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A Micro-Scale Approach to Ethnic Minority Concentration in the Residential Environment and Voting for the Radical Right in The Netherlands

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Abstract

Existing empirical research on the link between ethnic minority concentration in residential environments and voting for the radical right is inconclusive, mainly due to major differences between studies in the spatial scale at which minority concentration is measured. We examined whether the presence of non-western ethnic minorities in the residential environment, measured at four spatial scales, is related to individuals' intention to vote for the Dutch Party for Freedom (Dutch acronym PVV). We combined individual level survey data and register data, and we used multi-level structural equation models to examine possible mediation by anti-immigrant attitudes and political dissatisfaction. The models show different effects at different scales. At the micro scale (100 by 100 meter grids) we find a curvilinear effect: individuals with 30–50 per cent non-western minorities in their direct living environment are most likely to report to vote for the PVV. At higher spatial scales (up to municipal level) we find that the higher the proportion of non-western minorities, the more likely individuals are to report to vote for the PVV. These effects can however not be explained by anti-immigrant attitudes or political dissatisfaction. We even find that at the micro scale the presence of non-western minorities is related to less anti-immigrant attitudes.

Introduction

Populist far right parties are gaining support in many European societies, creating a political landscape organized around xenophobia and racial-ethnic division. Since World War II, almost all Western European societies have grown increasingly diverse as a result of various migration flows, from guest workers in the 1960s and 70 s, to post-colonial migrants, intra-EU migration after the expansion of the EU, and the most recent inflow of refugees and asylum seekers. The consequences for society of this ongoing immigration have become major public issues and have been put high on

the political agenda. While stemming from different political backgrounds and varying considerably on political standpoints, radical right parties have in common that they strongly oppose immigration and multiculturalism. These parties also have in common that they show a deep mistrust of political elites, and they attract voters who are dissatisfied with established political parties.

Voters for radical right parties are known to have negative attitudes towards immigrants and ethnic minorities (Lubbers and Scheepers, 2000; Lubbers, Gijsberts and Scheepers, 2002; Norris, 2005). Much less is known about whether a tendency to vote for these parties is related to exposure to ethnic minority group members in the residential environment (cf. Dinas and van Spanje, 2011; Savelkoul, Laméris and Tolsma, 2017). Intuitively it could be argued that those who experience the multi-cultural society at first hand, in their streets, neighbourhoods and cities, are most likely to vote for anti-immigration parties. However, there are several competing hypotheses on the link between ethnic minority presence and the intention to vote for the radical right. On the one hand, social identity theory (Tajfel and Turner, 1979) and realistic conflict theory (Coser, 1956; Blumer, 1958) suggest that the presence of ethnic minorities will lead to feelings of ethnic threat, which in turn makes individuals more likely to support radical-right parties. On the other hand, Blau's (1977) meeting opportunities hypothesis, combined with Allport's (1954) contact hypothesis, suggests that more ethnically diverse settings lead to a more positive image of immigrants, and reduces the support for radical-right parties. The relationship between ethnic minority presence and voting for the radical right could also be non-linear (see Savelkoul, Laméris and Tolsma, 2017).

Previous empirical research examining the link between ethnic minority concentrations and electoral support for radical right-wing parties is inconclusive. This is partly caused because some studies use aggregate level data, and other studies examine individual level data. On the one hand, studies which use aggregated level data on voting (e.g. Biggs and Knauss, 2011; Rydgren and Ruth, 2013; Van der Waal, de Koster and Achterberg, 2013; Van Gent, Jansen and Smits, 2014; Strömblad and Malmberg, 2016) cannot control for individual level characteristics that might explain why people residing in areas with larger proportions of immigrants vote for radical right parties. In addition, these macro-level studies have to make the assumption that immigrants themselves do not vote for anti-immigrant parties. On the other hand, studies that do use individual level data on voting preferences can control for individual level characteristics, but these studies differ substantially in the geographical scale that is used to measure ethnic minority concentrations as a spatial context variable. Most existing studies use relative large geographical areas, such as countries, regions, and municipalities (e.g. Lubbers, Gijsberts and Scheepers, 2002; Rink, Phalet and Swyngedouw, 2008; Green *et al.*, 2016; Stockemer, 2016), and only a few studies use very small geographical units, such as four-digit postal code areas (Dinas and van Spanje, 2011; Savelkoul, Laméris and Tolsma, 2017). The main reason is that most surveys do not include detailed geographical identifiers of residential locations. And as a result most studies ignore substantial variation in ethnic minority concentrations within regions, cities, and even within neighbourhoods.

The current study focusses on the Netherlands, and contributes to the literature on the relationship between voting for the radical right and ethnic minority concentrations in the residential context in two ways. The first is that we use individual level survey data on voting intentions, which allows us to control for a large range of individual characteristics, and to examine the mediating role of anti-immigrant attitudes and political dissatisfaction. A unique feature of this survey data is that it can be linked with geo-coded register data from the Dutch population registers. The second contribution of this study is that we use a multi-scale approach to measure ethnic minority concentration in the residential context. We use four different spatial scales, from the very proximal level of 100 by 100 meter grid cells, to the whole municipality. In our analyses, we focus on examining voting intentions for the Party for Freedom (Dutch acronym PVV). The PVV, founded by Geert Wilders in 2006, became the second largest party in the Netherlands in the elections of 2017. The PVV has been characterized as right-wing populist, radical right, anti-immigrant, antisystem and Eurosceptic (Giugni and Koopmans 2007; Van der Brug and Fennema, 2007; De Lange and Art 2011). We follow Van der Brug and Fennema (2007) in using the term radical right as it is most often used. Geert Wilders, the party's sole member, has called for banning the Quran, taxing wearing a hijab, shutting down all mosques, and closing the Dutch borders to immigrants—especially Muslim immigrants. In addition to anti-immigration, the PVV is also anti-establishments and demonstrates to be anti-urban (Van Gent *et al.*, 2014).

Theoretical Background

Ethnic Minority Presence and Voting for the Radical Right

Opposing hypotheses about the relationship between ethnic minority presence in the residential environment and the intention to vote for the radical right can be derived from two established theories. The first theoretical approach originates from Blau's (1977) meeting opportunities hypothesis combined with Allport's (1954) contact hypothesis. According to Blau more ethnically diverse settings increase the likelihood of inter-ethnic contacts. The contact hypothesis states that interaction between members of different groups leads to more positive intergroup relations. Allport (1954) states that prejudice is a result of generalizations and over-simplifications made about an entire group of people based on incomplete or mistaken information. Contact between members of different groups leads to a more positive image of, and fewer prejudices about the other group (Allport, 1954). This more positive imaging would be the result of more mutual information about norms and values, lifestyle and experiences. Although there is a large body of literature supporting the contact hypothesis (see Pettigrew and Tropp, 2006; Pettigrew *et al.*, 2011), the idea that ethnically diverse settings lead to more interethnic contact received less empirical support (but see Martinović, 2013; Wagner *et al.*, 2006).

Dinesen and Sønderskov (2015) have made an important distinction between *exposure* and *contact*, which is closely related to the distinction made by Lee, Farrel and Link (2004) between *observation* and *interaction*. The key difference between exposure and contact is that the latter is a more deliberate decision than the first (Dinesen and Sønderskov, 2015). Exposure, in contrast to contact, is unavoidable in contexts with higher proportions of ethnic minorities. Allport (1954) held that positive effects of intergroup contact occur only in situations marked by four key conditions: equal group status within the situation; common goals; intergroup cooperation; and authority support. He even stated that casual, superficial contact seems more likely to increase prejudices (Allport, 1954: pp. 263–264). However, Pettigrew and Tropp (2006) have shown with their meta-analysis of more than 200 studies that, although the reduction in prejudice is the strongest if these optimal conditions are met, prejudice was still reduced in their absence. These findings offer support for a simpler version of the contact hypothesis: mere observation of out-groups in the course of everyday life is sufficient to increase familiarity and tolerance towards the out-group. This suggests that living in close proximity of non-western ethnic minorities reduces the probability of voting for radical-right parties.

A second theoretical approach can be derived from social identity and realistic conflict theory (Coser, 1956; Blumer, 1958; Tajfel and Turner, 1979). Social identity theory assumes that in society everyone belongs to certain social groups (Tajfel and Turner, 1979). Membership of a particular social group gives a person a place in society and the opportunity to identify oneself socially. Furthermore, group membership creates the fundamental need of individuals to perceive their in-group as superior to out-groups (Tajfel and Turner, 1979). According to realistic conflict theory, the distinction between in-groups and out-groups is established in and through conflict (Coser, 1956; Blumer, 1958). It implies that competition will lead to conflicts between groups. According to ethnic competition theory, which integrates social identity theory and realistic conflict theory (Scheepers, Gijsberts and Coenders, 2002), the presence of ethnic minorities will lead to feelings of ethnic threat. This could be due to socio-economic competition, which consists of competition between individuals for resources such as jobs, housing, social services, and economic benefits (Semyonov, Raijman and Gorodzeisky, 2006). The perceived ethnic threat in relation to the presence of immigrants in the neighbourhood could also be due to more symbolic, non-material competition. Examples of phenomena related to ethnic minorities that can become objects of symbolic competition include acceptable clothing in public (e.g. wearing headscarves), use of foreign languages, retail businesses targeting immigrant residents (e.g. ethnic shops and restaurants), and the presence of religious facilities (e.g. mosques). Based on this second theoretical approach it can be expected that being in close proximity of non-western ethnic minorities increases the probability of voting for radical-right parties.

Both mechanisms linking ethnic minority presence to the intention to vote for the radical right—contact and competition—run through attitudes about immigrants. Following the competition hypothesis, the presence of ethnic minorities will result in negative attitudes towards immigrants, which in turn is related to voting for the radical right. According to the contact hypothesis, however, the presence of ethnic minorities will result in less negative attitudes towards immigrants, which in turn is related to a lower probability of voting for radical right parties. Although some studies found that in ethnically more diverse settings ethnic threat and anti-immigrant attitudes are more widespread (Quillian, 1995; Scheepers *et al.*, 2002), other studies found no such effect (Semyonov *et al.*, 2004; Semyonov, Raijman and

Gorodzeisky, 2006), or even an effect in the opposite direction (Wagner *et al.*, 2006). A study from the Netherlands found no association between the proportion of immigrants in the neighbourhood and anti-immigrant attitudes (Gijsberts and Dagevos, 2004). Although negative attitudes towards immigrants are expected to be strongly related to the intention to vote for radical right parties, anti-immigrant attitudes and feelings of ethnic threat certainly do not only stem from living in environments with higher concentrations of ethnic minorities (Stolle *et al.*, 2013). These attitudes and feelings can exist regardless of the level of ethnic diversity in the residential context. Whether ethnic minority presence is related to a higher likelihood to vote for the radical right (competition), or a lower likelihood to vote for the radical right (contact), in theory this relationship should be explained by anti-immigrant attitudes.

It has been argued, however, that the relationship between ethnic minority presence and voting for the radical right is not as simple as stated by the contact or threat hypothesis. The mechanisms of contact and threat might be insufficient to explain the relationship between the ethnic composition of neighbourhoods and voting for the radical right (Van Gent *et al.*, 2014; de Blok and Van der Meer, 2018). Van Gent *et al.* (2014) proposed a theoretical framework based on urban theories of class, revanchism and nostalgia, and argue that support for radical right wing populism is greatest among the middle class living in suburbs. Perceived urban conditions and change is what drives this group to vote for the radical right in order to reclaim urban space for their daily activities (Van Gent *et al.*, 2014).

In addition to the proposed alternative mechanisms linking minority presence to voting for the radical right, it has also been proposed that the relationship could be non-linear, and that the relevant mechanism is dependent on geographical scale. Both are discussed further below.

Non-Linear Effect of Ethnic Minority Concentration

A non-linear relationship between ethnic minority presence and individual voting intentions can be expected. The idea is that at the lower end of the distribution, a threshold must be met in order for the presence of ethnic minorities to result in feelings of ethnic threat, and consequently voting for the radical right. At very low concentrations of ethnic minority group members, their presence might not be perceived as a threat (Gijsberts and Hagendoorn, 2017). At the higher end of the

distribution, higher percentages of ethnic minorities may not increase anti-immigrant attitudes anymore, which is labelled by Schneider (2008) as the familiarization hypothesis. This entails that due to inevitable exposure to ethnic minority groups in areas with higher levels of ethnic minorities, people get used to outgroups, over and above individual contact (Schneider, 2008). Daily observation of ethnic minority groups is expected to lead to familiarity (Lee, Farrel and Link, 2004), which in turn reduces the likelihood to support radical-right parties (Savelkoul *et al.*, 2011).

Rink, Phalet and Swyngedouw (2008) found a curvilinear effect between the percentage of immigrants in the municipality and the probability to vote for the far-right party Vlaams Blok in Belgium. Their results show an increase in the support for Vlaams Blok with increasing shares of immigrants in the municipality, but above a certain share this effect decreases. In a more recent study on the Netherlands, Savelkoul, Laméris and Tolsma (2017) examined the relation between the percentage of non-western ethnic minorities at postcode level and the intention to vote for the Party for Freedom (PVV). They showed that with a higher percentage of non-western ethnic minorities individuals are more likely to support the PVV, but only where the concentration of non-western minorities exceeds 15 per cent.

The Role of Geographical Scale

The theoretical frameworks discussed above provide little guidance on what the relevant geographical scale is to examine the effect of ethnic minority presence on voting intention. Biggs and Knauss (2011) have argued that contact and threat mechanisms can be disentangled by considering different spatial scales. They have argued that contact is more likely to occur at a smaller geographical scale, whereas threat mechanisms play at a higher spatial scale. Putnam (2007) argued that people are more aware of the ethnic composition of smaller localities. The immediate micro-context is where exposure to outgroup members is assumed to be unavoidable (Dinesen and Sønderskov, 2015). This would suggest that ethnic minority presence in the immediate surroundings of the residence is stronger related to voting intentions. Exposure to ethnic minority members is, however, not necessarily restricted to smaller geographical scales/residential neighbourhoods. The residential neighbourhood, although still the main anchor point of daily activities, is only one of many spatial contexts in which people meet others (Van Ham and Tammaru, 2016). Therefore, also exposure to ethnic minorities at

higher spatial scales, such as the municipality, could be relevant for understanding voting intentions.

Current Study

In the present study, we examined the extent to which the ethnic composition of the residential area is related to the intention to vote for the PVV in the Netherlands, over and above individual characteristics that might explain intentions to vote radical right. We explicitly take a multi-scale approach to measuring the ethnic composition of the residential area. Whereas previous studies were often limited to using relatively large pre-defined administrative areas, we had access to contextual characteristics at the very low spatial scale of 100 by 100 meter and 500 by 500 meter grid cells. In addition we also measured ethnic minority presence at the level of postal codes and municipalities. By explicitly examining the effects of scale we aim to get more insight into how ethnic minority concentration is related to the intention to vote for the radical right. In addition, we tested for possible curvilinear effects and the extent to which the effect of ethnic minority concentration in the residential context on the intention to vote for the radical right is mediated by anti-immigrant attitudes and political dissatisfaction.

Method

Research Site

As a result of various migration flows, the Netherlands has grown increasingly ethnically diverse over the past decades. In the 1960s and 1970s large numbers of guest workers arrived, mainly from Turkey and Morocco. Then from the late 1970s, family reunion of guest workers started to take place, and at more or less the same time there was a large inflow of Surinamese and Antilleans from the former Dutch colonies. The more recent migrants consist mainly of refugees and asylum seekers. Currently, about 22 per cent of the 17 million inhabitants of the Netherlands have an immigration background. Ethnic minorities are defined by Statistics Netherlands as having at least one parent who was born outside the Netherlands. Like in many other European countries, also in the Netherlands immigration, and the social, economic, and cultural integration of ethnic minorities, have become major public debate issues and have been put high on the political agenda.

Sample and Data

In the current study, we made use of data of the Longitudinal Internet Studies for the Social sciences (LISS) panel administered by CentERdata (Tilburg University, The Netherlands). It consists of 4,500 households, comprising 7,000 individuals. The panel is based on a true probability sample of households drawn from the population register by Statistics Netherlands. Households that could not otherwise participate are provided with a computer and internet connection. A survey is fielded in the panel every year, covering a large variety of topics including work, education, income, housing, time use, political views, values and personality. Respondents are paid for each completed questionnaire. The survey data was linked to register data within the secure environment of Statistics Netherlands. This linkage provided the geo-coding (at the level of 100 by 100 meter grid cells) needed to link the individual level data with spatial context information in order to construct neighbourhoods at various spatial scales.

We used the sixth wave of the LISS which was conducted in the summer of 2013, in which 5,680 panel members completed the questionnaire on politics and values. We selected respondents without an immigration background of 18 years or older, and who could be matched to register data from Statistics Netherlands. We also randomly selected only one person per household and included only individuals who reported an intention to vote for a political party. Finally, respondents with missing values ($n = 65$) were excluded listwise, which resulted in a final data set containing 2,381 individuals.

Measures

Dependent variable

Respondents' intention to vote for the PVV was measured by the following question. 'If parliamentary elections were held today, for which party would you vote?' Answering categories to this question consisted of the 11 largest political parties represented in the Dutch Parliament, including 'another party', 'blank vote' (3.89 per cent), 'I am not eligible to vote' (0.06 per cent), and 'I would not vote' (8.27 per cent). We constructed a dichotomous variable measuring the intention to vote for the PVV. Individuals who intended to vote blank, who would not vote, who were not eligible to vote, and who had a missing value are excluded from the analyses ($n = 920$). We excluded blank and none-voters because they resemble PVV voters to a large degree. In our analyses we use the intention to vote for the PVV in 2013 as the dependent variable. Because the data comes from a panel study, we had information on what respondents said they would vote in previous years as well. Using this information we know that of all 'none-voters' in

2013 (our study year), 21 per cent answered in 2010 that they would vote for PVV. This category/group was the second-largest; only the percentage of individuals who answered that they would not vote was larger. Of all blank-voters in 2013, 13 per cent answered in 2010 that they would vote PVV. And again this was the second-largest category; only the percentage of individuals who answered that they would vote blank was larger.

In total, 11 per cent of the respondents reported an intention to vote for the PVV in 2013. The percentage of intended PVV-voters in our data corresponds to the actual PVV votes in the 2012 election (10.1 per cent).

Contextual-level independent variables

Presence of non-western minorities. There are different ways to measure the ethnic composition of a geographical area (see Van der Meer and Tolsma, 2014). In the current study, we use measures of relative ethnic group size as we are interested in the effect of the concentration of non-western ethnic minorities. We focus on non-western ethnic minorities as a proxy for more visible ethnic minorities. To test for a possible curvilinear effect, we also included the squared term of this variable.

We used microdata from Statistics Netherlands from 2013, which is not publicly available and only accessible through the highly secured remote access environment. As we had access to register data on the full population of the Netherlands, we could construct measures of minority presence for all areas, including areas with only a small number of residents. Our multi-scale approach entails that we measured the concentration of ethnic minorities at four different geographical scales. The smallest scale is represented by 100 meter by 100 meter grid cells, followed by 500 meter by 500 meter grid cells. We also measured minority concentrations at the level of four-digit postal code areas, and municipalities. Table 1 gives an overview of the size of these different scales in terms of geographical size and population count.

Socio-economic disadvantage. As control variables we also included in our models two contextual measures of socioeconomic disadvantage (each measured at all four scales), measured by the percentage of households with a low income, i.e. households with a disposable income below the poverty line as defined by Statistics Netherlands (Ament and Kessels, 2012), and the percentage of households receiving social security benefits. These two measures are aggregated from household level data including the full population of the Netherlands to the four geographical scales. Descriptive

Table 1. Area size and population count of the four geographical scales

	Average area size (square kilometre)	Average population count
100 meter by 100 meter grid cell	0.01	35
500 meter by 500 meter grid cell	0.25	183
Four-digit postal code area	10.25	4,940
Municipality	101.81	41,125

statistics of, and correlations between, the contextual variables at different geographical scales are shown in Table 2.

Individual-level independent variables

Anti-immigrant attitudes. Our measure of anti-immigrant attitudes is a latent variable constructed using Principal Component Analysis (PCA). The following six items asking the respondents opinion (the possible responses to these statements ranged from 1 [fully disagree] to 5 [fully agree]) on a number of statements (factor loadings in parentheses): 'It is good if society consists of people from different cultures' (.740); 'It should be made easier to obtain asylum in the Netherlands' (0.732); 'Legally residing foreigners should be entitled to the same social security as Dutch citizens' (0.640); 'There are too many people of foreign origin or descent in the Netherlands' (0.823); 'Some sectors of the economy can only continue to function because people of foreign origin or descent work there' (0.616); 'It does not help a neighbourhood if many people of foreign origin or descent move in' (0.681). Items measuring positive attitudes were flipped prior to the PCA. Correlations between the items ranged from 0.262 to 0.582.

Political dissatisfaction. Our measure of political dissatisfaction is also a latent variable constructed using PCA. The following questions about the respondents satisfaction with the Dutch government, politicians, and the European Parliament: 'How satisfied are you with the way in which the following institutions operate in the Netherlands?' For all three institutions a separate question was asked and the answering categories ranged from 0 (very dissatisfied) to 10 (very satisfied). Factor loadings for the three items were 0.928, 0.950, and 0.893 respectively. Correlations between the items ranged from 0.713 to 0.857.

Table 2. Contextual level correlations and descriptive statistics

	1	2	3	4	5	6	7	8	9	10	11	M	SD
1 per cent Non-western minorities 100 × 100 meter grid cell												7.23	11.20
2 per cent Non-western minorities 500 × 500 meter grid cell	0.759											8.33	9.75
3 per cent Non-western minorities postal code area	0.676	0.844										8.64	9.13
4 per cent Non-western minorities municipality	0.518	0.675	0.735									9.63	8.57
5 per cent Low income 100 meter by 100 meter grid cell	0.460	0.335	0.274	0.170								6.53	8.66
6 per cent Low income 500 meter by 500 meter grid cell	0.450	0.579	0.462	0.302	0.544							7.41	5.74
7 per cent Low income postal code area	0.437	0.556	0.598	0.812	0.251	0.611						7.95	2.80
8 per cent Low income municipality	0.509	0.613	0.736	0.438	0.396	0.612	0.222					7.57	3.89
9 per cent Welfare 100 meter by 100 meter grid cell	0.385	0.293	0.236	0.133	0.517	0.353	0.391	0.354				3.99	5.78
10 per cent Welfare 500 meter by 500 meter grid cell	0.390	0.489	0.385	0.248	0.360	0.561	0.574	0.558	0.619			4.37	3.80
11 per cent Welfare postal code area	0.436	0.514	0.629	0.365	0.356	0.532	0.574	0.885	0.351	0.574		4.50	2.52
12 per cent Welfare municipality	0.376	0.468	0.513	0.686	0.251	0.390	0.935	0.592	0.241	0.415	0.638	4.73	1.75

Note: All correlations are significant at $P < 0.001$; M = mean, SD = standard deviation.
Source: System of Social statistical Datasets (SSB).

Table 3. Individual level descriptive statistics ($n = 2,381$)

	Mean / per cent	SD
Intention to vote PVV	11	
Daily activity		
Working	49	
Looking for work	3	
Studying	4	
Housekeeping	10	
Retired	26	
Other	8	
Welfare recipient	4	
Low educated	55	
Male	51	
Social housing	7	
Household income[a]	26,498	12,315
Age	54	16.00
Anti-immigrant attitudes (mean score)	3.08	0.68
Political dissatisfaction (mean score)	5.22	2.00

[a]Maximum and minimum values are not reported due to confidentiality rules of Statistics Netherlands.
Source: Longitudinal Internet Studies for the Social sciences (LISS), System of Social statistical Datasets (SSB).

Socio-demographics. We included several individual level socio-demographic characteristics as control variables. Age was measured in years and sex was measured as a dummy variable with female as the reference category. Daily activity is measured by a categorical variable indicating respondents' occupational status: working, looking for work, studying, housekeeping, retired, or other. We also included dummy variables measuring whether the respondent receives social security welfare benefits, whether the respondent lives in social housing, and whether the respondent has a low level of obtained education (i.e. primary, intermediate secondary, intermediate vocational education). Household income is measured by the standardized disposable annual household income.

For descriptive statistics of all individual level variables see Table 3. Household income was *z*-standardized prior to inclusion in the regression models.

Analytical approach

We estimated a series of multi-level models with the intention to vote for the PVV as the dependent variable in M*plus*. We used a Bayes estimator, which uses the probit link function, as this is needed for such complex models with a categorical dependent variable (Muthén & Muthén, 1998-2017). The analyses are based on 2,381 individuals in 1,844 100 by 100 meter grid cells;

1,743 500 by 500 meter grid cells; 1,259 postal code areas; and 356 municipalities.

First, in order to estimate the effect of ethnic minority presence on the intention to vote for the PVV, we estimated separate models for each scale (i.e. 100 by 100 meter, 500 by 500 meter, postal code area, and municipality) in which we included the percentage of non-western ethnic minorities and its quadratic term at a specific scale, and the contextual and individual level control variables.

Second, in order to test whether the effects of minority presences on the intention to vote for the PVV were mediated by anti-immigrant attitudes and political dissatisfaction, we estimated multi-level structural equation models. These models include a pathway from minority presence to voting for the PVV (path c'), the pathways from minority presence to anti-immigrant attitudes and political dissatisfaction (paths a), and pathways from anti-immigrant attitudes and political dissatisfaction to the intention to vote for the PVV (paths b). Indirect effects and their significant tests were calculated in M*plus* and are also reported.

Results

Ethnic Minority Presence and the Intention to Vote for the PVV

The results from the multi-level regression models predicting the intention to vote for the PVV are presented in Tables 4 and 5. Table 4 includes the results at the lower spatial scales (i.e. 100 by 100 meter and 500 by 500meter) and Table 5 includes the results at higher spatial scales (i.e. postal code area, and municipality). In each model the contextual variables measuring the percentage of low income households and the percentage of households living on welfare are included, in addition to a range of individual level socio-demographic characteristics.

We found different effects of the percentage of non-western ethnic minorities at different geographical scales. At the lower geographical scales (i.e. 100 by 100 meter and 500 by 500 meter,) we found a curvilinear effect of the percentage on non-western minorities on the intention to vote for the PVV. The results at the two micro scales are very similar and show that people

Table 4. Two-level probit regression models predicting the intention to vote for the PVV with individuals at L1 ($N = 2,381$) and 100×100 meter Grid Cell at L2 ($N = 1,844$) in Model 1 and 500×500 meter Grid Cells at L2 ($N = 1,743$) in Model 2

	Model 1 100×100 meter grid cell			Model 2 500×500 meter grid cell		
		95 per cent CI			95 per cent CI	
	Est.	Lower 2.5 per cent	Upper 2.5 per cent	Est.	Lower 2.5 per cent	Upper 2.5 per cent
Contextual level (L2)						
Per cent Non-western minorities	**0.081**	0.037	0.130	**0.071**	0.021	0.116
Per cent Non-western minorities squared	**−0.001**	−0.002	0.000	**−0.001**	−0.002	0.000
Per cent Low income	−0.020	−0.059	0.020	−0.009	−0.057	0.037
Per cent Welfare recipients	−0.001	−0.052	0.050	0.005	−0.062	0.064
Individual level (L1)						
Daily activity (ref.=working						
Looking for work	0.736	−0.257	1.946	1.006	−0.008	1.971
Studying	**−1.607**	−2.807	−0.398	**−1.346**	−2.270	−0.514
Housekeeping	0.425	−0.306	1.217	0.331	−0.391	0.972
Retired	0.209	−0.416	0.862	0.220	−0.319	0.691
Other	0.361	−0.370	1.106	0.450	−0.136	1.092
Household income (z-score)	−0.085	−0.445	0.221	−0.052	−0.297	0.140
Welfare recipient	−0.090	−1.359	1.025	−0.402	−1.442	0.600
Low educated	**1.647**	1.106	2.197	**1.428**	1.022	1.810
Male	**0.796**	.413	1.256	**0.594**	0.306	0.896
Age	**−0.052**	−0.075	−0.027	**−0.038**	−0.050	−0.027
Social housing	0.547	−0.350	1.358	0.452	−0.273	1.082
Threshold	3.224	2.393	4.111	2.890	2.450	3.540

Notes: Bayesian estimator; Bold estimates indicate significant effects; CI = Bayesian Credibility Interval; Mplus uses thresholds instead of intercepts; the negative of the threshold is the intercept.

Source: Longitudinal Internet Studies for the Social sciences (LISS), System of Social statistical Datasets (SSB).

Table 5. Two-level probit regression models predicting the intention to vote for the PVV with individuals at L1 ($N = 2,381$) and postcode areas at L2 ($N = 1,259$) in Model 3, and municipalities at L2 ($N = 356$) in Model 4

	Model 3 postcode areas			Model 4 municipalities		
		95 per cent CI			95 per cent CI	
	Est.	Lower 2.5 per cent	Upper 2.5 per cent	Est.	Lower 2.5 per cent	Upper 2.5 per cent
Contextual level (L2)						
Per cent Non-western minorities	**0.055**	0.022	0.089	**0.054**	0.016	0.100
Per cent Non-western minorities squared	−0.001	−0.001	0.000	−0.001	−0.002	0.001
Per cent Low income	0.001	−0.075	0.089	−0.045	−0.181	0.118
Per cent Welfare recipients	−0.024	−0.132	0.082	0.016	−0.219	0.186
Individual level (L1)						
Daily activity (ref.=working						
Looking for work	0.594	−0.054	1.284	0.424	−0.034	0.893
Studying	**−0.923**	−1.525	−0.358	**−0.599**	−1.007	−0.217
Housekeeping	0.116	−0.306	0.568	0.092	−0.209	0.406
Retired	0.128	−0.289	0.490	−0.014	−0.271	0.280
Other	0.346	−0.065	0.781	0.214	−0.062	0.550
Household income (z-score)	−0.048	−0.181	0.093	−0.040	−0.156	0.065
Welfare recipient	−0.289	−0.947	0.355	−0.133	−0.589	0.287
Low educated	**0.934**	0.705	1.206	**0.791**	0.618	0.965
Male	**0.371**	0.127	0.595	**0.297**	0.128	0.446
Age	**−0.029**	−0.037	−0.019	**−0.018**	−0.024	−0.012
Social housing	0.291	−0.088	0.708	0.154	−0.135	0.457
Threshold	1.569	1.090	2.214	1.272	0.822	1.723

Note: Bayesian estimator; Bold estimates indicate significant effects; CI = Bayesian Credibility Interval; Mplus uses thresholds instead of intercepts; the negative of the threshold is the intercept.

Source: Longitudinal Internet Studies for the Social sciences (LISS), System of Social statistical Datasets (SSB).

living in areas with moderate levels (30–50 per cent) of non-western ethnic minorities are more likely to express an intention to vote for the PVV compared to people living in areas with very low or high percentages of non-western minorities. Based on the results at micro level from Model 1 in Table 4, the predicted probability to vote for the PVV is 0.01[1] for a 30 year old low educated male living in a residential area (i.e. 100 by 100 meter grid cell) with 0 per cent non-western minorities and 0.24[2] for a 30 year old low educated male areas with 40 per cent non-western minorities. In areas with 80 per cent of non-western minorities the predicted probability to vote for the PVV drops again strongly to 0.01[3]. In contrast, the results in Model 3 and 4 in Table 5 show that when the presence of ethnic minorities is measured at the level of postcode areas and municipalities, we find a linear effect. The probability to vote for the PVV increases monotonically with the percentage of non-western ethnic minorities at postcode and municipal level.

These different results at different geographical scales possibly indicate that familiarization processes are more

at work at lower geographical scales where exposure to non-western ethnic minorities is inevitable. The idea is that when people are exposed to higher percentages of ethnic minorities in the immediate surroundings of their home, this does not lead to an increased probability to vote for the PVV. An alternative explanation is selective residential mobility, which is also more likely to play a larger role at smaller geographical scales (Van der Meer and Tolsma, 2014). Interestingly, at these lower scales, people living in areas with between 30 and 50 per cent of ethnic minorities are most likely to vote for the PVV. These moderate percentages of minorities around the home might not lead to familiarisation, but might be perceived as ethnic threat. At the level of municipalities on the other hand, threat processes might come more into effect with increasing percentages of ethnic minorities.

We found no effects of concentrated disadvantage on the intention to vote for the PVV over and above the effect of the presence of ethnic minorities and individual characteristics at all geographical scales. Regarding individual level socio-demographic characteristics, we find

Table 6. Two-level probit structural equation models predicting the intention to vote for the PVV with individuals at L1 ($N = 2,381$) and 100×100 meter grid cells at L2 ($N = 1,844$)

		95 per cent CI	
	Est.	Lower 2.5 per cent	Upper 2.5 per cent
DIRECT EFFECTS			
Contextual level (L2)			
Path c'			
Per cent nw minorities → voting PVV	**0.073**	0.032	0.114
Per cent nw minorities squared → voting PVV	**−0.001**	−0.002	0.000
Path a			
Per cent nw minorities → anti-immigrant attitudes[a]	**−0.010**	−0.018	−0.001
Per cent nw minorities squared → anti-immigrant attitudes[a]	0.000	0.000	0.000
Per cent nw minorities → political dissatisfaction[a]	0.001	−0.008	0.010
Per cent nw minorities squared → political dissatisfaction[a]	0.000	0.000	0.000
Individual level (L1)			
Path b			
Anti-immigrant attitudes[a] → voting PVV	**1.674**	1.214	2.106
Political dissatisfaction[a] → voting PVV	**1.161**	0.857	1.511
INDIRECT EFFECTS (path $a \times b$)			
Per cent nw minorities → anti-immigrant attitudes[a] → voting PVV	**−0.016**	−0.032	−0.001
Per cent nw minorities squared → anti-immigrant attitudes[a] → voting PVV	0.001	−0.009	0.012
Per cent nw minorities → political dissatisfaction[a] → voting PVV	0.000	0.000	0.001
Per cent nw minorities squared → political dissatisfaction[a] → voting PVV	0.000	0.000	0.000

[a]Factor score.

Note: Bayesian estimator; Bold estimates indicate significant effects; CI = Bayesian Credibility Interval; Estimates are adjusted for all individual and neighbourhood characteristics used in the previous models.

Source: Longitudinal Internet Studies for the Social sciences (LISS), System of Social statistical Datasets (SSB).

that lower educated individuals, males, and younger individuals are most likely to have the intention to vote for the PVV. We find no effect on voting intentions of individual income, receiving welfare benefits or living in socially rented housing. The only significant effect of occupational status is that students are less likely than others to vote for the PVV[4].

Anti-Immigrant Attitudes and Political Dissatisfaction as Mediators

In order to examine whether the effect of ethnic minority presence on the intention to vote for the PVV was mediated by anti-immigrant attitudes and political dissatisfaction, we estimated multi-level structural equation models. The results of these models are presented in Tables 6–9.

As the results show, both anti-immigrant attitudes and political dissatisfaction are strongly related to the intention to vote for the PVV (path b). However, the effect of the presence of non-western ethnic minorities on the intention to vote for the PVV is not mediated by these variables. The direct curvilinear effects of minority presence on the intention to vote for the PVV (path c')

remain statistically significant at the lower spatial scales (i.e. 100 by 100 meter grid cell and 500 by 500 meter grid cell). Thus, although individuals in areas with 30–50 per cent non-western minorities are more likely to vote for the PVV than individuals in areas with lower or higher percentages of non-western minorities, this cannot be explained by their anti-immigrant attitudes.

Most importantly, at these lower spatial scales we find that the presence of non-western ethnic minorities is in fact negatively related to anti-immigrant attitudes. This means that people in areas with higher percentages of non-western minorities are more positive about immigrants compared to individuals living in areas with lower percentages of non-western minorities. The effect of −0.010 in Table 6 indicates that the difference in anti-immigrant attitudes between individuals from areas with no non-western ethnic minorities and individuals from areas with 50 per cent non-western immigrants is half a standard deviation.

The indirect effects are significant, indicating that the presence of non-western ethnic minorities are indirectly, through anti-immigrant attitudes, negatively related to the intention to vote for the PVV. On the other hand, we

Table 7. Two-level probit structural equation models predicting the intention to vote for the PVV with individuals at L1 ($N = 2,381$) and 500×500 meter grid cells at L2 ($N = 1,743$)

		95 per cent CI	
	Est.	Lower 2.5 per cent	Upper 2.5 per cent
DIRECT EFFECTS			
Contextual level (L2)			
Path c'			
Per cent nw minorities → voting PVV	**0.082**	0.030	0.143
Per cent nw minorities squared → voting PVV	**−0.001**	−0.003	0.000
Path a			
Per cent nw minorities → anti-immigrant attitudes[a]	**−0.015**	−0.025	−0.004
Per cent nw minorities squared → anti-immigrant attitudes[a]	0.000	0.000	0.000
Per cent nw minorities → political dissatisfaction[a]	−0.003	−0.013	0.008
Per cent nw minorities squared → political dissatisfaction[a]	0.000	0.000	0.000
Individual level (L1)			
Path b			
Anti-immigrant attitudes[a] → voting PVV	**1.514**	1.166	1.902
Political dissatisfaction[a] → voting PVV	**1.202**	0.869	1.511
INDIRECT EFFECTS (*path a × b*)			
Per cent nw minorities → anti-immigrant attitudes[a] → voting PVV	**−0.022**	−0.041	−0.006
Per cent nw minorities squared → anti-immigrant attitudes[a] → voting PVV	−0.003	−0.017	0.010
Per cent nw minorities → political dissatisfaction[a] → voting PVV	0.000	0.000	0.001
Per cent nw minorities squared → political dissatisfaction[a] → voting PVV	0.000	0.000	0.000

[a]Factor score.

Note: Bayesian estimator; Bold estimates indicate significant effects; CI = Bayesian Credibility Interval; Estimates are adjusted for all individual and neighbourhood characteristics used in the previous models.

Source: Longitudinal Internet Studies for the Social sciences (LISS), System of Social statistical Datasets (SSB).

find a direct positive effect of non-western minority presence at micro level on the intention to vote for the PVV. So, whereas minority presence is related to a higher likelihood of voting for the PVV, it is also related to more positive attitudes towards immigrants. The relationship between minority presence and the intention to vote for the PVV can therefore not be explained by either contact or competition theory. We do not find indirect effects of non-western minority presence at the postal code and municipal level.

Discussion

In the present study, we have investigated the relationship between the concentration of non-western ethnic minorities in the residential environment and voting intentions for the PVV. We used individual level data on voting behaviour, and we have measured ethnic minority concentrations at multiple geographical scales ranging from the direct surroundings of a residence (i.e. 100 by 100 meter) to the whole municipality. We furthermore investigated the mediating role of anti-immigrant attitudes and political dissatisfaction. The literature

suggests competing hypotheses about the relationship between ethnic minority presence and the intention to vote for the radical right. Following ethnic competition theory (Scheepers, Gijsberts and Coenders, 2002) it can be suggested that with higher concentrations of ethnic minorities, individuals are more likely to vote for the radical right due to increased feelings of ethnic treat. But following contact theory (Allport, 1954) it can be suggested that in areas with higher concentrations of ethnic minorities individuals are less likely to vote for the radical right due to more contact with ethnic minorities. However, it has been argued that the relationship is not as simple as mere contact or threat: the mechanisms of contact and threat might be insufficient to explain the relationship between the ethnic composition of a neighbourhood and voting for the radical right. (Van Gent *et al.*, 2014; de Blok and van der Meer, 2018), the relationship could be non-linear (Schneider, 2008), and different mechanism could play a role at different geographical scales (Biggs and Knauss, 2011).

The results of the current study have shown that at the two lowest geographical scales (i.e. 100 by 100 meter, 500 by 500 meter) the effect of non-western

Table 8. Two-level probit structural equation models predicting the intention to vote for the PVV with individuals at L1 ($N = 2,381$) and postcode areas at L2 ($N = 1,259$)

		95 per cent CI	
	Est.	Lower 2.5 per cent	Upper 2.5 per cent
DIRECT EFFECTS			
Contextual level (L2)			
Path c'			
Per cent nw minorities → voting PVV	**0.062**	0.021	0.099
Per cent nw minorities squared → voting PVV	−0.001	−0.002	0.000
Path a			
Per cent nw minorities → anti-immigrant attitudes[a]	**−0.005**	−0.018	0.006
Per cent nw minorities squared → anti-immigrant attitudes[a]	0.000	0.000	0.000
Per cent nw minorities → political dissatisfaction[a]	0.001	−0.012	0.012
Per cent nw minorities squared → political dissatisfaction[a]	0.000	0.000	0.000
Individual level (L1)			
Path b			
Anti-immigrant attitudes[a] → voting PVV	**1.062**	0.871	1.243
Political dissatisfaction[a] → voting PVV	**0.771**	0.623	0.946
INDIRECT EFFECTS (path $a \times b$)			
Per cent nw minorities → anti-immigrant attitudes[a] → voting PVV	−0.005	−0.019	0.006
Per cent nw minorities squared → anti-immigrant attitudes[a] → voting PVV	0.001	−0.009	0.009
Per cent nw minorities → political dissatisfaction[a] → voting PVV	0.000	0.000	0.000
Per cent nw minorities squared → political dissatisfaction[a] → voting PVV	0.000	0.000	0.000

[a]Factor score.

Note: Bayesian estimator; Bold estimates indicate significant effects; CI = Bayesian Credibility Interval; Estimates are adjusted for all individual and neighbourhood characteristics used in the previous models.

Source: Longitudinal Internet Studies for the Social sciences (LISS), System of Social statistical Datasets (SSB).

ethnic minority presence on the intention to vote for the PVV is curvilinear. Individuals living in residential areas with 30–50 per cent non-western ethnic minorities are more likely to have the intention to vote for the PVV compared to those living in areas with low or very high percentages of non-western minorities. The curvilinear effect of ethnic minority concentration on the intention to vote for the PVV at the lowest spatial scales might be explained by the fact that contact with ethnic minorities is inevitable at these spatial scales. It could be the case that living in short proximity of ethnic minorities increases the likelihood of inter-ethnic contact, and therefore leads to less anti-immigrant attitudes. In contrast, at higher spatial scales (i.e. postal code and municipal level) we found a linear effect, indicating that with higher percentages of non-western ethnic minorities, the probability to have an intention to vote for the PVV is higher.

In the second step of our analyses, we examined the extent to which the effect of ethnic minority presences on voting for the PVV is mediated by anti-immigrant attitudes. Our results show that the effects are in fact not mediated. The higher likelihood of individuals voting for the PVV in areas with moderate (at the micro

scale) and high (at a larger geographical scale) proportions of non-western ethnic minorities cannot be explained by anti-immigrant attitudes. What our results did show is that at the micro scale ethnic minority presence is related to more positive attitudes towards immigrants, which is in line with previous studies (Wagner *et al.*, 2006; Martinović, 2013). This offers potential support for the contact hypothesis. However, although a meta-analysis of the literature suggests that contact outweighs selection (Pettigrew and Tropp, 2006), selective sorting is still an alternative explanation. It is known that certain types of households sort into certain types of neighbourhoods (e.g. Van Ham, Boschman and Vogel, 2018). Individuals who appreciate diversity are more likely to choose to live in neighbourhoods with higher concentrations of ethnic minorities (Van Gent *et al.*, 2014). Just as contact, selective residential mobility is more likely to take place at smaller geographical scales compared to larger geographical units (Van der Meer and Tolsma, 2014).

Although the finding that at the micro scale minority concentration is related to more positive attitudes towards immigrants could be in support of contact

Table 9. Two-level probit structural equation models predicting the intention to vote for the PVV with individuals at L1 ($N = 2,381$) and municipalities at L2 ($N = 356$).

	Est.	95 per cent CI	
		Lower 2.5 per cent	Upper 2.5 per cent
DIRECT EFFECTS			
Contextual level (L2)			
Path c'			
Per cent nw minorities → voting PVV	0.050	−0.012	0.119
Per cent nw minorities squared → voting PVV	0.000	−0.002	0.001
Path a			
Per cent nw minorities → anti-immigrant attitudes[a]	−0.009	−0.032	0.016
Per cent nw minorities squared → anti-immigrant attitudes[a]	0.000	−0.001	0.001
Per cent nw minorities → political dissatisfaction[a]	−0.008	−0.031	0.014
Per cent nw minorities squared → political dissatisfaction[a]	0.000	0.000	0.001
Individual level (L1)			
Path b			
Anti-immigrant attitudes[a] → voting PVV	**0.710**	0.581	0.849
Political dissatisfaction[a] → voting PVV	**0.480**	0.375	0.587
INDIRECT EFFECTS (path a × b)			
Per cent nw minorities → anti-immigrant attitudes[a] → voting PVV	−0.006	−0.023	0.011
Per cent nw minorities squared → anti-immigrant attitudes[a] → voting PVV	−0.004	−0.015	0.006
Per cent nw minorities → political dissatisfaction[a] → voting PVV	0.000	0.000	0.001
Per cent nw minorities squared → political dissatisfaction[a] → voting PVV	0.000	0.000	0.000

[a]Factor score.

Note: Bayesian estimator; Bold estimates indicate significant effects; CI = Bayesian Credibility Interval; Estimates are adjusted for all individual and neighbourhood characteristics used in the previous models;.

Source: Longitudinal Internet Studies for the Social sciences (LISS), System of Social statistical Datasets (SSB).

theory, the finding that anti-immigrant attitudes do not explain the relationship between ethnic minority concentration and voting for the PVV indicates that contact theory (nor competition theory) does not a very good job in explaining this relationship. Individuals with 30–50 per cent non-western minorities in the direct environment of their home are most likely to vote for the PVV, but this cannot be explained by their anti-immigrant attitudes. These findings are in line with previous work that has argued that contact and competition theory are not sufficient in explaining the relationship between ethnic-minority concentration and voting for the radical right (Van Gent *et al.*, 2014; de Blok and van der Meer, 2018). Van Gent *et al.* (2014) propose a theoretical framework that uses perceived urban conditions and change as drivers to vote for the radical right. As previous research has shown that especially in these middle-category neighbourhoods the population changes most (Zwiers, Ham and Manley, 2018), this might offer an alternative explanation. It could be the case that in these changing

neighbourhoods there is a fear of changing society in general, which does not necessarily results in more anti-immigrant attitudes, but does lead to support for the PVV. In our models, however, in an attempt to capture this alternative explanation, we also included political dissatisfaction as a mediator of the relationship between ethnic minority concentration and voting for the PVV. The results showed that political dissatisfaction was strongly related to the intention to vote for the PVV, but was not at all related to the presence of ethnic minorities in the residential environment.

Of course, the measure of political dissatisfaction that we used certainly does not capture all aspects of political discontent, let alone fear of change. The specific underlying mechanisms at work at different spatial scales should be subject to future studies. The main contribution of the present study is that we showed that it is important to examine the effects of ethnic minority presence in the residential environment on voting behaviour at multiple scales: analyses at different spatial scales lead to different modelling outcomes.

Notes

1 $P(y = 1 \mid x = 0) = F(-3.224 + (0.081 \times 0) + (-0.001 \times 0 \times 0) + (1.647 \times 1) + (0.796 \times 1) + (-0.052 \times 30))$

2 $P(y = 1 \mid x = 40) = F(-3.224 + (0.081 \times 40) + (-0.001 \times 40 \times 40) + (1.647 \times 1) + (.796 \times 1) + (-0.052 \times 30))$

3 $P(y = 1 \mid x = 80) = F(-3.224 + (0.081 \times 80) + (-0.001 \times 80 \times 80) + (1.647 \times 1) + (0.796 \times 1) + (-0.052 \times 30))$

4 In addition, we analyzed interaction terms between individual-level socio-economic characteristics (i.e. income, education) and the percentage of non-western ethnic minorities at contextual level, and none of the interaction terms were statistically significant.

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