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**Author:** Koot, Charlotte  
**Title:** Making up your mind about a complex technology: an investigation into factors that help or hinder the achievement of cognitive closure about CCS  
**Issue Date:** 2015-01-21
Chapter 4

It Seems Like They Know What They’re Talking About: How Perceptions of Source Expertise Affect the Ability to Achieve Cognitive Closure

This chapter is based on Koot, C., Ter Mors, E., Ellemers, N., & Daamen, D. D. L. (2014c). Facilitation of attitude formation through communication: How perceived source expertise enhances the ability to achieve cognitive closure about complex environmental topics. Manuscript submitted for publication.
Closed attitudes—attitudes about which people have achieved a state of cognitive closure—are known to be more stable and predictive of actual behavior than “unfinished” or open attitudes (cf. Bassili, 1996; Fazio & Zanna, 1978; Krosnick & Petty, 1995; Petty & Cacioppo, 1986b). As a consequence, such closed, definite attitudes are also more predictive of people's support for or opposition to policies, projects, or other enterprises that affect them or are otherwise relevant to them. For example, people's current attitudes on nuclear energy are more indicative of their future support for a government's plan to increase the production of nuclear energy if the attitudes are closed, compared to when they are unfinished and open. It is hence important to understand the factors that lead people to achieve a state of cognitive closure. The present research investigates how one such antecedent of cognitive closure—the ability to achieve closure—is determined in the context of information provision about a complex, publicly relevant topic. We examine the importance of the level of expertise that people ascribe to a source of information for their ability to achieve cognitive closure on a complex topic. Specifically, we will examine whether and how the identity of a source and the communication of consensus influence people's perceptions of source expertise, and as such impact on the ability to achieve closure.

The Ability to Achieve Cognitive Closure

Research on precursors of cognitive closure has so far primarily focused on people's need for closure (e.g., Kruglanski et al., 2009; Kruglanski & Webster, 1996; Webster & Kruglanski, 1994, 1997). This research has uncovered that people tend to differ from each other in the extent to which they feel compelled to reach and maintain a state of closure, or are comfortable to retain a more open, undecided view of different issues. More recent work, however, has also started paying attention to the idea that people differ in their ability to achieve cognitive closure, i.e., whether they manage to make up their mind and decide what they think, or feel unable to do so (e.g., Kossowska & Bar-Tal, 2013; Roets & Soetens, 2010; Roets & Van Hiel, 2007).

In our prior research we demonstrated that the extent to which people feel able to achieve closure is an important antecedent of the actual achievement of cognitive closure in the context of complex topics (Koot, Ter Mors, Ellemers, & Daamen, 2014a). In this work, we define the ability to achieve closure as the perceived ability to make judgments and decisions confidently and with certainty (cf. Roets & Van Hiel, 2007). We developed an experimental procedure to manipulate the extent to which participants believed they were able to achieve closure. In two experimental studies using this manipulation, participants were invited to form an attitude on the complex, environmental topic of carbon capture and storage technology (CCS). Participants who were led to believe
that their ability to achieve closure was relatively high actually achieved more cognitive closure in their attitudes towards CCS—as indicated in a self-report measure as well as a behavioral measure (taking a stance in an opinion poll). This research thus revealed that people’s ability to achieve closure influences the level of cognitive closure that they achieve and demonstrated that the extent to which people feel able to achieve closure can also be determined by external factors, instead of representing a stable individual difference factor (see also Kossowska et al., 2014). Only a few studies so far have manipulated the ability to achieve closure, and have done so by employing relatively artificial experimental procedures. Now that it has been established that external factors in principle can affect whether or not people feel capable of making up their mind, the next question is which factors tend to have such effects in daily life. In the case of decision making about complex topics, a pertinent complication when trying to form one’s opinion is that multiple parties are available to provide potentially relevant information. In judging the value of such information, we know that people tend to refer to source characteristics as useful cues (e.g., Bohner, & Dickel, 2011). In the present research, we examine whether the perceived expertise of an information source relates to people’s ability to form a closed attitude on complex topics.

Perceived Source Expertise and the Ability to Achieve Closure

The public discourse in today’s society is increasingly characterized by highly complex issues, such as international political conflicts and the threat of climate change. Due to the complex nature of such topics, many people will feel incapable of forming a definite attitude about them, or of achieving cognitive closure. In order to advance the attitude formation process, people can consult information on the topic in question. However, given the extensive supply of information that is available these days, not all information will be equally helpful for the formation of a closed attitude. In this study we propose that people feel particularly strengthened in their ability to make up their mind about complex issues when they believe that they are consulting or receiving information from a knowledgeable source. That is, people should feel more comfortable forming their attitude on the basis of information from a source that they believe to be an expert, rather than a lay source. Prior research (for instance in product marketing) has shown that identical information seems more convincing when originating from a source that is regarded as having high expertise, compared to low expertise (e.g., Cialdini & Goldstein, 2004; Pornpitakpan, 2004). That is, persuasive communication has a greater impact on the content of people’s attitudes when they believe that information is provided by a highly knowledgeable source versus an uninformed source. We build
on this prior research to examine whether a parallel effect of perceived source expertise can be observed for the confidence people have in their ability to achieve closure. We propose that people feel better able to achieve cognitive closure on the basis of a piece of information when they perceive the information source to have high, rather than low, relevant expertise.

**Source Identity and Consensus as Cues of Source Expertise**

If perceived source expertise is indeed important for people’s ability to achieve closure, then this raises the question of what determines people’s impressions of source expertise. In the present research, we propose two determinants of perceptions of source expertise, namely who is providing the information (source identity) and what message is being communicated (consensus vs. non-consensus).

To start with the importance of who is providing the information; we argue that people may consider the identity of an information source to gain a sense of its expertise. That is, when different individuals or stakeholders provide information, merely knowing who they are or which body they represent can already provide an indication of the source’s knowledgeability (e.g., Reimer et al., 2004). For instance, knowing whether a statement is made by a random person in the street, a relevant professional, or a journalist already indicates the likelihood that this source has relevant expertise about the topic in question. Which of these parties is most likely to offer expert information further depends on the issue under consideration. When receiving information on the effectiveness of vaccinations for instance, knowing that this information was provided by a professor of immunology will lead people to infer high source expertise, as an academic title in a relevant field suggests that years of high-level education, training, and professional experience are contained in the information provided. This is less likely to be the case, however, when another parent in the playground proclaims his or her beliefs about potential side effects of immunization, as this most probably reflects idiosyncratic views, very limited case observations or unwarranted hearsay. We therefore predict that relevant features indicating the identity of an information source determine people’s perceptions of the source’s expertise. Furthermore, we predict that when people attribute high expertise to a source on the basis of its identity, this should lead them to feel better able to achieve closure compared to when they believe the source to have low relevant expertise.

Second, we argue that for perceptions of source expertise it may not only matter who provides the information, but that it is also important what message the information source communicates. Prior research has tended to consider sources of information either as being represented by a particular individual, or as a unified entity, representing
a single particular stance or opinion. In real life, however, a source of information is more likely to constitute of a collection of individuals, or group of relevant stakeholders, such as professionals, citizens, politicians, or businesses. Moreover, in particular in the case of complex and multi-faceted topics, it is not self-evident that all individuals who together constitute a particular information source are in full agreement with each other, or focus on the same information aspects. As a result, when such sources provide information about complex topics, they do not always draw definite conclusions about the issue at stake. They may, for instance, indicate concern about current developments without providing explicit guidelines about what should be done instead. For example, an organization involved with the fight against global warming can provide information about different technologies that have been developed to reduce greenhouse gas emissions, while explaining that there are conflicting views on which of these technologies can be best employed. In view of our current research interest, the question is how such (lack of) consensus affects the perceived expertise of the source in question among those receiving such information, and how such a message as a consequence affects their ability to achieve closure on the topic. In highly complex situations, even experts do not necessarily agree about each aspect of the issue in question and lack of consensus may simply reflect a very careful and nuanced consideration of the complex nature of the topic. However, we anticipate that communicating disagreement about relevant concerns or conclusions will generally tend to be interpreted as a sign of low expertise—for instance when this disagreement is seen to reveal that not everyone is equally aware of relevant facts. If this is the case, an information source that expresses consensus about a complex topic might more easily evoke the impression that individuals draw on a common and objective knowledge base and that they “know what they are talking about”. Expressions of consensus may thus be taken as a proxy of high source expertise. We therefore predict that people perceive higher source expertise when an information source communicates consensus rather than non-consensus. Furthermore we predict that when people attribute high expertise to a source that communicates consensus, this should lead them to feel better able to achieve closure compared to when an information source communicates disagreement—resulting in a reduction of perceived expertise. Thus, we argue that perceptions of source expertise do not only depend on the identity of the source or its objective level of expertise, but is also likely to vary depending on the content of the source's communication.

Finally, in examining the impact of source identity as well as level of consensus communicated, we will explore the possibility that the impact of communicating (non-)consensus on perceived expertise also depends on the identity of the source. We anticipate that there is relatively little added value in communicating consensus
when high expertise is already clearly implied in the identity of the source. Thus, communication of consensus might particularly increase the perceived expertise of a source (and increase people’s ability to achieve closure) whose expertise seems to be low on the basis of its identity. For instance, when private citizens who have no particular knowledgeable ability on climate change all agree that in their garden plants come into bloom earlier every year, this may suggest some shared expertise based on lay observations, even if their observations are inaccurate or remain unverified.

The Present Research

We examine the importance of perceptions of source expertise for people’s ability to achieve cognitive closure about complex topics in two experimental studies. Specifically, we assess whether and how the identity of the information source and the communication of (non-)consensus affect perceived source expertise. Moreover, we investigate how these effects on perceptions of source expertise in turn influence people’s ability to achieve closure. The studies will be conducted in the context of the complex environmental topic of carbon capture and storage technology (CCS); a climate change mitigation technology that is considered important for stabilizing greenhouse gas concentrations in the atmosphere (IPCC, 2007). In both studies, the identity of the information source is manipulated by explaining to participants that they are to receive information on CCS from either the “Association of Citizens and Sustainability” or the “Association of Dutch Geophysicists and Sustainability”. In Study 4.2, we additionally manipulate source consensus by explaining that the members of the information source either agree or disagree among themselves regarding the consequences of CCS for the environment. The level of source expertise that participants perceive and the extent to which they feel able to achieve closure are measured in both studies as central outcome variables. Additionally, in Study 4.2, participants are actually provided with information on CCS that allegedly originates from the information source and in which consensus or non-consensus is communicated. In this study we then also measure the extent to which participants achieve cognitive closure in their attitude formation towards the implementation of CCS with both a self-report and a behavioral measure. We test the following hypotheses:

H1. We argue that people will perceive an association of relevant professionals to have higher expertise on CCS than an association of citizens, and that this higher level of perceived expertise in turn increases people’s ability to achieve closure on the complex

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10 CCS involves the capture of CO2 produced in power plants or other industrial sources, transportation of the CO2 to underground storage sites (e.g., depleted oil and gas fields), and long-term storage in these sites. As with other complex technologies, public acceptance is a critical factor in the successful implementation of CCS (e.g., Markusson et al., 2011; Terwel et al., 2012).
topic of CCS. As a result, we predict that source identity will indirectly influence ability to achieve closure through perceived source expertise.

H2. We argue that people will perceive an information source that communicates consensus to have higher expertise than a source that communicates non-consensus, and that this higher level of perceived expertise in turn increases people’s ability to achieve closure on the complex topic of CCS. We thus predict that source consensus will indirectly influence ability to achieve closure through perceived source expertise.

Additionally, we will explore whether or not the indirect effect of consensus on ability to achieve closure, as predicted in Hypothesis 2, applies equally to both types of sources examined (relevant professionals vs. citizens). We anticipate that the added value of consensus as an indicator of expertise may be particularly evident in the case of a lay source (citizens).

**Study 4.1**

The aim of Study 4.1 was to test our prediction that the identity of an information source affects perceptions of source expertise, and in this way indirectly influences people’s ability to achieve closure on a complex topic (Hypothesis 1). Initial support for this hypothesis was found in a preliminary study that was set up, among other things, to explore the effects of source identity on perceived source expertise and ability to achieve closure. In this preliminary study we used a similar setup and an identical source identity manipulation as in Study 4.1, but were unable to achieve random allocation to conditions because data for the two source identity conditions were collected separately and several months apart from each other. Nevertheless, data from this preliminary study revealed that university students (N = 89) perceived higher levels of source expertise (α = .92, $F[1, 87] = 23.31, p < .001, \eta_p^2 = .21$) and perceived themselves to be better able to achieve closure on CCS (α = .68, $F[1, 87] = 7.53, p = .007, \eta_p^2 = .08$) when anticipating to receive information from Geophysicists than from the Citizens Association. Further, perceived source expertise was found to mediate the effect of source identity on ability to achieve closure in this sample (indirect effect $B = 0.23, 95\% CI [0.06, 0.49]$; $c’$ path $B = 0.28, p = .175$). These data provide initial support for Hypothesis 1, and for the effectiveness of the source identity manipulation and experimental procedure we developed to examine this. In Study 4.1, we sought to test the robustness of these findings under more controlled circumstances.
Method

Participants and design
Seventy social science and humanities undergraduate students (19 men and 51 women, $M_{age} = 20.90, SD = 3.58$) from Leiden University participated in this experimental study and were randomly assigned to either one of the source identity conditions (the Citizens Association condition or the Geophysicists condition). Participants received a monetary reward or course credit in return for their participation.

Procedure
The study was the first in a series of unrelated studies. Upon arrival at the laboratory, participants were led to individual cubicles, each containing a PC on which the study would be conducted. Participants first read an introductory text on climate change and carbon dioxide capture and storage technology (CCS). They then learned that CCS would possibly be implemented in the west of the Netherlands, which is the region where the participants lived, or to which they were tied in other ways, and where Leiden University is located. The study was introduced as a study on the attitudes of inhabitants of the west of the Netherlands towards the potential implementation of CCS in this region. Next, participants were told that before they were to report their attitudes on the implementation of CCS, they would receive more information on the topic. Participants learned that there are various bodies and organizations that provide information on CCS and that they would receive information from one of these sources. They also learned that not every participant would receive information from the same source and that some information sources might appeal more than others. As a manipulation of source identity, participants were either told that they would receive information from “the Association of Citizens and Sustainability” or that they would receive information from “the Association of Dutch Geophysicists and Sustainability”. Both these information sources were fictitious.

Participants in the Citizens Association condition read:

In your case the information about carbon capture and storage technology and its implementation in the west of the Netherlands is coming from the Association of Citizens and Sustainability. This association is concerned with developments regarding sustainability and consists of Dutch citizens: These are people with diverse backgrounds who are interested in the topic. The Association of Citizens and Sustainability has listed information about aspects and characteristics of carbon capture and storage technology in the west of the Netherlands that in their view are the most important.
Participants in the Geophysicists condition, on the other hand, read:

In your case the information about carbon capture and storage technology and its implementation in the west of the Netherlands is coming from the Association of Dutch Geophysicists and Sustainability. This association is concerned with developments regarding sustainability and consists of geophysicists: These are experts who are specialized in the topic. The Association of Dutch Geophysicists and Sustainability has listed information about aspects and characteristics of carbon capture and storage technology in the west of the Netherlands that in their view are the most important.

Participants then completed the manipulation check of the source identity manipulation and completed measures of perceived source expertise and ability to achieve closure. At the end of the series of studies in which the participants took part, participants were thanked and debriefed. They also learned that they would not receive additional information on CCS.

Measures

Depending on experimental condition, participants either answered questions relating to (information from) the Association of Citizens and Sustainability or relating to (information from) the Association of Dutch Geophysicists and Sustainability. For reasons of legibility, we refer to both associations using the term “the information source” in our presentation of the dependent variables below.

Manipulation check. To check whether participants had correctly understood the identity of the information source, they were asked the following question: “Is the information that you are about to read about carbon capture and storage technology provided by the information source?” (1 = yes; 2 = no).

Perceived source expertise. The level of expertise that the participants ascribed to the information source was measured using a 4-item questionnaire. Participants were asked to indicate their agreement with the following statements: “I think that the members of the information source know a lot about carbon capture and storage technology”, “I think that the members of the information source are knowledgeable about carbon capture and storage technology”, “I think that the information source is a specialist in the area of carbon capture and storage technology”, and “I think that the information source has expertise in the area of carbon capture and storage technology” (1 = completely disagree, 7 = completely agree). A perceived source expertise scale was calculated by averaging participants’ responses to the items (α = .93).

Ability to achieve closure. Participants’ perception regarding their ability to achieve closure on CCS was measured by means of a 4-item questionnaire. Participants
were asked to indicate their agreement with the following statements: “I think that I can form a clear opinion on the implementation of carbon capture and storage technology in the west of the Netherlands on the basis of the information of the information source”, “I expect that after reading the information of the information source I will be certain of my opinion on the implementation of carbon capture and storage technology in the west of the Netherlands”, “I expect that after reading the information of the information source my opinion on the implementation of carbon capture and storage technology in the west of the Netherlands will be fixed”, and “I think that after reading the information of the information source I will still have a need for extra information about carbon capture and storage technology” (reverse-coded) (1 = completely disagree, 7 = completely agree). An ability to achieve closure score was calculated by averaging participants’ responses to the items (α = .66).

Results

Manipulation check

We screened the data for incorrect answers to the manipulation check. Two of the 70 participants had incorrectly understood the identity of the information source. We excluded these cases from the analyses reported below; accordingly, the analyses reported below were performed on the data of 68 participants. Inclusion of all cases did not change the pattern of results.

Perceived source expertise

Analysis of variance (ANOVA) showed a significant effect of source identity on perceived source expertise, \( F(1, 66) = 57.75, p < .001, \eta_p^2 = .47 \). As predicted, and consistent with the results of the preliminary study, participants in the Geophysicists condition ascribed higher levels of expertise to the information source (\( M = 5.66, SD = 0.62 \)) compared to participants in the Citizens Association condition (\( M = 3.89, SD = 1.21 \)).

Ability to achieve closure

ANOVA revealed a marginally significant effect of source identity on ability to achieve closure in the predicted direction, \( F(1, 66) = 3.07, p = .085, \eta_p^2 = .04 \). That is—replicating the results of our preliminary study—participants in the Geophysicists condition felt better able to achieve closure in their attitudes on CCS (\( M = 3.61, SD = 0.92 \)) compared to participants in the Citizens Association condition (\( M = 3.21, SD = 0.95 \)).
Mediation analysis

We followed a bootstrapping procedure (Preacher & Hayes, 2008: 5000 resamples, bias corrected) to examine whether or not perceived source expertise mediated the effect of source identity on ability to achieve closure. The results indeed revealed a significant indirect effect of the source identity manipulation (0 = Citizens Association, 1 = Geophysicists) on ability to achieve closure through perceived source expertise ($B = 0.65$, 95% CI [0.31, 1.11]; $c'$ path $B = -0.24$, $p = .411$), thereby providing additional support for Hypothesis 1.

Discussion

Results of Study 4.1 provide support for our argument that when people believe an information source to have high expertise, they consider themselves to be more capable of forming a closed attitude than when they perceive the source to have low expertise on the topic in question. Specifically, we found that level of expertise that participants ascribed to the information depended on the identity of the source, and that perceived expertise in turn affected people’s ability to achieve closure. Providing support for Hypothesis 1, and consistent with the results of the preliminary study, participants perceived the Geophysicists to have higher relevant expertise than the Citizens Association, and as a consequence, participants felt better able to achieve closure on CCS when anticipating information from the Geophysicists.

Study 4.2

The goals of Study 4.2 were the following: First, we set out to replicate the results of Study 4.1 on the indirect effect of source identity on ability to achieve closure through perceived source expertise (Hypothesis 1). The second goal was to extend these results by examining our further prediction that the communication of consensus (versus non-consensus) by an information source increases people’s perceptions of source expertise and in this way enhances their ability to achieve closure (Hypothesis 2). Finally, we explored whether or not the indirect effect of consensus on ability to achieve closure through perceived source expertise, as predicted in Hypothesis 2, applies regardless of the base rate level of source expertise implied in its identity (i.e., the Citizens Association and the Geophysicists).

The design of Study 4.2 was similar to the design of Study 4.1. As in the previous study, we varied the identity of the information source from which participants expected to receive information on carbon capture and storage technology (CCS); the Association of Citizens and Sustainability versus the Association of Dutch Geophysicists.
and Sustainability. In the present study, we also varied the level of consensus in the source, in a $2 \times 2$ design. That is, participants additionally learned that there was agreement or disagreement among members of the information source regarding the consequences of CCS for the environment. Participants then completed the central outcome measures of perceived source expertise and ability to achieve closure. Next, in another extension of Study 4.1, participants actually received information on CCS that ostensibly originated from the information source and in which consensus or non-consensus was communicated. After participants had read this information, we measured the extent to which they actually achieved cognitive closure in their attitude towards the implementation of CCS. We know from our own previous research (Koot et al., 2014a) that ability to achieve closure affects the level of cognitive closure that people achieve in their actual attitude formation. Hence, we anticipated that the source identity manipulation and the consensus manipulation would not only affect (self-perceived) ability to achieve closure, but also in a similar way would influence the level of closure that participants actually achieved when attempting to form an opinion about the topic. Finally, in extension of Study 4.1 we included control measures in the present study to rule out a number of potential alternative explanations for the observed patterns. Specifically, we checked whether individual differences in general need to achieve closure (Webster & Kruglanski, 1994) or in overall self-efficacy (Bandura, 1977, 2006) were related to differences we observed between research participants in their ability to achieve cognitive closure.

**Method**

**Participants and design**

Eighty-six social science and humanities undergraduate students (22 men and 64 women, $M_{age} = 20.76$) from Leiden University participated in Study 4.2 and were randomly assigned to one of the conditions of the $2$ (source identity: Citizens Association vs. Geophysicists) $\times 2$ (consensus: consensus vs. non-consensus) between-participants factorial design. Participants received a monetary reward or course credit in return for their participation.

**Procedure**

Study 4.2 was the first in a series of unrelated studies. The study followed the same procedure as Study 4.1 up to the point where the source identity manipulation was introduced. The source identity manipulation—Citizens Association versus Geophysicists—was identical to the manipulation in Study 4.1. However, instead of the last sentence of the manipulation (“The information source has listed information about...”)
aspects and characteristics of carbon capture and storage technology in the west of the Netherlands that in their view are the most important.”), the consensus manipulation was introduced. Depending on experimental condition, participants read (manipulated information in italics):

The Association of Citizens and Sustainability/the Association of Dutch Geophysicists and Sustainability has listed what in their view are the most important consequences of carbon capture and storage technology for the environment. You are about to read this information. It is good to know that the members of the Association of Citizens and Sustainability/the Association of Dutch Geophysicists and Sustainability agree/disagree among themselves about the net effect of carbon capture and storage technology for the environment. In other words; the members all draw the same conclusion/do not all draw the same conclusion. This also appears from the information of the Association of Citizens and Sustainability/the Association of Dutch Geophysicists and Sustainability.

Participants then completed manipulation checks of source identity and consensus and they completed measures of the central outcome variables of perceived source expertise and ability to achieve closure. Next, in extension of Study 4.1, participants read information on CCS that allegedly originated from the announced source (Citizens Association or Geophysicists) and in which (non-)consensus was expressed. In all experimental conditions, the information from the source consisted of the same two arguments that were based on the CCS argument map by Van Egmond and Hekkert (2012); one argument reasoning why the effects of CCS for the environment would be positive and one argument reasoning why the effects would be negative. In the consensus condition, members of the source agreed on the net effect of CCS for the environment. The conclusion of the source on this topic was counterbalanced (i.e., an overall positive effect of CCS for the environment or an overall negative effect). Half of the participants in the consensus condition read (manipulated information in italics):

The members of the Association of Citizens and Sustainability/the Association of Dutch Geophysicists and Sustainability agree among themselves about the net effect of carbon capture and storage technology for the environment. This is what they have to say about it: “The members of our association think that the effect of carbon capture and storage technology for the environment is positive, since the technology reduces CO₂ emissions and thereby fights climate change. Indeed, large amounts of chemical waste are produced with the capture of CO₂ but according to our members this does not outweigh the advantage of fighting climate change.”
The other half of the participants in the consensus condition read (manipulated information in italics):

The members of the Association of Citizens and Sustainability/the Association of Dutch Geophysicists and Sustainability agree among themselves about the net effect of carbon capture and storage technology for the environment. This is what they have to say about it: “The members of our association think that the effect of carbon capture and storage technology for the environment is negative, since large amounts of chemical waste are produced with the capture of CO\(_2\). Indeed, carbon capture and storage technology reduces CO\(_2\) emissions and thereby fights climate change, but according to our members this does not outweigh the disadvantage of chemical waste.”

In the non-consensus condition, on the other hand, members of the source disagreed on the net effect of CCS for the environment. The same two arguments as in the consensus condition were used, and the order in which they were presented was counterbalanced.

Half of the participants in the non-consensus condition read (manipulated information in italics):

The members of the Association of Citizens and Sustainability/the Association of Dutch Geophysicists and Sustainability disagree among themselves about the net effect of carbon capture and storage technology for the environment. This is what they have to say about it: “Some members of our association think that the effect of carbon capture and storage technology for the environment is positive, since the technology reduces CO\(_2\) emissions and thereby fights climate change. Others find that this advantage does not outweigh an important disadvantage—being that large amounts of chemical waste are produced with the capture of CO\(_2\). They think that the effect of carbon capture and storage technology for the environment is negative.”

The other half of the participants in the non-consensus condition read (manipulated information in italics):

The members of the Association of Citizens and Sustainability/the Association of Dutch Geophysicists and Sustainability disagree among themselves about the net effect of carbon capture and storage technology for the environment. This is what they have to say about it: “Some members of our association think that the effect of carbon capture and storage technology for the environment is negative, since large amounts of chemical waste are produced with the capture of CO\(_2\). Others find that this disadvantage does not outweigh an important advantage—being that the technology reduces CO\(_2\) emissions and thereby fights climate change. They think that the effect of carbon capture and storage technology for the environment is positive.”
After reading the information on CCS, participants indicated their attitude toward the implementation of CCS in the west of the Netherlands\(^\text{11}\) (1 = *very negative*, 7 = *very positive*; overall \(M = 3.80, SD = 1.05\)) and completed a cognitive (self-report) measure and behavioral measure of cognitive closure achieved concerning the topic of CCS, an additional manipulation check of source consensus, and a number of control measures.\(^\text{12}\) At the end of the series of studies in which the participants took part, they were thanked and debriefed.

**Measures**

*Manipulation checks.* We employed the same source identity manipulation check as in Study 4.1 to check whether participants had understood the source identity manipulation correctly. To check whether participants had understood the consensus manipulation correctly, prior to reading the information from the information source they were asked to indicate whether members of the information source agree or disagree among themselves concerning the net effect of the implementation of carbon capture and storage technology for the environment (1 = *they disagree among themselves*; 2 = *they agree among themselves*). Moreover, at the end of the study—that is, after reading the information ostensibly provided by the source in question and completing the measures of cognitive closure achieved—participants were asked to indicate the extent to which they thought that the members of the information source disagreed or agreed among each other about the net effect of carbon capture and storage technology for the environment (1 = *disagreed completely*, 7 = *agreed completely*).

*Control measures.* We wanted to rule out the possibility that effects of our experimental manipulations might be accounted for by individual differences between participants in their overall need for closure or self-efficacy (c.f. Webster & Kruglanski, 1994). We therefore assessed these two factors as control variables after completing the actual study, presenting these measures to participants as an unrelated study on personality differences. We measured need for closure using the revised 15-item need for closure scale developed by Roets and Van Hiel (2011) (\(\alpha = .80\)). Self-efficacy was measured by means of the Dutch adaptation of the general self-efficacy scale (Teeuw et al., 1994), which consists of 10 items (\(\alpha = .81\)). Higher scores on the 7-point scales indicate higher levels of need for closure or higher levels of self-efficacy.

*Perceived source expertise.* Perceived source expertise was measured using the

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\(^{11}\) There were no significant main effects of, or interaction effect between the source identity manipulation and the consensus manipulation on participants’ (positive or negative) attitudes towards the implementation of CCS in the west of the Netherlands, \(F(1, 72) \leq 1.63, ps \geq .205\).

\(^{12}\) We checked whether counterbalancing of the source’s message (positive versus negative conclusions in the consensus condition; order of arguments in the non-consensus condition) significantly affected cognitive closure achieved. This was not the case.
same items as in Study 4.1 (α = .93).

**Ability to achieve closure.** Ability to achieve closure was measured with the same items as in Study 4.1 (α = .84).

**Cognitive closure achieved.** Following the attitude measure, participants’ cognitive closure regarding their attitude on CCS was measured using a cognitive (self-report) measure as well as a behavioral measure, which were both virtually identical to those used in our previous research on cognitive closure (Koot et al., 2014a). First, participants indicated their agreement with 13 statements regarding their attitude on the implementation of CCS, such as “I am certain of my opinion on the implementation of carbon capture and storage technology in the west of the Netherlands”, “I feel undecided about my opinion on carbon capture and storage technology” (reverse-coded), and “My opinion on the implementation of carbon capture and storage technology in the west of the Netherlands is fixed” (1 = *completely disagree*, 7 = *completely agree*). A cognitive closure scale was calculated by averaging participants’ responses to the items (α = .81), on which higher scores indicate higher levels of cognitive closure achieved.

We then assessed cognitive closure achieved with a behavioral measure, which involved asking participants to decide whether or not they were ready to participate in a poll concerning the implementation of CCS in the west of the Netherlands (1 = *I am ready to participate*; 2 = *I am not yet ready to participate*). The results of this poll would ostensibly be forwarded to governmental organizations involved in the implementation of CCS in the west of the Netherlands. After indicating whether or not they were ready to participate, participants who answered affirmatively could choose to vote for or against the implementation of CCS. Participants’ decision whether or not to participate in the poll (i.e., commit to their attitude) was used as a behavioral measure of cognitive closure achieved, in which the decision to participate in the poll was regarded an indicator of cognitive closure.

**Results**

Descriptive statistics (means, standard deviations, and percentages) for the dependent variables as a function of source identity and consensus are presented in Table 4.1.
Table 4.1.
Means (Standard Deviations) and Percentages of Perceived Source Expertise, Ability to Achieve Closure, and Cognitive Closure Achieved as a Function of Source Identity and Consensus (Study 4.2)

<table>
<thead>
<tr>
<th>Source identity</th>
<th>Citizens Association</th>
<th>Geophysicists</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consensus</td>
<td>Non-consensus</td>
</tr>
<tr>
<td>Perceived source expertise</td>
<td>4.28</td>
<td>3.56</td>
</tr>
<tr>
<td></td>
<td>(1.29)</td>
<td>(1.07)</td>
</tr>
<tr>
<td>Ability to achieve closure</td>
<td>3.40</td>
<td>2.56</td>
</tr>
<tr>
<td></td>
<td>(1.16)</td>
<td>(1.00)</td>
</tr>
<tr>
<td>Cognitive closure achieved</td>
<td>Self-report</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.90</td>
<td>2.90</td>
</tr>
<tr>
<td></td>
<td>(0.81)</td>
<td>(0.60)</td>
</tr>
<tr>
<td>Readiness to participate in poll</td>
<td>64%</td>
<td>17%</td>
</tr>
</tbody>
</table>

Manipulation checks
We screened the data for incorrect answers to the factual manipulation checks of source identity and consensus (i.e., the checks that took place prior to reading the information on CCS from the information source). Ten participants answered one of the manipulation check questions incorrectly. This means that these participants had incorrectly understood the identity of the information source or had incorrectly understood that the members of the information source (dis)agreed among themselves (none of the participants answered both questions incorrectly). We excluded these cases from the analyses below. Thus, the analyses reported below were conducted on the data of 76 participants. Inclusion of all cases did not change the pattern of results.

Analysis of Variance (ANOVA) on the remaining participants’ perceptions of the level of (dis)agreement among members of the information source (assessed after completion of the study) further confirmed that participants in the consensus condition clearly perceived higher consensus among source members ($M = 6.23$, $SD = 1.56$) than participants in the non-consensus condition ($M = 2.54$, $SD = 1.61$), $F(1, 72) = 98.68$, $p < .001$, $\eta^2_p = .58$. There was no main effect of source identity on this measure, $F(1, 72) < 1$, $p = .757$, nor an interaction between source identity and consensus, $F(1, 72) < 1$, $p = .818$, confirming that we were able to manipulate perceived source consensus independently from source identity.

Control measures
ANOVA showed no significant main effects of, or interaction effect between
source identity and consensus on need for closure or on self-efficacy, $F_s(1, 72) \leq 1.80$, $ps \geq .184$. Furthermore, including need for closure and self-efficacy as covariates in subsequent analyses did not change the pattern of results reported below. Thus, effects of our experimental manipulations on participants’ responses cannot be ascribed to differences between conditions in need for closure or self-efficacy.

**Perceived source expertise**

We conducted a $2 \times 2$ ANOVA with source identity and consensus as independent variables and perceived source expertise as the dependent variable. As in Study 4.1, and as predicted in Hypothesis 1, results showed a significant main effect of source identity, $F(1, 72) = 44.43, p < .001, \eta^2_p = .38$, where participants in the Geophysicists condition ascribed higher levels of expertise to the information source ($M = 5.49$, $SD = 0.80$) than participants in the Citizens Association condition ($M = 3.96$, $SD = 1.24$). The analysis further revealed the predicted main effect of consensus, $F(1, 72) = 5.04, p = .028, \eta^2_p = .07$, where participants in the consensus condition perceived significantly higher levels of source expertise ($M = 4.88$, $SD = 1.27$) compared to those in the non-consensus condition ($M = 4.47$, $SD = 1.31$). There was no significant interaction effect of source identity and consensus on perceived source expertise, $F(1, 72) < 1, p = .405$.

**Ability to achieve closure**

We submitted participants’ perceptions concerning their ability to achieve closure on CCS to a $2 \times 2$ ANOVA with source identity and consensus as independent variables. Consistent with our prediction (Hypothesis 1), and replicating the results of Study 4.1, the analysis revealed a significant main effect of source identity, $F(1, 72) = 4.08, p = .047, \eta^2_p = .05$, such that participants in the Geophysicists condition felt better able to form a closed attitude on CCS ($M = 3.47$, $SD = 1.03$) than participants in the Citizens Association condition ($M = 3.02$, $SD = 1.15$). Furthermore, the analysis revealed a marginally significant main effect of consensus on ability to achieve closure, with the pattern of means revealing differences in the predicted direction (Hypothesis 2), $F(1, 72) = 3.30, p = .073, \eta^2_p = .04$. That is, participants in the consensus condition felt (marginally) better able to form a closed attitude on CCS ($M = 3.44$, $SD = 1.16$) than participants in the non-consensus condition ($M = 3.01$, $SD = 1.04$). There was no significant interaction effect between source identity and consensus on ability to achieve closure, $F(1, 72) = 2.57, p = .113$.

**Mediation analyses**

We followed a bootstrapping procedure (Preacher & Hayes, 2008: 5000 resamples, bias corrected, controlling for consensus) to test our prediction that perceived source expertise would mediate the effect of source identity on ability to achieve closure.
Consistent with Hypothesis 1 and corroborating the results of Study 4.1, the analysis showed a significant indirect effect of the source identity manipulation (0 = Geophysicists, 1 = Citizens Association) on ability to achieve closure through perceived source expertise, $B = -0.70$, 95% CI ($-1.08$, $-0.38$); $c'$ path $B = 0.21$, $p = .464$. This means that to the extent that people perceive an association of Geophysicists to have higher expertise on CCS than a Citizens' association, this higher level of source expertise in turn increases their ability to achieve closure on CCS.

We followed another bootstrapping procedure (Preacher & Hayes, 2008: 5000 resamples, bias corrected, controlling for source identity) to test our second hypothesis that perceived source expertise would also mediate the effect of consensus on ability to achieve closure. Results confirmed our prediction and revealed a significant indirect effect of the consensus manipulation (0 = consensus, 1 = non-consensus) on ability to achieve closure through perceived source expertise, $B = -0.24$, 95% CI ($-0.51$, $-0.05$); $c'$ path $B = -0.23$, $p = .340$, thereby providing support for Hypothesis 2. That is, these results show that to the extent that the communication of consensus (versus non-consensus) increases people's perceptions of source expertise, this higher level of source expertise in turn increases people's ability to achieve closure on CCS.

**Cognitive closure achieved**

To test whether the source identity manipulation and consensus manipulation also affected the level of cognitive closure that participants actually achieved, we first conducted a $2 \times 2$ ANOVA on the self-report measure of closure achieved. Results of the analysis revealed no main effect of source identity, $F(1, 72) < 1$, $p = .397$, but did reveal a significant main effect of consensus, $F(1, 72) = 9.35$, $p = .003$, $\eta_p^2 = .11$. This main effect was qualified by a significant interaction between source identity and consensus, $F(1, 72) = 8.77$, $p = .004$, $\eta_p^2 = .11$. Additional analyses of simple main effects revealed that in the case of the Citizens Association, participants reported significantly higher levels of cognitive closure achieved when members of the source had communicated consensus ($M = 3.90$, $SD = 0.81$) compared to when they had communicated disagreement (i.e., non-consensus) ($M = 2.90$, $SD = 0.60$), $B = 1.00$, $t = 4.36$, $p <.001$. In the case of the Geophysicists, however, the communication of consensus versus non-consensus did not further increase the level of cognitive closure that participants achieved ($M = 3.27$, $SD = 0.79$, and $M = 3.25$, $SD = 0.64$, respectively), $B = 0.02$, $t = 0.07$, $p = .947$.

We also tested whether source identity and consensus affected the behavioral manifestation of cognitive closure achieved by conducting a $2 \times 2$ binary logistic regression analysis on participants' decision to participate in the poll, as a way to assess
cognitive closure achieved. Results of the analysis revealed no main effect of source identity ($B = -1.07$, Wald[1] = 1.83, $p = .176$), but did show a main effect of consensus ($B = -2.17$, Wald[1] = 7.89, $p = .005$). In line with the self-report measure of cognitive closure achieved, this main effect was qualified by a marginally significant interaction effect of source identity and consensus ($B = 1.75$, Wald[1] = 2.89, $p = .089$). Separate chi-squared tests for the two source identity conditions revealed that in the Citizens Association condition, participants were more likely to participate in the poll when the source had communicated consensus (64% decided to cast a vote) compared to non-consensus (17% decided to cast a vote), $\chi^2(1) = 8.94$, $p = .003$. In the Geophysicists condition, on the other hand, communication of (non-)consensus did not affect participants readiness to participate in the poll; 47% of participants in the consensus condition decided to cast a vote versus 37% in the non-consensus condition, $\chi^2(1) = 0.39$, $p = .535$.

**Additional analyses**

At first sight, it may seem inconsistent that we find two main effects on perceived expertise and ability to achieve closure (as predicted), while our measures of cognitive closure achieved reveal an interaction between these two manipulations. We conducted some additional analyses to better understand this apparent discrepancy between our observations on different measures. The ANOVAs we conducted to examine support for our predicted effects on perceived source expertise and ability to achieve closure did not reveal statistically significant interaction effects of source identity and consensus. However, further inspection of the mean scores (see Table 4.1) does suggest that that the effect of consensus on these measures primarily emerged in the Citizens Association condition—reflecting a pattern similar to what we observed in the two measures of closure achieved. We further explored this possibility by conducting separate ANOVAs to examine the effect of the consensus manipulation on perceived source expertise and ability to achieve closure for each of the two source identity conditions. The results of these additional analyses confirm that the added value of communicating consensus for perceived source expertise and ability to achieve closure primarily emerges when the expertise of the source is not clearly implied in its identity. That is, participants who anticipated to receive information from the Citizens Association perceived (marginally) higher levels of source expertise and felt significantly better able to achieve closure on CCS when this source communicated consensus ($M_{expertise} = 4.28$, $SD_{expertise} = 1.29$; $M_{ability} = 3.40$, $SD_{ability} = 1.16$) compared to non-consensus ($M_{expertise} = 3.56$, $SD_{expertise} = 1.07$; $M_{ability} = 2.56$, $SD_{ability} = 1.00$) (perceived source expertise: $F[1, 38] = 3.66$, $p = .063$, $\eta_p^2 = .09$; ability to achieve closure: $F[1, 38] = 5.96$, $p = .019$, $\eta_p^2 = .14$). However,
there was no evidence of an added value of communicating (non-)consensus when participants anticipated to receive information from the Geophysicists. That is, participants did not appear to perceive higher source expertise or feel better able to achieve closure when the Geophysicists communicated consensus ($M_{\text{expertise}} = 5.66$, $SD_{\text{expertise}} = 0.72$; $M_{\text{ability}} = 3.50$, $SD_{\text{ability}} = 1.19$) versus non-consensus ($M_{\text{expertise}} = 5.33$, $SD_{\text{expertise}} = 0.85$; $M_{\text{ability}} = 3.45$, $SD_{\text{ability}} = 0.90$) (perceived source expertise: $F[1, 34] = 1.59$, $p = .216$; ability to achieve closure: $F[1, 38] < 1$, $p = .881$). Moreover, when we conducted separate bootstrapping analyses for each of the two source identity conditions (Preacher & Hayes 2008: 5000 resamples, bias corrected) this revealed that perceived expertise mediated the effect of the source consensus manipulation ($0 = \text{consensus}, 1 = \text{non-consensus}$) on ability to achieve closure in the Citizens Association condition ($B = -0.31$; 95% CI $[-0.76, -0.03]$; $c'$ path $B = -0.54$, $p = .107$).

Again, no such indirect effect occurred in the Geophysicists condition ($B = -0.13$; 95% CI $[-0.47, 0.03]$; $c'$ path $B = 0.10$, $p = .770$). Taken together, these additional analyses consistently suggest that the communication of consensus primarily increases perceptions of source expertise—and thus increases the ability to achieve closure—when the identity of the source does not (already) contain clear cues to indicate high expertise (e.g., in the case of a lay information source).

Discussion

In sum, the results of Study 4.2 replicate and extend those of the first study, and offer support both Hypothesis 1 and Hypothesis 2. The findings again show the importance of perceived source expertise for people's ability to achieve closure on complex topics, and demonstrate that both source identity and communication of consensus can contribute to perceptions of source expertise. As in Study 4.1, we found that the identity of an information source influences perceptions of source expertise, and that higher levels of perceived source expertise in turn increase people's ability to form a closed attitude on a complex topic. Moreover, Study 4.2 extends the results of the previous study by demonstrating that for perceptions of source expertise, and thereby for people's ability to achieve closure, it is not only important who is providing the information, but also what message is being communicated. That is, we found that people regard an information source to have more expertise, and therefore feel better able to achieve closure, when it communicates consensus rather than non-consensus. Notably, the effects observed in the present research emerged independently of individual differences in need for closure or self-efficacy. This allows us to rule out such differences as alternative explanations for our findings and suggests that people's ability to achieve closure may be affected by source and message characteristics, regardless of
existing variations in people's individual needs and abilities relevant to the formation of a closed attitude. Finally, although the effects of source identity and consensus occur independently of one another as predicted, results on cognitive closure achieved and additional analyses suggest that that the added value of communicating consensus primarily emerges for sources with a non-expert identity.

**General Discussion**

Compared to open, “unfinished” attitudes, closed attitudes are better predictors of people's future attitudes and behavior (cf. Krosnick & Petty, 1995; Petty & Cacioppo, 1986b). As such, closed attitudes—attitudes on which people have achieved a state of cognitive closure—are also better predictors of people's support or opposition to a complex technology. Recent research has demonstrated that experimental manipulations of the extent to which people feel that they are able to achieve closure determine the level of cognitive closure that they actually achieve in their attitude formation concerning complex topics (Koot et al., 2014a). It is therefore important to examine which real-life factors impact on people's ability to achieve closure. To examine this, we connected to existing insights on the importance of communication and the provision of information for the formation of attitudes. Specifically, we examined the impact of the level of expertise that people perceive an information source to have on their ability to form a closed attitude on complex topics.

Results of the two experimental studies reported here consistently show that when people believe a source of information to have high, compared to low, expertise on the complex topic in question, they feel better able to form a closed attitude on the basis of the information provided by this source. Our results furthermore demonstrate that perceived source expertise not only depends on who is communicating, but is also affected by the message communicated by this source. That is, people attribute higher expertise to an information source that has an expert identity (i.e., geophysicists) compared to a non-expert identity (i.e., a citizens association). Likewise, a source that communicates consensus, rather than non-consensus, is seen as having more expertise on the topic in question. Perceptions of source expertise are relevant, because these subsequently increase the perceived ability to form a closed attitude on the complex topic in question. These effects were also visible in the extent to which people actually achieve cognitive closure in their attitude on a complex topic.
Theoretical Implications

The present research contributes to the existing literature in several ways. Results of two studies demonstrate that perceptions of the expertise of a particular source of information impact on people's ability to achieve closure on the basis of information provided by this source. A few studies so far have demonstrated that people's ability to achieve closure is susceptible to external influences. However, these have all employed relatively artificial manipulations (e.g., bogus feedback from a personality test; Koot et al., 2014a) to induce such differences. To our knowledge, the current research is the first to reveal how experiences that are more likely to emerge in real life settings may determine people's ability to make up their mind. In this way, the present results corroborate and extend emerging evidence that the ability to achieve closure not only indicates how individuals differ from each other, but is also a factor that can be influenced situationally, independently of such more stable individual differences. The effect of perceived source expertise we observed on the ability to achieve closure moreover extends previous findings from research on persuasion. That is, prior work has shown that information has a stronger impact on the content of people's attitudes (i.e., is more persuasive) when they believe that the information source has high, compared to low, relevant expertise (e.g., Cialdini & Goldstein, 2004; Pornpitakpan, 2004). We have complemented these insights by showing that perceived source expertise also affects the likelihood that people feel confident that they are able to form an attitude on the topic in question. As such, the present data again underline the significance of source expertise, and especially perceptions thereof, for the realm of attitude formation, but do this in a different way than in prior research.

In the present research, we established that people form an impression about the expertise of a particular source of information on the basis of its identity. At first sight, this may seem self-evident, and indeed, there are several studies in which source identity and source expertise are treated as interchangeable concepts (e.g., Bohner, Ruder, & Erb, 2002; Clark, Wegener, Habashi, & Evans, 2012; Mackie & Worth, 1989). Notwithstanding this prior work and the relation we observed between source identity and perceived expertise, the current research also demonstrates that the level of expertise that people attribute to a particular information source is not fixed. Instead, we demonstrated that the perceived level of expertise of a given source is also affected by the content of its message (cf. Reimer et al., 2004)—in this case the level of consensus communicated by the source. Of course, this could not be revealed in prior studies where the level of consensus remained unspecified or was held constant. However, we found that if an information source communicates that its members agree among themselves (instead
of disagreeing), people take this as a cue of high source expertise. Interestingly, our results seem to suggest that the added value of explicitly communicating consensus is particularly relevant for sources whose identities suggest low relevant expertise. By contrast, being informed about the level of consensus is less relevant for people’s perceptions of a source that already is considered expert on the basis of its identity.

Our present findings also resonate with prior work on person perception (Cuddy, Glick, & Beninger, 2011; Fiske, Cuddy, & Glick, 2007). This research established that there is an asymmetry in the impact of explicit information that is provided about particular individuals, depending on pre-existing expectations that other people have about their competence. Specifically, when someone is expected to be relatively incompetent, any display of competence is seen as indicating the “true level” of competence, and is taken as evidence that the individual actually is more competent than was anticipated. By contrast, when someone is expected to be generally competent, a disappointing performance is not seen as very informative, as it tends be attributed to lack of care or motivation rather than being seen as diagnostic of the true ability of the individual in question. As a result, the knowledge of competent or incompetent behaviors has much less of an impact on the overall impression of someone who is a priori expected to be competent. Likewise, in our research the communication of (non-)consensus was less impactful in the case of an expert source. This parallel between prior work on person perception and individual impression formation and the present research on attitude formation and the ability to achieve closure suggests that there may be a more general asymmetry in the perceived value of explicit information, depending on pre-existing expectations people have. Future research may further explore this possibility, to examine whether a broader underlying mechanism may account for a larger corpus of findings from different literatures.

**Practical Implications**

The present findings have a number of very concrete and practical implications. They may be of particular interest for stakeholders involved in complex issues or projects that affect the public, such as a government planning the implementation of a novel technology or policy. Public opinion can be a decisive factor in the progress of political decision making or for the implementation of decisions already made. The present research helps understand under which circumstances people will feel most able of achieving the cognitive closure that is needed for declared opinions to be indicative of people’s actual points of view. This is not to suggest, however, that the achievement of closure should be a goal in itself. In fact, there may be conditions under which it would be more appropriate to keep an open mind, for instance because crucial information
(e.g., about long-term effects of a technology) is not yet available. Ideally, individuals are thoroughly and well informed before forming their definite, closed attitude. If high quality and complete information can be provided, encouraging people to achieve closure may be appropriate. However, as long as the available information is of low quality, still incomplete, or possibly even false, there is little benefit in assessing people’s stated opinions, or in encouraging them to achieve closure (cf. Lewandowsky et al., 2012). Communicators and opinion pollsters do well to take this into account when deciding whether and how to assess “public opinion” to gauge support for particular policies or activities.

Our results indicate that people take into account the expertise of a particular source when evaluating the usefulness of the information provided by this source. That is, receiving information from a source with higher perceived expertise causes people to feel strengthened in forming a closed attitude on complex topic, on which they themselves are no experts. This can be a comforting thought for those who strive to communicate high quality information to the general public and are confronted with the current reality in which abundant information of varying quality is available to the public (e.g., on the internet). The present research suggests that people who try to form an opinion will tend to filter and select information, depending on the identity of the source of this information. When informing the public on the basis of valid information from experts, it would thus make sense to explicitly state the identity of the information source. Emphasizing the expert identity should raise perceptions of source expertise and as such increase the extent to which people feel capable of forming their closed, definite attitude on the basis of the information provided.

Those who provide information on complex topics for the public interest should furthermore beware of the impact that seemingly innocuous statements embedded in the content of the message can have. Specifically, it may be important for members of an information source to draw a joint conclusion when possible, and if this is the case, to explicitly communicate such agreement. Indeed, our results suggest that people will take such consensus as indicating high knowledgeability of the source on the topic in question. Of course, in the case of many complex issues, such as the question of climate change, it may not always be possible to reach agreement about all relevant aspects. If this is the case, withholding the fact that there is an unresolved (scientific) debate on a public affair from the public would be irresponsible. At the same time, it is important to be aware of the possible impact that disclosure about such disagreement may have, and to take into account the possibility that it undermines perceptions of expertise. Knowing this may be the case makes it even more pressing to be explicit about people’s professional qualifications, or to elaborate on the scientific evidence supporting
statements that are made. Indeed, the results from the present work seem to suggest that the negative effects of communicating lack of consensus are likely to be less pronounced when people are made aware of the expert identity of the source. This makes it all the more important to make salient the expert identity of an information source when the state of affairs of the topic in question (e.g., the development of nanotechnology) does not yet allow for the communication of consensus. That is, knowing that information is coming from experts will make people feel reasonably able to decide on their point of view on the basis of this information, despite the lack of consensus on the topic.

By contrast, the communication of consensus can increase people’s reliance on information provided by a non-expert source. People may feel ready to make up their mind when a source with a lay status conveys a concordant conclusion, even when the actual quality of this information is unclear. The potential impact of non-experts communicating a strong and unanimous message should therefore not be underestimated by those charged with communicating about complex scientific and public projects. Parties that providing a podium for the debate on complex issues, such as the implementation of a novel technology, should be mindful of giving voice to lay parties that provide inaccurate information but nevertheless communicate a strong and unanimous message.

**Limitations and Future Directions**

We have interpreted the present results as indicating that the communication of (non-)consensus mainly affects perceived source expertise and ability to achieve closure when such confidence cannot be derived from the identity of the source. Nevertheless, we acknowledge that the present data are not conclusive on this point. Instead, they may reflect the specific nature of the manipulation we used to convey (lack of) consensus. That is, while we indicated that there was disagreement on what can be concluded about the net *consequences* of CCS for the environment, there was no sign of disagreement about the underlying *facts*. This form of disagreement may not have seemed very strong or problematic. Indeed, on the basis of the present work, we cannot exclude the possibility that a stronger level of disagreement might also undermine people’s reliance on information provided by an expert source. We conducted an auxiliary study to explore this possibility (Koot, Ter Mors, Ellemers, & Daamen, 2014b). In this study, members of “the Association of Dutch Geophysicists and Sustainability” were said to agree or disagree about the facts underlying their stance towards CCS. In support of our current interpretation of the present findings, and similar to what we observed in Study 4.2, this stronger manipulation of (lack of) consensus did not affect perceived source expertise to such an extent that it lead to a significant decrease in people’s ability
to achieve closure on the topic. Thus, despite the limitations of the present methodology, the available evidence actually suggests that an expert identity is quite a robust indicator of high expertise. Additional research can further address this question and more systematically establish the boundary conditions for this effect.

Now that we have established the relevance of communicating about source identity and consensus, future research might also address additional factors in communication that possibly impact on perceived expertise and subsequently the ability to achieve closure. For instance, people may be less impressed with information from one information source (i.e., perceive lower source expertise and feel less able to achieve closure) when they realize that there is also information available from sources with higher levels of expertise, compared to when they are unaware of such information. Exploring these issues would be a useful direction for future research.

When trying to ascertain the broader implications of our current findings, we acknowledge that the particular nature of our sample may have played a role in the responses we observed. Participants in the current research were Dutch university students. These are likely to deviate from a random sample of the general public in a number of ways. First, they may be more used to and hence overall more confident to form opinions on the basis of partial or inconsistent information. Indeed, as part of their academic training, they are prepared to deal with scientific nuance and to weigh the positions of experts advocating diverging points of view. This may have made our participants relatively unmoved by the communication of (non-)consensus in the case of an expert source. At the same time, one may argue that a more representative sample of the general population is likely to be more impressed with the expertise of geophysicists than university students who are used to interact with and question different types of experts. All in all, we acknowledge the specific nature of our sample, and future research might establish the broader applicability of these findings. Nevertheless, it is not self-evident whether or how the nature of our sample should have biased our results.

In a similar vein, it might be of interest to investigate the relation between source identity, perceived source expertise, and the ability to achieve closure in national contexts that differ in their overall level of scientific skepticism. In the Netherlands the general public has a relatively high level of trust in science (KNAW, 2013). It might be relevant to establish whether such overall differences also affect the sensitivity of the general public to additional or alternative indicators of potentially relevant expertise. For instance, in countries where people have less trust in science, communication of consensus by a source with a non-expert identity may be especially influential. Conversely, communicating lack of consensus among scientists might be more harmful in contexts where the status of scientists is more easily called into question. While we
think this does not invalidate the implications of the present research, it might be of interest to gain further insight in how different a priori levels of perceived expertise of different types of sources affect the impact of further information provided.

**Conclusion**

Results from two studies lead us to conclude that the level of expertise that people perceive an information source to have is an important determinant of how capable they feel of forming a closed attitude on complex topics. The identity of an information source emerges as an important determinant of people’s impressions of the source’s expertise. However, the level of expertise that people ascribe to a particular source is not fixed. When a source communicates consensus about the topic in question people perceive higher source expertise and as a consequence feel better able to achieve cognitive closure.