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Article

Media Coverage as Mirror or Molder? An Inference-Based Framework

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Abstract
Many communication theories in the context of political communication are based on the premise that humans are social beings affected by their perception of what others think, do, or say. For example, the spiral of silence theory predicts that individuals publically speaking their mind on certain issues is dependent on whether they perceive their opinion to be that of the majority or minority, and that the media is a core source for gauging public opinion. Yet, communication research has produced contradictory findings regarding the relationship between media coverage, perceived public opinion, personal opinion, and behavior. We argue that these contradictory findings can be explained by different inference hypotheses that people apply when inferring the opinion and behaviors of others from media coverage. There are two competing inference hypotheses discussed in the literature: While the reflection hypothesis assumes that the audience sees media content as a mirror of what the public thinks, persuasive press inference postulates that individuals perceive media as an influence on public opinion. Drawing on different research strands such as the spiral of silence theory, hostile media, persuasive press inference, and corrective action, several propositions are put forward that link these inference hypotheses to the media coverage and its effects on individual outcomes, and potential drivers are discussed. The propositions are then put to an initial test using an existing data set.

Keywords
hostile media; inference; media effects; persuasion; persuasive press inference; public opinion; reflection; spiral of silence

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1. Introduction

A great deal of research in political communication is concerned with how political media coverage affects individual judgments and behaviors. Researchers are interested in whether news media shape political beliefs, TV debates change voting intentions, or the use of nonpartisan news hinders political participation. However, when it comes to media's influence on opinion formation and individual behavior, results have been contradictory and sometimes downright confusing. For instance, a meta-analysis on the relationship between cross-cutting exposure and political participation (Matthes et al., 2019) showed that individual studies had found cross-cutting exposure to be either a positive, negative, or an insignificant predictor, and overall, there was a null relationship that could not be explained by any moderating factors. In the same vein, Krämer and Peter (2020) found small to no overall effects of exemplars (portrayals of ordinary citizens) on personal opinion, although some studies have shown rather strong effects at least on perceptual judgments such as perceived public opinion (e.g., Brosius & Bathelt, 1994; Zerback & Peter, 2018).

This article argues that such findings might be due to the lack of consideration of two key factors that can be decisive when looking at the effects of media coverage on individual outcomes such as opinion formation and behaviors: (a) the dependence of individual opinions and behaviors on the perception of others' opinion and behaviors, and (b) the lay hypothesis that is applied when inferring the opinion and behaviors of others from the media. Based on existing research and especially the work by Gunther (1998; see also Gunther & Christen, 1999, 2002), two competing inference hypotheses are

proposed: *reflection inference* and *persuasion inference*. Although both inference hypotheses should elicit similar effects, for example, on public opinion perceptions (Gunther, 1998; Gunther & Christen, 2002), we argue that the distinction of these two processes is key to understanding when and how these perceptions affect opinion formation and individual behavior. Drawing on different research strands such as the spiral of silence theory, hostile media, persuasive press inference, and corrective action, we propose a theoretical framework that links different types of media content and individual predispositions to the inference hypotheses, and these hypotheses to perceptual judgments and subsequent individual outcomes.

2. How Media Coverage Affects our Perception of Others

So far, media effects research has looked at different types of individual outcomes that can be distinguished on three levels (e.g., Krämer & Peter, 2020): (a) reality perceptions, such as risk perceptions or perceived public opinion (first-level effects); (b) individual judgments, such as personal opinions, cognitions, or emotional reactions (second-level effects); and (c) behavioral consequences, such as speaking out, voting intentions, or political participation, or lifestyle changes (e.g., going vegan; third-level effects). Often, one of these judgments is the primary interest in research. Yet, even if different levels of judgments are investigated, they are frequently treated independently.

This article follows the notion that to understand media effects on outcomes such as personal opinions and behaviors, the perceptions of others' opinions and behaviors need to be considered. As social creatures, a great deal of what we think and how we behave is dependent on what (we believe) others think or do. The idea that individual outcomes may be dependent on mediated perceptions of others is well established in political communication research: Several communication theories argue that media leads people to make assumptions about how others think about a given issue and that these assumptions may influence subsequent judgments and behaviors. For example, the spiral of silence theory argues that the perception of the majority opinion on a topic (and whether this perceived majority is in line with one's own opinion) may be decisive for whether people speak out on the topic or not. Gunther and Storey's (2003) influence of presumed influence approach states that people's behavior is guided by their perception of media's influence on others. Importantly, research has looked at how these levels of judgments are causally linked to each other, with quite different results: For example, the looking glass effect assumes that personal opinion affects public opinion perception, while conformity approaches suggest that people adapt majority opinion as their own (e.g., Asch, 1956). Thus, to understand diverging effects of media on these judgments, we must acknowledge that there is a complex causal relationship between these judgments in the first place (Figure 1).

This article draws special attention to the relationship between media coverage and people's perception of others on the one hand and how this relationship influences subsequent second and third-level outcomes on the other. In particular, we argue that consumers' lay strategy that is applied in inferring the opinion of others from media coverage is key to understanding the effects on second and third-level outcomes and can shed light on prior divergent results when it comes to the effects of media coverage on people's opinions and behaviors. Thus, this article's goal is to integrate different strands

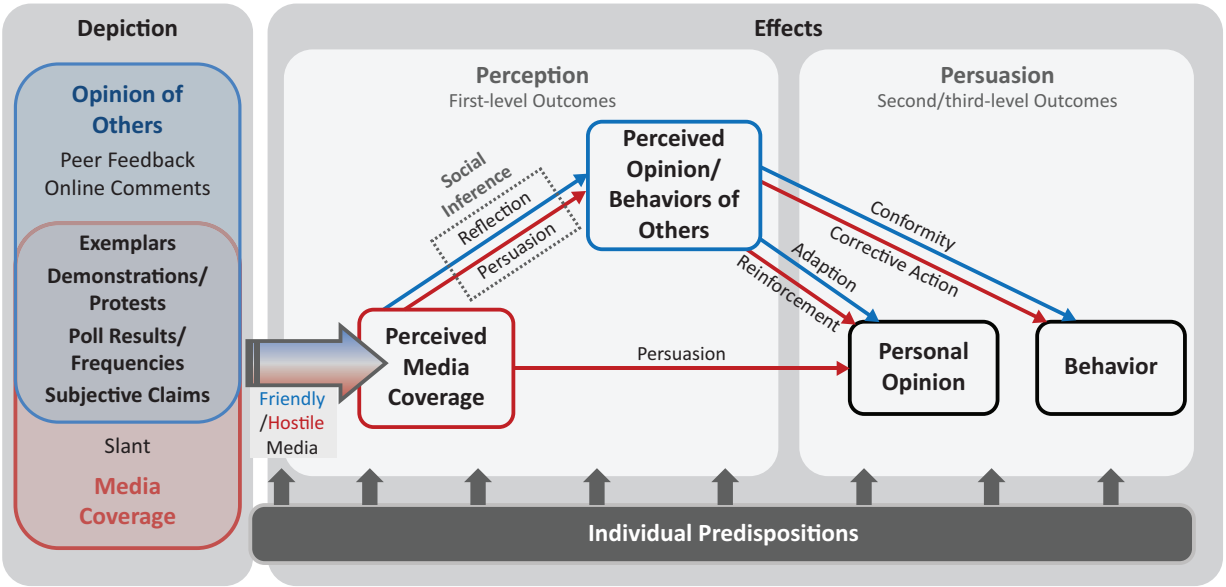

Figure 1. Proposed relationships between media coverage and different outcomes.

of research in the context of what we term ”social inference” (how people infer judgments about others’ opinions and behaviors from media coverage) and what Mutz coins “impersonal influence” (effects of these judgments on subsequent outcomes such as opinion and behaviors; Mutz, 1998). The objective of this integration is to create a coherent propositions capable of predicting effects in the context of political communication and beyond (see Figure 1 for an overview).

3. Mirror or Molder? How Inference Hypotheses Link Media Coverage to Individual Outcomes

When it comes to our perception of what others think or do, different sources inform individual judgments (e.g., Zerback, 2016). First and most obviously, our personal social network provides ample first-hand information about what others think about a given topic. In this context, social media has expanded our social network and our supposedly first-hand impressions when it comes to the opinion of others. In addition, research has shown that we use our own opinion as a proxy for the opinion of others, which has been coined as false consensus, looking glass, or simply projection effects in literature (e.g., Marks & Miller, 1987; for a thorough discussion see Christen & Gunther, 2003). Although we are aware of the importance of these sources for perceptual judgments about others, this model focuses solely on the role of media coverage as a source of information about the opinion and behavior of others.

In a first step, we simply argue that in many cases, people will infer the opinions and behaviors of others, e.g., public opinion, from media coverage to some extent—we term this phenomenon “social inference.” Most obviously, this happens when direct displays of public opinion or behavior of others are present in coverage, such as, for example, opinion polls, exemplars, or general statements about public opinion (for an overview, see Peter & Zerback, 2020). However, research has shown that even if no such direct portrayals of others are present in media coverage, people may still infer the opinions and behaviors of others from the mere (perceived) slant of that coverage (e.g., Gunther, 1998; Gunther & Storey, 2003; Zerback, 2016):

> Proposition 1a: People tend to infer the opinions and behaviors of others on a given issue from perceived media coverage on that issue (social inference).

However, effects on second and third-level judgments might depend on how judgments about others’ opinions and behaviors are formed based on media displays. Following the argumentation and research on the persuasive press inference by Gunther (1998; see also Gunther & Christen, 1999), we distinguish between two alternative ways how people infer the opinions and behaviors of others (e.g., public opinion) from media coverage: the reflection hypothesis, which suggests that people see media as a mirror of what others think or do; and the persuasion hypothesis, which suggests that people believe media to be a molder of the opinion/behaviors of others. There is ample empirical evidence for both inference strategies as drivers of the relationship between (perceived) media coverage and the perception of opinions and behaviors of others. For instance, several authors could show that people use media slant as a basis to predict both public opinion (e.g., Gunther et al., 2001; Gunther & Christen, 2002; Zerback, 2016) as well as the behavior of others (e.g., Gunther & Storey, 2003). In addition, Peter (2021) was able to show that media content containing subjective claims about public opinion affects both perceived reflection as well as perceived public opinion. In their examination of the persuasive press inference, Gunther and Christen (1999) conclude that regardless of whether “people believe the content to be a reflection of public opinion rather than a shaper of such opinion,…the effect…would be the same” (p. 288). Thus, a positive relationship between the perceived slant of media coverage and the perceived opinion of others should occur regardless of which of these two inference hypotheses is applied (Gunther, 1998; Gunther & Christen, 1999; Gunther et al., 2001):

> Proposition 1b: For inferring the opinions and behaviors of others from media coverage, two different inference hypotheses can be applied (reflection and persuasion hypothesis); the relationship between (perceived) media coverage and perceived opinion/behaviors of others will remain regardless of the inference hypothesis applied.

Importantly, we believe these inference hypotheses not to be more general beliefs or traits, and thus to be distinguishable from concepts such as, for example, media trust. Consequently, while we believe the inference hypotheses to be something that might very well be influenced to some extent by stable personality traits (see Section 3.3.2), we argue that it is also dependent upon situational factors such as, for example, concrete media content (e.g., direct public opinion displays, Section 3.3.1), the topic and individual’s attitude towards it, and attitude extremity (see Section 2.3).

3.1. The Reflection Inference: Media Coverage as a Mirror of Public Opinion

The spiral of silence theory is one of the most prominent theories regarding the relationship between media coverage, public opinion, and individual outcomes. It predicts, put shortly, that whether individuals publically speak their minds on a certain topic is dependent on whether they perceive their opinion to be that of the majority or the minority (Noelle-Neumann, 1974) and that the media is seen as a core source for gauging public opinion. In this regard, the theory assumes that people see the media as a reflection of what the public

thinks (media follows the public): "The media are not perceived as agents of direct influence, but rather as reporters of the distribution of "acceptable" opinion" (Katz, 1983, p. 89). We have coined a term for this hypothesis about how the media and the opinion of others are connected—*reflection inference*: people base perceptions about others, such as public opinion, on media coverage because they believe the media mirror public opinion.

We assume that this will be strengthened by the extent to which media coverage is perceived to be in line with one's opinion ("friendly media," Goldmann & Mutz, 2011). We base this assumption on two key findings from previous research: First, there is strong evidence for so-called projection effects (e.g., false consensus and looking glass effect, Marks & Miller, 1987; Christen & Gunther, 2003), meaning that people usually see public opinion to be in line with their own opinion. We hypothesize that this projection effect will spill over to media coverage, meaning that when they perceive media to be in line with their own opinion, they may (unconsciously) assume that it also represents the opinion of others (e.g., public opinion). Second, it is the logical inversion of an argument that we will elaborate on in detail in the following section: when media is seen as biased against one's own opinion ("hostile media"), this leads to the assumption that the media has a strong influence on others (Gunther & Chia, 2001; Hansen & Kim, 2011; Vallone et al., 1985). Using representative survey data, Gunther and Christen (2002) showed that projection effects (consonance between one's own opinion and perceived public opinion) increase when the similarity between one's own opinion and perceived media coverage increases. Thus, we propose:

> Proposition 2a: The more media coverage is judged to be in line with one's own opinion (friendly media), the more likely it is seen as a reflection of the opinion/behavior of others (reflection inference).

The spiral of silence theory proposes that perceived public opinion causally influences willingness to speak out, depending on whether people perceive their own opinion to be in line with that of the majority. Those who perceive consensus between their own opinion and the majority are more willing to speak out than those who perceive themselves as part of the minority opinion (Donsbach et al., 2014; Noelle-Neumann, 1974). Existing meta-analyses on the spiral of silence theory (Glynn et al., 1997; Glynn & Huge, 2014; Matthes et al., 2017) have confirmed this effect. In her original theory, Noelle-Neumann based this assumption on research regarding conformity effects (Asch, 1956; Cialdini & Goldstein, 2004) which has shown that people adapt their behaviors to those of the majority. Based on this, we argue that reflection inference and thus the belief that media coverage reflects what others think will more likely lead to conformity in second and third-level outcomes, so that opinion and behaviors will be adapted to the perceived majority opinion and behavior of others:

> Proposition 2b: The stronger the reflection inference, the more people will adapt their opinions and behaviors to the perceived opinion and behavior of others (conformity).

Proposition 2a applies to scenarios where people possess (strong) preconceptions about a topic. In this case, reflection inference will predict opinion reinforcement rather than opinion formation or change, and congruency between perceived public opinion, personal opinion, and subsequent behavior. When individuals hold no (strong) preconceptions, we believe other factors to be more important in triggering the reflection inference (e.g., direct displays of others, see Section 3.3) and assume a stronger conformity influence on personal opinion (i.e., change in the direction of perceived public opinion) when reflection inference is applied.

3.2. The Persuasion Inference: Media Coverage as a Molder of Public Opinion

The persuasion inference has already been intensively researched by Gunther and colleagues (e.g., Gunther & Christen, 1999; Gunther et al., 2001) and is based on Gunther's (1998) persuasive press inference where he challenged the idea that people infer public opinion from the media because they see the media as a reflection of public opinion. Gunther argued that people infer public opinion from media coverage even if it does not display explicit public opinion cues such as polling results, meaning from the mere slant of media coverage. He coined the persuasive press inference for this, which leads people to believe that "what mass media are saying today must be what the public will be thinking tomorrow" (Gunther, 1998, S. 487). Thus, he assumed that people infer public opinion from the media because they perceive it as not a mirror but a molder of it (the public follows the media). Gunther's persuasive press inference is based on a two-step process: First, people extrapolate the slant of a given news report to the overall media coverage on an issue, meaning that they assume that all media reports similarly on a topic, both across outlets and time (Gunther et al., 2001). Second, media is judged to be influential on the audience, a phenomenon that has already been well established by research on the third-person effect and influence of presumed influence (Davison, 1983; Gunther & Storey, 2003; Sun et al., 2008). Perceived media influence on others can also be tied back to hostile media perceptions, meaning that people perceive media coverage to be biased against their own beliefs (e.g., Gunther & Chia, 2001; Hansen & Kim, 2011; Vallone et al., 1985). As research on the hostile media phenomenon has shown, the perception of biased media and the associated mistrust results in the perception of

a stronger influence on others (e.g., Barnidge & Rojas, 2014; Tsfati, 2007). In this context, Wojcieszak and Rojas (2011) were able to show that perceiving media as dissimilar to one's personal opinion can lead to a hostile public effect. Based on this, we propose:

> Proposition 3a: The more media coverage is seen as biased against one's opinion (hostile media), the more likely media is seen as an influence on the opinion and behaviors of others (persuasion inference).

Following the above argumentation, we predict that under the application of the persuasion inference, public opinion perceptions will likely be in line with the perceived slant of media coverage—but not with one's own opinion. This could also explain effects on individual behaviors that deviate from what we predicted based on the reflection inference. Research on the corrective action hypothesis (Barnidge & Rojas, 2014; Rojas, 2010) has shown that hostile media perceptions can lead people to take action (e.g., speak out) to counteract the perceived illegitimate influence of biased media and that this effect is mediated by perceived influence on others. This idea is also supported by early research on the third-person effect that showed that individuals who perceived a stronger influence on others than on themselves are also more likely to act on this perceived influence, e.g., demand censorship for the respective media content (e.g., Gunther, 1995; Rojas et al., 1996). Consequently, in these scenarios, we predict no causal influence of media coverage on opinion formation, meaning that individuals' original opinions will either be unaffected or even reinforced. This notion is important as it may explain previous findings, e.g., from exemplification research, where researchers have demonstrated influences of exemplars on public opinion, but not on personal opinion. Consequently, we propose:

> Proposition 3b: The stronger the persuasion inference, the more likely people's opinions, and behaviors will deviate from the perceived opinion and behavior of others (corrective action).

3.3. Relationship Between Inference Hypotheses and Driving Factors

The above argumentation suggests that reflection and persuasion inference are distinct mechanisms that occur under different circumstances and affect individual outcomes differently. However, we do not think these inference hypotheses are mutually exclusive: One can very well believe that the media is representative of what the public thinks and, at the same time, assume some effect of such coverage on public opinion (e.g., Gunther & Christen, 2002; Gunther et al., 2001). In addition, one may believe that media coverage neither reflects nor influences public opinion. Nevertheless, we assume that both hypotheses are in a hydraulic relationship, meaning the more one sees the media as a molder of public opinion, the less one will judge it to reflect it and vice versa:

> Proposition 4: Both inference strategies can co-occur, but will be negatively correlated.

Furthermore, we assume that additional driving factors (other than personal opinion) are likely to trigger one of the inference hypotheses more than the other. We believe these factors to be especially important when people hold weak or no preconceptions on the given topic. Such driving factors can be (a) specifics of media coverage and (b) individual predispositions.

3.3.1. Specifics of Media Coverage

In journalistic media coverage, several information types can be used to depict the opinion and behavior of others (Peter & Zerback, 2020). For example, in their study, Lewis et al. (2005) distinguish between four major types of direct references to public opinion: opinion polls, general statements about public opinion, vox populi (interviews of ordinary citizens stating their opinion), and the display of demonstrations or protests. Peter and Zerback (2020) have extended this perspective and provide a comprehensive categorization of ordinary citizen displays in the media by matching single displays of others (so-called exemplars), especially their opinions (vox populi) and behaviors (e.g., case study exemplars) with their respective aggregated, more valid counterparts (opinion polls, frequency of events/behaviors).

There is ample evidence that both aggregated information about others (e.g., public opinion) and individual displays (exemplars) influence people's perception of others (for an overview, see Krämer & Peter, 2020). For aggregated information, the mechanism is quite straightforward: According to Zerback et al. (2015), a simple learning process occurs as people can directly infer their judgments from such information types (e.g., perceived public opinion from displayed public opinion), meaning that people can simply store and recall the information when in need of a respective judgment (Peter, 2021; Zerback et al., 2015). For the display of one or more single depictions of others (exemplars), the influence on the respective judgments is more complex and supposed to occur through heuristic processing (Kahneman & Tversky, 1972): people (unconsciously) judge these single cases to be representative for a large population and thus integrate them when forming a judgment about the respective population (Peter & Zerback, 2017).

Regardless of the different mechanisms, both aggregated and individual depictions of others are supposed to elicit effects because they are or at least are perceived as representative of others and thus integrated when forming judgments about them. Following this perspective, as well as the argumentation by Gunther (1998; see also Gunther & Christen, 2002), we predict that each cue that provides direct information about public opinion

(be it aggregated information about a given population [opinion polls, general statements] or the display of single opinions of individuals or a smaller group from the said population [vox populi, demonstrations/protests]) increases the likelihood that people will believe that media reflects others. Indeed, Peter (2021) has shown that the more direct public opinion cues were present in an interview, the more people judged the interview content to reflect the public's thoughts.

However, as elaborated extensively in Section 3.2, even if such direct cues are absent, research has shown that people infer the opinions and behaviors of others from the mere slant of media content. This is driven by the (unconscious) perceptions that the media content is representative of media coverage at large, which influences others in shaping their opinions and behaviors (e.g., Gunther, 1998; Gunther & Christen, 1999; Zerback, 2016). Taken together, we argue that direct cues are more likely to trigger reflection inference, whereas the absence of such cues is more likely to lead to persuasion inference:

> Proposition 5a: Direct opinion cues in media coverage are more likely to trigger reflection inference than persuasion inference, whereas the absence of direct cues will more likely trigger persuasion rather than reflection.

3.3.2. Individual Predispositions

However, media specifics alone cannot explain prior findings on the relationship between media coverage and opinion formation. We assume that, in addition, individual predispositions can drive inference hypotheses. One factor that has already been elaborated on is the congruence between one's opinion and the perceived slant of media coverage (hostile media perception), which is fueled by attitude extremity that can reduce projection effects and foster the perception of a hostile public (Wojcieszak & Rojas, 2011). However, other factors should become more important if people have no or weak preconceptions about an issue. In this regard, more stable personality traits could come into play. For instance, prior research has linked low trust in media and populist attitudes to hostile media perceptions and, consequently, perceived media influence on others (e.g., Schulz et al., 2020). In addition, studies by Peter (2019, 2021) have shown that populist attitudes can alter the effects of media coverage on public opinion perceptions, and the stronger the populist beliefs, the less reflective media coverage was seen, and the more reactance to it was triggered regardless of the specific content. In line with this, we believe that apart from situational factors such as specifics of media coverage, personal predispositions, especially those related to distrust in media coverage, are more likely to trigger the feeling that media coverage influences rather than mirrors people's opinions and behaviors:

> Proposition 5b: More stable personality factors associated with low trust in media (e.g., media skepticism, populist beliefs) are more likely to trigger persuasion inference than reflection inference.

4. Application: Case-Study "Perceived Media Coverage on Refugees in Germany"

4.1. Study Rationale

To see whether our propositions stand up to a first empirical test, we will test some of them using existing data from an online survey about perceived media coverage of refugees in Germany, conducted in 2017 (Peter & Zerback, 2018). This specific topic can be considered controversial and morally loaded, and at that time, it was highly present in the public discourse due to the so-called refugee crisis. Prior research on the specific topic has shown that media coverage regarding refugees in Germany was overly positive and welcoming (Maurer et al., 2022) and that the topic elicited strong hostile media perceptions in both partisan groups (in favor of and against welcoming refugees in Germany; Merten & Dohle, 2019).

A quota sample (gender, age, formal education) was employed, recruited from a German online access panel for social science research (SoSci Panel; Leiner, 2016). Although not representative of the German population, the sample is heterogeneous regarding gender (51.2% female), age (M = 45, SD = 15.9), and formal education (57.2% held a higher education entrance qualification). In addition, the opinion distribution regarding refugees in Germany closely mirrors those measured by representative surveys at the point of data collection (e.g., ZDF Politbarometer), showing that approximately two-thirds hold favorable opinions toward refugees. The panel was sent 5,908 invitations, which led to a total of 1,638 participants (response rate of 27.7%). For the present analysis, only complete data sets will be used (N = 1,302).

We will use this data set to illustrate how mediated social influence (effects of media coverage on individual outcomes via the perceived opinion of others) is dependent on how individuals infer public opinion from media coverage. This data set employed direct measurements of the inference hypotheses (see Section 4.2). As this is a topic where we assume that people have already formed strong personal opinions, we introduce personal opinion as an exogenous variable. It is important to note that the data set was not used to generate the propositions but to test some of the proposed assumptions. However, since the data was part of another project and not collected to test the above propositions specifically, we will not engage in classical null hypothesis testing (although we will report respective indicators) but rather check if we find empirical indications that our propositions are sound. In addition, due to the specifics of the data set, not all propositions can undergo testing, and although the theoretical framework applies to a larger

set of outcomes, only specific outcomes (e.g., willingness to speak out) can be tested in this first use case.

4.2. Measurements

Personal Opinion towards refugees was measured via five items on a five-point Likert scale (e.g., "Refugees enrich cultural life in Germany," M = 3.38, SD = 1.07, α = .89). Perceived Media Coverage was measured on a seven-point semantic differential ranging from 1 = *the media reports very negatively* to 7 = *the media reports very positively on refugees in Germany* (M = 4.16, SD = 1.65). Friendly/Hostile Media Perception was computed as the absolute difference between perceived media coverage and personal opinion (z-standardized). Values range from 0 (*perfect congruence, friendly media*) to 4.05 (*maximum difference, hostile media*; M = 1.41, SD = .99).

Reflection And Persuasion Inference were measured via three items each (reflection: e.g., "Media coverage of the issue reflects the opinion of the majority of the population," M = 2.56, SD = .80, α = .80; persuasion: e.g., "Many citizens adapt their opinions to the media coverage of the topic," M = 3.43, SD = .86, α = .82) on a five-point Likert scale (1 = *fully disagree* to 5 = *fully agree*). In addition, a bipolar measurement of inference hypotheses was applied (seven-point semantic differential ranging from 1 = *The media reflect public opinion* to 7 = *The media influences public opinion*, M = 5.23, SD = 1.07) that will be used to cross-validate the above measures.

Perception Of Public Opinion was measured on a slider ranging from 0 to 100% (estimated percentage of people holding a favorable opinion towards refugees in Germany, M = 43.1, SD = 16.8). Minority/Majority Perception was determined from the agreement between personal opinion and perceived public opinion and ranged from −3 (*extreme minority*) to 3 (*extreme majority*). For example, values of "−3'' meant that the participant held an extremely favorable opinion towards refugees (4 or higher) but estimated that 25% or less of the Germans also held favorable opinions. In contrast, a value of "3" meant that the participant held an extremely favorable opinion towards refugees and also estimated 75% or more to be of a favorable opinion. We used this way of computing minority/majority perception to provide a more fine-graded variable and thus account for the fact that it makes a difference whether one holds an extreme opinion (e.g., 1 on the seven-point scale) while believing that the vast majority think differently than when one holds a moderate opinion (e.g., 3.5 on the seven-point scale) and sees public opinion as pointing slightly in the opposite direction (a dichotomous variable would put both persons in the same category).

Willingness To Speak out was measured by asking participants about their likelihood to engage in different behaviors, both online (six items, e.g., "express my opinion on the subject in social media," M = 2.34, SD = 1.11, α = .90) and "offline" (four items, e.g., "express my opinion on the subject in public," M = 3.68, SD = 0.96, α = .83).

In addition, we assessed several additional concepts to control for in our analyses: Political Orientation (left–right, seven-point-semantic differential, M = 4.89, SD = 2.26), Political Interest (five-point-semantic differential, *not at all–very much interested in politics*, M = 3.93, SD = 1), Populist Attitudes (Schulz et al., 2018; nine items, M = 3.12, SD = .87; α = .85) and Media Skepticism (Tsfati, 2003; seven items, M = 3.09, SD = .74, α = .85).

4.3. Results

Before checking the data for consistency with our propositions, we looked at the mean values and performed zero-order correlations for our main variables (Table 1). This reveals some specifics of the data set that need to be taken into account. First, the majority of respondents seem to hold a rather favorable opinion towards refugees in Germany, while public opinion is perceived rather negatively on average. Second, we see a somewhat strong negative correlation between perceived media coverage and personal opinion that points to a hostile media effect regarding this topic. Third, perceived media coverage and perceived public opinion are significantly correlated, but the effect size is marginal. Fourth, and contrary to our assumption, persuasion and reflection inference are not negatively correlated. In contrast, both concepts have a significant positive correlation, although the effect size is rather small, $r(1{,}636)$ = .14, p < .001. Cross-validation with the bipolar measurement shows the assumed correlations in the expected direction (Table 1). Interestingly, the descriptives show that participants clearly see media more as a molder (persuasion inference, M = 3.43, SD = .86) than a mirror (reflection inference, M = 2.56, SD = .80) of public opinion (mean of bipolar measurement, M = 5.23, SD = 1.07).

To approach propositions 1a and 1b, we conducted a hierarchical regression analysis with perceived public opinion as the outcome variable, perceived media coverage as the predictor, and inference hypotheses as moderators (Table 2). All variables were mean-centered to allow for a meaningful interpretation of conditional main effects. In a first step, we controlled for gender, age, formal education, personal opinion, and political orientation. As predicted, perceived media coverage and perceived public opinion are related. Both inference strategies serve as moderators of this relationship in that the stronger one perceives the media to reflect/influence public opinion, the stronger the relationship between perceived media coverage and perceived public opinion. However, the effect is considerably stronger for the reflection inference than for the persuasion inference, challenging the assumption that both inference hypotheses would be equally meaningful for inferring public opinion from media coverage. Consequently, the more people believe that media is reflective of the public, the more they seem to use media coverage as a basis to estimate public opinion as predicted; however, the belief that the media influences

Table 1. Zero-order correlations.

	Zero-order correlations						
	Perceived media coverage	Perceived public opinion	Personal opinion	Reflection inference	Persuasion inference	Inference hypotheses (bipolar)	Willingness to speak out
1 Perceived media coverage	—						
2 Perceived public opinion	−.06*	—					
3 Personal opinion	−.46***	.26***	—				
4 Reflection inference	−.29***	.21***	.40***	—			
5 Persuasion inference	−.27***	−.01	.03	.14***	—		
6 Inference hypotheses (bipolar)	−.07*	−.15***	−.22***	−.26***	.50***	—	
7 Willingness to speak out	−.12***	.16***	.27***	.11***	.10***	.02	—

Note: *p < .05, **p < .01, ***p < .001.

public opinion does not drive this connection to the same extent.

To approach propositions 2b and 3b and test how inference hypotheses influence the relationship between perceived media coverage and willingness to speak out, we performed a regression analysis with willingness to speak out as the outcome variable, inference strategies as predictors, and minority/majority-perception as a moderator. All variables that define products were mean-centered before the analysis to allow for interpretation of conditional main effects. In a first step, we controlled for gender, age, formal education, personal opinion, and political orientation. Results confirm both hypotheses (Table 3). Reflection inference has no conditional effect on willingness to speak out but is moderated by minority/majority perception. In contrast, persuasion inference has a conditional effect on willingness to speak out that is not moderated by minority/majority perception. This means that the stronger people perceive media as a reflection of public opinion, the more likely they are to speak out, but only if they see their personal opinion in line with public opinion; however, the more they perceive media to influence public opinion, the more likely they are to speak regardless of whether they think their opinion is shared by the majority or not.

Lastly, we wanted to explore which individual factors explain whether people tend to infer public opinion through reflection or persuasion. With the present data set, we can test propositions 2a and 3a and check whether hostile media perceptions trigger persuasion rather than reflection and vice versa. Since we have a single variable that ranges from 0 = *friendly media perception* (perfect congruence between perceived media coverage and personal opinion) to 4.05 = *hostile media perception* (maximum difference), we would expect this variable to negatively predict reflection and positively predict persuasion inference. In addition, we checked

Table 2. Regression analysis predicting perceived public opinion.

	Perceived Public Opinion			
	B	*beta*	*t*	*p*
Model 1: Covariates[1]				
Gender	2.924	.087	3.190	.001
Age	−0.057	−.054	−1.900	.058
Formal education	1.883	.055	1.928	.054
Personal opinion	4.409	.281	8.441	<.001
Political orientation	0.434	.058	1.771	.077
Model 2: Conditional effects & moderations[2]				
Perceived media coverage	2.668	.262	8.429	<.001
Reflection inference	3.248	.154	5.487	<.001
Persuasion inference	0.596	.031	1.142	.254
Perceived media coverage x reflection inference	2.607	.227	8.421	<.001
Perceived media coverage x persuasion inference	0.590	.051	1.991	.047
Model Summary	[1] $F(5, 1{,}285) = 23.33$, $p < .001$, $R^2 = .08$ [2] $F(10, 1{,}285) = 33.63$, $p < .001$, $R^2 = .18$			

Notes: Values for each variable are taken from the model where the variable was first entered; to allow a meaningful interpretation of conditional effects, all variables that define products were mean-centered before analysis.

Table 3. Regression analysis predicting willingness to speak out.

	Willingness to Speak Out			
	B	*beta*	*t*	*p*
Model 1: Covariates[1]				
Gender	0.108	.060	2.197	.028
Age	−0.001	−.018	−0.650	.516
Formal education	−0.022	−.012	−0.425	.671
Personal opinion	0.189	.226	6.774	<.001
Political orientation	−0.034	−.084	−2.577	.010
Model 2: Conditional effects & moderations[2]				
Reflection inference	−0.036	−.032	−1.06	.289
Persuasion inference	0.098	.095	3.37	<.001
Minority/majority-perception	0.108	.087	2.96	.003
Reflection inference x Minority/majority-perception	−0.156	−.099	−3.58	<.001
Persuasion inference x Minority/majority-perception	0.38	.027	0.97	.331
Model Summary	[1]$F(5, 1{,}282) = 21.99$, $p < .001$, $R^2 = .08$ [2]$F(10, 1{,}282) = 14.33$, $p < .001$, $R^2 = .10$			

Notes: Values displayed for each variable are taken from the model where the variable was first entered; to allow a meaningful interpretation of conditional effects, all variables that define products were mean-centered before analysis.

for the influence of media skepticism and populist attitudes that should also increase persuasion inference and reduce reflection inference (proposition 5b). We conducted two hierarchical regression analyses with inference hypotheses as outcome variables and sociodemographics (Model 1) as well as several individual dispositions (Model 2) as predictors (see Table 4). Zero-order correlation analysis conducted before the regression models revealed expected low to moderate correlations between hostile media perception, populism, and media skepticism (*r*'s between .30 and .43), and between populism and formal education ($r = -.39$).

Table 4 summarizes the results of both regression analyses. In line with proposition 2a, friendly/hostile media perception negatively predicts reflection inference, meaning that the more one sees media coverage on refugees in line with one's own beliefs, the more one sees it as a reflection of public opinion. However, friendly/hostile media perceptions do not predict persuasion inference as proposed. The same holds true for the general trait of media skepticism, only that this also predicts persuasion inference (albeit to a weaker extent than reflection).

As an overall pattern, almost all individual factors under investigation are significant predictors for (a decrease in) reflection inference but do not predict (an increase in) persuasion inference to the same extent. As an exception, populist attitudes do predict both strategies to a similar extent, but the effect is very small. The same goes for formal education, with higher

Table 4. Regression analyses predicting inference hypotheses.

	Reflection Inference				Persuasion Inference			
	B	*beta*	*t*	*p*	*B*	*beta*	*t*	*p*
Model 1								
Gender (1 = *male*)	−0.136	−.085	−3.067	.002	−0.048	−.028	−.984	.325
Age	−0.004	−.074	−2.549	.011	−0.006	−.102	−3.482	<.001
Formal education (1 = *higher*)	0.136	.084	2.928	.003	−0.136	−.078	−2.696	.007
Model 2								
Friendly/hostile media perception	−0.179	−.223	−8.095	<.001	0.002	.003	.087	.931
Media skepticism	−0.280	−.260	−9.051	<.001	0.180	.154	4.744	<.001
Populist attitudes	−0.053	−.058	−1.955	.051	0.080	.081	2.408	.016
Political interest	−0.070	−.087	−3.242	.001	−0.033	−.038	−1.249	.212
Political orientation	−0.049	−.139	−5.467	<.001	−0.012	−.030	−1.059	.290
Model summary	[1]$F(3, 1{,}285) = 11.44$, $p < .001$, $R^2 = .03$ [2]$F(8, 1{,}280) = 55.85$, $p < .001$, $R^2 = .26$				[1]$F(3, 1{,}285) = 5.81$, $p < .001$, $R^2 = .01$ [2]$F(8, 1{,}280) = 8.97$, $p < .001$, $R^2 = .05$			

Notes: Values displayed for each variable are taken from the model where the variable was first entered.

formal education leading to a stronger reflection and a weaker persuasion inference. Interestingly, age is negatively related to both concepts, meaning that the older the participants, the less they judge media to be related to public opinion.

5. Discussion and Conclusion

So far, media effects research in political communication has produced diverging results regarding the relationships between media coverage, public opinion perception, and individual outcomes. Based on existing findings and prior work on social inference (e.g., Gunther, 1998; Gunther & Christen, 1999), the present manuscript proposes two different inference hypotheses that might be decisive for how (perceived) media coverage affects subsequent judgments and behaviors: reflection and persuasion inference. An existing data set on the refugee crisis in Germany in 2017 was used to test some of the propositions put forward.

Although the data set provides only one specific case study, it reveals some interesting findings regarding the proposed framework. First, it suggests that reflection and persuasion inference are two distinct, unrelated concepts. This is supported by the negligible correlation between both strategies, the very weak moderating effect of the persuasion inference, and the stronger effect of hostile media perceptions on reflection than persuasion. Thus, it can be stated that while hostile media perception leads people to believe that the media does not represent public opinion, it does not necessarily mean that they see media as a molder of it. Rather, it may be that people with hostile media perceptions see media coverage and public opinion as detached. Consequently, the data does not support proposition 4, that the inference strategies stand in a hydraulic relationship, which also suggests that when measured directly, two distinct scales should be used rather than a bipolar measurement. It also suggests that to trigger persuasion inference, more than just the perception that the media is biased against one's viewpoint is needed—drawing from research, it is plausible that attitude importance/strength could be a factor that tips the scale.

Second, although we found an overall higher manifestation of a persuasion inference than a reflection inference in the data, reflection inference was a better predictor for the proposed relationships. In particular, it was a more important moderator of the effect between perceived media coverage and perceived public opinion, meaning that inference of public opinion from (perceived) media coverage is stronger when seen as reflective than persuasive. Interestingly, one of the key drivers of perceived media influence on others, hostile media perceptions, did not predict an increase in persuasion inference in this data set, but a decrease in reflection. Certainly, this result from one specific study should not be seen as evidence against this proposition (especially with ample evidence from prior research in this area, e.g., Gunther & Chia, 2001; Hansen & Kim, 2011), but it again points to the fact that the feeling that media does not represent the public does not automatically result in the feeling that it influences it. The most important predictors for persuasion inference were more stable traits such as media skepticism and populist attitudes, pointing to the fact that it might not be as dependent on situational factors as reflection inference. Certainly, this assumption needs to be tested by additional studies, e.g., by experimentally varying specifics of media coverage.

Third, the data suggested that reflection and persuasion inference may have different consequences regarding third-level outcomes, in this case, willingness to speak out. In line with the spiral of silence assumptions, we saw that the more people saw the media as a mirror of public opinion on refugees, the more likely they were to speak out but only if they perceived themselves as part of the majority opinion. In contrast, and in line with research on corrective action (e.g., Barnidge & Rojas, 2014), the belief that media influences people's opinion on the topic leads to an increased willingness to speak out regardless of perceived minority/majority opinion.

Taken together, we see that the integration of several strands of research on perceived public opinion perceptions and their consequences can help to understand media influence processes from the perception of media coverage over the perceived opinion of others to respective consequences. An important finding is that reflection and persuasion inference seem not to be two ends of the same continuum but two different concepts with somewhat different drivers and outcomes. Importantly, this means that the factors that may lead to a decrease in reflection inference do not necessarily increase perceived persuasion. What adds to this is that these inference hypotheses also related differently to a subsequent outcome, willingness to speak out in this case: While this was dependent on public opinion perception in the case of reflection, it was not in the case of persuasion. Taken together, this points to the fact that persuasion inference is harder to trigger than (a decrease in) reflection inference, but once it is triggered, people seem inclined to act upon it regardless of whether the majority shares their opinion.

Importantly, to better understand the results, some specifics and limitations of the data set need to be noted. First and most importantly, we are looking at cross-sectional, non-experimental data, which means that we cannot empirically test the causal relationships that are put forward in the propositions. This becomes especially apparent for personal opinion, which was treated as an exogenous variable guiding perception, although this could very well be the other way around. In reality, one would assume reciprocal relationships between perception and personal opinion, which cannot be modeled with the current data set. Second, the data is focused on only one topic with specific characteristics (e.g., strong predispositions, controversial and morally

loaded, highly present in public discourse, strong hostile media perception). In addition, this data set provides a specific sample (non-representative, single country) and a specific topic (attitudes towards refugees), which may look different in other contexts. Thus, the present results should be viewed as the first evidence for or against some of the propositions that need replication.

In addition, not all propositions put forward in this article could be tested; for example, proposition 5a addresses the relevance of direct cues of the opinions and behaviors of others, such as exemplars and poll results, as drivers for reflection inference. However, this could be an important avenue for future research to help understand what leads people to engage in one inference hypothesis more than the other. In this vein, it would be interesting to examine whether the inclusion of ordinary citizens as exemplars could strengthen people's belief that the media is reflective of what the public thinks and, in turn, affect judgments such as trust in media coverage in the long run (Peter, 2019). Here, experimental designs can help to gain further insight into whether direct cues or their absence drive inferences hypotheses as proposed by H5a (e.g., Peter, 2021). Furthermore, the experimental manipulation of the inference hypotheses could be a fruitful way to establish causal relationships between perceptual judgments about others derived from these hypotheses and subsequent individual outcomes. In particular, more research is needed to understand how personal predispositions and situational factors interact. For instance, a study by Peter (2021) showed that for people holding strong populist attitudes, only a high number of direct public opinion cues triggered reflection compared to people holding little to no populist attitudes.

With the proposed framework, we hope to inspire future theoretical and empirical work research as we are confident that it applies not only to research questions in political communication but to a wide range of research topics and outcomes. For instance, it could be applied to advertising research and used to understand whether the inclusion of the testimonies of ordinary people could trigger reflection inference and proposed consequences, e.g., buying a product when one believes that many people are in favor of it. Furthermore, it could be applied to health communication and in the context of media coverage about certain groups of people, e.g., those suffering from depression. If, for instance, coverage paints a negative picture of this group, reflection inference might lead consumers of said coverage to avoid contact with people in the group if they believe the display is representative of (a majority of) the group. Taken together, we believe that acknowledging the relevance of perceptual judgments for media effects on individual outcomes and integrating inference hypotheses into theoretical reasoning could help to shed light on prior confusing results in various areas and inform future research on media effects.

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