtain additional support for our central prediction that the provision of group voice enhances inferred trustworthiness, which in turn mediates the effect of public voice (but not the individual in question) on people's willingness to accept decisions (Hypothesis 3).

Method

Participants and design

Eighty-three undergraduate students from Leiden University participated in the study (51 women and 32 men). We randomly allocated each participant to one of the four conditions of the 2 (information about CCS: yes vs. no) by 2 (procedure: public voice vs. no public voice) factorial design. Upon completion of the experiment participants were each paid 3 euros for participating in the experiment.

Procedure

Upon arrival at the laboratory participants were led into separate cubicles, each containing a personal computer. On the computer screen the participants read that a new technology had been developed that enables the storage of carbon dioxide into underground sites. Participants further read that the decision whether or not this new technology, called CCS, should be implemented is both important and complex. Moreover, they read that the national government had appointed a "CCS board" to advise the government about whether or not CCS should be implemented.

After the introduction, participants in the information condition read "Later on you will be asked some questions, but first we want you to read a text that contains further information about CCS." after which they read the text. This text was similar to the text that participants in Studies 4.1 and 4.2 had read and informed them about energy production, greenhouse gasses and global warming, and the new CCS technology. Participants in the no-information condition read "Later on you will be asked some questions, but first we want you to read a text that is not directly related to CCS, but that contains information about the Dutch climate." after which they read this text. This text was not directly relevant to the decision that had to be made about CCS implementation, but was comparable with the text about CCS in the information condition with regard to length and difficulty. After reading the text, all participants completed a test assessing their knowledge about CCS. Subsequently, participants completed a short questionnaire that assessed their desire for public voice in the decision-making process regarding CCS implementation.

Upon completion of the questionnaire, participants read about the CCS board assigned to advise the national government about the implementation of CCS technology. They read that the CCS board had asked Leiden University to study

opinions regarding CCS and to write a report about these opinions. Participants in the public-voice condition read:

> The CCS board provides environmental NGOs, industrial organizations and representatives of the Dutch population an opportunity to voice their opinion. The CCS board has asked Leiden University to assess and report on the opinions of environmental NGOs, industrial organizations and, by means of sampling, a representation of the Dutch population. The report will be used in the formation of an advice concerning the implementation of CCS. You, however, are not included in the sample of people that receive an opportunity to voice.

Participants in the public-no-voice condition read:

> The CCS board provides environmental NGOs and industrial organizations an opportunity to voice their opinion. The CCS board has asked Leiden University to assess and report on the opinions of environmental NGOs and industrial organizations. The report will be used in the formation of an advice concerning the implementation of CCS. The CCS board does not provide the Dutch population an opportunity to voice their opinions, so these will not be represented in the report.

The experiment continued with a second questionnaire that contained measures of participant's willingness to accept the advice and that assessed their inferences regarding the trustworthiness of the CCS board. Subsequently, participants answered to the control question regarding the manipulation of procedure. Finally, they were debriefed, paid, and thanked for their participation in the study.

Dependent variables

Manipulation checks. We checked for the success of the information manipulation using the score on the knowledge test (which was directly administered after the information manipulation). The test contained five multiple-choice questions, each question having four alternative answers. We coded a correct answer "1" and an

incorrect answer "0" and added the scores on the five questions to create an overall "knowledge score". We checked for the success of the procedure manipulation by asking participants near the end of the experiment "Does the CCS board provide Dutch citizens an opportunity to voice their opinion about CCS technology?" (1 = *Yes, all Dutch citizens receive an opportunity to voice their opinion*, 2 = *Some Dutch citizens receive an opportunity to voice their opinion and some do not*, 3 = *No, Dutch citizens do not receive an opportunity to voice their opinion*).

Desire for public voice. The measure of participants' desire for an opportunity for the public to voice opinions contained three items (α = .77), "To what extent do you consider an opportunity for the Dutch population to voice opinions about implementation of CCS to be desirable?" (1 = *not at all*, 7 = *very much*), "To what extent do you consider an opportunity to voice an opinion about CCS to be important?" (1 = *not at all*, 7 = *very much*), and "The Dutch population should have the right to vote about the implementation of CCS." (1 = *completely disagree*, 7 = *completely agree*).

Acceptance. We measured acceptance of the advice using the item "To what extent are you willing to accept the advice by the CCS board?" (1 = *not at all*, 7 = *very much*).

Trustworthiness. We assessed inferred trustworthiness of the CCS board using the same two items as in Study 4.1 and Study 4.2 (r = .86).

Results

Manipulation checks

We conducted an ANOVA with information about CCS (yes vs. no) as independent variable and the knowledge score on the test as dependent variable, which showed the expected difference in the amount of knowledge that participants had about CCS, $F(1, 81) = 215.36$, $p < .001$, $\eta^2 = .73$. Participants who had read the text about CCS technology had significantly more knowledge about CCS technology (M = 4.56, SD = 0.67) than those who had not read this text (M = 1.60, SD = 1.13). Analysis of responses on the question checking the procedure manipulation showed that all participants answered this question as intended. All participants in the public-no-voice condition answered that the public did not receive an opportunity to voice their opinion about CCS technology (answer no. 3), whereas all participants in the public-voice condition answered that some members of the Dutch population received an opportunity to voice their opinion and some did not (answer no. 2).

Desire for public voice

We conducted an ANOVA with information about CCS (yes vs. no) as independent variable and desire for an opportunity for the general public to voice opinions as dependent variable. This analysis showed a significant effect, $F(1, 81) = 4.75$, $p < .04$, $\eta^2 = .06$. In line with our reasoning underlying Hypothesis 5, informed participants reported a greater desire for public voice ($M = 4.11$, $SD = 1.63$) than uninformed participants ($M = 3.42$, $SD = 1.21$).

Acceptance

We performed an ANOVA with information about CCS and the procedure used by the CCS board (public voice vs. no public voice) as independent variables and willingness to accept the advice of the CCS board as dependent variable. This analysis revealed a main effect for procedure, $F(1, 79) = 7.02$, $p < .01$, $\eta^2 = .08$, which was qualified by a significant Procedure by Information interaction, $F(1, 79) = 5.73$, $p < .02$, $\eta^2 = .07$. In line with our reasoning and as predicted in Hypothesis 6, additional analyses of simple main effects revealed that the type of decision-making procedure affected participants' willingness to accept the advice if they had received information about CCS, $F(1, 80) = 13.39$, $p < .001$, but did not affect uninformed participants' willingness to accept the advice, $F(1, 80) = 0.03$, *ns*. Informed participants were more willing to accept the advice after a public-voice procedure than a public-no-voice procedure, whereas uninformed participants' willingness to accept the advice did not depend on the type of decision-making procedure (for means and standard deviations, see Table 4.1).

Trustworthiness

We performed an ANOVA with information and procedure as independent variables and trustworthiness of the CCS board as dependent variable. This analysis showed a main effect of procedure, $F(1, 79) = 7.15$, $p < .01$, $\eta^2 = .08$, which was qualified by a significant Procedure by Information interaction, $F(1, 79) = 4.49$, $p < .04$, $\eta^2 = .05$. In support of Hypothesis 6, the type of procedure affected trust in the CCS board among participants who had been informed about CCS, but did not affect the level of trust among uninformed participants. Informed participants judged the CCS board to be more trustworthy when it employed a public-voice procedure than when it employed a public-no-voice procedure, whereas uninformed participants were inclined to trust the decision-making authority regardless of the type of procedure (for means and standard deviations,

see Table 4.1). These results support our prediction that participants with a reasonable level of knowledge about CCS respond more positively to public-voice procedures than to public-no-voice procedures, even if they are not personally involved in decision making.

Table 4.1 Means (and SD) for decision acceptance and inferred trustworthiness as a function of information received and type of decision-making procedure.

	Informed		Uninformed	
	Public voice	Public no voice	Public voice	Public no voice
Acceptance	5.67^{ab} (1.02)	4.68^{ac} (1.00)	5.25^{a} (0.79)	5.20^{a} (0.70)
Trustworthiness	5.26^{a} (0.92)	4.18^{b} (1.31)	5.10^{a} (0.77)	4.98^{a} (1.01)

Note. Per row different subscripts indicate different means at the $p < .05$ level.

Mediation analysis

Again, we performed mediation analysis to examine whether inferred trustworthiness of the CCS board mediated the relationship between procedure and acceptance. However, we hypothesized this indirect effect to be moderated by participants' knowledge level. That is, we predicted that public voice would only affect acceptance of the advice through inferred trustworthiness (the proposed mediator) among informed participants, not among uninformed participants. Baron and Kenny's (1986) procedure to test for mediation provided initial support for this prediction. By showing the significant Information by Procedure interaction on the outcome variable (i.e., acceptance; $\beta = -.43$, $p < .02$) and the proposed mediator (i.e., trust; $\beta = -.38$, $p < .04$) we met the first two requirements for mediation. The

required association between the proposed mediator and the outcome variable was also significant, β = .53, $p < .001$. Moreover, we found that the Information by Procedure interaction on the outcome variable dropped to nonsignificance (β = -.26, $p = .12$) after introduction of the proposed mediator in the equation. The reduction of the magnitude of the interaction effect was significant, Sobel $z = 1.98$, $p < .05$ (see Figure 4.3), indicating mediation. In addition to this analysis, we applied the procedure developed by Preacher, Rucker, and Hayes (2007) to test for moderated mediation, which uses bootstrapping to test for mediation at different levels of the moderator variable. This analysis further corroborated our reasoning because it supported the mediation model among informed participants (boot $z = 2.75$, $p < .01$), but not among uninformed participants (boot $z = 0.36$, $p > .70$). Thus, consistent with Study 4.1 and Study 4.2, these mediation analyses provided support for the mediating role of trustworthiness in the relationship between decision-making procedure and acceptance of the advice.

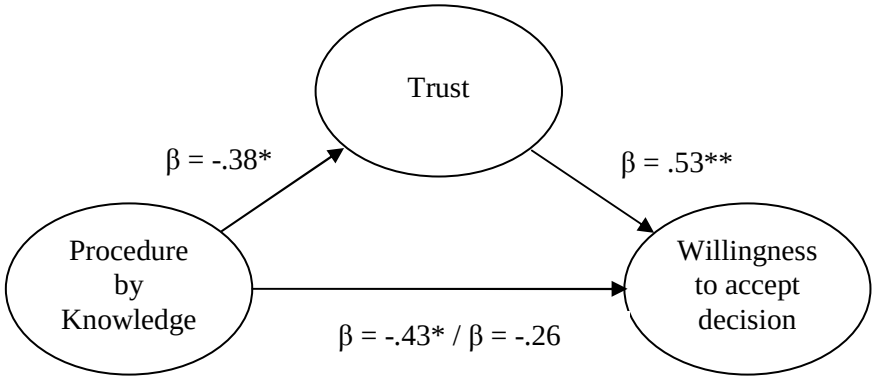
Discussion

This study offers converging support for our central prediction that characteristics of a decision-making procedure affect people's trust in the decision-making authority, which in turn determines the likelihood that they will accept decisions made by this authority. Study 4.3 further indicates that knowledge about CCS technology can moderate this effect: Informed people reacted more positively to public voice compared to no public voice, while uninformed people seemed relatively indifferent about an opportunity for members of the general public to voice their opinions. This finding extends existing insights on procedural voice as it suggests that people do not automatically display negative reactions to no-voice procedures. Instead, we showed that responses also depend on people's knowledge of the problem, which determines the extent to which they find it desirable for the general public to have a voice in the decision-making process.

General discussion

In the current research we have focused on how acceptance of policy decisions is affected by whether or not interest groups receive an opportunity to voice their opinion in decision making. The decision-making issue concerned the implementation of carbon dioxide storage as a climate mitigation option, which is an important issue on the current political agenda. Our results demonstrate that

Figure 4.3 Schematic representation of trust mediating the effect of decision-making procedure on decision acceptance in Study 3.



*$p < .05$, **$p < .001$ Sobel $z = 1.98$, $p < .05$

voice for interest groups in decision-making processes, which we refer to as group voice, affects inferred trustworthiness of decision makers and, as a result, impacts on acceptance of the decisions made. That is, the current studies show that people use procedural information to determine whether or not an authority is worthy of trust and more readily accept decisions made by trustworthy decision makers. Study 4.3 indicates that one's knowledge level can moderate this effect: Informed people reacted more positively to public-voice procedures compared to public-no-voice procedures, whereas uninformed people seemed relatively indifferent about an opportunity for members of the general public to voice their opinions.

Our experiments contribute to the existing literature in several ways. First and foremost, the experiments presented in the current chapter show that procedural voice is not only important in the case of personal involvement in decision making. In our studies, group-voice effects occurred even though participants were not personally involved in the decision-making process. In this way, the present work extends previous research in the domain of procedural fairness, which has primarily focused on personal voice in decision making. We argue that the difference between personal and group voice is important because traditional self-oriented explanations (e.g., instrumental and relational accounts) for preferences of voice procedures over no-voice procedures do not easily apply in the case of group voice. Whereas self-relevant implications are proposed to account for

the effects of voice at the personal level, implications of the procedure for the decision maker (i.e., inferred trustworthiness) can explain why people value group-voice procedures over no-voice procedures.

Another important contribution of the present research is our assessment of reactions to decision-making processes in which several parties with different identities are involved. In Study 4.1 and Study 4.2, we specifically focused on whether people care about voice for interest groups other than the general public (i.e., environmental NGOs and industrial organizations). Study 4.3 extended this analysis by focusing on reactions to procedures that explicitly do or do not provide the general public (but not the individual in question) with an opportunity to voice opinions. Across all three studies, we found that the provision of group voice by a decision-making authority – communicating a fair procedure – instigated trust, which resulted in a greater willingness to accept decisions made by the decision maker. Importantly, we excluded alternative explanations, such as the possibility that the involvement of specific parties is crucial (Study 4.2). Thus, it seems important that different types of interest groups have equal opportunities to voice their opinions in decision making, independently of the identity of the organizations involved.

The current research also contributes to the existing literature in that we examined the effects of the level of information available to the self (Study 4.3). Interestingly, this last study showed that reactions to public-voice procedures only differed from reactions to public-no-voice procedures among people who had received information about CCS, but not among those who had not received such information. That is, we found that only people who had some knowledge of the topic under consideration displayed public-voice effects. One explanation for this finding is that participants who had been informed about CCS were more aware of the complexity of the issue and the need for proper decision-making procedures in dealing with this issue. The topic was still quite complex for informed participants, so that they did not have particularly strong feelings about the accuracy or favorability of the decision-making outcome (recall that in Study 4.1 and 4.2 participants' own attitudes towards CCS implementation did not affect acceptance of the advice provided by the CCS board, regardless of the nature of this advice). Nevertheless, they did consider it important that attention is paid to the concerns among the general public with regard to CCS. Thus, as a result of the information received they see the importance of integrating views and concerns of different interest groups into the decision, including that of the general public.

The positive relationship between trustworthiness of decision makers and acceptance of policy decisions observed in the current research complements findings in other areas of research indicating that trustworthiness of authorities has positive effects on their effective functioning (Tyler & Degoey, 1996). For example, it has been found that employees' trust in supervisors positively impacts employees' support for their supervisor, particularly when outcomes are unfavorable (Brockner, Siegel, Daly, Tyler, & Martin, 1997). Moreover, trustworthiness of organizational authorities has been found to positively influence subordinates' organizational citizenship behavior (Konovsky & Pugh, 1994), job performance (Oldham, 1975), and other types of constructive organizational behavior (for an overview, see Dirks & Ferrin, 2001). At the societal level, trustworthiness of legal authorities creates citizen compliance to rules without coercion (Tyler, 1990). Along these lines, we have shown here that trustworthiness of the parties responsible for making national-level policy decisions positively affects public acceptance of these decisions, which is necessary for successful implementation of the policies in question.

Limitations and directions for future research

The current results were obtained in experiments among undergraduate university students, which may be raised as a possible limitation. We think, however, that the use of these participants does not necessarily undermine the validity of our current findings. In fact, it can be argued that student populations provide a strong test for our prediction that the provision of voice to interest groups (without any personal involvement in the decision-making process) can enhance trust in decision-making authorities and foster decision acceptance. That is, undergraduate students are likely to have higher intelligence, to be more politically active, and to have greater knowledge about scientific constructs, probably causing them to be more critical of authorities than a representative sample of members of the general public. Moreover, there is no reason to believe that undergraduate students differ from other people in how important they consider fair procedures to be or in the extent to which they think trustworthiness is important. Fairness and trustworthiness represent quite basic human values that do not only apply to this context or to the undergraduate students in these experiments. Indeed, a positive correlation between trust in organizations using gene technology and public acceptance of this technology was obtained from a representative sample of the Swiss population (Siegrist, 2000). Similarly, Leung and colleagues (2007) showed that Hong Kong

citizens' evaluations of the Hong Kong government were influenced by the fairness of the procedures used to arrive at policy decisions regarding Vietnamese asylum seekers. This illustrates the robustness of voice effects in general, and suggests that the observations of the present research may generalize to broader research populations.

Finally, even though undergraduate students may possess more knowledge about scientific constructs in general, just like members of the general public they will tend to have relatively little knowledge about a specific issue such as CCS. Indeed, in Study 4.3 participants who did not receive specific information about CCS technology were clearly less able to correctly answer a number of questions testing their knowledge of the issue at hand than those who had received such information. Comparable differences in knowledge level are likely to be observed among members of the general public, of whom some will have or develop a reasonable level of knowledge about CCS, whereas others will stay uninformed. For the same reason, we think that the results of the current studies are not limited to the decision-making issue under consideration here (i.e., CCS implementation), but should also be found in research on other national-level policymaking situations. Future research could examine the boundary conditions of the effects observed here, for example by assessing group-voice effects in decision making on issues that are less difficult to judge for members of the general public or about which people have stronger outcome preference. Potentially, in these cases people's own outcome preferences impact on authority evaluations and acceptance of policy decisions, over and above the element of group voice in decision making. Future research is needed to examine this possibility.

Conclusion

On the basis of three studies we conclude that inferred trustworthiness of decision makers is an important attribute in complex political decision making. When people are not capable of determining whether a certain decision is favorable or unfavorable, they will more readily accept the decision and display support behavior when the decision maker is considered to be trustworthy (rather than untrustworthy). Furthermore, we have shown that people use procedural information about group voice to determine whether or not they can trust the authority. Accordingly, policymakers should be aware that acceptance of policy decisions is not only affected by the content of the information that they provide to the public. Instead, it is crucial that they employ fair group-voice procedures to

reach policy decisions and that they communicate the nature of these decision-making procedures to the general public.

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Nederlandse samenvatting
(Summary in Dutch)

Deze dissertatie gaat over antecedenten en consequenties van publiek vertrouwen in organisaties die betrokken zijn bij de ontwikkeling van en de besluitvorming over CCS[16] technologie. In het kort houdt deze technologie in dat het koolstofdioxide (CO_2) dat vrijkomt bij de verbranding van fossiele brandstoffen wordt afgevangen en getransporteerd naar geologische formaties (bijvoorbeeld lege aardgasvelden) waarin het langdurig kan worden opgeslagen. Het doel van CCS technologie is het verminderen van de alsmaar toenemende concentratie koolstofdioxide in de atmosfeer, aangezien dit volgens wetenschappers de voornaamste oorzaak van klimaatverandering is (IPCC, 2007). Door middel van de inzet van CCS technologie kan energiewinning uit fossiele brandstoffen blijven plaatsvinden zonder dat de concentratie koolstofdioxide in de atmosfeer toeneemt. Vanwege deze eigenschap wordt de inzet van CCS technologie, naast het terugdringen van energieverbruik en het uitvoeriger benutten van duurzame energiebronnen, beschouwd als een belangrijke strategie om de uitstoot van koolstofdioxide te verminderen en daarmee klimaatverandering tegen te gaan.

Publieke acceptatie van CCS is cruciaal voor het succesvol implementeren van deze technologie. Onderzoek heeft echter aangetoond dat mensen weinig kennis hebben over CCS en de relatie tussen de concentratie koolstofdioxide in de atmosfeer en het veranderende klimaat (de Best-Waldhober, Daamen, & Faaij, in druk). Hierdoor zijn zij niet goed in staat om zelf tot een weloverwogen en accuraat oordeel over de wenselijkheid van de technologie te komen (dit principe geldt ook voor andere complexe technologieën, zoals gentechnologie; Siegrist, 2000). Daarom is de vraag op grond waarvan mensen zullen besluiten de inzet van CCS te accepteren of juist af te wijzen.

De redenering die in deze dissertatie centraal staat is dat mensen zich hierbij zullen laten leiden door de mate van vertrouwen die zij hebben in de organisaties die betrokken zijn bij CCS (onder anderen industriële organisaties, milieuorganisaties en overheidsorganisaties). Naarmate men meer vertrouwen heeft in een organisatie zal men eerder geneigd zijn het standpunt met betrekking tot de

[16] De afkorting “CCS” staat in het Engels voor “carbon dioxide capture and storage”.

inzet van CCS technologie van deze organisatie te volgen. Het doel van deze dissertatie is inzicht te verschaffen in factoren die van invloed zijn op de mate van publiek vertrouwen in CCS organisaties en te toetsen hoe publiek vertrouwen van invloed is op publieke acceptatie van CCS.

In Hoofdstuk 1 wordt een korte inleiding gegeven op de huidige klimaatproblematiek en de rol die CCS technologie kan spelen bij het tegengaan van klimaatverandering. Daarna volgt een korte bespreking van relevante literatuur over vertrouwen en wordt een drietal psychologische processen beschreven die relevant zijn voor een beter begrip van antecedenten en consequenties van publiek vertouwen in organisaties die betrokken zijn bij CCS. Het eerste proces heeft betrekking op de relatie tussen publiek vertrouwen op basis van *competenties* en publiek vertrouwen op basis van *integriteit* aan de ene kant en publieke acceptatie van CCS aan de andere kant. Het tweede proces betreft de invloed van door CCS organisaties naar het publiek gecommuniceerde informatie op de mate van publiek vertrouwen in deze organisaties. Het derde proces gaat over de relatie tussen de wijze waarop besluiten ten aanzien van CCS tot stand komen, het vertrouwen dat mensen in de besluitvormer hebben, en de mate waarin zij geneigd zijn besluiten van deze besluitvormer te accepteren. Het onderzoek dat naar deze drie processen is gedaan staat beschreven in de drie empirische hoofdstukken die deel uitmaken van deze dissertatie (Hoofdstukken 2, 3 en 4).

In Hoofdstuk 2 wordt onderscheid gemaakt tussen twee typen vertrouwen. Het eerste type heeft betrekking op vertrouwen dat gebaseerd is op percepties van de competentie van een organisatie en is gerelateerd aan vragen als “Heeft de organisatie veel ervaring op dit gebied?”en “Heeft de organisatie voldoende expertise in huis?”. Het tweede type vertrouwen is gebaseerd op percepties van de integriteit van een organisatie en is gerelateerd aan vragen als “Geeft de organisatie eerlijke informatie?” en “Heeft de organisatie oog voor publieke belangen of slechts voor eigenbelang?”. Door middel van experimenteel onderzoek is vervolgens de invloed van deze twee typen vertrouwen op publieke acceptatie van CCS in kaart gebracht hoe. Uit het onderzoek blijkt dat mensen geneigd zijn de positie van een CCS organisatie te volgen wanneer zij op basis van waarnemingen ten aanzien van de *competentie* van de organisatie veel vertrouwen in de organisatie hebben. Dat wil zeggen dat mensen in dit geval meer geneigd zijn de inzet van CCS te accepteren wanneer de organisatie een voorstander is van CCS dan wanneer de organisatie een tegenstander is van CCS. Dit effect lijkt te worden veroorzaakt door het feit dat mensen de voordelen van CCS groter achten wanneer

de organisatie een voorstander is dan wanneer de organisatie een tegenstander is. Echter, als het op competentie gebaseerde vertrouwen laag is, dan laten mensen zich niet zozeer beïnvloeden door het standpunt van de organisatie. In dit geval lijkt het er op dat mensen twijfelen over de juistheid van het oordeel van de organisatie, waardoor het standpunt van de organisatie niet van invloed is op hoe mensen de voordelen van CCS beoordelen (en op hun bereidheid om CCS te accepteren).

De invloed van op *integriteit* gebaseerd vertrouwen in een organisatie op acceptatie van CCS is anders dan de hierboven beschreven invloed van op competentie gebaseerd vertrouwen. Als vertrouwen in een organisatie laag is vanwege waarnemingen met betrekking tot de integriteit van de organisatie, dan zijn mensen geneigd tegen de positie van deze organisatie in te gaan. In dit geval verwerpen mensen de inzet van CCS als de organisatie een voorstander is van de inzet van CCS, terwijl zij geneigd zijn CCS te accepteren wanneer de organisatie een tegenstander is. Echter, als vertrouwen in een organisatie hoog is vanwege waarnemingen ten aanzien van de integriteit van de organisatie, dan lijkt het standpunt van de organisatie niet zozeer van invloed op acceptatie van CCS. Dit onderzoek is relevant omdat het laat zien dat het voor organisaties die als weinig integer worden waargenomen van groot belang is om in te zetten op manieren waarmee het waargenomen gebrek aan integriteit overkomen kan worden.

In Hoofdstuk 3 wordt onderzocht hoe publiek vertrouwen in verschillende typen CCS organisaties afhangt van de motieven die mensen deze organisaties toedichten. Hierin wordt onderscheid gemaakt tussen twee typen motieven, namelijk publiekdienende motieven (zoals zorg voor het milieu en publiek welzijn) en organisatiedienende motieven (zoals het nastreven van een zo groot mogelijke winst en het verkrijgen van een positief imago). Een veldstudie laat zien dat mensen meer vertrouwen hebben in milieuorganisaties dan in industriële organisaties die bij CCS betrokken zijn. Dit verschil in publiek vertrouwen kan worden verklaard door het feit dat mensen denken dat milieuorganisaties het publieke belang nastreven (publiekdienende motieven), terwijl zij denken dat industriële organisaties het belang van de organisatie zelf nastreven (organisatiedienende motieven). Het verschil in publiek vertrouwen kan niet verklaard worden door eventuele verschillen in competentie aangezien zowel milieuorganisaties als industriële organisaties relatief competent gevonden worden.

In dit hoofdstuk wordt ook experimenteel onderzocht hoe communicatie over motieven van invloed is op de mate van vertrouwen in deze typen

organisaties. Uit dit onderzoek blijkt dat organisaties het meest worden vertrouwd wanneer zij argumenten met betrekking tot de inzet van CCS geven die in overeenstemming zijn met het type motief dat mensen van de organisaties verwachten (bijvoorbeeld een economisch argument voor de inzet van CCS door een industriële organisatie). Dit impliceert dat industriële organisaties weinig vertrouwen wekken door publiekdienende motieven te communiceren en beter "eerlijk" uit kunnen komen voor de organisatiedienende motieven die hen worden toegedicht. Gelijktijdig communiceren van publiekdienende motieven (bijvoorbeeld een milieuargument voor de inzet van CCS) en organisatiedienende motieven lijkt een effectievere manier voor industriële organisaties om vertrouwen te wekken onder het publiek.

In hoofdstuk 4 wordt aandacht besteed aan de invloed van het besluitvormingsproces ten aanzien van CCS op de mate van publiek vertrouwen in de besluitvormer en acceptatie van besluiten die worden genomen. Specifiek wordt onderzocht hoe het geven van inspraak aan verschillende typen belanghebbenden (i.e., milieuorganisaties, industriële organisaties en de Nederlandse bevolking) van invloed is op de mate van publiek vertrouwen in de politieke besluitvormer, aangezien dit medebepalend zal zijn voor de mate waarin het publiek geneigd is het voorgestelde beleid ten aanzien van CCS te accepteren. Uit dit onderzoek blijkt dat het expliciet geven van inspraak aan milieuorganisaties en industriële organisaties in het CCS besluitvormingsproces meer vertrouwen wekt en daardoor inderdaad tot meer acceptatie van besluiten over de inzet van CCS leidt dan wanneer geen mogelijkheid tot inspraak aan deze organisaties wordt gegeven. Dit effect van "groepsinspraak" op de mate van vertrouwen in de besluitvormer en acceptatie van het besluit kan niet worden verklaard door het simpele feit dat milieuorganisaties inspraak kregen (ongeacht of industriële organisaties ook inspraak in de besluitvorming kregen). Vervolgonderzoek laat namelijk zien dat besluitvormers vertrouwen wekken als zij inspraak geven aan beide typen organisaties, maar niet als zij alleen inspraak geven aan een specifiek type organisatie en niet aan een ander type organisatie. Kortom, het is niet zo dat mensen het enkel belangrijk vinden dat milieuorganisaties die zij vertrouwen inspraak krijgen; mensen vinden het belangrijk dat besluiten op een grondige en rechtvaardige manier tot stand komen en daarbij is ook het geven van inspraak aan industriële organisaties van belang.

Het laatste onderzoek in dit hoofdstuk heeft betrekking op het wel of niet geven van inspraak aan de Nederlandse bevolking en de vraag of het kennisniveau

van mensen ten aanzien van CCS van invloed is op hoe belangrijk zij publieke inspraak vinden. Het in kaart brengen van de invloed van kennisniveau op hoe mensen reageren op karakteristieken van CCS besluitvormingsprocedures is ondermeer van belang omdat er in de toekomst ook kennisverschillen onder de Nederlandse bevolking zullen zijn. In dit onderzoek werd daarom de helft van de deelnemers geïnformeerd over CCS en de ander helft niet, waardoor een groep ontstond met relatief veel kennis over CCS technologie en een groep met relatief weinig kennis over dit onderwerp. Vervolgens werden de deelnemers geïnformeerd over het CCS besluitvormingsproces. De helft van alle deelnemers las dat naast milieuorganisaties en industriële organisaties ook het publiek inspraak kreeg, terwijl de andere deelnemers lazen dat alleen milieuorganisaties en industriële organisaties inspraak kregen en de bevolking niet. De resultaten van dit onderzoek laten zien dat mensen die weinig kennis hebben over CCS publieke inspraak niet essentieel vinden; het feit dat zij weten dat zowel milieuorganisaties als industriële organisaties inspraak hebben lijkt voor hen genoeg. Voor mensen met een grotere mate van kennis over CCS lijken publieke inspraak in het besluitvormingsproces echter wel van belang. Zij zijn meer geneigd besluiten met betrekking tot de inzet van CCS te accepteren op basis van een besluitvormingsprocedure waarin ook het publiek inspraak heeft dan op basis van een procedure die niet voorziet in een mogelijkheid voor inspraak van de Nederlandse bevolking.

Het onderzoek in deze dissertatie heeft zowel belangrijke theoretische als praktische implicaties. Vanuit theoretisch oogpunt is het onderzoek relevant omdat het bijvoorbeeld laat zien dat de twee typen vertrouwen (vertrouwen op basis van competentie en vertrouwen op basis van integriteit) op verschillende manieren van invloed zijn op publieke acceptatie van een nieuwe technologie zoals CCS. Hoewel het onderzoek experimenteel van karakter is, heeft het zeker ook relevantie voor de praktijk. Sterker nog, experimenteel onderzoek is uitermate geschikt voor het vroegtijdig identificeren en analyseren van psychologische processen die een rol zullen gaan spelen bij het tot stand komen van toekomstige publieke acceptatie van de inzet van CCS, zonder daarbij de doelgroep (bijvoorbeeld de Nederlandse bevolking of omwonenden van een koolstofdioxide opslagveld) te “besmetten”. Immers, op deze manier is het bijvoorbeeld mogelijk eerst te onderzoeken welke wijze van communiceren effectief is zonder eerst een paar keer de mist in te gaan bij het informeren van mensen (wat zeer belangrijke gevolgen kan hebben voor de mate van publieke acceptatie van CCS). Besef van de processen die een rol spelen bij publieke acceptatie van CCS is cruciaal om te voorkomen dat mensen de inzet

van CCS om onjuiste redenen verwerpen (bijvoorbeeld wanneer zij zich baseren op ideeën die aantoonbaar niet kloppen).

Conclusie

Het huidige onderzoek heeft enkele processen blootgelegd die van belang zijn voor het voorspellen en verklaren van de mate van publieke acceptatie van CCS. Hieruit blijkt dat publieke acceptatie van CCS niet alleen zal afhangen van de objectieve kwaliteiten van CCS en de informatie die hierover wordt gegeven, maar ook in belangrijke mate van het type informatie dat wordt gegeven (bijvoorbeeld informatie met betrekking tot milieu- versus economische consequenties van CCS of informatie over potentiële voordelen versus risico's van CCS), de bron die de informatie geeft (bijvoorbeeld milieuorganisaties versus industriële organisaties) en de wijze waarop besluiten met betrekking tot CCS tot stand komen. Ten eerste geeft het onderzoek aan dat het voor organisaties desastreus is wanneer het publiek hen waarneemt als niet integer. Aangezien publiek vertrouwen in industriële organisaties te wensen over laat is het voornamelijk voor deze organisaties van belang om door middel van communicatie naar het publiek het vertrouwen van mensen te vergroten. Communicatie lijkt niet effectief wanneer industriële organisaties alleen publiekdienende (milieu)argumenten voor de inzet van CCS geven. Industriële organisaties doen er beter aan eerlijk naar het publiek te communiceren dat naast de gevolgen voor het milieu ook organisatiedienende motieven een rol spelen. Voor overheidsorganisaties is het van belang om duidelijk aan te geven dat er zowel milieuorganisaties als industriële organisaties bij de besluitvorming over CCS betrokken zijn. Hierdoor wordt de suggestie van achterkamertjespolitiek vermeden en wordt duidelijk dat besluiten op een rechtvaardige en goede manier tot stand komen. Dit wekt vertrouwen en kan tevens al in een vroegtijdig stadium van de besluitvorming over CCS plaatsvinden. Het is in de toekomst aan de verschillende CCS organisaties om de inzichten die deze dissertatie heeft opgeleverd op een juiste manier te gebruiken.

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Curriculum Vitae

Bart Terwel was born on November 12th 1980, in Arnhem, the Netherlands. After completing his secondary education (VWO) at the Christelijk Lyceum Arnhem (CLA) and the Leidse Onderwijsinstellingen (LOI) in 2000, he moved to Leiden to study Social and Organizational Psychology at Leiden University. He received his Master's degree in 2004. His master thesis addressed the influence of "fixed-sum" and "variable-sum" assumptions on making use of the integrative potential that is often present in negotiations. In September 2004, he started his PhD training at Leiden University on a research project within the CATO program (the Dutch national research program on carbon dioxide capture and storage technology), which has resulted in the present dissertation. He is currently employed as a post-doctoral researcher at Leiden University. Aside from studying science, one of his major interests is the practice of draughts.

Bart Terwel werd geboren op 12 november 1980, in Arnhem, Nederland. Na het afronden van zijn middelbare school (VWO) aan het Christelijk Lyceum Arnhem (CLA) en de Leidse Onderwijsinstellingen (LOI) verhuisde hij naar Leiden om Sociale en Organisatiepsychologie te studeren aan Universiteit Leiden. Hij behaalde zijn doctorandusgraad in 2004. Zijn afstudeerscriptie ging over de invloed van "fixed-sum" en "variable-sum" assumpties op het benutten van integratief potentieel dat vaak aanwezig is in onderhandelingen. In september 2004 begon hij als onderzoeker in opleiding aan Universiteit Leiden op een onderzoeksproject binnen het CATO programma (het nationale Nederlandse onderzoeksprogramma over koolstofdioxide afvang- en opslagtechnologie), wat heeft geresulteerd in het huidige proefschrift. Hij is momenteel werkzaam als post doctoraal onderzoeker aan Universiteit Leiden. Buiten het beoefenen van wetenschap heeft het damspel zijn grote interesse.

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