Thinking of Others: Effects of Implicit and Explicit Media Cues on Climate of Opinion Perceptions

Thomas Zerback[1], Thomas Koch[1], and Benjamin Krämer[1]

Abstract

Media contain various cues to opinions of others and therefore serve as an important source of information about the climate of opinion. We distinguish explicit cues directly describing opinion distributions in society, from implicit cues lacking such a direct reference. In an experiment, we examined the relative impact of survey data (explicit cue) and arguments (implicit cue) on climate of opinion judgments. While survey results strongly affected assessments, argumentation had an effect only when no survey information was available. However, arguments produced an indirect effect, as they strongly affected personal opinions, which in turn influenced climate of opinion judgments (projection).

Keywords

climate of opinion, projection, survey results, arguments

What do Americans think of Barack Obama? Do they oppose or favor the government's foreign policy? When asked to assess the way others think about certain people or issues, individuals can use various sources of information. They can, on one hand, draw on external information by monitoring their personal social environment or mass media coverage. Opinions or behaviors observed this way can serve as indicators of public opinion.[1] For instance, if friends, family, or acquaintances support America's

[1]Ludwig-Maximilians-Universität München, München, Germany

Corresponding Author:
Thomas Zerback, Institut für Kommunikationswissenschaft und Medienforschung, Ludwig-Maximilians-Universität München, Oettingenstraße 67, München 80538, Germany.
Email: thomas.zerback@ifkw.lmu.de

foreign policy, an observer could generalize this attitude to people outside his or her direct environment.[2] The mass media, as a second external source, also present a wide range of indicators of prevalent opinions in society.[3] The media can convey explicit information on existing opinion distributions, for example, opinion surveys, or rather implicit information, such as arguments, individual opinions, or in the form of general news slant. Following Noelle-Neumann, the mass media are an important source for public opinion judgments[4] especially when other sources, like firsthand experiences or interpersonal communication, are not available.

Other than external information, people are also guided by their own attitudes, which they can project onto their social environment. Well-known perceptual phenomena, such as the looking-glass or the false-consensus effect, describe such social projections, and have been empirically confirmed in numerous studies.[5]

Up to now, studies examining the effects of media cues on the perception of public opinion are found in the fields of exemplification research,[6] research on the persuasive press inference (PPI),[7] hostile media effects,[8] media skepticism,[9] and selective exposure.[10] While exemplification studies focus predominantly on the effects of single-case descriptions compared with those of base-rate information,[11] PPI and hostile media studies examine the influence of (perceived) media slant.[12] We extend this view by comparing the effects of arguments within a newspaper report as implicit cues to public opinion, with poll information as an explicit cue. Following Noelle-Neumann's "spiral of silence" theory, we also distinguish between effects on current and future climate of opinion perceptions[13] to examine possible differences regarding the relative importance of implicit and explicit media cues.

Theoretical Considerations

Implicit and Explicit Cues to the Climate of Opinion

Media coverage provides recipients with a broad range of potential information about the climate of opinion. Apart from opinion polls—as probably the most prominent example[14]—there are also more subtle cues to public opinion, for example, the depiction of individual behaviors and opinions (exemplars)[15] or the general slant of news.[16]

Researchers have been aware of this particular function of mass media for quite a while[17] and have examined media content relevant to "climate of opinion" judgments.[18] In this respect, we can distinguish explicit from implicit cues.

Explicit cues refer to content that directly describes prevailing opinion distributions or proportions in society. Journalists present these direct descriptions, for example, in the form of poll data and depict them in charts, tables, or report them in written form (e.g., "62 percent of U.S. citizens appreciate the government's foreign policy").[19] Representations of poll data in the media have increased significantly in the last few decades and have become a salient feature of coverage, especially prior to elections.[20]

Implicit cues, however, do not provide a direct reference to the climate of opinion. Thus, recipients themselves must establish this cognitive link. For instance, if individuals or groups of people declare their support for, or opposition to, a certain

position (e.g., "We oppose U.S. interventions in the Middle East"), or show respective behaviors (e.g., by attending demonstrations), recipients could generalize this observation.[21] Furthermore, general news slant[22] as well as the frequency and distribution of issues[23] or political candidates[24] can convey impressions of opinion distributions in society.

Cognitive Processing of Implicit and Explicit Cues to the Climate of Opinion

The differentiation between implicit and explicit cues derives from theoretical considerations regarding the way they are cognitively processed. When recipients receive explicit information on the climate of opinion (e.g., "73 percent of the U.S. population welcomes the abandonment of nuclear energy"), they possibly remember and retrieve it when they assess public opinion.[25] In this case, judgments should result from learning processes. In contrast, assessments based on implicit indicators derive from cognitive heuristics that allow judgment formation, even if direct information about the climate of opinion is not available.

Cognitive processing of explicit cues. When people form judgments, they often draw on information that is available and easily accessible in their memory. The accessibility of information increases the more recently or frequently it has been perceived.[26] Moreover, memory content matching the object of evaluation, or being relevant to the judgment in question, becomes more important (applicability). For instance, the more a person believes that statistical information suits a following judgment, the more the evaluation will depend on this information.[27] In addition, studies analyzing the effects of survey results showed that, for the most part, people are able to adequately recall prevailing majority ratios,[28] and that this information exerts a strong influence on public opinion assessment.[29]

Therefore, we assume that judgments regarding the climate of opinion are based on poll information that is (1) readily available and (2) matching the judgment in question:

H1: Surveys, as explicit media cues, influence recipients' judgments of the climate of opinion in the direction of the survey results.

Cognitive processing of implicit cues. As the climate of opinion cannot be inferred directly from implicit media cues, people must engage in alternative cognitive processes. The "persuasive press inference" described by Gunther explains how individuals assess public opinion on the basis of media coverage.[30] Gunther—in line with third-person effect research[31] and the more general "influence of presumed media influence" approach[32]—assumes that recipients believe in strong media effects on other people. Consequently, they also think that media content exerts a persuasive effect, induced by the slant of coverage. Furthermore, the PPI model assumes that recipients believe that

the media reach a broad audience and provide them with more or less similar content. Based on these assumptions, recipients generalize the presumed effect of tendentious media coverage and infer corresponding opinion distributions from it.[33] However, there is also an alternative explanation for the relationship between news slant and public opinion perception that Gunther mentions in his pioneer study and which he calls "reflection." The idea is that, instead of expecting media to shape public opinion, recipients might simply see it as its mirror. Nevertheless, the PPI and the reflection hypothesis predict a positive effect of article slant on public opinion perception although the cognitive processes they rely on differ.[34] This leads us to the following hypothesis:

> **H2:** If arguments in a media report support (oppose) a certain opinion, the per-
> ceived public agreement to this opinion increases (decreases).

Persuasive Effects of Implicit and Explicit Media Cues

Media cues to public opinion can not only exert an influence on climate of opinion perceptions, but also on personal opinions and even behavior. Two fields of research have contributed to the understanding of the persuasive effects of publicized polls.

The first field emerged as an early reaction to the publication of election polls and it focuses on the consequences for voting behavior, with rather mixed results.[35] Sometimes bandwagon effects are observed, meaning that voters tend to take the side of the supposed winner.[36] In other cases, people tend to support the candidate lagging behind (the underdog effect).[37] Studies trying to specify the conditions under which the two effects occur found that underdog effects are more likely when the candidate lagging behind in the polls is displayed as disadvantaged and underprivileged. Voters then tend to support this candidate because they feel sympathy or pity.[38] However, a recent meta-analysis shows that bandwagon effects occur slightly more often than underdog effects,[39] especially if additional information on the candidates is scarce, for example, in the case of issue-centered elections or referenda.[40] How can this tendency be explained theoretically? Mutz assumes that the reception of survey data leads to an activation of existing cognitions and recipients start reflecting why other people may hold certain (majority) opinions. Memory content activated this way can in turn influence one's personal opinion (self-persuasion). The probability that cognitions are in accordance with the presented majority opinion (bandwagon) increases if a person does not hold a strong opinion or lacks information about the situation. In this case, he or she tends to fall in line with the majority view.[41]

The second approach explaining persuasive poll effects originates in social psychology and is known as "social proof."[42] Social proof means that in certain situations people tend to align their attitudes and behavior to the majority because they want to make "correct" decisions. This behavior may be based on the assumption that others have more substantial information or a superior ability in judging certain issues. In other cases, reasons of cognitive economy may be the best explanations: if a sufficiently large proportion of the general population is sufficiently intelligent and

informed, a majority "cannot be wrong" and the individual can save cognitive effort by following majority judgments. Very similar to the studies of poll effects, social proof is found to be most prevalent in low-information settings, when the situation is uncertain, unfamiliar[43] or when individuals perceive similarities between themselves and others.[44] However, tendencies to conform to the majority are less pronounced when judgments or decisions are important and difficult at the same time.[45] We therefore assume that in new and unknown situations people tend to be persuaded by majority opinions depicted by polls.

> **H3a:** If survey information on an unknown issue is presented, recipients tend to follow the majority opinion.

Apart from social cues such as polls, other message characteristics are also known to influence personal opinions and attitudes. Especially rational persuasive appeals can change the way people think about certain issues. Based on the elaboration-likelihood model,[46] two independent meta-analyses by Allen (1991) and O'Keefe (1999) have shown that (one- and two-sided) messages have substantial persuasive effects on recipients opinions.[47] Also, a greater number of arguments pointing in a certain direction increase the likelihood that a person will change his or her opinion accordingly.[48] In line with this research, we reach the following assumption regarding the persuasive effect of arguments:

> **H3b:** If arguments on an unknown issue are presented, the recipient's opinion will follow the slant of the arguments.

Personal Opinion and Climate of Opinion Assessment

In addition to implicit and explicit information as external cues, people are also guided by their own opinions when assessing public opinion. In many cases, one can observe a strong relationship between attitudes and the perceived majority opinion, an effect known as "social projection."[49] Projection can be a result of social selection processes, as people tend to select their social surroundings according to their own attitudes. In this way, social experiences characterized by agreement with other people are more frequent, and therefore cognitively more available, if judgments on the climate of opinion are formed. A second explanation refers to a strong focus on one's own opinion during judgment formation, which is more likely to occur if a person holds an extreme opinion. Due to high personal involvement, the individual concentrates so heavily on his or her own attitude that other opinions are underestimated or ignored. A further, motivational explanation considers the cause of the correlation to lie in the positive effects resulting from a consensus between the individual and his or her social environment (e.g., social approval, self-enhancement). To date, there is still little clarity regarding the causes of projection effects.[50] Nevertheless, the previous remarks suggest that personal opinions have a substantial influence on the perceived climate of opinion, which leads us to the following hypothesis:

H4: The more positive one's personal opinion on an issue, the more positively he or she will assess the climate of opinion with respect to the issue.

Perceptions of the Current and Future Climate of Opinion

A frequently encountered distinction in public opinion research is that between current and future climate of opinion perceptions. The differentiation was first introduced by Noelle-Neumann in the "spiral of silence" theory[51] and was subsequently adopted by other researchers.[52] Whereas the current climate of opinion refers to impressions of present opinion distributions, that is, the perceptions of actual majorities or minorities in society, the future climate of opinion describes expectations of how public opinion will develop over time.[53] Noelle-Neumann assumes that differences between the two judgments indicate a process of change in public opinion, and that it is the future expectation that most strongly determines individual behavior.[54]

Therefore, most studies focus on the effects of current and future public opinion perceptions on attitudes or behavior[55] but do not analyze differences in the formation of the two judgments.[56] An exception is a qualitative study by Shamir and Shamir, examining whether people's assessments of the current and future state of opinion are based on the same information.[57] The authors conclude that

> people must use very different information arrays in estimating current opinion distributions and future opinion trends. In forming estimates of the current distribution of opinion, people will indeed rely mainly on social cues. However, their expectations of the future distribution of opinions will reflect a much wider informational array, consistent with a more rational prospective outlook. When perceptions and expectations diverge, it is because they are affected differently by these two distinct information arrays. Such divergence allows us to assess these two sources of public opinion and their role in public opinion dynamics.[58]

By analyzing think-aloud protocols, Shamir and Shamir reveal some important aspects: estimates of the future climate of opinion were based on what they call "substantive information about current policy decisions, events, conditions, and developments."[59] It means that if asked about future developments of public opinion, participants often referred to current conditions or events and considered their effects on the future opinion of others. They also found that personal opinion was a relevant cue regarding both judgments (social projection), but was more pronounced when people estimated the future state of public opinion. Poll information, however, was barely mentioned as a cue at all but was slightly more important in forming current public opinion judgments.[60]

Following Shamir and Shamir's qualitative work, we also expect differences regarding the importance of specific cues to current and future public opinion perceptions and therefore pose the following hypotheses:

H5a: Survey results as a social cue to public opinion will exert a stronger influence on judgments about the current state of public opinion than on judgments about its future state.
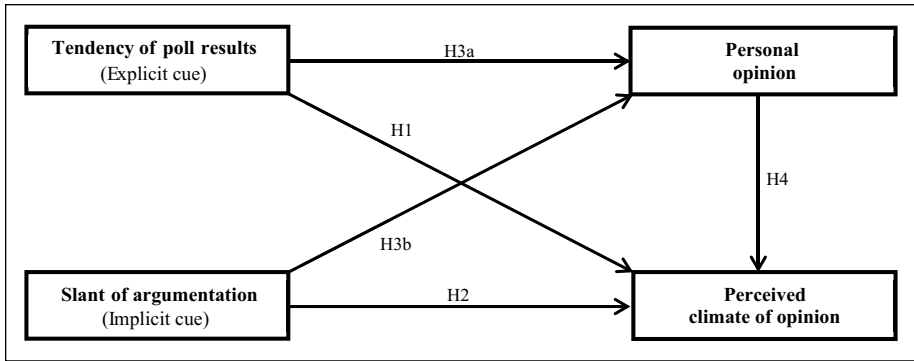
Figure 1. Effects of implicit and explicit cues on climate of opinion perceptions.

H5b: Arguments as substantive information will exert a stronger influence on judgments about the future state of public opinion than on judgments about its current state.
H5c: Social projection will be more pronounced for judgments regarding the future climate of opinion than for those of the current climate of opinion.

Relationships between Media Cues and Perceived Climate of Opinion

The relationships between media cues, individual opinion, and climate of opinion perceptions presented so far are closely linked to one another, and can therefore be integrated theoretically. The model shown in Figure 1 is an attempt to describe how judgments on the climate of opinion are formed. We assume two effects of poll information presented in a news report: on one hand, it will encourage people to align their opinion with the majority opinion indicated by the poll (**H3a**); on the other hand, recipients immediately learn about the current opinion distribution and use this information when assessing the climate of opinion (**H1**).

Arguments contained in the media as implicit cues also initiate two cognitive processes. First, they exert a persuasive effect on personal opinions (**H3b**), and second, recipients infer the climate of opinion from the slant of the arguments presented (**H2**). In addition, the model takes into account the projection of personal opinions onto the social environment (**H4**). Thereby, indirect effects of media cues are also possible, because survey information or arguments might initially influence one's personal opinion, which in turn shapes climate of opinion judgments.

Method

Study Design and Stimulus

To test our hypotheses, we conducted an online experiment in which a (fictional) newspaper report on the extension of an express railway in a suburb of Cologne in

Germany served as a stimulus. The topic seemed appropriate for two reasons: first, it allowed us to present and manipulate arguments both in favor of and against the extension (implicit cue) as well as survey results (explicit cue) within the article. Second, because of its regional character, we did not expect the issue to be associated with strong attitudes, prior knowledge, or high thematic involvement, as these factors might shape judgments as well.[61] After participants read the newspaper article, they answered various questions concerning our central constructs as well as sociodemographic characteristics.

The experiment was based on a 3 × 4 design with "tendency of survey results" and "slant of argumentation" serving as experimental factors. Survey results, as an explicit cue to public opinion, varied on three levels: the article contained a survey showing either a clear (26% in support, 74% opposed) or a narrow (48% in support, 52% opposed) opposition of Cologne's citizens to the railway extension. Participants in the control condition received no survey information. Survey results were presented in the text and as a chart, which was titled "Cologne's Citizens' Opinion of the Railway Extension," and showed two bars indicating the proportion of citizens in favor of and against the extension, including percentages.

As an implicit cue, the article contained arguments that were directly related to the line extension.[62] We varied the slant of argumentation on four levels: it was either in favor of (two positive arguments: easing of heavy traffic, positive effect on the environment) or against (two negative arguments: relocation of inhabitants, costs for the city) the extension. In addition, we set up one condition with an ambivalent argumentation that contained both positive and negative arguments listed above. A final version of the article contained no arguments.

Sample and Participant Selection

Participants were recruited in April 2012 via a noncommercial online access panel and asked to take part in a survey on direct democracy, to conceal the actual purpose of the study. A simple randomizing mechanism determined assignment to one of the twelve experimental conditions. For the analysis, we excluded those who spent less than forty seconds reading the stimulus, as this was identified as the minimum time required to read the text completely. Also, individuals living in Cologne or nearby were removed from the sample. The remaining 1,351 participants were almost equally distributed among the experimental groups. There were no significant differences between the groups regarding education, $\chi^2(55) = 37.95$, $p = .96$; gender, $\chi^2(11) = 9.71$, $p = .56$; or age, $F(11, 696) = 1.18$, $p = .29$.

Measures

Assessment of the current climate of opinion. We measured the participants' perceptions of the current climate of opinion using two items ("At the moment, the majority of Cologne's citizens are against the extension" [CC 1, current climate of opinion 1] and "Right now Cologne's citizens do not want an extension of the express line" [CC 2,

current climate of opinion 2]). Participants could answer on a five-point Likert-type scale ranging from 1 (*I don't agree at all*) to 5 (*I totally agree*). Both items made up a scale measuring participants' perception of disagreement within the population (Spearman-Brown coefficient = .70, $M = 3.75$, $SD = 1.21$).

Assessment of the future climate of opinion. Participants were asked to estimate the result of an upcoming referendum on the railway extension. Again, two items were used (five-point Likert-type scale; "The referendum will probably result in a rejection of the railway extension" [FC 1, future climate of opinion 1] and "The citizens of Cologne will probably turn down the planned extension in October" [FC 2, future climate of opinion 2]), which subsequently formed a scale (Spearman-Brown coefficient = .89, $M = 3.52$, $SD = 1.03$).

Personal opinion. Participants were presented with two options to express their own opinion on the railway extension: "I support the line extension" (PO 1, personal opinion 1) and "In my opinion the railway extension makes no sense" (PO 2, personal opinion 2; five-point Likert-type scale). After reverse-coding the first item, the scale constructed measured personal disagreement with the project and showed good reliability (Spearman-Brown coefficient = .93, $M = 3.50$, $SD = 1.28$).

Results

Before we move on to the examination of the relationships depicted by our theoretical model, we will first examine the relative influence of the experimental factors. To this end, we have conducted a two-way analysis of variance (ANOVA) with poll results and slant of argumentation as the independent variables and the current and future opinion climate assessments as dependent variables (Figure 2).

Regarding the current climate of opinion, it becomes apparent that the poll results have a strong and significant main effect, $F(2, 692) = 213.42$, $p < .001$, $\eta^2 = .38$: people aligned their assessment of the current climate of opinion closely to the respective poll results. If the article presented a clear majority against the railway extension, participants also assumed a large opposition against the project. Accordingly, judgments were more moderate when the survey indicated only a marginal lead for the opposition. The slant of argumentation was found to have a main effect too, but it turned out to be much weaker, $F(3, 692) = 5.12$, $p < .01$, $\eta^2 = .02$, and did not follow a clear pattern. This is also apparent regarding the rather small differences in means between the argumentation groups (Figure 2).

Things change considerably if we turn to the estimated future climate of opinion. Although participants also tend to conform their judgments to the survey results, $F(2, 615) = 112.56$, $p < .001$, $\eta^2 = .27$, the effect of arguments increases somewhat, $F(3, 615) = 14.21$, $p < .001$, $\eta^2 = .07$. It is interesting to see that arguments especially have an effect in cases of uncertainty; that is to say, if survey results are ambiguous or completely missing. In this case, climate of opinion assessments noticeably follow the argumentation slant: arguments against extension lead to the impression that the
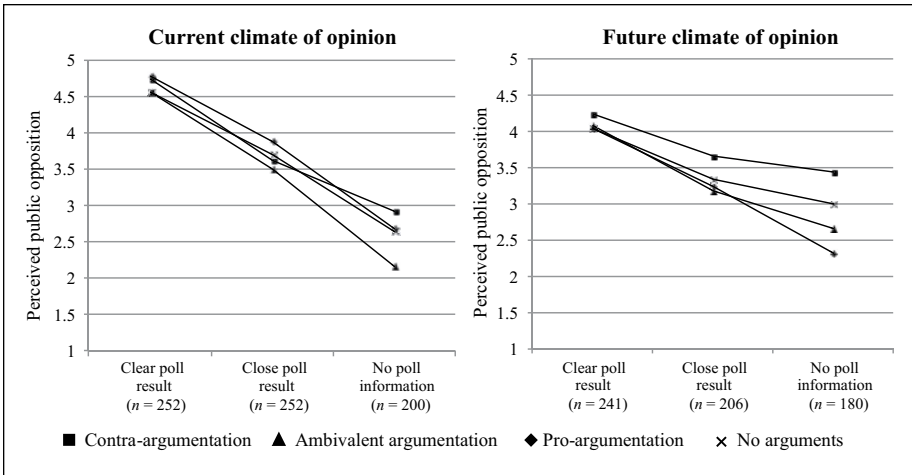
Figure 2. Effects of survey and argumentation on assessments of the current and future climate of opinion.

railway project will lose public support, whereas arguments in favor have the opposite effect. People who were shown ambivalent or no arguments tend toward the middle of the scale. This interaction effect proves to be statistically significant, $F(6, 615) = 3.32$, $p < .01$, $\eta^2 = .03$, and becomes apparent when the pro and contra groups are compared within the condition of no survey information. While members of the pro group tend to predict public support in the future ($M = 2.31$, $SD = 0.93$), the contra group tends to believe that the extension will be rejected ($M = 3.45$, $SD = 0.93$).

We will now turn to the more complex relationships depicted by our theoretical model (Figure 1) and include participants' personal opinions in the analysis by using a linear structural equation model (SEM). Structural equation modeling has two important advantages: first, latent variables can be integrated into the analysis, which usually yield a higher reliability than single manifest indicators. Second, the strengths of indirect relationships between the variables, in addition to direct relationships, can be quantified and tested statistically.[63] Survey results were integrated into the SEM as a dummy variable (0 = *slight lead for extension opponents*, 1 = *clear lead for extension opponents*). The slant of argumentation was coded as an ordinal variable (−1 = *argumentation in favor of extension*, 0 = *ambivalent argumentation*, +1 = *argumentation against extension*).[64] This means that high values on both variables indicate opposition against the project.

Figure 3 shows the results for assessments of the current opinion climate as the dependent variable (see Appendix for bivariate correlations). The model shows a good fit[65] ($\chi^2 = 1.258$, $df = 5$, $p = .94$; standardized root mean square residual [SRMR] = .007; root mean square error of approximation [RMSEA] = .000; comparative fit index [CFI] = 1.00) and two effects of the experimental treatments can be observed: first, the survey results considerably influenced assessments of the current opinion climate
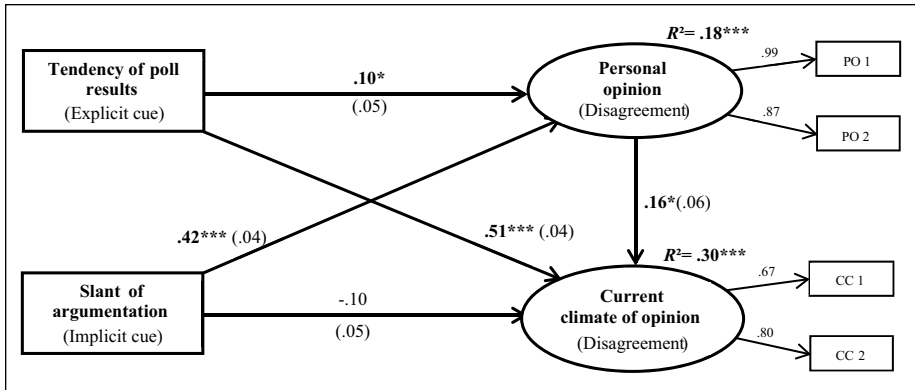
Figure 3. Effects of implicit and explicit cues on the perceived current climate of opinion. *Note.* Model fit: χ^2 = 1.258, *df* = 5, *p* = .939; SRMR = .007; RMSEA = .000; CFI = 1.000; *n* = 564. All significance tests were calculated using bootstrapping (10,000 samples). To facilitate the interpretation of the path coefficients, the scales of the indicators of the constructs "current climate of opinion" were reversed. This also applies to the negatively formulated indicator of the construct "personal opinion." SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CFI = comparative fit index. PO: personal opinion, CC: current climate of opinion. Significant coefficients are bolded.
Standardized path coefficients (β): *p < .05. **p < .01. ***p < .001.

(β = .51, p < .001). People who saw an article picturing a large majority against the railway extension estimated the current proportion of opponents to be higher than participants who received information about a small lead of opponents. Second, argumentation had a significant effect: participants based their own opinion on the railway extension predominantly on the arguments they found in the text (β = .42, p < .001). Arguments against led to rejection of the project, and conversely, positively connoted arguments led to an increase in acceptance.

Survey information had a much weaker, but yet significant effect on participants' personal opinions (β = .10, p < .05). When a large majority opposing the extension was presented, opinions also tended slightly in this direction. Contrary to our expectations, we found no significant effect of argumentation on the perceived climate of opinion (β = −.10, p = .06). Consequently, **H1**, **H3a**, and **H3b** are confirmed, whereas **H2** is not, according to conventional criteria (the effect is weak at best, as is the effect of survey information on participants' personal opinions). Finally, we assumed a projection of personal opinion on others (**H4**), which is also confirmed: the more a person disagreed with the railway extension, the more public opposition against the project he or she suspected (β = .16, p < .05).

At first glance, argumentation slant seems to have a rather weak effect on climate of opinion perceptions. Yet, following the model, arguments do not only exert a direct influence, but also work indirectly through projection. If, for instance, a person forms an opinion on the line extension on the basis of a news article, and subsequently
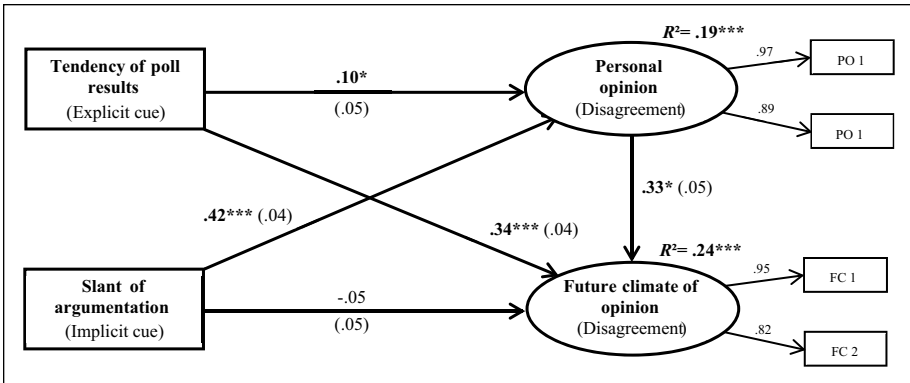
Figure 4. Effects of implicit and explicit cues on the perceived future climate of opinion.
Note. Model fit: χ^2 = 5.329, *df* = 5, *p* = .377; SRMR = .012; RMSEA = .0011; CFI = 1.000; *n* = 527. All significance tests were calculated using bootstrapping (10,000 samples). To facilitate the interpretation of the path coefficients, the scales of the indicators of the constructs "future climate of opinion" were reversed. This also applies to the negatively formulated indicator of the construct "personal opinion." SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CFI = comparative fit index. PO: personal opinion, FC: future climate of opinion. Significant coefficients are bolded.
Standardized path coefficients (β): *p < .05. **p < .01. ***p < .001.

projects his or her opinion on the citizens of Cologne, this is an indirect effect worth considering. Multiplying the coefficients along the respective model path[66] results in a mild, indirect effect of argumentation (β_{ind} = .07, *p* < .05). In contrast, when it comes to survey information, no indirect effect on the perceived climate of opinion occurs (β_{ind} = .02, *p* = .13).

The relationships described above can analogously be examined to explain assessments of the future climate of opinion (Figure 4, see Appendix for bivariate correlations). Again, the model corresponds well to the empirical data (χ^2 = 5.329, *df* = 5, *p* = .38; SRMR = .012; RMSEA = .01; CFI = 1.00). Compared with the first model, the fundamental directions of the effects remain mostly the same, and thus conform to the hypotheses. In addition, the strength of several relationships changes only slightly, if at all: the survey still exerts a weak effect on participants' personal opinions (β = .10, *p* < .05), just as argumentation remains inconsequential for assessing the future opinion climate (β = −.05, *p* = .33). Nevertheless, it still influenced participants to personally agree or disagree with the railway project, as strongly as in the first model (β = .42, *p* < .001). However, there were several interesting and statistically significant[67] changes: on one hand, the effect of survey results on evaluations of the climate of opinion weakened (β = .34, *p* < .001). Although participants still based their forecasts to a great deal on the available survey information, they did so to a considerably lesser degree than in the case of judgments on the current climate of opinion. On the other hand, the importance of personal opinion increased: participants now had a more pronounced tendency to project their own opinion onto others (β = .33, *p* < .001), which

consequently also reinforced the aforementioned indirect effect of argumentation slant (β_{ind} = .14, *p* < .001). Therefore, **H5a** and **H5c** are also corroborated. However, we did not find significant effects of argumentation slant—neither on current nor on future public opinion perception—and therefore had to reject **H5b**.

Discussion

Our findings indicate a strong, direct effect of survey information on individual perceptions of the current and future climate of opinion, as they provide a direct cue to existing opinion distributions and are therefore easily applicable to judgments. In addition, we showed that the representation of survey data also influences personal opinions, although this effect turned out to be considerably weaker. Our findings confirm the results of previous studies, which also revealed dominant effects of survey data on public opinion perceptions compared with those on individual opinions.[68]

Arguments strongly shape recipients' individual opinions, which is in accordance with our initial suppositions. Contrary to our expectations, their effect on public opinion perception has not been demonstrated clearly. It failed to reach significance according to conventional criteria. At least, their direct effect is weak. Nevertheless, this should not lead to underestimate the influence of arguments: first, they have a relatively strong indirect effect on climate of opinion perceptions, which is conveyed through social projection—a finding also confirmed by other studies.[69] Second, the ANOVA shows that arguments influence climate of opinion judgments when survey information is absent or ambivalent, which should be quite common in everyday coverage.[70] The possibility of substituting specific cues to public opinion by others that are currently available is also mentioned by Shamir and Shamir, who found that people made less use of their own opinion as a cue to public opinion when media cues were available.[71]

We suggest two possible explanations for this hierarchy of effects: on one hand, it supports our assumption that survey information fits judgments on the climate of opinion quite well (high applicability). People simply judge survey data to be a more adequate indicator of public opinion than article slant. On the other hand, ambivalent or absent information could increase recipients' uncertainty regarding their assessment of the climate of opinion resulting in the use of additional information. Both assumptions should be investigated further, because media reports usually offer different cues influencing perceptions of public opinion. Both researchers and media professionals should be aware of their interdependencies.

However, the findings presented here should be interpreted with caution for numerous reasons: first, the topic we selected as a stimulus (railway extension in Cologne) represents a rather special judgment situation which, according to Fleitas, can be considered a minimal information election.[72] The term refers to situations in which individuals form judgments or make decisions based on limited prior knowledge, unstable attitudes, and a lack of information. As a result, their assessments derive primarily from the information available, which consequently has a strong effect. This certainly

explains the strong persuasive influence of the arguments presented in the text, and also that of survey information on individual opinions. The latter result is also confirmed by previous studies on the effects of survey coverage.[73] The uncertain character and the small amount of information within our experimental setting also correspond to the social proof interpretation as the mechanism underlying survey effects on personal opinion.[74] Second, by choosing a geographically distant and unknown issue, we intentionally tried to avoid an influence of preexisting attitudes and issue involvement. Although we increased the internal validity this way, both variables still represent important moderators of poll effects. Mutz, for example, shows that under moderate involvement conditions (compared with the high involvement condition) consensus information leads to an intensified issue-related cognitive responses and attitude change.[75] Similarly, Hardmeier, in her extensive literature review, states that poll effects seem to be more pronounced when people are less involved and have weak predispositions.[76]

The prominent placement of the survey information within the article (text and chart) is also a special feature of our study and most probably overemphasized the importance of poll information for recipients' judgments.[77] Current studies on the effects of exemplars indicate stronger effects associated with graphically represented statistical descriptions of reality.[78] Furthermore, the high salience of survey information could also account for differences between the current study and a similar experiment conducted by Gunther and Christen. Contrary to our results, they find a dominant influence of news slant on climate of opinion evaluations. However, their operationalization of public opinion information differs from ours, as majority ratios were mentioned rather shortly in the text without percentages (e.g., "most Americans," "very few Americans"). However, we certainly agree with the authors who state, "Actual public opinion information can arguably be highlighted to such an extent that it will make a difference in peoples' social and personal judgments."[79]

Finally, the relationship between personal opinion and perceived climate of opinion that we interpreted as projection can also be read in the opposite direction. Thus, participants could have first formed a certain impression of existing opinion distributions, to which they subsequently adopt their own opinion. With regard to the second interpretation, Deutsch and Gerard[80] define two categories of majority influence. Normative influence occurs because the individual expects sanctions when it does not conform to the group. Such an explanation would reflect theoretical ideas that are also included in the "spiral of silence."[81] Informational influence, as the second category, is motivated by a desire for accuracy and therefore very similar to the social proof interpretation we discussed above.

We believe that in our experimental setting, the fear of isolation was rather low, due to the vast social and geographic distance of the reported situation. Hence, it seems unlikely that recipients show conformity reactions caused by normative influence. However, informational influence might have been at work: due to their lack of prior knowledge, participants could have tended to consider the majority opinion to be an indicator of validity. In this case, they would have based their opinion on the following

consideration: if so many citizens in Cologne oppose the project, then they must have a point. Assuming that this explanation is correct, the influence of the climate of opinion on one's own opinion should weaken or at least remain stable when participants have no information about the opinions of Cologne's inhabitants. However, additional analyses do not support this assumption. We calculated correlations between participants' personal opinion and their perceptions of the current/future public opinion for each of the experimental conditions separately. The relationship was weaker in the case of clear (current climate: $r = -.05$, $p > .05$; future climate: $r = -.16$, $p < .01$) and narrow poll results (current climate: $r = -.08$, $p > .05$; future climate: $r = -.30$, $p < .001$) than in the condition without any poll information (current climate: $r = -.29$, $p > .001$; future climate: $r = -.46$, $p < .001$). While the same pattern holds for the present and future climate, the correlations are generally stronger in the latter case. These findings may indicate that public opinion assessments and personal opinions covary more strongly if polls are lacking. To further support the projection interpretation, it is also important to note that our stimulus reported the arguments against or in favor of the express railway before poll information was brought up. This did not, of course, fully ensure that recipients first formed an opinion and then projected it onto public opinion, but it can be seen as an additional argument supporting our initial assumption. This interpretation is also supported by empirical studies showing that the influence of others' opinions decreases considerably when individuals had the chance to form an opinion in advance.[82]

Another central finding of the present experiment is that the slant of media coverage does not affect perceptions of the (current and future) climate of opinion. Participants, hence, neither assume that the report will influence the opinions of others (PPI) nor that it reflects public opinion (reflection). In addition, if judgments would follow a PPI, one would expect a correlation between the slant of argumentation and perceived *future* climate of opinion as the report should at least affect people's opinions after some time has passed. Perhaps participants did not consider the news report to be persuasive enough, which would hinder a PPI or they did not perceive the article as a reflection of the current situation, but rather as single opinion of a journalist.

Our findings offer numerous possibilities for future studies. First, one could draw more attention to the relative importance of implicit and explicit cues to public opinion in news reports. Although some studies have already considered some forms of media content, such as surveys[83] or exemplars,[84] these do not permit an integrative or comparative analysis of these indicators. In addition, as the comparison with the study by Gunther and Christen has shown, the effect of different media content can shift due to minor changes in coverage or presentation,[85] which therefore should be examined as well. In this context, field studies could shed light on the question to what extent cumulation and consonance of certain content cues exert an influence on opinions and the perceived climate of opinion. Furthermore, longitudinal studies could answer the question whether, and under what conditions, either conformity to the perceived climate of opinion or social projection occurs.

Appendix

Table A1. Bivariate Correlations between the Variables in Model 1.

	1	2	3	4
1. Tendency of poll results	—			
2. Slant of argumentation	.00	—		
3. Personal opinion	−.11**	.37***	—	
4. Current climate of opinion	.40***	.02	.14***	—

*p < .05. **p < .01. ***p < .001.

Table A2. Bivariate Correlations between the Variables in Model 2.

	1	2	3	4
1. Tendency of poll results	—			
2. Slant of argumentation	.00	—		
3. Personal opinion	−.11**	.37***	—	
4. Future climate of opinion	.39	−.15***	.30***	—

*p < .05. **p < .01. ***p < .001.

Declaration of Conflicting Interests

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Notes

1. W. P. Davison, "The Public Opinion Process," *Public Opinion Quarterly* 22 (summer 1958):91-106; Robert R. Huckfeldt and John Sprague, *Citizens, Politics and Social Communication: Information and Influence in an Election Campaign* (Cambridge, UK: Cambridge University Press, 1995); Elisabeth Noelle-Neumann, "The Spiral of Silence. A Theory of Public Opinion," *Journal of Communication* 24 (summer 1974): 43-51; Hubert J. O'Gorman, "Pluralistic Ignorance and White Estimates of White Support for Racial Segregation," *Public Opinion Quarterly* 39 (fall 1975):313-30; Magdalena Wojcieszak and Vincent Price, "What Underlies the False Consensus Effect? How Personal Opinion and Disagreement Affect Perception of Public Opinion," *International Journal of Public Opinion Research* 21 (spring 2009): 25-46.
2. Whether such an inference is valid may be questionable, as the personal social environment tends to be a rather limited and homogeneous sample. See Diana C. Mutz, *Hearing*

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22. Gunther, "The Persuasive Press Inference."

23. Mutz and Soss, "Reading Public Opinion"; Jacob Shamir and Michael Shamir, "Pluralistic Ignorance across Issues and over Time: Information Cues and Biases," *Public Opinion Quarterly* 61 (summer 1997): 227-60.

24. Hoffman, "When the World Outside Gets inside Your Head."

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55. e.g. Patricia Moy, David Domke, and Keith Stamm, "The Spiral of Silence and Public Opinion on Affirmative Action," *Journalism & Mass Communication Quarterly* 78 (spring 2001): 7-25; Catherine Marsh, "Back on the Bandwagon: The Effect of Opinion Polls on Public Opinion," *British Journal of Political Science* 15 (spring 1985): 51-74; Petric and Pinter, "From Social Perception to Public Expression of Opinion."

56. This does not mean that there are no studies analyzing the formation process of climate of opinion judgments. In fact, the vast body of research on exemplification, the persuasive press inference, hostile media perceptions, or poll effects has contributed a lot to our

understanding of their origins. However, most of these studies only examine the derivation of current public opinion estimates or lack comparisons between the factors influencing current and future judgments.

57. Shamir, "Information Cues and Indicators of the Climate of Opinion"; Shamir and Shamir, *The Anatomy of Public Opinion*.

58. Shamir and Shamir, *The Anatomy of Public Opinion*, 127.

59. Shamir and Shamir, *The Anatomy of Public Opinion*, 125.

60. Shamir, "Information Cues and Indicators of the Climate of Opinion."

61. Fields and Schuman, "Public Beliefs about the Beliefs of the Public."

62. For this reason, the theoretical part of this study does not deal with the representativeness heuristic, which is put forward to explain the effects of exemplars. See Amos Tversky and Daniel Kahneman, "Judgment under Uncertainty: Heuristics and Biases. Biases in Judgments Reveal Some Heuristics of Thinking under Uncertainty," *Science* 185 (September 27, 1974): 1124-31. They are omitted here as the arguments in the text do not originate from identifiable individuals, whose behavior or opinions could be generalized to a broader demographic category.

63. Gordon W. Cheung and Rebecca S. Lau, "Testing Mediation and Suppression Effects of Latent Variables: Bootstrapping with Structural Equation Models," *Organizational Research Methods* 11 (summer 2008): 296-325; R. L. Holbert and Michael T. Stephenson, "The Importance of Indirect Effects in Media Effects Research: Testing for Mediation in Structural Equation Modeling," *Journal of Broadcasting & Electronic Media* 47 (winter 2003): 556-72.

64. To test the hypotheses above, we had to exclude two experimental conditions from the analysis: participants who were not given any survey information, and participants to whom we did not present any arguments. Thus, the structural equation model (SEM) tests for effects of survey and argumentation, and not for the effect of missing information. This way we also ruled out the interaction effect between survey results and slant of argumentation, which showed up in the analysis of variance (ANOVA) in case of missing survey information, which would have complicated the interpretation of results.

65. Data analysis using SEMs requires multiple normally distributed variables; Randall E. Schumacker and Richard G. Lomax, *A Beginners Guide to Structural Equation Modeling*, 2nd ed. (Mahwah, NJ: Lawrence Erlbaum, 2004), 11. If this condition is violated, as in the case of this study, test of statistical significance should be conducted using a bootstrap procedure, which provides considerably more reliable confidence intervals. All samples in the following calculations are based on 10,000 bootstrap samples. See Bradley Elfron, "Bootstrap Methods: Another Look at the Jackknife," *The Annals of Statistics* 7 (spring 1979): 1-26; Bradley Elfron, "Better Bootstrap Confidence Intervals," *Journal of the American Statistical Association* 82 (March 1987): 171-85; Barbara Byrne, *Structural Equation Modeling with AMOS: Basic Concepts, Applications and Programming* (Mahwah, NJ: Lawrence Erlbaum, 2001), 267-86; Yiu-Fai Yung and Peter M. Bentler, "Bootstrapping Techniques in Analysis of Mean and Covariance Structures," in *Advanced Structural Equation Modeling: Issues and Techniques*, ed. George A. Marcoulides and Randall E. Schumacker (Mahwah, NJ: Lawrence Erlbaum, 2003), 195-226.

66. Multiplying the path coefficients in a SEM can result in a product that is not normally distributed, and therefore may produce skewed results when conventional statistical

tests are applied. We therefore performed a corrected bootstrap (bias corrected bootstrap) to account for potential distortions. See Cheung and Lau, "Testing Mediation and Suppression Effects"; Holbert and Stephenson, "The Importance of Indirect Effects"; David P. MacKinnon, Chondra M. Lockwood, and Jason Williams, "Confidence Limits for the Indirect Effect: Distribution of the Product and Resampling Methods," *Multivariate Behavioral Research* 39 (January 2004): 99-128.

67. Significant differences between the path coefficients of the current and future models are specified by two indicators. The first is the size of their standard errors that are relatively small (SE = .04-.05). The second indicator is the chi-square difference test that compares chi-square values of two nested models, in which the path coefficients of model 2 are separately fixed to their values in model 1. Both indicators point to statistical differences for two pairs of path coefficients: the effect of survey results on climate of opinion perception, χ^2 difference (1, N = 527) = 226.002, p < .001, and the projection effect, χ^2 difference (1, N = 527) = 65.577, p < .001.

68. Mutz and Soss, "Reading Public Opinion"; Sonck and Loosveldt, "Impact of Poll Results."

69. Gunther and Christen, "Effects of News Slant and Base Rate Information."

70. The ANOVA also shows a small main effect of arguments on current and future climate of opinion perceptions that vanishes in the SEM. This is due to slight differences between the ANOVA and the SEM: the SEM (1) considers participants' personal opinion as a mediator between argumentation and public opinion perception and (2) lacks an interaction effect between the tendency of poll results and slant of argumentation.

71. Shamir and Shamir, *The Anatomy of Public Opinion*, 31-34.

72. Fleitas, "Bandwagon and Underdog Effects."

73. Fleitas, "Bandwagon and Underdog Effects"; Hardmeier, "The Effects of Published Opinion Polls on Citizens."

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78. Christina Peter and Hans-Bernd Brosius, "Grenzen der Wirksamkeit von Fallbeispielen?," *Publizistik* 55 ["Limited Effects of Exemplars?"] (fall 2010): 275-88.

79. Gunther and Christen, "Effects of News Slant and Base Rate Information," 287-88.

80. Morton Deutsch and Harold B. Gerard, "A Study of Normative and Informational Social Influences upon Individual Judgment," *Journal of Abnormal and Social Psychology* 51 (fall 1955): 629-36.

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Author Biographies

Thomas Zerback is a postdoctoral reseacher at the Department of Communication Studies and Media Research at LMU Munich, Germany. His research interests include political communication, public opinion perception, and media diversity.

Thomas Koch is a postdoctoral reseacher at the Department of Communication Studies and Media Research at LMU Munich, Germany. His research focuses on effects of persuasive communication, the relationship between journalism and public relations, media use, and political communication.

Benjamin Krämer is a postdoctoral researcher at the Department of Communication Studies and Media Research at LMU Munich, Germany. His research interests include media use and media socialization as well as political communication.