Mirror, Mirror on the Wall: How Social Projection and Social Sampling Interact in the Formation of Public Opinion Perceptions

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1. Introduction

Public opinion perceptions are important for citizens to orient themselves in the political world since they provide a baseline for expectations about political outcomes and the views of their fellow citizens. However, aggregating opinions across millions of citizens in a democracy is an impossible task for individuals. Unsurprisingly, people therefore vary widely in their estimates of public support and opposition across various political issues, such as the death penalty, treatment of asylum seekers, or climate change (Burghartswieser/Rothmund 2021; Leviston et al. 2013; Wojcieszak/Price 2009). Substantial variation in public opinion perceptions, however, inevitably leads to different expectations about political outcomes in representative democracies. If political outcomes – be it election results or specific policies – do not match with people's expectations, this may lead to disillusionment, disappointment, or doubts about the functioning of democracy.

But how do people come up with their ideas about what the general population thinks of different political issues? How can this variation be explained?

In this study, we build on two prominent perspectives in extant research about how people make up their minds about aggregated public opinion. First, employing a perspective of introspection, scholarship highlighted how individuals rely on internal informational resources and reasoning and project them onto the general public (Fields/Schuman 1976; Krueger 2007; Krueger/Clement 1994; Marks/Miller 1987; Wojcieszak/Price 2009). According to these studies, individuals come to the conclusion that the public predominantly holds views similar to their own, leading to a perception of a *false consensus* (Krueger 1998; Krueger/Clement 1994; Ross et al. 1977). This perspective, however, often neglects the informational cues available

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in individuals' social environments. Taking this shortcoming into account, a second strand of research examined to what degree individuals' social networks affect their perceptions of views held in society at large. This scholarship focuses on individuals' *social sampling*, meaning their outward-facing inference from their social surroundings to the entire population (Galesic et al. 2012; Lee et al. 2019; Wojcieszak/Price 2009). These studies support the notion that individuals make use of the observed distribution of opinions in their immediate social network and presume the overall distribution of opinions to be similar.

We test the adequacy of these approaches in the case of Germans' perceptions of immigration policy and build and expand on the established literature in two ways. First, we add to the relatively new theoretical and empirical work on the practice of social sampling by considering the neglected dimensionality of differences in social ties. Based on the theoretical argument of the "strength of weak ties" (Granovetter 1973), we argue that the effect of observed opinions on individuals' perceptions differs dependent on their attribution to different social circles. Accordingly, we expect the informational value of opinions among weak ties to be higher and its effect, therefore, stronger. Second, while explanations of projection and social sampling are complementary, there is an apparent lack of studies that treat them as such. Consequently, there is little inquiry into the interaction of both mechanisms, although a substantial mitigation effect of social sampling on projection has been demonstrated in the US context (Wojcieszak/Price 2009). Accordingly, we replicate this interaction with a focus on dissenting views in individuals' networks, again with a novel focus on the heterogeneous effects of opinions held in different social circles.

We take three different steps in this study. In the first step, we treat the perception of public opinion as a product of social projection. Second, we examine the extent to which people also rely on information about the distribution of opinions in their social environments. We hypothesize that next to a person's own position on a political issue, the average perceived positions of their peers inform their perception of public opinion. Additionally, we test our argument that when citizens infer public opinion from their social network, they apply different weights according to the informational value of different ties. As we expect the positions of weak ties to be especially informative to the individual, we analyze whether people particularly use the views held by their acquaintances – in contrast to views held by family or friends – as the best proxy for views held in society at large. Third, we use an integrated approach to test the interaction between

individuals' projection and their inference from their social networks. If people are aware of views different from their own in their social circles, they may question to what extent their own views are shared in the overall population. Therefore, we examine whether the strength of projection is conditional on experiences of disagreement.

To test our hypotheses, we make use of uniquely suited data from the *Conversations of Democracy* project. Designed by Rüdiger Schmitt-Beck, the project was established to provide comprehensive insights into citizens' interconnectedness through political conversations and how such conversations shape their political views and behavior (for more details, see Grill et al. 2018). The main component of the project consists of a two-wave panel survey of 1,600 citizens from the medium-sized German city of Mannheim in 2017 and 2018. We primarily use information about respondents' own positions on immigration, as well as their perceptions of the views held in their network and of the German population's average position on the issue. The panel structure and a host of additional variables allow us to control for a set of alternative explanations.

We find that people engage in social projection but also rely on the information in their social networks. When considering the opinions of others to inform their perceptions of public opinion, people do rely strongly on perceived preferences among their weak ties, namely acquaintances, followed by family and friends. As expected, perceived disagreement with people in their social network leads to a mitigation of social projection. Again, this mitigating effect is strongest if people perceive their acquaintances to hold different views than they do.

Our results show that public opinion perceptions vary widely. Both explanatory approaches prove to be valuable in explaining how this variation comes about: citizens rely on their own views as well as the information in their social networks to make up their minds about public opinion. Our most important findings are the interaction of both effects and the varying informational value from different social circles: experiences of disagreement strongly decrease social projection and especially disagreement with acquaintances seems to lead people to question the universality of their own views. Our study highlights once more the importance of understanding individual citizens as embedded in a complex social network – both when it comes to one's theoretical framework and empirical tests.

2. Explaining citizens' public opinion perceptions

What informs citizens' perceptions of public opinion? We focus on two well-established explanatory approaches[2]: First, research regarding *social projection* employs an introspective view of the individual as it posits that citizens primarily draw on their own views when they impute the views of others (Fields/Schuman 1976; Ross et al. 1977). Secondly, the social-psychological perspective of *social sampling* treats the individual as embedded in a social network that is influenced by observing the views held within it (Brown et al. 2022; Galesic et al. 2018). In other words, people infer the views of the larger population from their own views and/or from the distribution of views held in their social proximity. Additionally, we follow previously made arguments to combine the two approaches and test them in interaction (see Wojcieszak/Price 2009). Our review of arguments results in our *social projection*, *social sampling*, and *mitigation* hypotheses.

2.1 Social projection

The primary resource people consult when they make assumptions about others are their own views and conclusions (Marks/Miller 1987). This phenomenon – broadly labeled *social projection* – has been comprehensively identified and studied (Allport 1924; Krueger 2007; Robbins/Krueger 2005). In general, social projection is defined as "the process by which people come to believe that others are similar to them" (Krueger 2007: 2). This projection has been observed in various contexts, particularly concerning perceptions of public opinion on political issues or vote shares (Christen/Gunther 2003; Fields/Schuman 1976; Nir 2011; Van Boven et al. 2012; Wojcieszak/Price 2009). As a consequence, social projection is reflected in the prevalence of citizens' mistaken belief that their own position is held relatively more often than the opposite one – leading to the so-called *false consensus effect* (Ross et al. 1977).

In their review, Marks and Miller (1987) attribute this false consensus effect to four possible social-psychological explanations. First, estimations of

2 Of course, these mechanisms are not the only possible mechanisms and do not operate exclusive to alternative explanations. Other popular explanations for public opinion perceptions highlight the importance of awareness of opinion polls (see e.g., Daschmann 2000; Peter/Beckers 2022; Sonck/Loosveldt 2010), news coverage (see e.g., Gunther 1998; Hoffman 2013; Mutz/Soss 1997), or elite cues (see Peter 2021).

overall positions are a "top-of-the-head" phenomenon and one's own views are cognitively more readily accessible to people than other arguments. Additionally, this may be reinforced by frequent experiences of similarity in encounters within homogeneous social circles. Second, people's focus of attention on their position leads to a perception of heightened salience for this line of reasoning, which consequently stands out as distinct against other, less considered points of view. Third, individuals may consider others and themselves to be equally rational beings who will almost inevitably come to the same conclusion given their same situational exposition. Finally, individuals may simply be motivated to maintain a positive self-image that is tied to general appreciation and the validation of their position by others.

Given the strong and robust findings of the prevalence of such cognitive processes (Burghartswieser/Rothmund 2021; Glynn 1989; Gvirsman 2015; Robbins/Krueger 2005; van Boven et al. 2012), we expect people to apply social projection also in the case of public opinion about immigration in Germany. In contrast to other applications of this explanation in studies of the false consensus effect (see Ross et al. 1977; Wojcieszak/Price 2009), we posit that this process applies not only to individuals' judgments of binary outcomes such as support for or opposition to a policy but to their perception of mean positions in the general public regarding a specific policy on a graded scale. More precisely, we expect people to base their estimate of the population's average position regarding immigration policy on their own position. We call this our *social projection hypothesis*.

2.2 Inference from citizens' networks

Explaining perceptions through projection employs a psychological perspective that incorporates outside influences only through individuals' cognitive processing of information about experiences of similarity (see Marks/Miller 1987). This is a rather limited perspective that does make strong assumptions about the nature and effect of individuals' social interactions, though. In contrast to these individual-level focused explanations, a separate line of social-psychological perspectives has highlighted the importance of available information in individuals' social networks to explain their perceptions, attitudes, and behavior (see Christen/Gunther 2003; Huckfeldt/Sprague 1995; Lee et al. 2019; Price/Oshagan 1995; Scheufele 2001; Sumaktoyo et al. 2022; Wojcieszak/Price 2009).

We subsume this process under the idea of individuals' cognitive practice of *social sampling* (Brown et al. 2022; Galesic et al. 2018, 2012). Social sampling describes the process of people using cues about the distribution of attitudes or other characteristics in their social proximity (Brown et al. 2022; Sumaktoyo et al. 2022) to make inferences about the overall distribution in the population if they cannot perceive it directly (Fiedler 1996; Galesic et al. 2018, 2012). In other words, given the challenge to observe the distribution of traits in a generalized group, such as the population of a whole country, people refer to available information about these characteristics in their social circles to make an educated guess.

This cognitive process is not unlike Noelle-Neumann's (1974: 44) assumption of individuals use of a "quasi-statistical organ" and their ability to come up with a "quasi-statistical picture of the distribution of opinions which the individual gains from his social environment.". While Noelle-Neumann's and other scholars' interest was not focused on testing citizens' perception formation but primarily their expressive behavior and the eventual aggregation of voiced opinions (see Matthes et al. 2018), scholarship has noted that their metaphors *are* warranted and that people *do* infer opinions in the larger society from distributions in their social circles (Dawtry et al. 2015; Galesic et al. 2012; Lee et al. 2019; Sumaktoyo et al. 2022). Most importantly, people base their estimates of public support for or opposition to different policies on perceived levels of support and opposition in their social circles, such as among family members, friends, or acquaintances (see e.g., Wojcieszak/Price 2009).

Overall, it is apparent that social circles provide a resource for citizens when they make up their minds about distributions in the overall population. This is true for all sorts of characteristics, but most importantly also for political views. Our *social sampling hypothesis*, therefore, states that people perceive public opinion to be similar to the opinions in their social environment. In our case, we expect people's perception of the average opinion of German citizens toward immigration to be influenced by the average positions toward this issue in their social networks.

While scholars have shown that people use their social environment as a proxy to estimate the aggregate opinion of the population, they have not made any assumptions about whether it matters *which* people in their social environments individuals think about when they engage in social sampling. For example, Christen and Gunther (2003) investigated the influence of friends' views on individuals' perceptions but did not investigate the same effect for other types of social ties. Specifically, they only included friends

as they have been rightly understood to be a particularly common source for selective exposure (Marks/Miller 1987) while other, potentially less homogeneous social circles were omitted. In other studies, different relationships were included but not addressed. For example, Wojcieszak and Price (2009) included views of family members, friends, and acquaintances from respondents' conversation networks but then treated the views in the different spheres of individuals' lives as equally important without further distinction in their theoretical considerations or analysis. However, there are valid reasons to expect different social ties to have different impacts on people's perceptions of public opinion.

Importantly, social ties differ in the information they can provide to the individual (Granovetter 1973). While interactions with strong ties are frequent and characterized by high levels of homogeneity (see e.g., Huckfeldt et al. 2005), people experience most of their cross-cutting exposure when it comes to social interactions beyond their most intimate social circles (Eveland et al. 2018; Huckfeldt et al. 2004; Pattie/Johnston 2008). Consequently, the homogeneous and dense network of strong ties, such as family members or friends, is expected to provide relatively little new information when people "sample" from them. In contrast, sampled interactions with weak ties, such as colleagues or neighbors, are more probable to be heterogeneous and provide a variety of insights into other social circles and rather dissimilar contexts (Granovetter 1973; Pattie/Johnston 2008). To that end, a handful of weak ties provides the individual with more information about a wider set of people's views than an equal number of strong ties does. If we ascribe to people an awareness of such differences in informational value, information from weak ties should be more influential for their perception than information from strong ties. We argue that people understand that their closest friends and family members are not representative of the general population but that the broader network of acquaintances might be seen as a window into society at large.

Given this argument, we propose to qualify our *social sampling hypotheses* about the effects of observed positions in social networks based on differences in the strength of ties. More precisely, we expect people to value insights from the perceived views of weak ties more than from strong ties and place more weight on them when forming their judgments about the overall population's opinions than they place on their strong ties.

2.3 The mitigating effect of exposure to disagreement on social projection

Undoubtedly, the two mechanisms are not mutually exclusive. People may both apply social projection and use the information available in their social environments. Thus, we follow previous arguments that both mechanisms must be considered in interaction to arrive at a comprehensive explanation of people's perceptions of public opinion (Wojcieszak/Price 2009; Wojcieszak/Rojas 2011).

The conditionality of social projection on the information available in one's network comes from the level of experienced disagreement. On the one hand, the perception of divergent views in one's social sample may moderate naïve assumptions about the true aggregate opinion, as it can increase the salience of other viewpoints, shift one's focus of attention, and demonstrate that one's conclusions are not necessarily shared by everyone. Therefore, experiences of disagreement may not only change individuals' perceptions of the aggregated distribution in the direction of the positions held in their networks but also mitigate the very cognitive mechanisms that underlie social projection (Marks/Miller 1987). As Barnidge, Sayre, and Rojas (2015), Christen and Gunther (2003), and Wojcieszak and Price (2009) demonstrate, observing diversity of views and experiencing disagreement in everyday political conversations inform individuals' perceptions of public opinion in the expected direction as it mutes social projection in favor of the perceived position of their interlocutors.

On the other hand, people's social environments are far from being representative of the population as a whole and are much more characterized by a high degree of homophily (Huckfeldt 1983; Huckfeldt et al. 2004; McPherson et al. 2001; Mutz 2006). If people are situated in homogeneous networks, sampling social instances to assess a population's distribution can be similarly biased as if people applied social projection (Galesic et al. 2012; Lee et al. 2019; Sumaktoyo et al. 2022). In the extreme but relatively common case of homogeneous social environments, people may not need to question their projection because they do not encounter information that contrasts their views. Quite the opposite: reinforcing experiences of similarity may feed the very cognitive processes that underlie the false consensus effect (Marks/Miller 1987).

Thus, the strength of social projection should be understood as contingent on peer information if we want to arrive at a more comprehensive explanation for differences in public opinion perceptions. Specifically, we expect the relationship between an individual's own position on immig-

ration and their public opinion perception to vary depending on their exposure to dissenting viewpoints in their networks. When people lack exposure to different political views, they may severely overestimate support for their own position in the general public. Heterogeneous networks, in contrast, may serve as a 'reality check' for people thus leading to less social projection (Christen/Gunther 2003; Dawtry et al. 2015; Sumaktoyo et al. 2022; Wojcieszak/Price 2009; Wojcieszak/Rojas 2011). Accordingly, our *mitigation hypothesis* states that being exposed to dissenting viewpoints in their networks lowers the levels of social projection applied by individuals when they estimate the mean position held in society at large.

3. Data and methods

3.1 Data source

To test our hypotheses, we rely on survey data from the *Conversations of Democracy Project (CoDem)*. The project, initiated and designed by Rüdiger Schmitt-Beck, aims to shed light on the interconnectedness of citizens through their daily political conversations, and challenges and remedies for democracy that follow from differences in those interactions. A correspondingly designed face-to-face survey of 1,600 German citizens from the medium-sized city of Mannheim was conducted in a two-wave panel design in 2017-2018. The first wave was fielded in the months leading up to the German *Bundestag* election in 2017 and respondents were re-approached for participation in the second wave in January 2018.[3]

The data provides an excellent opportunity to test the above-presented explanations for people's perceptions of public opinion on immigration in a setting where the issue was highly salient. The data was collected during an election campaign strongly focused on the issue of immigration. Additionally, the issue was of particular importance in Mannheim given public debates surrounding refugee reception centers, the success of the populist radical right party in previous years, and an overall very high level of residents with a migration background (Stadt Mannheim, Fachbereich Arbeit und Soziales 2017).

3 For further details about the project, data, and field work, see Grill et al. (2018).

3.2 Dependent variables

We use three different dependent variables in our analyses. First, we explain differences in individuals' perceptions of public opinion on the issue of immigration. Second, we are interested in the change in their perception of public opinion between the two survey waves. And third, we focus on deviation from social projection in the form of the absolute difference between people's own views and their perceptions of public opinion.

To measure individuals' perception of public opinion, respondents were asked to indicate how they think the German population – on average – stands on the issue of immigration on a scale ranging from 0 to 10, where 0 indicates that the general population is strongly in favor of facilitating immigration and 10 indicates that the general population is strongly in favor of restricting immigration into the country. In contrast to common measures of false consensus perceptions where respondents are asked to indicate population shares supporting/opposing a policy, this dimensional scale allows us to measure nuances in differences in public opinion perceptions. Going beyond the dichotomy of support and opposition mirrors more closely the decision formation in consensual democracies that are based on compromise.

In a second model, to get closer to a causal estimate of the relationship between someone's own position and their perceptions of public opinion, we make use of the panel design of the survey. For this analysis, we are interested in changes in the perception of public opinion as the dependent variable. We subtract the public opinion perception in the second survey wave from that in the first survey wave. Higher values of the resulting measure indicate that over time a respondent perceived the public opinion to have shifted in the direction of stronger opposition towards immigration.

Finally, to uncover the effects of projection conditional on dissenting views in citizens' immediate networks, we eventually change our dependent variable to capture respondents' level of projection, meaning to what extent individuals' perception of public opinion aligns with or differs from their own views. Analogous to their perception of public opinion, respondents were asked to indicate on a scale from 0-10 how much they favor (0) or oppose immigration (10). We measure the level of projection as the absolute difference between an individual's position on immigration and their perception of public opinion. Thus, the measure takes on the value 0 if a respondent perceives the German population on average to hold their own views and increases up to 10 in case a respondent is strongly opposed

to immigration and perceives the general population to be strongly in favor of immigration or vice versa. Admittedly, our last dependent variable does not ideally measure social projection. Respondents who themselves hold the same position as society at large are assumed to fully project their views onto the general public. However, it is also possible that those people are fully aware of the distribution in society and happen to hold those views themselves. With only one issue to measure public opinion perceptions, we are unable to account for that. However, less than ten percent of respondents occupy the position closest to our approximation of the 'true' public opinion on the issue and thus we are confident that our results are not severely biased by this shortcoming (see section 3.5). Future research may be able to measure public opinion perceptions based on multiple issues to overcome this problem.

3.3 Independent variables

In the first step of the analysis, the main independent variable is the respondent's position on immigration, measured as mentioned above. In addition to their own views and the perceived public opinion, respondents stated what they thought their family members', friends', or acquaintances' average position was on the issue of immigration on the same scale ranging from 0 to 10. These items are used to estimate the impact of social sampling on public opinion perceptions. Lastly, to uncover to what extent social projection depends on dissenting views in individuals' networks we calculate a measure of disagreement between the respondent and each of their networks. We calculate the absolute difference between an individual's position on immigration and the perceived position in their family, among their friends, and among their acquaintances, respectively. This indicates the degree to which respondents' networks signal to them that their own views are not broadly shared.

3.4 Control variables

We adjust our estimates with a rigorous set of control variables that are likely to both influence citizen's views on the issue of immigration and their perception of public opinion. In all models, we account for differences in socio-demographic backgrounds. We control for age and gender (taken

from the register sample, 0 = male, 1 = female). Employment status (0 = marginal employment or not employed [incl. students, pensioners, and people in charge of domestic work], 1 = at least part-time employed) might impact views on immigration given the perceived competition in the labor market (Hainmüller/Hiscox 2007), and being employed may lead to higher exposure to a variety of different people. Conditional on their education background people vary in their immigration attitudes (Cavaille/Marshall 2019) and more educated people tend to be more informed about public opinion (Stoeckel et al. 2021). Thus, we adjust our estimates for differences in education (0 = not qualified to acquire tertiary education [no Abitur/Fachhochschulreife], 1 = qualified [Abitur/Fachhochschulreife]). Lastly, yet importantly, we control for migration background (0 = both parents born in Germany, 1 = at least one parent born outside of Germany) given that people with a migration background are likely to hold more favorable views towards immigration (Becker 2019) and given their potential exposure to discrimination (Esses 2021) they might perceive the public opinion as more hostile towards immigration.

In our final model in which social projection serves as the dependent variable, we expand the set of controls to include variables that are likely to impact a person's desire to align their views with the majority views in the overall population or that provide people with information leading them to reduce or increase their level of social projection. These controls can be broadly grouped into three categories: respondents' relation to the issue, media consumption, and political and psychological predispositions. We control for the importance attributed to the issue of immigration (0 = not important at all, 1 = not so important, 2 = rather important, 3 = very important) and how certain the respondent is of their own position (0 = not certain at all, 1 = not so certain, 2 = rather certain, 3 = very certain). In addition, we control for issue extremity, which is measured by mid-folding respondents' scores on the issue. Given that we use the difference between respondents' own positions and their public opinion perceptions as a dependent variable, people at the extremes can by construction of the variable have higher values on this variable. At the same time, people at the extremes can have higher values in our measures of network disagreement and might also have a harder time surrounding themselves with like-minded people given the distribution of views in society. Controlling for issue extremity should thus shield us from overestimating the effects of network disagreement.

Given that many people might form their own opinions about political issues and their perception of public opinion based on media consumption, we control for consumption of newspapers, public and private broadcasting, and online news as well as social media use (Barnidge et al. 2015; Gunther/Christen 2002; Neubaum/Krämer 2017). The variables for public or private broadcasting and online news consumption take on the value 1 if a respondent reported to consume any of these media channels at least once a week and zero if they did not. Social media is similarly measured dichotomously (0 = no social media[4], 1 = at least sometimes). We further control for political interest (0 = not at all, 1 = very little, 2 = moderate, 3 = strong, 4 = very strong), the strength of party identification (0 = none[5], 1 = very weak, 2 = rather weak, 3 = moderate, 4 = rather strong, 5 = very strong) and internal political efficacy based on a two-item additive scale[6]. To adjust our estimates for differences in psychological predispositions that might impact people's need to align their own views with majority views or vice versa as well as people's predisposition to thoroughly evaluate political topics, we control for an individual's need to belong (additive scale based on two items[7]), need for cognition[8], and fear of evaluation (additive scale based on two items; see also Nir 2011)[9]. Higher values for the three variables indicate a stronger need to belong, a stronger need for cognition, and stronger fear of negative evaluation, respectively. To account for people's embeddedness in social networks as well as the amount and variety of political discussions they are likely to have, we also control for the number of people a respondent has talked to about politics in the six months preceding the interview (0 = 1-5 persons, 2 = 6-10 persons, 3 = 11-15

4 Respondents who did not know whether they used social media were assumed to not use social media.

5 Respondents who did not know whether they identified with a particular party were coded as 0.

6 We use two items that measure respondents' agreement with the following statements on a five-point scale: "I am perfectly able to understand and assess important political questions" and "Politics is so complicated that someone like me does not understand what is going on" (reverse-coded).

7 These items measure agreement to the following statements: "It would bother me if no one wanted to be around me" and "One of the worst things that can happen to me is to be excluded by people I know".

8 We use a measure of agreement to the following statement: "I find little satisfaction in thinking deeply about things for hours" (reverse-coded).

9 We add agreement scores on a five-point scale to the two statements: "I worry that I will say or do the wrong things" and "I worry about what other people think of me."

persons, 4 = 16-20 persons, 5 = 21-25 persons, 6 = more than 25 persons). All control variables have been rescaled to range between 0 and 1.[10]

3.5 'True' public opinion

To give an approximation of the extent to which individuals' perceptions of German public opinion scatter around the 'true' public opinion in our visualizations, we also use data from the German Longitudinal Election Study 2017 pre-election survey (GLES 2019), a survey based on a representative register sample of the German population that was collected at a similar time as the main dataset we employ here. Using this dataset, we calculated the mean position on immigration on an identical scale from 0 to 10.[11]

3.6 Methods

To understand the extent to which citizens use social projection to arrive at an estimate of public opinion (*social projection hypothesis*), we apply multiple regression analyses with respondents' own positions on immigration as the independent variable and their perception of the mean opinion in the German population as the dependent variable. Secondly, we apply a difference-in-difference design using the panel structure of the survey data and regress the changes in public opinion perceptions on changes in individuals' own positions on the issue of immigration.

Thirdly, we run our regressions while accounting for positions on immigration held in the circles of families, friends, and acquaintances to test our *social sampling hypothesis*.

In a final step, we test the *mitigation hypothesis* by switching our dependent variable to measure differences between people's own views on immigration and their public opinion perception and regress this measure on disagreement with family members, friends, and acquaintances to understand to what extent exposure to dissenting viewpoints might mute the

10 One percent of respondents reported to not have talked about politics at all. These cases are excluded from the analyses.

11 We used a design and transformation weight that accounts for discrepancies between the sample and the overall population regarding gender, age, education, regional population, and East vs. West Germany.

social projection and correspondingly increase the difference between one's own position and their perception of public opinion.

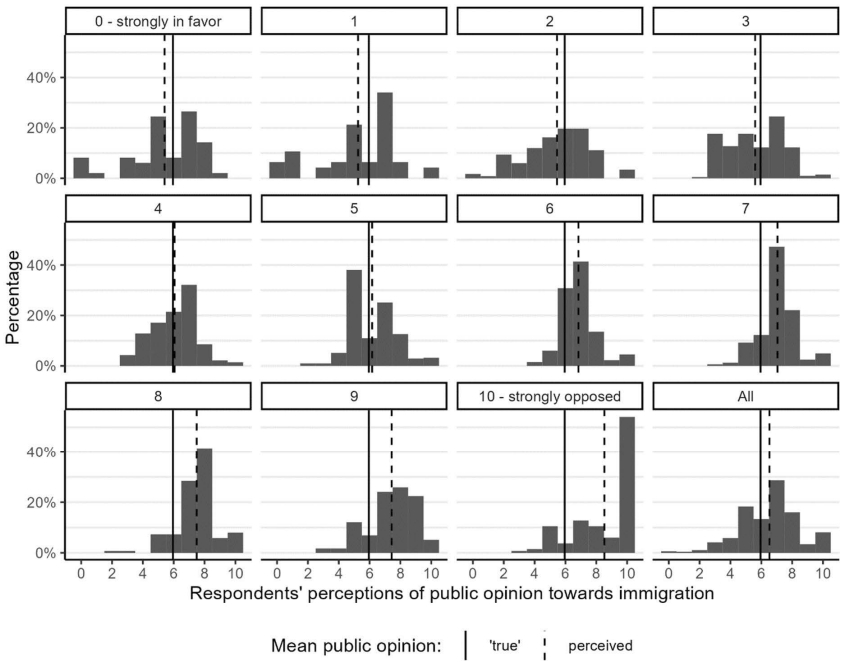
4. Results

4.1 Social projection

We start the analyses with a description of the association between citizens' own positions on the issue of immigration and their perceptions of the overall views held by the German population. Although it would be normatively desirable for people to share a common public perception, this is far from reality.

People's perceptions of the position on immigration in the general population vary widely. Importantly, these differences in what people conceive of as the mean position on the issue are highly conditional on their own views. Figure 1 shows the effect of individuals' own views (displayed in the separate panels) on the distribution of public opinion perceptions. The more people favor/oppose immigration, the more they think that the German population at large favors/opposes immigration. In other words, the mean perception of public opinion (vertical dashed lines) steadily changes with increasing opposition towards immigration on the respondents' part. The solid vertical lines show the 'true' public opinion calculated based on a representative sample of German citizens (ibid.). On average people in Germany are rather opposed to immigration, scoring 5.9 on a scale ranging from 0 to 10. Yet, people who are strongly in favor of immigration themselves perceive public opinion to be at 5.4 (dashed line in panel 1), thus slightly underestimating opposition to immigration. In contrast, individuals who strongly oppose immigration (10) severely overestimate to what extent the overall population shares their views. On average those people perceive the public to score 8.5 on a scale from 0 to 10. Strikingly, over 50 percent of them think that – overall – Germans are equally opposed. This is a strong first indication of our *social projection hypothesis* that states that people rely on their own views when making up their minds about the population's average opinion.

Figure 1: Public opinion perceptions depending on individuals' positions on immigration

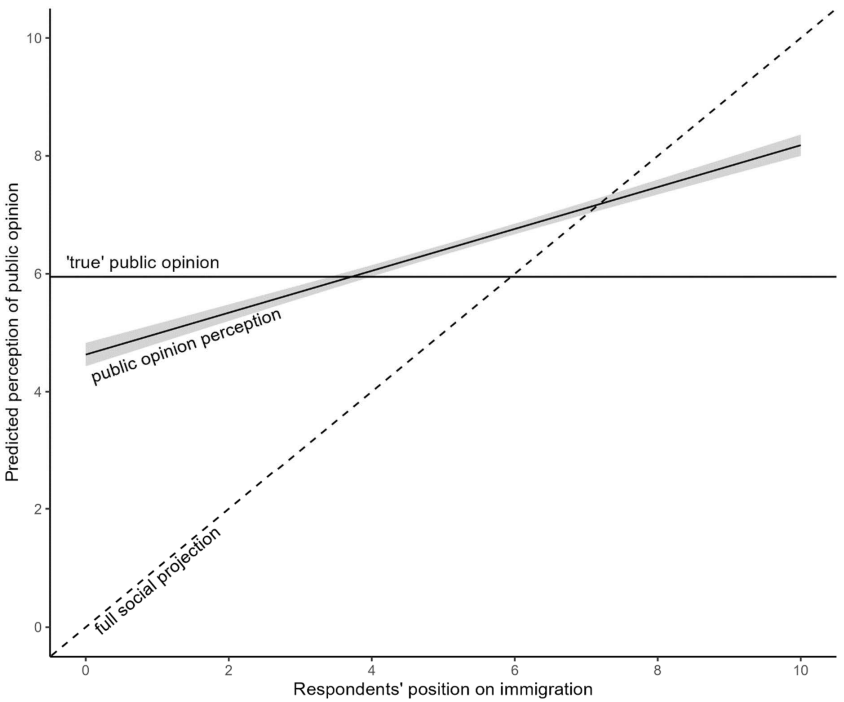


Note: Dashed vertical lines display mean public opinion perceptions in each subgroup (conditional on individuals' own positions) and solid vertical lines show the 'true' public opinion in the German population (ibid.). Higher values indicate stronger opposition to immigration.

It is unclear, however, whether this relationship persists in a multiple regression analysis in which we adjust for socio-demographic variables. The multiple regression confirms that individuals strongly infer the public opinion from their own views. M1 in Table 1 shows that with every scale point increase in a respondent's opposition toward immigration, on average, they perceive the German public to be 0.36 scale points more opposed as well. While this also indicates that people do not perfectly project and probably rely on a variety of sources to infer what the general public thinks, it still shows that people's projection can lead to severely distorted and strongly varying perceptions of public opinion. Figure 2 shows the effect of differing views held by individuals on their predicted perception of public

opinion (solid line). Again, the graph shows that people who strongly favor immigration underestimate the general opposition toward immigration and people who strongly oppose immigration misperceive the population as being, on average, more opposed.

Figure 2: Predicted perception of public opinion conditional on individuals' positions on immigration



Notes: The solid horizontal line shows the 'true' public opinion calculated based on a representative sample of German citizens. The diagonal dashed line displays a scenario where citizens solely infer the public opinion from their own position. The grey area displays a 95 percent confidence interval. Predictions are based on Model M1 in Table 1.

This cross-sectional analysis, however, might overestimate the social projection effect due to unobserved confounding variables.[12] To overcome this limitation – at least partially – in the next step we apply a difference-in-difference design. As respondents were invited to participate in the second panel wave, they were again asked to indicate their own position toward immigration and their public opinion perception regarding the issue several months later, after the German *Bundestag* election. We calculate the differences between respondents' perception of the public opinion in wave 1 and wave 2 and regress it on the change in their own position toward immigration between wave 1 and wave 2 to account for any time-invariant confounders. M2 in Table 1 confirms our previous findings. As people change their own views, they project it onto the overall population: a change of one scale point towards more opposition to immigration is associated with a 0.34 increase in the perceived opposition in the German population. Therefore, both in a cross-sectional and in a longitudinal analysis, we find support for our *social projection hypothesis*.

12 A second caveat is the direction of the effect, as it has been shown that people not only project their views onto society at large but people also adapt their stated opinions to conform with societal norms. This reverse causal relationship has been termed 'bandwagon' or 'contagion effect' (Schmitt-Beck 2015). In essence, social projection and the bandwagon effect are mirror images of one another. However, we cannot disentangle the relationship from the data we have at hand. Yet, the specific issue and political as well as regional context we are investigating make it unlikely for people to be strongly influenced by public opinion. Bandwagon effects are more likely to occur when citizens are confronted with an issue that they do not have much information about other than what they know about the stance of society at large (ibid.: 3). However, we investigate the issue of immigration which was at the forefront of political discourse prior to the *Bundestag* election in 2017, when the survey was fielded (Dostal 2017). In addition, the respondents are likely to have many points of contact with the issue of immigration, given that they all reside in Mannheim, a city in which over 40 percent of residents have a migration background and which had several central refugee reception centers at the time of the survey (Stadt Mannheim, Fachbereich Arbeit und Soziales 2017). While this is not conclusive evidence of pure social projection it should make our evidence more indicative of the presence of the theoretical mechanism we propose.

Table 1: Explaining perceptions of public opinion

	M1: Public opinion perception	M2: Δ Public opinion perception	M3: Public opinion perception	M4: Deviation from full projection
Issue (resp.)				
Position	0.36 (0.02)***		0.18 (0.03)***	
Δ Position		0.34 (0.03)***		
Issue extremity				0.73 (0.18)***
Issue importance				-0.10 (0.22)
Position certainty				-0.17 (0.25)
Issue (networks)				
Position (family)			0.11 (0.03)***	
Position (friends)			0.08 (0.03)*	
Position (acquaint.)			0.16 (0.03)***	
Disagreement (family)				0.13 (0.04)***
Disagreement (friends)				0.11 (0.04)**
Disagreement (acquaint.)				0.36 (0.04)***
Socio-demographics				
Migration background	0.07 (0.10)	-0.15 (0.18)	0.08 (0.11)	0.08 (0.12)
Age	0.15 (0.22)	-0.36 (0.37)	-0.15 (0.23)	-0.39 (0.31)
Female	0.21 (0.09)*	0.00 (0.14)	0.22 (0.09)*	0.41 (0.10)***
High education	0.20 (0.09)*	-0.10 (0.15)	0.22 (0.10)*	0.31 (0.11)**
Employment	0.18 (0.10)	-0.14 (0.16)	0.18 (0.10)	0.08 (0.11)
Media				
Newspaper				-0.17 (0.14)
TV (public)				0.17 (0.15)
TV (private)				-0.17 (0.10)
Online news				0.19 (0.13)
Social media				0.06 (0.12)
Predispositions				
Political interest				-0.07 (0.25)
PID strength				-0.04 (0.15)
Internal efficacy				0.34 (0.28)
Need to belong				0.18 (0.23)
Need for cognition				0.17 (0.16)
Fear of evaluation				-0.12 (0.23)
Network size				0.09 (0.17)
Constant	4.24 (0.18)***	0.09 (0.28)	3.26 (0.23)***	0.23 (0.40)
R2	0.23	0.12	0.28	0.27
Adj. R2	0.23	0.12	0.27	0.25
Num. obs.	1,480	814	1,274	1,138

Notes: Dependent variables are the perceived public opinion on immigration (M1, M3), the change in public opinion between survey waves one and two (M2), and the absolute difference between respondents' own position on immigration and their perception of the mean public opinion (M4). M1, M3, and M4 are based on all respondents with valid information on all included variables in wave 1. M2 is based on all respondents who participated in both survey waves. $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

4.2 Social sampling to infer public opinion

Thus far, we have shown that people project their own views onto society at large. Yet, the analyses have neglected the social embeddedness of citizens and how they might infer not only from themselves but use the socially provided information as a proxy for public opinion. Therefore, in the next step, we test to what extent individuals use information available in their social networks to infer public opinion.

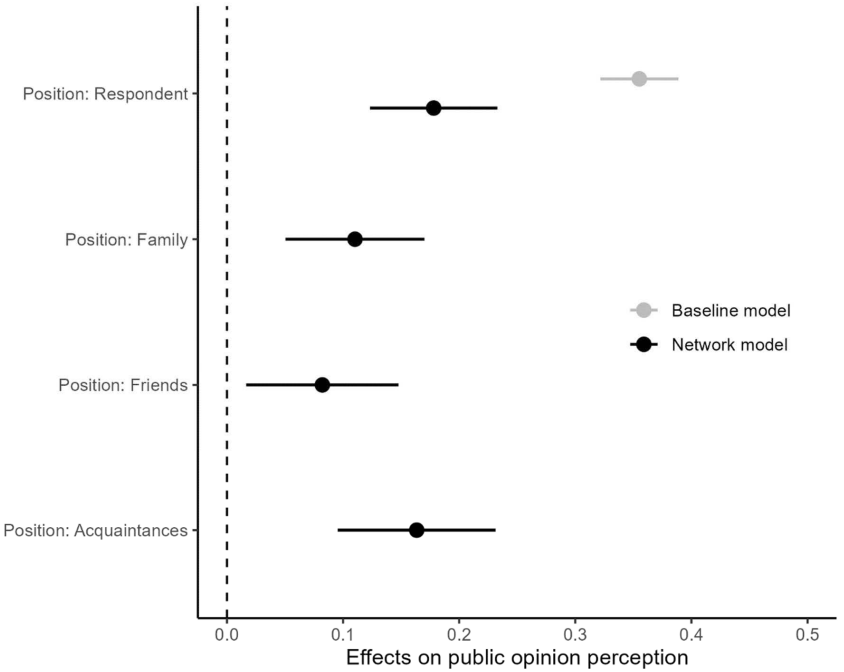
In line with previous research (see Galesic et al. 2018, 2012), respondents also applied social sampling as a mechanism to estimate the position toward immigration in society at large: based on our regression including the perceived positions of family members, friends, and acquaintances, individuals perceive the public opinion to be more opposed to immigration the more opposed their networks are. This lends support to our *social sampling hypothesis*.

Importantly, we observe that the position held among acquaintances exerts the strongest effect on individuals' public opinion perceptions.[13] Figure 3 shows the corresponding effects, displaying that a one-point increase in the position among family members, friends, or acquaintances is associated with a perception of increased opposition in the public of 0.11, 0.08, and 0.16, respectively (see M3 in Table 1). The larger network of acquaintances seems to serve as a particularly useful shortcut that people rely on when making up their minds about the mean opinion in their country, lending partial support for our qualification of the *social sampling hypothesis*.

The presented analyses further indicate that part of what might be referred to as a social projection bias can be attributed to inference from social networks. Figure 3 displays the change in the estimated impact of respondents' own position once we control for the positions held in respondents' networks (top row in Figure 3). If we do not account for the fact that people connect with similar people (Ellerbrock 2022; Huckfeldt 1983; McPherson et al. 2001), the analyses result in an overestimation of the social projection effect. However, even when controlling for the positions held among network members, we still find a statistically and substantively significant relationship between one's own position and their perception of public opinion.

13 It should be noted that the differences between the effects of the position in the networks of families, friends, and acquaintances fail to reach conventional levels of statistical significance.

Figure 3: Network effects on public opinion perception



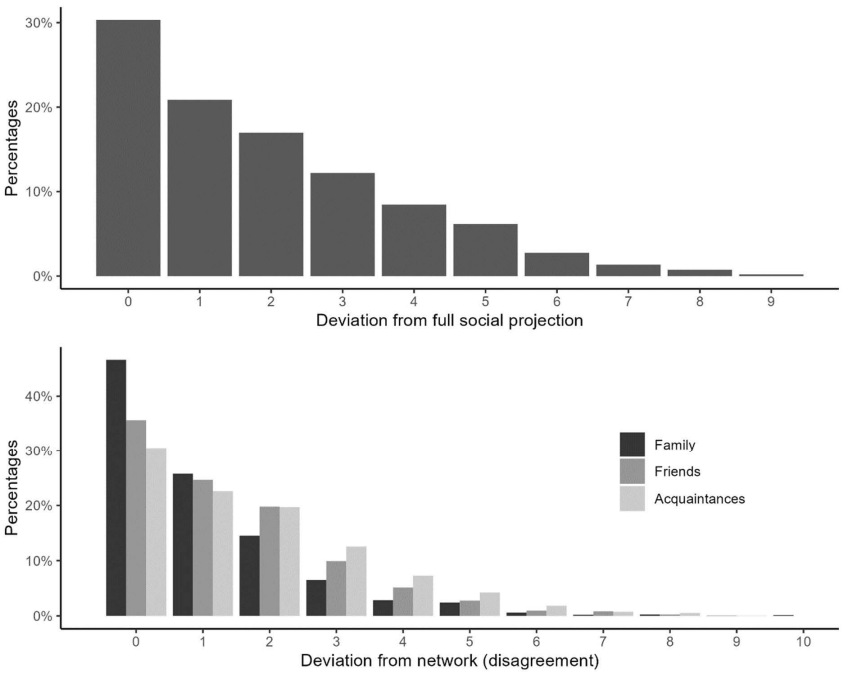
Notes: Displayed are unstandardized OLS estimates from regression analyses only taking individuals' positions on immigration into account (grey dot) and from a model taking positions held in individuals' networks into account (black dots). Dependent variable: public opinion perception. Horizontal lines display 95 percent confidence intervals. Effects are based on Model M3 in Table 1.

4.3 Disagreement as a reality check

In the first step of our analysis, we have demonstrated that individuals' projections can lead to severely distorted and naïve imaginations about the views held by their fellow citizens. Yet citizens do not solely rely on introspection but infer the public opinion based on their social networks. While beliefs held in citizens' networks are more often than not very similar to their own beliefs, many people are still embedded in networks that hold views dissimilar from their own (Ellerbrock 2022; Huckfeldt et al. 2004; Minozzi et al. 2020). We finally pose the question of whether people's

exposure to these deviant positions leads them to rely less on their own views when estimating the views held by the population at large.

Figure 4: Deviation from social projection (top) and disagreement with networks (bottom)



Note: The upper panel displays the distribution of the absolute differences between individuals' positions toward immigration and their perceptions of public opinion toward immigration in Germany. The lower panel shows the absolute difference between respondents' position towards immigration and the positions held in their networks of family (black), friends (dark grey), and acquaintances (light grey).

While in all previous analyses, we estimated the impact on the directional public opinion perception (public for to public against immigration), we now change our outcome variable of interest to a measure of the difference between respondents' own positions and their public opinion perception. This measure increases as people perceive public opinion to deviate more from their own views. Consequently, a value of 0 indicates that a respondent perceives the German population, on average, to be congruent with

their position on immigration.[14] The upper panel in Figure 4 displays the distribution of this measure. Around thirty percent of respondents think that the German population is on average on the exact same position as they are and over half of all respondents think that the mean public opinion on immigration only deviates from their own by one scale point or less. On average, respondents think that their own position deviates from the public opinion in the country by 1.9 scale points, once again indicating a strong alignment of individual views and public opinion perceptions.

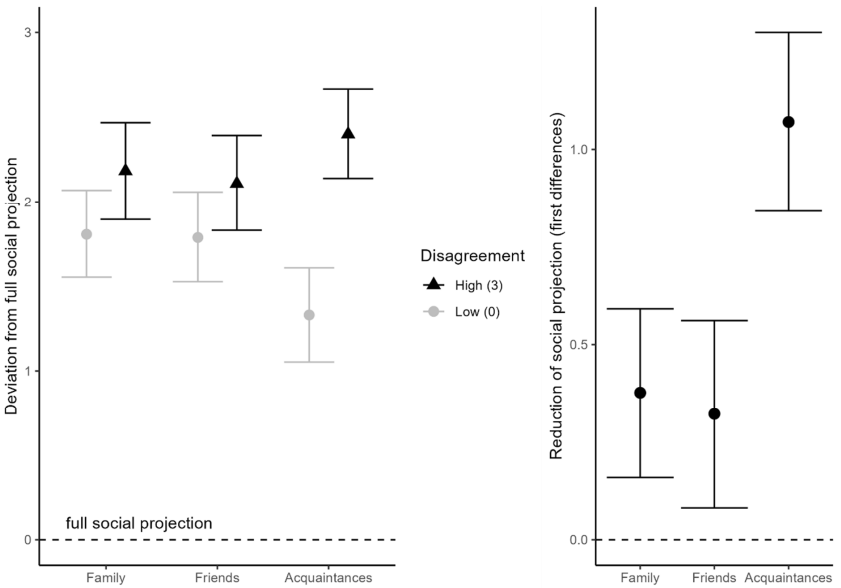
To measure individuals' exposure to disagreement through their networks, we take the absolute difference between a respondent's position on the issue of immigration and the perceived position in the networks of family, friends, and acquaintances, respectively. In line with previous research and our theoretical expectations (e.g., Granovetter 1973; McPherson et al. 2001; Min/Wohn 2020; Morey et al. 2012), the similarity in issue positions decreases as the intimacy of the relationship decreases. About 47 percent of people perceive their family, on average, to share their exact position on the issue of immigration. In contrast, only 36 percent think that their friends share their exact views and 30 percent perceive their acquaintances to fully agree with them. Thus, the networks of acquaintances are most likely to put people in a position where they must question the universality of their own beliefs.

Our analysis shows that disagreement on the issue of immigration in any social circle leads people to perceive the public opinion to be more different from their own position, thus replicating previous findings from the U.S. (Wojcieszak/Price 2009; Wojcieszak/Rojas 2011) and lending support to our *mitigation* hypothesis. Importantly, though, exposure to dissenting viewpoints through acquaintances seems the strongest attenuating factor to social projection. Not only are encounters with acquaintances most likely to expose people to divergent viewpoints but when they do, they lead people to engage in much less social projection. The left panel in Figure 5 shows how perceiving the respective networks (x-axis) as agreeing (circles) or disagreeing (triangles) affects how much people's public opinion perceptions deviate from their own views (y-axis). The right panel shows simulated

14 It should be noted that the degree to which people's perceptions of public opinion as well as their networks can deviate from their own views depends on the extremity of their own position. People occupying the mid-point can only reach scores up to five while people at the extremes can reach values of up to ten. This is taken into account in the multiple regression by adjusting the estimates for the extremity of the position (see also our section on control variables).

first differences that indicate how much social projection is attenuated depending on the disagreement experienced in the different networks. We chose a difference of three scale points as a reasonable quantity of interest for network disagreement because it can be conceived as a substantially relevant divergence in views and is still relatively common to be experienced by citizens (13, 20, and 27 percent with family, friends, and acquaintances, respectively).

Figure 5: Effects of network disagreement on reducing social projection



Notes: The left panel displays the predicted difference between respondents' position on immigration and their perception of the mean public opinion (y-axis) conditional on different levels of disagreement (triangles = high; circles = low) with different networks (x-axis). The dashed horizontal line shows zero difference between respondents' position and their public opinion perception (full social projection). The right panel shows the simulated first differences between high and low disagreement in the different networks (reduction of social projection). Vertical lines display 95 percent confidence intervals. Predictions are based on Model M4 in Table 1 with all covariates held at their respective means.

Whether people are exposed to positions different from their own in their contexts of family or friends impacts their social projection substantially. For people who experience disagreement with friends or family, the dif-

ference between their own position and their public opinion perception is around 0.38 and 0.32 scale points higher compared to people who experience no disagreement with these networks (see right panel in Figure 5). However, particularly realizing that acquaintances such as neighbors, colleagues, or generally people one meets on rare occasions do not share one's views leads people to reflect on the possibility that their own views may deviate from the overall population. The reduction of social projection amounts to over one scale point when people experience disagreement with their acquaintances. Conversely, this means that people read agreement within this network as a cue that society at large shares their views. This is a strong indication that weak ties in particular serve as a window into the world and as a reality check when people infer public opinion.[15]

5. Conclusion

Citizens vary strongly in their perceptions of what the population at large thinks about pressing issues. Extant research has attributed this phenomenon to the cognitive processes of *social projection* (see, e.g., Krueger 2007; Krueger/Clement 1994; Marks/Miller 1987; Wojcieszak/Price 2009) and *social sampling* (see e.g., Brown et al. 2022; Galesic et al. 2018, 2012). In our study, we tested these explanatory approaches in the context of the highly salient issue of immigration policy in Germany. Based on uniquely suited survey data collected in the city of Mannheim containing detailed information on views held by citizens and their networks about the issue, we empirically showed that people strongly infer public opinion in the wider population based on their own views (social projection) as well as the issue positions in their networks of families, friends, and acquaintances (social sampling). By combining a measure of social projection with information on dissenting views in individuals' networks, we show that social projection is profoundly attenuated when people realize that their views are not shared in their networks.

We advanced previous research by making an argument for the distinct effects of different social ties. We show that information from weak ties

15 It should be noted that a deviation from social projection need not entail that people's perceptions of public opinion become more accurate. For people who occupy the mean position held in society at large, experiencing disagreement might even lead to misperceptions. Yet, this study aims to explain how people form their perception rather than explain accuracy in perceptions.

seems to be most influential on how individuals perceive overall public opinion. Not only do people use weak ties as the best proxy for the average opinion in society at large, but they also conclude more strongly that they are not aligned with the populations' aggregated views when confronted with weak-tie disagreement. Because we cannot test the potential mechanisms behind these heterogeneous network effects, our findings should be viewed as initial results that indicate an important, yet understudied dimensionality of network effects on public opinion perceptions. Future studies should take the differences between social ties into account and elicit the conscious or unconscious heuristics that people rely on when inferring from these different groups.

There are additional characteristics of this study that merit further investigation or require replication: we extend previous literature by examining social projection not in terms of opposition to and support for specific policies, but in terms of a position on a graded scale between two extreme positions. This represents more closely the context of consensus orientation in multi-party systems. We are, to the best of our knowledge, the first to replicate the mitigation effect through network disagreement outside of the most commonly studied context of the two-party system in the U.S. (see Wojcieszak/Price 2009). Yet, we are aware of the very specific context of our case, given the high salience of the issue of immigration during the field period of our survey (Dostal 2017). To test the transferability of our findings, future studies should include public opinion perceptions of multiple issues that vary in terms of available information on the topic, salience, and overall distribution of public opinion. This may enable future research to solve the problem that for people who are solely surrounded by people who share their views, the effects of social projection and social sampling cannot be disentangled. With multiple issues, researchers will increase the likelihood for people to have disagreeing networks on at least one of them. Also, differences in salience and available information can help to differentiate social projection from its reverse effects, the bandwagon or contagion effect. Unfortunately, with the data at hand these effects cannot be disentangled.

Our findings once more underline the important role that experiencing disagreement in one's social environment plays for citizens political lives, which has been shown to impact political attitudes (Kim 2015; Mutz 2006; Pattie/Johnston 2008) and behavior (Bello 2012; Mutz 2006; Nir 2005). We also highlight that disagreement impacts the cognitive processes that citizens employ to orient themselves in the world of politics by attenuating

their naïve practice of projecting their own reasoning onto the broader public (Wojcieszak/Price 2009; Wojcieszak/Rojas 2011). This highlights once more the challenges that arise when people shy away from a fundamental part of a pluralistic system: political disagreement. After all, experiences of disagreement show people that views held in society at large are not mere mirror images of their own convictions.

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