

## REACTING TO NEIGHBORHOOD CUES? POLITICAL SOPHISTICATION MODERATES THE EFFECT OF EXPOSURE TO IMMIGRANTS

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BOLETTE DANCKERT\*

PETER THISTED DINESEN

KIM MANNEMAR SØNDERSKOV

**Abstract** Drawing on insights from political psychology regarding political information processing, this paper argues that politically sophisticated individuals are less sensitive to the social cues manifested in the ethnic composition of their neighborhood when they form political opinions. This prediction is founded on politically sophisticated individuals having a greater comprehension of news and other mass-mediated sources, which makes them less likely to rely on neighborhood cues as sources of information relevant for political attitudes. Based on a unique panel data set with fine-grained information about the ethnic composition of the immediate neighborhood, the paper finds consistent support for the hypothesis: While neighborhood exposure to non-Western immigrants reduces anti-immigration attitudes among individuals with low political sophistication, there is no effect among individuals with high political sophistication. These results thus partially support contact theory and demonstrate that integrating the information processing and ethnic diversity literatures enhances our understanding of outgroup exposure effects.

BOLETTE DANCKERT is a postdoctoral researcher in the Department of Political Science at Aarhus University, Aarhus, Denmark. PETER THISTED DINESEN is a professor (MSO) in the Department of Political Science at the University of Copenhagen, Copenhagen, Denmark. KIM MANNEMAR SØNDERSKOV is a professor in the Department of Political Science at Aarhus University, Aarhus, Denmark. The authors would like to thank participants at the 2013 Annual Meeting of the Midwest Political Science Association, the 2013 Annual Meeting of the Danish Political Science Association, the 2014 Centre for the Study of Democratic Citizenship Graduate Student Conference, and a 2014 political behavior seminar at the University of Copenhagen, as well as Dietlind Stolle and Marc-André Bodet for helpful comments. All remaining errors are the authors' own. The article was completed when the first author was a doctoral student in the Department of Political Science at the University of Copenhagen, Copenhagen, Denmark. This work was supported by the Danish Council for Independent Research [12-125277 to P.T.D. and K.M.S.] and the Carlsberg Foundation [2011\_01\_0609 to P.T.D. and K.M.S.]. \*Address correspondence to Bolette Danckert, Department of Political Science, Aarhus University, Bartholins Allé 7, 8000 Aarhus C, Denmark; e-mail: [bd@ps.au.dk](mailto:bd@ps.au.dk).

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Immigrants and descendants of immigrants constitute an increasing share of the population in Western democracies, with a concomitant increase in the political salience of immigration. In light of these developments, the question about how exposure to ethnic others affects immigration attitudes is relevant for at least two reasons: First, understanding effects of outgroup exposure will allow us to better comprehend the underpinnings of one of the most important current political cleavages. Second, as public attitudes are likely to influence policymaking in democratic societies, it enables a better understanding of political responses to immigration.

Testifying to the relevance of the issue, the effect of—primarily residential—exposure to ethnic minorities (and, more recently, immigrants in particular) on native citizens' immigration attitudes has received extensive attention in the literature (e.g., Citrin et al. 1997; Hood and Morris 1997; Fetzer 2000; Scheve and Slaughter 2001; Hopkins 2010, 2011; Rocha et al. 2011; Hopkins 2013; Enos 2014). However, conclusions are mixed: Some studies find that (residential) exposure to immigrants increases support for immigration (Hood and Morris 1997; Hopkins 2013), some find the opposite (Rocha et al. 2011; Enos 2014), and yet others find no relationship at all (Citrin et al. 1997; Fetzer 2000; Scheve and Slaughter 2001; see Hainmueller and Hopkins [2014] for a review). Partly in response to the inconsistent findings, scholars have started to examine how the impact of interethnic exposure is moderated by contextual factors (in a broader sense) such as socio-economic characteristics, previous ethnic/immigrant composition of neighborhoods, and media attention (Branton and Jones 2005; Hopkins 2010; Cho and Baer 2011; Newman 2013; Sønderskov and Thomsen 2015). Additionally, recent studies look at individual-level moderators such as party affiliation, ideology, and personality traits (Hawley 2011; Sibley et al. 2013; Johnston, Newman, and Velez 2015; Karreth, Singh, and Stojek 2015; Enos 2016).

While these studies point to the importance of considering the processes by which individuals react to interethnic exposure, an overlooked aspect concerns political sophistication, that is, individuals' capacity to comprehend and critically engage with political information.<sup>1</sup> This is surprising given that multiple studies demonstrate that individuals' level of political sophistication substantially structures their reaction to politically relevant information (Rhee and Cappella 1997; Gilens 2001; Kam 2005). Taking this as our point of departure, we hypothesize that political sophistication decreases individuals' sensitivity to cues embodied in the ethnic composition of their neighborhood. We base this hypothesis on research showing that politically sophisticated individuals have a better comprehension of mass-mediated information (Rhee and Cappella 1997; Gilens 2001; Kam 2005), which in turn makes them less likely to default to more mundane social cues from personal experiences when considering political matters (Weatherford 1983; Bisgaard, Dinesen, and Sønderskov 2016).

1. This definition builds on Luskin (1990, 332) and Zaller (1992, 21).

Using Danish panel data that allow for more precise measurement of interethnic exposure and reduce self-selection concerns plaguing previous research, we find support for the hypothesis by demonstrating that political sophistication significantly moderates the extent to which the ethnic composition of individuals' immediate neighborhood affects immigration attitudes: While we find no relationship among individuals with high political sophistication, residential exposure to non-Western immigrants significantly reduces anti-immigration attitudes among individuals with low political sophistication. The analysis hereby points to the fruitfulness of bridging the literatures on neighborhood effects and information processing to gain a better understanding of the implications of local ethnic diversity, and, in addition, contributes to a better understanding of the differential processes by which individuals derive their political preferences.

## Contextual Ethnic Composition and Outgroup Attitudes

Understanding how contextual racial or ethnic composition shapes political attitudes and behavior has been a central theme within political science and related disciplines for decades. Starting with Key (1949), who famously studied the racial context of voting in the American South, the debate soon spilled over to the domain of ethnic tolerance and outgroup attitudes more generally, paralleling the increasing salience of this topic in politics (e.g., Allport 1954; Blalock 1967). In recent decades, numerous studies have shown that living among larger proportions of outgroup members tends to correlate with more negative attitudes toward these groups (e.g., Schneider 2008; Meuleman, Davidov, and Billiet 2009; Rocha et al. 2011). These observations support what is often labeled *conflict* or *threat* theory, suggesting that increased exposure to ethnic others enhances perceived outgroup threat (Key 1949; Blalock 1967; Bobo 1999).

Other studies, however, find the opposite, namely that residential proximity to ethnic others correlates with positive attitudes toward this group (e.g., Hood and Morris 1997; Oliver and Wong 2003; Pettigrew and Tropp 2006; Wagner et al. 2006). This is typically explained with reference to *contact theory*, positing that outgroup contact reduces stereotypes and negative outgroup attitudes (Allport 1954; McLaren 2003; Pettigrew and Tropp 2006; Wagner et al. 2006). Acknowledging that residential proximity to outgroup members may not entail personal contact, Oliver and Wong (2003, 570) suggest that mere exposure to ethnic others on an everyday basis can produce positive outgroup attitudes. This is supported by a meta-study by Pettigrew and Tropp (2006).

With evidence supporting countervailing hypotheses and other studies finding no effect at all (e.g., Citrin et al. 1997; Scheve and Slaughter 2001; Hjerm 2009), recent debates concern the conditions under which outgroup exposure triggers certain attitudes. Accordingly, scholars have suggested that low

socioeconomic status—either at the individual or contextual level—intensifies negative responses to exposure (Quillian 1995; Branton and Jones 2005; Cho and Baer 2011). Along the same lines, Hopkins (2010, 2011) and Sønderskov and Thomsen (2015) show that national media or political attention to immigration moderates the relationship between exposure and attitudes. Newman (2013) demonstrates that previous levels of ethnic minorities condition effects of current immigrant influxes and, relatedly, Enos (2014) finds that sudden changes in outgroup exposure enhance restrictive attitudes, but suggests that this hostility may diminish over time as individuals get used to the demographic changes. Moreover, recent studies show that individual-level factors in terms of ideology and certain personality traits moderate interethnic exposure effects (Hawley 2011; Sibley et al. 2013; Johnston, Newman, and Velez 2015; Karreth, Singh, and Stojek 2015; Enos 2016).

## Political Sophistication as a Moderator of Contextual Ethnic Composition

While important insights have been obtained regarding various moderating factors, previous research has overlooked that the context effect on immigration attitudes may depend on individuals' information-processing capabilities.<sup>2</sup> This assumption of uniformity in contextual information processing is surprising given that scholars have demonstrated substantial differences in how and to what extent individuals react to political information. More specifically, individuals not only seek out different sources of political information, but also approach and interpret political cues and messages differently depending on their personal cognitive dispositions (Fiske, Lau, and Smith 1990; Zaller 1992; Rhee and Cappella 1997; Kam 2005). By extension, we would also expect such differences in information processing to apply to the domain of neighborhood outgroup exposure and whether individuals use such neighborhood cues as a source of information. Consequently, the processes by which individuals assess political information seem to be a highly relevant—yet overlooked—aspect of understanding outgroup exposure effects.

Political sophistication is a particularly likely individual-level moderator in this regard, as it has been found to be essential for how individuals approach new information and incorporate it into their political beliefs (e.g., Fiske, Lau, and Smith 1990; Zaller 1992; Rhee and Cappella 1997; Gilens 2001; Gomez and Wilson 2001; Kam 2005). In addition to seeking out more mass-mediated political news and information, politically sophisticated individuals have higher learning outcomes from these sources of information (Fiske, Lau, and Smith

2. A few studies have emphasized that studies of neighborhood effects should pay attention to information processing (e.g., Wong et al. 2012; Newman 2013), but none have explicated and tested potential processes.

1990; Rhee and Cappella 1997). Therefore, politically sophisticated individuals are also more likely to integrate policy-specific information into their political opinions (Gilens 2001). Research indicates that this is not only because political sophistication enhances the ability to understand relevant information, but also because politically sophisticated individuals engage in more extensive and effortful information processing, that is, systematic rather than heuristic processing (Kam 2005). This is also supported by neuroscientific research indicating that different parts of the brain are active for individuals with different levels of sophistication when analyzing political information (Fowler and Schreiber 2008).

Expanding on these insights, we hypothesize that political sophistication decreases individuals' sensitivity to social cues manifested by the ethnic composition of their neighborhood. Specifically, while all individuals are likely to rely on such heuristics when making generalizations and forming opinions, political sophistication enhances the ability to rely on generalized, mass-mediated information instead of information from the social context. As a consequence, while individuals high and low in political sophistication may be equally attentive to their surroundings (*in casu* the ethnic composition of their residential area), we expect politically sophisticated individuals to rely less on these neighborhood cues as a source of information when forming political opinions. This follows the suggestion by Weatherford (1983) that political novices, who lack the ability to understand mass-mediated information, are more likely to default to personal experiences when considering political matters (see also Mutz [1992]).

Summing up, we expect political sophistication to moderate the effect of exposure to ethnic minorities on immigration attitudes. More specifically, due to a greater ability to engage with other sources of more generalized information, we expect that politically sophisticated individuals are less sensitive to neighborhood exposure to ethnic minorities irrespective of whether exposure enhances or reduces anti-immigration attitudes.

## Research Design: Methodological Challenges When Studying Context Effects

Studying context effects on attitudes is complicated by (at least) two severe methodological challenges: specifying the appropriate contextual level and ruling out self-selection of individuals into certain contexts (Hopkins 2011). The research design we employ here goes a long way in bypassing these issues and thus provides a stronger basis for drawing causal inference than most previous studies of contextual effects on (immigration) attitudes.

Specification of the appropriate contextual level relates to the problem of understanding the mechanism(s) by which contextual influences are expected to operate. Previous research studying the relationship between contextual

ethnic composition and immigration attitudes has generally been restricted to measuring ethnic composition in administrative units for which data have been available (Cho and Baer 2011).<sup>3</sup> However, when studying effects of contextual exposure to ethnic minorities, administrative units are typically less appropriate because they are generally quite large and therefore likely imprecise reflections of individuals' daily experiences. To circumvent this issue of imprecision (i.e., measurement error), we use the ethnic composition of the immediate neighborhood (a circle with a radius of 130 meters/142 yards around a given person's residence) as our measure of exposure. This measure is facilitated by a unique Danish data set that combines attitudinal survey data and official individual-level register data on home address, country of origin, and other relevant information (see below) for all persons residing in Denmark. Consequently, the data also allow us to flexibly create contexts of any size and thus provide a unique opportunity to probe whether the results are sensitive to the specific contextual unit. This is an important feature because previous research shows that context effects may vary greatly depending on the context size; the so-called Modifiable Areal Unit Problem (Wong 2009; Wong et al. 2012).

The problem of self-selection concerns individuals not settling randomly. Unobserved characteristics, such as deep-held preferences or personality traits, may influence both residential decisions and attitudes, which complicates causal claims about the impact of contextual ethnic composition. As always, experiments are a solution to problems of causal inference. However, exogenous variation in ethnic composition of the neighborhood is difficult to come by (though see Enos [2016]), leaving scholars with the well-known imperfections of observational data. In this study, we are able to bypass some of these by applying a first-difference estimator to individual-level panel data.<sup>4</sup> Specifically, by analyzing how *changes* in the independent variables relate to *changes* in the dependent variable within individuals, the estimator controls for all time-invariant variables (Allison 2009), including potential drivers of self-selection such as personality and other deep-held predispositions that are unlikely to vary over time. However, panel data are no panacea for potential self-selection, since people may select into neighborhoods based on time-varying characteristics (e.g., resources). While our data provide some remedy in this regard, as they hold a rich set of control variables (see below), self-selection bias cannot be ruled out. We return to this issue below. Furthermore, because our main concern is the interaction between ethnic diversity and sophistication, changes in political sophistication in response to characteristics related to immigration attitudes or contextual ethnic composition are another potential source of bias. In the analyses below,

3. See Wong et al. (2012), Moore and Reeves (2015), and Enos (2016) for recent notable exceptions.

4. The first-difference estimator is identical to the fixed effect estimator in a two-wave panel like ours.

we assume that political sophistication is time invariant, and, by implication, that this form of bias is limited. Section 4 in the [online appendix](#) evaluates this assumption (by, *inter alia*, using the related construct of political interest) and provides indications that it is reasonable to treat sophistication as time invariant.

## The Danish Context

Parallel to other European countries, Denmark has experienced growing immigration rates in the past decades. Historically, the country has been very ethnically homogeneous, but ethnic minorities (measured as immigrants and descendants of immigrants) now comprise 11.6 percent of the population, and most of these (7.5 percent of the total population) are of non-Western origin ([Statistics Denmark 2015](#)).<sup>5</sup> The demographic changes have been paralleled by an immigration-skeptical discourse expressed most explicitly by the populist right-wing party, the Danish People's Party ([Green-Pedersen and Krogstrup 2008](#)), and the fact that Denmark has implemented multiple restrictions on immigration, family reunification, and access to Danish citizenship ([Mouritsen and Olsen 2013](#)). While these restrictions are relatively far reaching, the immigration challenges and debates as well as the emergence of populist right-wing parties are in large part similar to the situation in other European countries ([Mudde 2013](#)). It is therefore, *ceteris paribus*, conceivable that mechanisms regarding outgroup exposure effects work similarly in other, comparable countries.

## Data

The first wave of the survey data was collected as part of the European Social Survey (ESS), and the respondents were interviewed in 2002–2003 (ESS round 1), 2004–2005 (round 2), or 2008–2009 (round 4). The second wave was collected in 2011–2012, when 1,743 ESS-respondents were re-interviewed in the Danish Social and Political Panel Study.<sup>6</sup> We exclude individuals who move between the first and second wave, since otherwise unobserved

5. The numbers are based on a somewhat narrower definition of *non-Western* immigrants than we use (cf the “Measures” section), as Statistics Denmark include EU-28 countries (rather than the EU-15) in their definition of *Western* immigrants ([Statistics Denmark 2015](#)).

6. ESS respondents in Denmark are randomly sampled from the Danish Central Person Register. The response rate (RR2, American Association for Public Opinion Research) was between 54 and 67 percent in the first wave. For details, see [online appendix](#), section 1. The response rate was 52 percent in the second wave, and the respondents do not constitute a fully representative sample of the Danish population (most importantly, the respondents are slightly better educated, more politically interested, and more supportive of immigration compared to individuals who declined to participate in the second wave; see [online appendix](#), section 2).

contextual factors are not held constant, thereby furthering the risk of biased estimates. In addition, we exclude first- and second-generation immigrants (see definition in [online appendix](#), section 3). As a result, the data consist of 2,420 observations for 1,210 respondents (this is reduced in the analysis due to non-response and missing information, cf. note 7). Upon collection, the survey data were linked to official register data from Statistics Denmark. The registers hold anonymized information about, among other things, income, education, unemployment status, country of origin, and addresses for all individuals residing in Denmark. While misreports and typographical errors are unavoidable, the registers are considered to be very accurate (see the special issue edited by [Thygesen and Ersbøll \[2011\]](#)), and the data, in turn, allow us to compute highly reliable measures regarding the demography of respondents' immediate neighborhoods as well as obtain data on relevant personal characteristics.<sup>7</sup>

## Measures

### KEY VARIABLES

The dependent variable, attitudes toward immigration, is measured by a scale based on the following two items: "To what extent do you think Denmark should allow people from poorer countries outside Europe to come and live here?" and "To what extent do you think Denmark should allow people of a different race or ethnic group than most Danish people to come and live here?" Both questions are measured on a four-point scale ranging from "Allow many to come and live here" (1) to "Allow none" (4). Parallel to previous studies, we find that the two items tap into one latent variable ( $r = 0.73$ ;  $p < 0.01$ ;  $\alpha = 0.85$ ) considered to be a general rejection of further immigration ([Meuleman, Davidov, and Billiet 2009](#)). The scale based on the two items is rescaled to run from 0 (most anti-immigration attitude) to 10 (most pro-immigration attitude).

Neighborhood exposure to ethnic minorities is measured with data from the official Danish registers. Based on information about respondents' addresses, Statistics Denmark computed the distance from every survey participant to all other individuals living in the 20,000 nearest households (in practice, that equals people residing within at least 2,500 meters of the respondents). This information was merged with information about national origin (and parental national origin), which allowed us to compute measures of the ethnic composition within a given distance from the respondents' home addresses. Specifically,

7. Access to the register data requires permission on an individual-level basis, so the merged survey and register data are not publicly available. The survey data are available through the European Social Survey ([europeansocialsurvey.org](http://europeansocialsurvey.org)) and Center for Survey and Survey/Register Data (<http://www.sfi.dk/cssr>).



micro-contextual exposure is measured by the share of non-Western immigrants and first-generation descendants living within 130 meters of the respondents.<sup>8</sup> However, as we explain later, we conduct robustness tests to probe the sensitivity of the results to the specific size of context. We focus on non-Western immigrants (see definition in the [online appendix](#), section 3), as Western immigrants are not expected to be of major relevance to the immigration attitudes studied in the analysis given that the items used to measure immigration attitudes explicitly concern non-European immigrants and “immigrants of a different race or ethnic origin.” Additionally, non-Western immigrants are more clearly identifiable as immigrants, and in that light, the operationalization corresponds to other studies focusing partly or exclusively on (presumably) visible minorities ([Schneider 2008](#); [Hjerm 2009](#)).

The changes in share of non-Western immigrants over time are modest. In absolute terms, the average change in the share of non-Western immigrants is 2.1 percentage points (std. dev. = 3.0), although some individuals experience substantially larger changes (e.g., more than 10 percent of the respondents experience changes exceeding 5 percentage points).<sup>9</sup>

Political sophistication, the moderating variable, is measured using a scale comprising three items: (1) attention to politics in the media (“How often do you follow politics via television, radio, newspapers or the Internet?”), (2) whether the respondent discusses politics (“How often would you say you discuss politics and current affairs?”), and (3) a political knowledge subscale (based on four factual questions). Section 3 in the [online appendix](#) displays information about all items. The items correlate positively ( $r = 0.34$  to  $0.42$ ), and the scale displays reasonable internal consistency ( $\alpha = 0.62$ ). The scale ranges from 0 (minimal political sophistication) to 10 (maximum political sophistication). As the relevant sophistication items are not asked in the ESS surveys, the measure is based on the respondents’ answers in the second wave of the panel. While using measures from the first wave is preferable, this is unlikely to constitute a major problem because political knowledge, along with related features such as political interest, has been shown to be largely time invariant ([Zaller 1992](#), 22; [Jennings 1996](#); [Prior 2010](#)).

8. We chose the 130-meter radius as the primary contextual unit of analysis to strike a balance between being highly local (and thus an arena where actual exposure to immigrants is inevitable) and being of a sufficient size, so that small changes in ethnic composition do not drastically change the makeup of the neighborhood in relatively depopulated areas. To further safeguard that such potential outliers do not drive the results, we exclude individuals living in neighborhoods with fewer than 20 other individuals. As a result of this and missing values on other variables, the data set used in the primary analysis consists of 1,838 observations of 919 individuals. Robustness tests were carried out using 15 and 25 individuals in the nearby neighborhood as cut-off points. This does not make a substantive difference in the results.

9. The average share of non-Western immigrants within the nearest 130 meters of the respondents’ home is 4.02 percent (std. dev. = 6.50) (based on data from both waves), with some respondents living without any non-Western immigrants in the nearby neighborhood, and some experiencing large shares of non-Western immigrants (the maximum share is 78 percent).

The [online appendix](#), section 4, assesses the stability of sophistication, and concludes that sophistication is largely time invariant. Furthermore, the [online appendix](#), section 5, reports two robustness analyses of the analyses reported below, in which political sophistication is measured by proxy variables from the first wave (education and political interest). Reassuringly, the robustness analyses yield essentially parallel results, which suggest that measuring sophistication with data from the second wave is not overly problematic. It also suggests that the results reported below are robust to alternative measures of sophistication.

#### CONTROL VARIABLES

To reduce the possibility that the estimated effects are biased due to omitted variables simultaneously affecting residential choice, political sophistication, and immigration attitudes, we include a number of time-varying individual- and contextual-level controls (as noted, all time-invariant factors are taken into account by the first-difference estimator). In line with comparable studies (e.g., [Oliver and Wong 2003](#); [Hjerm 2009](#); [Hopkins 2011](#)), we include (changes in) average level of education, average income, unemployment rate, share of single-parent households, and population size as contextual-level control variables to minimize confounding by the socioeconomic environment of the neighborhood. We also include (changes in) personal income and unemployment status as individual-level controls to limit bias from self-selection into neighborhoods and political sophistication due to time-varying personal characteristics. Details about the control variables are reported in the [online appendix](#), section 3.

Finally, in line with classical models of political attitudes formation (e.g., [Sears et al. 1980](#)), we considered including political ideology in our model of immigration attitudes. However, as a consequence of the panel setup of the analysis, it is not straightforward whether this variable should be included or not. The motivation behind including ideology as an explanatory variable is essentially that it is considered a stable predisposition established early in life ([Jennings 1996](#); [Sears and Funk 1999](#)), which exerts an exogenous influence on subsequent political attitudes. In the first-difference setup, the assumption of stability implies that ideology is taken into account, as this analysis relates *changes* in the dependent variable to *changes* in the independent variable. If, on the other hand, ideology changes in the short(er) term, this indicates that it is more akin to an attitude rather than a stable predisposition. In this case, including ideology as an explanation of another attitude (*in casu* immigration attitudes) is therefore problematic, as this would lead to potential endogeneity. Moreover, this may also cause post-treatment bias in relation to residential concentration of immigrants. Therefore, ideology is not included as an explanation for immigration attitudes in the primary analyses. However, ideology may impinge on our results in other ways, which we return to after the analyses.

## Results

The results of the analyses are reported in [table 1](#). In order to test the hypothesis that the effect of exposure to ethnic minorities is conditional on the level of political sophistication, we include the interaction between the share of non-Western immigrants and political sophistication. This is reported in model 2, while model 1 reports the results obtained without the interaction term as a point of comparison. Note that because first-difference models regress changes in the dependent variable on changes in the independent variables, effects of time-invariant variables are not estimated (but are implicitly controlled). Thus, because political sophistication is assumed to be time invariant, a first-order term for this variable is not estimated. Conversely, a first-order term is estimated for the share of non-Western immigrants because this variable varies over time.<sup>10</sup>

Model 1 shows a positive, but insignificant, average effect of the share of non-Western immigrants in the micro-context. In model 2, when conditioning the effect of share of non-Western immigrants on individual political

**Table 1. Predicting Pro-Immigration Attitudes (0–10)**

|  | (1)      |               | (2)      |               |
|--|----------|---------------|----------|---------------|
|  | 130      |               | 130      |               |
|  | <i>b</i> | ( <i>SE</i> ) | <i>b</i> | ( <i>SE</i> ) |
| Radius (meters)  |          |               |          |               |
| Percentage of non-Western immigrants                                       | 0.022    | (0.021)       | 0.160    | (0.043)***    |
| Percentage of non-Western immigrants<br>x political sophistication (level) |          |               | -0.021   | (0.006)***    |
| <i>Individual-level controls</i>   |          |               |          |               |
| Personal income (million DKK)  | -0.198   | (0.175)       | -0.140   | (0.186)       |
| Personal unemployment  | -0.370   | (0.284)       | -0.383   | (0.285)       |
| <i>Contextual controls</i>   |          |               |          |               |
| Population (thousands)   | -3.037   | (3.096)       | -2.988   | (3.091)       |
| Average income (million DKK)   | -6.768   | (2.693)*      | -6.633   | (2.700)*      |
| Unemployment rate  | -0.003   | (0.019)       | -0.003   | (0.018)       |
| Educational level  | 0.014    | (0.016)       | 0.016    | (0.016)       |
| Percentage of single-parent households                                     | -0.006   | (0.019)       | -0.010   | (0.019)       |
| Constant   | 0.284    | (0.151)       | 0.275    | (0.151)       |
| Round dummies  | Yes      |               | Yes      |               |
| <i>N</i>   | 919      |               | 919      |               |

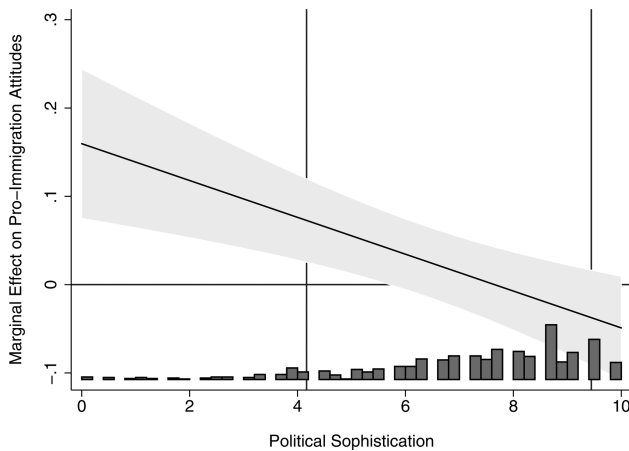
NOTE.—Regression coefficients (based on the first-difference estimator) with robust standard errors in parentheses. The first-difference estimates are obtained by regressing changes in the dependent variable (immigration attitudes) on changes in the independent variables.

\**p* < 0.05; \*\**p* < 0.01; \*\*\**p* < 0.001 (two-sided tests).

10. See Allison (2009, 37) for further details regarding first-difference estimators with an interaction term between a time-variant and a time-invariant variable.

sophistication, there is a significant positive effect, meaning that for the least politically sophisticated individuals (i.e., when the political sophistication scale equals zero), contextual exposure to non-Western immigrants significantly furthers more positive immigration attitudes. The negative and significant interaction term between individuals' political sophistication and the contextual share of non-Western immigrants shows the expected moderation of the effect by political sophistication: The (positive) effect of contextual exposure to non-Western immigrants on immigration attitudes is weakened for people with higher levels of political sophistication. The relationship is illustrated in [figure 1](#), which depicts the estimated effect of a one-percentage-point increase in the share of non-Western immigrants for various levels of political sophistication. The predicted effect is significantly positive for individuals scoring 5.7 or lower on the political sophistication index (corresponding to 19.5 percent of the sample), while it is insignificant for more sophisticated individuals.

The effect of exposure to non-Western immigrants among individuals with low political sophistication is noteworthy. Specifically, a two-percentage-point increase in the share of non-Western immigrants is predicted to make individuals low on political sophistication (the 10th-percentile value) almost 0.15 points more supportive of immigration (on the 0–10-point scale), while a five-percentage-point increase in the share of non-Western immigrants increases support for immigration by 0.36 point. This is a considerable effect, considering that individuals' immigration attitudes are relatively stable over time (the average change during the observed period is 1.5 points on the 0–10-point scale).



**Figure 1. The Conditional Effect of Neighborhood Exposure to Non-Western Immigrants on Pro-Immigration Attitudes.** The downward sloping line is the estimated marginal effect of neighborhood exposure surrounded by 95 percent confidence intervals (gray area). The histogram is the distribution of Political Sophistication, while the vertical lines indicate the 10th and the 90th percentiles for Political Sophistication.

Model 2 in table 1 also shows that the conditional effect of exposure to non-Western immigrants is among the only significant predictors of immigration attitudes. Given that temporal variation in the relevant variables is limited, we cannot rule out that the coefficients for the other variables are insignificant as a result of the analyses being underpowered. Nevertheless, the results highlight the importance of exposure to non-Western immigrants relative to other factors in explaining immigration attitudes.

So far our results suggest that political sophistication substantially moderates the effect of exposure to immigrants. The results, however, do not speak to the additive effect of sophistication because the first-order coefficient for sophistication partials out when using the first-difference estimator. A cross-sectional analysis of our data shows that individuals with high political sophistication express more pro-immigration attitudes: The average score on the immigration scale is 4.6 for individuals with low political sophistication (the 10th-percentile value) and 5.6 for individuals with high political sophistication (the 90th-percentile value).<sup>11</sup> Accordingly, the implication of the first-difference analysis presented above is that exposure to non-Western immigrants reduces the attitude gap, as increased exposure over time generates more pro-immigration attitudes among individuals with low political sophistication, while exposure has no significant effect among individuals with high political sophistication.

#### DOES CONTEXT SIZE MATTER?

The analysis shows the expected interaction effect between micro-contextual exposure and political sophistication. However, as noted above, context effects can vary greatly depending on the size of the geographical unit of analysis. Consequently, though measuring the share of non-Western immigrants within the immediate neighborhood is preferable when investigating exposure effects, it is relevant to assess whether the findings are an artifact of the specific context unit analyzed (*in casu* the nearest 130 meters). Therefore, we carry out robustness tests measuring the share of non-Western immigrants within other distances of the home of the respondents, that is, within 180, 250, 350, 500, 750, 1,000, 1,250, 1,500, 1,750, 2,000, 2,250, and 2,500 meters. Across context sizes, the significance and direction of all effects are generally consistent with the analyses presented above.<sup>12</sup> For individuals with low political sophistication (the 10th percentile), the share of non-Western immigrants is significantly related to pro-immigration attitudes,<sup>13</sup> while no significant effect

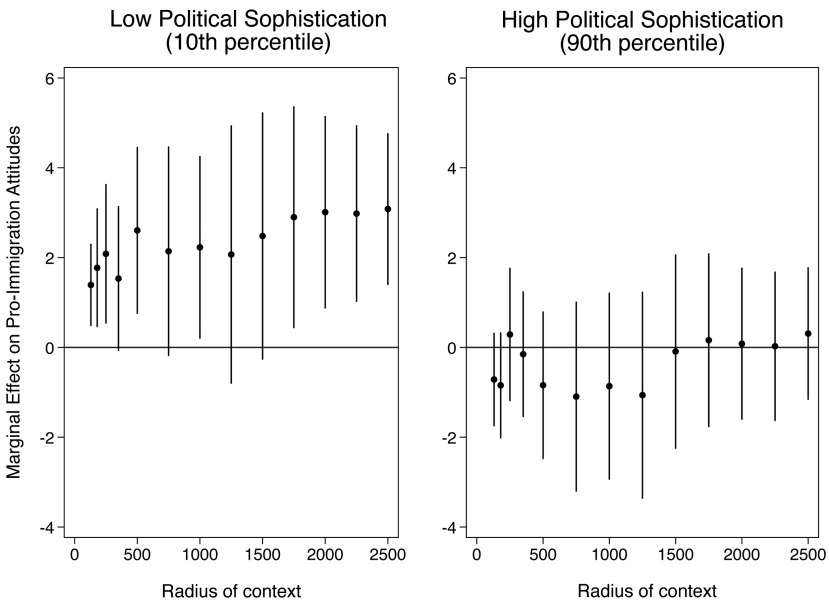
11. Based on bivariate cross-sectional analysis of political sophistication and immigration attitudes ( $b = 0.18$ ; std. error = 0.03). A multivariate cross-sectional analysis controlling for age, gender, income, unemployment, and contextual socioeconomic factors gives substantively similar results.

12. The interaction item is consistently positive, and it is significant on at least the 0.10-alpha level in all but two models.

13.  $P$ -values range from 0.002 to 0.076 across all the models based on different contextual units. Only for one model (when ethnic composition is measured within the nearest 1,250 meters) is the effect not significant on the 0.10 level ( $p = 0.156$ ).

is found for individuals with high political sophistication (the 90th percentile). This is illustrated in figure 2, which plots the estimated effect of a change from minimum to maximum in the share of non-Western immigrants in the neighborhood across contexts of different size.<sup>14</sup> In other words, there is little to suggest that the results are an artifact of the specific choice of context size.

At first sight, it appears somewhat counterintuitive that the effect of concentration of non-Western immigrants is not stronger in the very proximate neighborhood, where exposure is inevitable, compared to more aggregate contexts (Dinesen and Sønderskov 2015). If anything, figure 2 indicates that the



**Figure 2. The Effect of Neighborhood Exposure to Non-Western Immigrants on Pro-Immigration Attitudes for Individuals with Low (left panel) and High (right panel) Levels of Political Sophistication.** The x-axis denotes the radius of the neighborhood within which the share of non-Western immigrants is measured. The dots show the estimated effect of a change from minimum to maximum in the share of non-Western immigrants within the given area. The vertical lines are 95 percent confidence intervals based on robust standard errors. The estimate for each radius is based on all available respondents with at least 20 individuals residing within the area specified by the radius.

14. We opt for this effect calculation to increase comparability in effect size between different context sizes. More specifically, the variation in ethnic composition decreases when the context size increases, which implies that, for example, a one-percentage-point increase in the share of non-Western immigrants constitutes a more extreme change in larger than in smaller contexts.

estimated effect of share of immigrants tends to be slightly larger in more aggregate contexts. This may reflect that the measure of concentration of non-Western immigrants in larger contexts picks up factors other than exposure. For instance, media coverage, which is likely to occur in response to larger-scale (rather than extremely local) demographic changes, has also been found to moderate the effect of immigrant influxes on immigration attitudes (Hopkins 2010, 2011). Unraveling the pattern of increasing effects in the larger residential areas is outside the scope of the present study, but our findings point to this aspect as relevant for future research.

#### ISSUES OF SELF-SELECTION

As explained earlier, studying contextual effects based on a panel of individuals provides increased leverage for ruling out self-selection (i.e., reverse causality or confounding by unobserved variables stemming from individuals sorting into certain residential contexts based on prior immigration attitudes or deep-held beliefs). However, panel data are no panacea for potential self-selection. Of particular concern, individuals who have negative experiences with ethnic minorities may be more likely to move out of areas that become increasingly ethnically heterogeneous. To address the likelihood that this potential dynamic confounds our results, we perform an auxiliary analysis focusing on individuals' propensity to move (see Putnam [2007] and Dinesen and Sønderskov [2015] for a similar approach). Specifically, we examine whether the exposure effect varies with a central driver of relocation, namely individuals' financial situation (measured as personal income). The rationale is that more financially constrained individuals, who are presumably less economically capable of moving, are less likely to self-select out of a neighborhood if they are unhappy with increasing shares of non-Western immigrants. Therefore—if self-selection drives the results—the effect of exposure to non-Western immigrants on immigration attitudes would presumably be more negative for financially restrained individuals. Yet, three-way interaction analyses (with income level as the third variable in the interaction) do not indicate differential effects depending on individuals' financial situation (see the [online appendix](#), section 6). This further adds to our confidence that the observed positive exposure effect on immigration attitudes does not reflect confounding.

#### IDEOLOGY AS A POTENTIAL CONFOUNDING OR MODERATING FACTOR

As discussed above, political ideology as traditionally conceived (i.e., a stable predisposition influencing attitudes) is by design taken into account as the first-difference model looks at changes over time. We therefore prefer not including ideology as a time-varying variable, as this would violate the assumption of its over-time stability (note, however, that including ideology in this way does not change the results; cf. the [online appendix](#), section 7).

However, political ideology may impinge on our results in two other ways. First, in line with theories of ideologically motivated information processing (Taber and Lodge 2006), the relationship between immigrant concentration and immigration attitudes could potentially depend on individuals' prior political ideology rather than prior political sophistication. Second, perhaps the moderating effect of political sophistication varies by (prior) political ideology (e.g., political unsophisticated liberals respond differently to residential exposure to immigrants than do politically unsophisticated conservatives). We examined both of these possibilities empirically in analyses reported in the [online appendix](#), section 7. Reassuringly, neither of the tests gives rise to concern, strongly indicating that the relationship between political sophistication, interethnic neighborhood exposure, and immigration attitudes exists independently of ideological differences.

## **Conclusion**

Based on the political psychology literature on information processing, we hypothesized that political sophistication moderates the effect of outgroup exposure. Specifically, we argued that because citizens with low political sophistication are less able to comprehend mass-mediated information, they tend to rely more on neighborhood cues for politically relevant information compared to more sophisticated citizens. Using panel survey data linked with fine-grained measures of neighborhood exposure to non-Western immigrants, we find support for this theoretical conjecture: While exposure to non-Western immigrants does not significantly affect immigration attitudes among individuals with high political sophistication, the share of non-Western immigrants within the proximate neighborhood significantly diminishes restrictive attitudes among individuals with low political sophistication. Increasing exposure to outgroup members thus reduces the gap in immigration support between citizens with high and low political sophistication.

The analysis hereby supports and nuances the perspective suggested by [Oliver and Wong \(2003\)](#) and [Pettigrew and Tropp \(2006\)](#) that mere exposure to ethnic minorities can generate pro-immigration attitudes. Conversely, the results are at odds with the conflict theory. This is particularly interesting in light of [Enos's \(2014\)](#) finding that sudden changes in outgroup exposure generate exclusionary attitudes in the short run of a few weeks. As the effects observed in our study are the results of yearlong demographic developments, one plausible interpretation is that short-term effects of demographic changes differ substantially from long-term effects, presumably because people become accustomed to the changes that occur. Along those lines, Enos also observes that the negative short-term effects of outgroup exposure tend to be weaker after ten days than they are after three days of interethnic exposure. Further investigations focusing explicitly on disentangling short-term and long-term



effects of demographic developments appear to be a relevant avenue for future research.

On a substantive level, finding that citizens with low political sophistication are more likely to rely on neighborhood cues when considering immigration policies is not only important in order to better understand prevalent political disagreements and cleavages; it could also have the potential to facilitate a more constructive dialogue. With unprecedented immigration and refugee pressures to both North America and Europe polarizing the political debate, this could hardly be more relevant. As such, the results bring a new perspective to the salient discussion regarding why public opinion on immigration is so remarkably structured around educational lines. Specifically, a large body of literature suggests that individuals with higher levels of education are more supportive of immigration due to differential perceptions of the cultural and symbolic threat this entails rather than differences in labor-market vulnerability (e.g., Citrin et al. 1997; Hainmueller and Hiscox 2007). Our findings do not contradict this perspective, but suggest that the association between education and immigration attitudes is also related to political sophistication affecting the information sources upon which citizens rely when considering immigration issues.

On a broader theoretical level, our analysis speaks to the recently reinvigorated question of whether individuals base their political preferences on personal experiences (Egan and Mullin 2012); *in casu* exposure to ethnic outgroups in their immediate residential environment. While our results answer this question (partly) in the affirmative—individuals do use such residential cues to form their opinions on immigration—they also provide an important caveat: Residential context matters only for individuals who are comparatively politically unsophisticated. Interestingly, this result contrasts with conjectures from earlier research suggesting that experiences (specifically, related to self-interest) are most likely to matter for political attitudes to the extent that individuals possess the sophistication needed to derive their short-term interest from such occurrences (Gomez and Wilson 2006). Instead, our findings suggest that residential contextual exposure—and, potentially, personal experience more broadly—is most politically consequential when not countered by more generalized information of the kind typically received through the mass media by the more politically sophisticated. Or, put differently: When little generalized information is available, individuals' personal experience may be an incomplete, yet second-best alternative for arriving at political attitudes. Here, we have provided only a preliminary test of this idea relating to a specific set of experiences (contextual outgroup exposure) and a particular policy attitude (immigration attitudes), and further scrutinizing with regard to other experiences and policies is clearly necessary to substantiate the potential conditionality of experiential politics.

## Supplementary Materials

Supplementary materials are available online at <http://poq.oxfordjournals.org/>

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