Ethnic minority households and residential segregation: how important is the household composition to understand where minorities live?

Abstract

Despite the importance of life cycle and household characteristics for residential mobility, these factors are seldom considered in the extensive field of ethnic residential segregation research. This study integrates the household composition of ethnic minorities into the spatial assimilation theory, the ethnic enclave theory and the self-segregation theory. We investigate the relationship between the type of household and living in a concentration neighbourhood for Turkish and North-African origin households. Moreover, we distinguish between both higher-educated and lower-educated people. For these purposes, we use a selection of the Belgian census data of 2011 (N=126,451). We used multilevel binary logistic regression analyses comparing families with children, childless couples and single and living alone households. We find clear associations between living in a Turkish of North-African concentration neighbourhood and the household type: families with children are more likely to live in concentration neighbourhoods than childless couples. Moreover, only lower educated families with children are more likely to live in concentration neighbourhoods than lower educated singles. Higher educated families are equally likely to live in a non-concentration neighbourhood as higher educated single and living alone households.

Key words: Spatial assimilation theory, ethnic enclaves, self-segregation theory, ethnic residential segregation, ethnic minority households.

Ethnic residential segregation is the unequal dispersion of ethnic groups over neighbourhoods within cities (Massey & Denton, 1988). Although recent measurements find stagnating or even slowly declining segregation, these studies also show that cities in both the US and Europe remain (strongly) segregated (Musterd, 2005; Timberlake & Iceland, 2007). Ethnic minorities were overrepresented nationwide in Belgium's larger cities in 2001 (Vanneste, Thomas, & Goossens, 2007). In addition, close to 60% of the Moroccans in Brussels and nearly 70% of the North-Africans and Bosnians in Antwerp had to move in order to completely desegregate these two largest cities of Belgium at the turn of the century. These percentages are similar to those for Blacks in the average American metropolitan

area (Musterd, 2005). Moreover, Anonymous (2012) *[Verhaeghe, Van der Bracht & Van de Putte, 2012]* found declining, but still substantial, residential segregation between 2001 and 2011 for Turks, Maghrebis and Eastern and Central-Europeans in Ghent, the third largest city in Belgium.[1]

The spatial assimilation theory (Charles, 2003) is one of the theories used to explain ethnic residential segregation. This theory states that ethnic minorities prefer to live segregated when they first arrive in their host country, as they can more easily find social support in segregated neighbourhoods and face less language barriers. The more these immigrants acculturate, the more their residential preferences resemble those of the ethnic majority. If these individuals gain in socio-economic status, they can realize these preferences and move to neighbourhoods that house more ethnic majority and less ethnic minority inhabitants than their original neighbourhoods (Charles, 2003; Massey & Denton, 1985; Pais, South, & Crowder, 2012; South, Crowder, & Chavez, 2005; Timberlake & Iceland, 2007).

The self-segregation theory (Thernstrom & Thernstrom, 1997) and the related ethnic enclave theory (Zhou, 1997) are two other theories often used to explain ethnic residential segregation. According to these theories, segregation remains high because ethnic minorities – consistently – prefer to live close to their own ethnic group because this offers certain benefits (Ihlanfeldt & Scafidi, 2002; Thernstrom & Thernstrom, 1997; Zhou, 1997): (1) this offers economic possibilities, both for employment opportunities and to support an ethnic market (Portes & Shafer, 2007; Zhou & Logan, 1991); (2) this facilitates the housing search and protects against housing, and other forms of, discrimination and harassment (Phillips, 2006; Roscigno, Karafin, & Tester, 2009; Turner & Ross, 2005); (3) social networks, social cohesion and social support are more accessible as they thrive better in homogenous neighbourhoods (Cheshire, 2006; van Kempen & Bolt, 2009) and (4) this can allow ethnic minorities to more easily maintain their cultural habits and heritage (Phillips, 2006; Portes & Zhou, 1993).

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[1] Dissimilarity scores were calculated for Turkish (from 65% to 51%), Moroccan (from 53% to 42%), Tunisian (from 53% to 44%), Algerian (from 54% to 47%), Bulgarian (from 66% to 52%), Slovakian (from 73% to 46%) and Polish (from 56% to 36%) ethnic minorities.

Both theories link (persistent) ethnic residential segregation to the residential preferences of ethnic minorities (Charles, 2003; Thernstrom & Thernstrom, 1997; Zhou, 1997), but neither theory pays attention to the importance of household composition and life cycle characteristics (Iceland, Goyette, Nelson, & Chan, 2010). However, residential mobility researchers repetitively found that someone's life cycle phase and transitions, and the household composition as a manifestation hereof, are important to understand whether and where to households move (i.a.: Clark & Dieleman, 1996; Clark & Onaka, 1983; Coulter & Scott, 2015). Life cycle transitions, especially the transition to adulthood, often trigger residential moves while the life cycle phase and the household composition are strongly related to residential preferences, like the number of rooms or the preferred amenities nearby (Clark & Onaka, 1983; Feijten, Hooimeijer, & Mulder, 2008; Mulder & Wagner, 1993; Rabe & Taylor, 2010).

As these theories already use residential mobility to explain residential segregation, we believe that it is important to integrate household composition characteristics into these theories. If these demographic characteristics help to understand segregation, the demographic differences between the ethnic majority and minority groups present in Belgium and elsewhere in Europe could contribute to segregation (Bruch, 2014; Catney & Simpson, 2014; Eggerickx, Bahri, & Perrin, 2006). However, as far as we know, linking segregation theories to ethnic minority household composition characteristics has never been done before. Nevertheless, integrating household composition into the white flight already proved fruitful (Anonymous, working paper) and other researchers already demonstrated the association between segregation and household type (Iceland et al., 2010; Marsh & Iceland, 2010).

This study aims at integrating household composition characteristics into the spatial assimilation theory (Charles, 2003) on the one hand and the self-segregation theory (Thernstrom & Thernstrom, 1997) and ethnic enclave theory (Zhou, 1997) on the other. To test this importance we will focus on the association between the household structure of ethnic minority households with roots in Turkey or North-Africa[2] and neighbourhood concentration. We focus on three types of households: single and living alone households; childless couples; and families with children. These household

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[2] We chose this group as they are the largest ethnic minority group in Belgium.

types are chosen because it can be assumed that they have the most divergent residential needs and preferences and because they are the most mobile household types (van Ham & Clark, 2009). This study adds to the segregation literature by (1) theoretically linking household composition to the spatial assimilation theory and the ethnic enclave theory, (2) empirically testing this association and (3) thereby suggesting another contributing factor to ethnic residential segregation: the socio-demographic differences between ethnic groups.

Theoretical framework

Spatial assimilation (Charles, 2003) assumes that acculturating minority households begin to aspire the same kind of housing as ethnic majority households. Socio-economic mobility then allows these minorities to realize their preferences. Spatial assimilation theorists, implicitly, assume that ethnic minorities will desire the same houses as ethnic majority households with (young) children: suburban (semi-)detached houses with a garden. However, majority childless couples or single and living alone households aspire other housing as they are more concerned about prices or the ability to find recreational facilities fitting their life style (Feijten et al., 2008; Rabe & Taylor, 2010). Housing fitting these residential needs is more often found in Western Europe in less-prosperous, and hence more diverse, inner-city neighbourhoods (Hedman, van Ham, & Manley, 2011).

If the ethnic minority housing preferences evolve to resemble those of the majority, the household and life cycle differences in residential preferences found among the ethnic majority should be seen among ethnic minorities too. Ethnic minority households with (young) children would still aspire to the same (semi-)detached houses with a garden in low-density, suburban neighbourhoods, but ethnic minority singles and childless couples will prefer (to remain in) less prosperous, inner-city neighbourhoods. Households with children will then be more likely to live in less ethnic minority concentrated neighbourhoods, while childless couples or singles will more likely live and remain in concentrated neighbourhoods (Hedman et al., 2011). Following the spatial assimilation theory, we thus hypothesize that:

- 1 a-b: Families with children are more likely to live in non-concentration neighbourhoods than (a) childless couples or (b) single household, while these latter two are more likely to live in concentration neighbourhoods[3] than families with children.

The ethnic enclave theory (Zhou, 1997) and the self-segregation theory (Thernstrom & Thernstrom, 1997) state that ethnic minorities prefer to live among co-ethnics because of the benefits it offers. Even though these benefits can be enjoyed by all (ethnic minority) inhabitants, it can be assumed that certain household types, i.e. households with children, benefit more from living in an ethnic minority concentrated neighbourhood than others, i.e. childless couples or single and living alone households. Parents – of all ethnicities – are responsible for the upbringing of their children and are burdened with more domestic and care-related tasks than childless households (Bianchi, Milkie, Sayer, & Robinson, 2000). The social control exerted and social support provided by (the community in) the neighbourhood can help parents with these care-related burdens (Wellman & Wortley, 1990). Moreover, ethnic minority parents try to pass on their ethnic culture and protect their children against and teach them how to cope with discrimination (Hughes et al., 2006). Neighbourhoods with an ethnic minority community can aid this ethnic socialization as they are often better capable to maintain certain ethnic values and customs and already offer a buffer against discrimination and harassment (Phillips, 2006; Zhou, 1997). Following the ethnic enclave theory and the self-segregation theory, we thus hypothesise that:

- 2 a-b: Families with children are more likely to live in concentration neighbourhoods than (a) childless couples or (b) single household, while these latter two are more likely to live in non-concentration neighbourhoods than families with children.

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[3] With concentration or concentrated neighbourhoods we mean neighbourhoods with a (large) concentration of members from a particular ethnic (minority) group (i.e. Turkish or North-African ethnic minorities). This large concentration does not exclude, however, the possibility of much ethnic diversity in this neighborhood. Non-concentration neighbourhood are those neighbourhoods that lack a concentration of that particular ethnic minority group.

Background

Guest labourers from North-African countries and Turkey started to arrive in the early 1960s and were mostly recruited to work in the mining industry, metallurgy or textile factories. They supplemented earlier guest labour streams form Southern Europe. The oil crisis of 1974 brought an end to the high demand for low-skilled labour forces and new guest labourers were no longer welcome. The guest labourers already in Belgium had to choose between settling permanently and returning to their country of origin. Many chose the former option and urged their families to come to Belgium too. Single guest workers, and the siblings of the first guest labourers, were allowed to marry with a partner from abroad and bring that partner to Belgium. Family formation thus remains the most important channel for new Turkish and North-African migrants up to this day.

With the economic crisis of the 1970s and 1980s, the public opinion about ethnic minorities also changed. Whereas they originally were seen only as a curiosum, discrimination, hostility towards migrants and racism rose during and after this crisis. Nowadays, ethnic minorities stemming from North-African countries or Turkey still face discrimination (Anonymous 2015a) [*Van der Bracht, K., Coenen, A., & Van de Putte, B. (2015). The Not-in-My-Property Syndrome: The Occurrence of Ethnic Discrimination in the Rental Housing Market in Belgium. Journal of Ethnic and Migration Studies, 41(1), 158-175. doi:10.1080/1369183x.2014.913476*] and are socio-economically disadvantaged: they are disproportionally presented in both unemployment and (especially for men) school-drop out numbers (Tielens, 2005; Timmerman, Vanderwaeren, & Crul, 2003). At the same time, however, several descendants of these guest workers finish tertiary education and achieve upward social mobility leading to increased socio-economic diversity within this group (Timmerman et al., 2003).

Data and methods

Data

The data used in this study are based on the Belgian Census of 2011. This Census was drawn from several official registers and contains highly accurate information about demographic characteristics, the country of birth and the current nationality, socio-economic status, household composition, housing conditions and the place of residence (i.e. the census tracts) for all official

inhabitants of Belgium. From this census (1,100,6388 respondents), we retain only households with a

Turkish or North-African ethnic minority member, resulting in a remaining 671,712 respondents. A

further selection was made to exclude all respondents who do not belong to a family with children,

childless couple or single and living alone household (leaving 354, 376 respondents).[4] Of the

remaining respondents, one adult member[5] per household was selected to avoid including the same

household twice (resulting in 231,297 respondents). After deleting all respondents younger than 18 or

living in a neighbourhood with less than 100 inhabitants and list wise deleting all cases with missing

values, there are 126,451 respondents left.

Defining neighbourhoods and cities

The analyses presented below use a three level structure whereby individuals are clustered in

neighbourhoods, which are in turn clustered in cities. The demarcation of the statistical sectors is used

to determine what neighbourhoods are. These statistical sectors were first defined in 1970 and are

based on social, economic, urban and morphological characteristics (Jamagne, Lebrun, & Sajotte,

2012). They resemble the census tracts used in Anglo-Saxon research. We will use neighbourhoods

and statistical sectors as synonyms in the remainder of this paper. Cities are demarcated using the

official municipality borders. These municipalities form the lowest level of the political and

administrative organisation of Belgium.[6]

Belgium has 589 municipalities and 19,410 neighbourhoods. The number of neighbourhoods

in a city ranges from 2 to 285. Only the neighbourhoods with more than a hundred inhabitants, of all

ethnicities, were kept for analysis. Smaller neighbourhoods were dropped to avoid that individuals

have a too large impact on aggregated sector-variables. As only the neighbourhoods in which our

respondents live can be included in our analyses, we retain 8901 neighbourhoods in 581 cities. These

neighbourhoods have on average 963.100 inhabitants (Mdn: 729; SD: 816.140; range: 101-10,830),

while the cities have on average 18,880 inhabitants (Mdn: 12,040; SD: 30,326.720; range: 945-

498,500). The average number of ethnic minority neighbourhood inhabitants stemming from Turkey

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[4] The households that are not included are empty nest households, one person households, and subfamilies or extended households.
[5] Grown-up children were excluded before randomly selecting one household member.
[6] Antwerp is an exception as this is further divided into districts.

or North-Africa is 71.570 (Mdn: 12; SD: 221.230; range: 1-3,684), the average number of ethnic minorities in the city is 1110 (Mdn: 98; SD: 4996.095; range: 4-72,450).[7]

Variables

Dependent variable.

As mentioned before, we focus on three household types:[8] (1) families with children, either headed by two parents or a lone parent; (2) childless couples and (3) single and living alone households. *Families with children* are those households that include at least one child younger than 25.[9] *Childless couples* are those households existing of two partners and of whom neither has given birth to a child yet.[10] *Single households* exist of only one person who has never been married before. People who live alone but are either married, divorced or widowed are excluded from this category.[11] There are 99,921 respondents belonging to a family with children (79.02%), 8,294 respondents belonging to a childless couple (6.56%) and 18,236 single and living alone respondents (14.42%).

The dataset will be divided for the analyses. The first subset includes households with children and childless couples, the second the households with children and the single households. The dependent variables for the analyses are a dichotomization of this household variable, whereby the households with children are coded 1 and the two other household types are coded 0.

Independent variable.

Location quotient. Location quotients measure the degree of ethnic concentration in a neighbourhood by calculating the ratio of the percentage ethnic minorities in the neighbourhood to that of the city (Brown & Chung, 2006). The location quotient will be equal to one if the percentage ethnic minorities in the neighbourhood is equal to that in the city, greater than one if there is a higher percentage ethnic minorities in the neighbourhood than in the city and smaller than one if it is the

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[7] We performed sensitivity analyses excluding cities with a small number of ethnic minorities inhabitants (i.e. 100, 250 and 500), but the results remain the same.

[8] Our household classification is based on the classification made by Koebel and Murray (1999).

[9] Twenty-five is the age at which people can no longer enjoy youth related benefits in Belgium. Households with at least one household member not belonging to household head unit (i.e. the parents and their children) are excluded from this category.

[10] Empty-nest households are excluded from this category. However, there were 6384 respondents for whom it was impossible to determine whether they lived in an empty-nest household or belonged to a childless couple. These are removed from the data.

[11] These would be classified as one-person households.

other way round. As this quotient expresses the distribution of an ethnic group over the neighbourhoods within a city as a function of the total percentage of that ethnic group, it can be considered as a measure of the evenness dimension of segregation (Brown & Chung, 2006; Massey & Denton, 1988).

These location quotients are calculated for first and second generation ethnic minorities coming from North-African countries or Turkey and are dichotomized as the independent variable. Neighbourhoods with a score greater than one belong to the first category and are considered ethnic concentration neighbourhoods, all other neighbourhoods belong to the second category. This location quotient is calculated with the following formula:

$$LQ = \frac{\left(\frac{EM_i}{t_i}\right)}{\left(\frac{EM}{T}\right)}$$

where EM_i and t_i are the ethnic minority population and total population of the neighbourhood and EM and T represent the ethnic minority population, again with roots in North-African countries or Turkey, and the total population of the city.

The location quotient has an average score of 1.269 (SD: 1.191; Mdn: 0.965). This means that the average neighbourhood (in our dataset) has a share of ethnic minority inhabitants that is 26.9% bigger than the city share. The location quotients range from 0.009 to 17.020. As mentioned, all neighbourhoods with a location quotient above one belong to the first category of the dependent variable. This category includes 4296 neighbourhoods (48.26%). The second category comprises the 4605 neighbourhoods with a location quotient equal to or smaller than one (51.74%).

Socio-economic status. The socio-economic status is a dichotomous variable based on the respondents' highest educational degree. Respondents who finished tertiary education are considered to have a higher socio-economic status, while the other respondents are considered to have a lower socio-economic status. There are 106,336 lower educated (84.09%) and 20,115 higher educated (15.91%) respondents. Among the lower educated respondents, 85,283 (80.20%) belong to a family with children, 6,319 (5.94%) to a childless couple and 14,734 (13.86%) to a single and living alone

household. Among the higher educated respondents, 14,638 (72.77%) belong to a family with children, 1,975 (9.82%) to a childless couple and 3,502 (17.41%) to a single and living alone household.

Control variables.

We include seven control variables: two on the individual level, two on the neighbourhood level and three on the city level.

The first individual level control variable is the *country of birth* of the respondent. Respondents born abroad belong to the first category; the other respondents belong to the second category. This is included as a proxy for acculturation.[12] *Age* is the second control variable, as older respondents have a higher chance to have (already) started a family.

The first neighbourhood level control variable is the *proportion of multi-household dwellings.* This proportion measures the percentage of households who live in a dwelling that houses more than one household. As neighbourhoods with a high percentage (semi-)detached housing are considered as better and safer to raise children in (Meeus, De Decker, & Claessens, 2013), this control variable measures how unattractive a neighbourhood is for families with children. The *proportion of higher degree holders* measures the proportion of all neighbourhood inhabitants that have either a college or university degree. This control variable estimates the socio-economic standing of a neighbourhood. Both neighbourhood level variables are included because they are strongly related to the attractiveness of a neighbourhood.

The first city-level control variable is the *proportion ethnic minorities* in the city. This variable measures the proportion of the total population that belongs to a North-African or Turkish ethnic minority group. The number of *inhabitants* is included as a second city-level control variable. These numbers are divided by 1000 to make the order of magnitude of the variance in accordance with the other independent variables (Hox, 2010). The *educational ratio* expresses the ratio between the

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[12] The more standardly used *migrant-generation* is not included as this would lead to computational difficulties. This variable would have three categories: first generation migrants, second generation migrants and non-migrants. Respondents in a single and living alone household can never belong to the non-migrants category (these respondents are only included when their partners are of Turkish or North-African descent). This would lead to computational difficulties because of these 'empty-cells' in the analysis.

percentage ethnic minorities with a tertiary degree (compared to all ethnic minorities coming from Turkey or North-Africa) and the percentage Belgian tertiary degree holders (compared to all Belgians). To bring this in accordance with the other percentages, this ratio was multiplied by 100. A ratio larger than 100 means the percentage higher educated ethnic minorities is larger than the percentage higher educated Belgians and vice versa. All city-level variables are included because it has repetitively been found that they are related to segregation (Charles, 2003; Timberlake & Iceland, 2007).

Methods

It would be impossible to take neighbourhood type as the dependent variable, because the dependent variable always determines the lowest level in multilevel analysis (Hox, 2010). Trying to link neighbourhood concentration as the dependent variable to household characteristics would make concentration a household characteristic. This leads to biased results. It is therefore necessary to take the household type as the dependent variable. However, as we can only test associations between variables and no causal relationships, it does not matter which variable is taken as the independent and which as the dependent.

We split our dataset to perform two binary logistic multilevel analyses, separately comparing families with children to childless couples and to single and living alone households.[13] As the individuals are clustered within neighbourhoods and these neighbourhoods are in turn clustered within cities, it is necessary to perform multilevel analyses. With these analyses, it is possible to correctly measure the influences of both neighbourhood and city characteristics on individual households. Performing a single level analysis on the household level and adding neighbourhood and city characteristics as individual variables would overestimate the effects of these contextual characteristics. We report both the logodds and the odds ratios. The odds ratio expresses the ratio between the odds of different groups. These odds express the chance of being a family with children against the chance to not be a family with children, i.e. to be either a childless couple or a single household. The results are presented in table 2 and 3.

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[13] This is the standard procedure for multinomial logistic multilevel analyses.

Results

We first discuss the bivariate associations between household type and the ethnic minority concentration of the neighbourhood, presented in table 1. A first finding that stands out clearly is that households with a lower socio-economic status live much more often in a concentration neighbourhood. Of all the households with a lower socio-economic status, 70.49% live in a concentration neighbourhood, while this is only 56.56% of the households with a higher socio-economic status. When looking at the full sample, we see that smaller percentages of the childless couples (58.20%), and single and living alone households (62.77%) live in concentration neighbourhoods than of the families with children (70.12%). Although the percentages households living in a concentration neighbourhood increase for lower educated and decrease for higher educated households, childless couples (61.12% and 48.86% respectively) and single and living alone households (65.01% and 53.34% respectively) live less often in concentration neighbourhoods than families with children (72.13% and 58.38% respectively).

[TABLE 1 AROUND HERE]

The results from the multilevel regression analyses for families with children and childless couples are presented in table 2. The first model reports the associations between (1) the household type, (2) living in neighbourhood with a concentration of Turkish or North-African minorities, (3) educational attainment and (4) the interaction between these last two. Both higher and lower educated households living in a concentration neighbourhood have a higher likelihood to be a family with children than households in a non-concentration neighbourhood. This chance is 1.487 (p <.001) times higher for higher educated households and 1.633 (1.487*1.098, p <.001 and p <.1 respectively) times higher for lower educated households. However, the interaction between socio-economic status and living in a concentration neighbourhood is only marginally significant. In addition, lower educated households are also more likely to be families with children than higher educated households (OR: 1.535, p <.001).

Adding the control variables does not significantly alter these results. Households in concentration neighbourhoods and lower educated households are still more likely to be families with

children than households in non-concentration neighbourhoods or higher educated households (OR: 1.344, p <.001 and OR: 1.591, p <.001 respectively). However, compared to the previous model, the interaction between living in a concentration neighbourhood and having a lower socio-economic status is no longer (marginally) significant. This means that the association between living in a concentration neighbourhood and being a family with children is no longer dependent on the socio-economic status of the household.

Turning to the control variables, we see that both being born abroad (OR: 3.771, p <.001) and the age of the respondent (OR for a 1 year difference: 1.086, p <.001) are related to a higher chance to be a family with children. The percentage higher educational degree holders (OR for a 1 percentage point difference: 0.982, p <.001) and the percentage multi-household dwellings (OR for a 1 percentage point difference: 0.991, p <.001) in the neighbourhood, on the other hand, are related to a lower chance that a household is a family with children. At the city level, we see that households in cities with more ethnic minorities stemming from Turkey or North-African countries have a higher chance to be a family with children (OR for a one percentage point difference: 1.018, p <.001), while a higher educational ratio is related to a lower chance (OR for a 1 percentage point difference: 0.998, p <.05).

[TABLE 2 AROUND HERE]

Table 3 (intra- and inter-ethnic households) focuses on families with children and the single and living alone households. The same models are presented as in table 2. Living in a concentration neighbourhood is related to a higher chance to be a family with children for both higher (OR: 1.099, p <.1) and lower (OR: 1.344 (1.099*1.223), p <.1 and p <.001 respectively) educated households. However, the association for higher educated households is only marginally significant. In addition, lower educated households are also more likely to be a family with children than a single and living alone household than higher educated households are (OR: 1.085, p <.05).

The control variables are added for model 2. The association between household type and living in a concentration neighbourhood is no longer significant for higher socio-economic households. This means that the chance to be either a family with children or a single and living alone

household is no longer dependent on the neighbourhood a higher socio-economic household lives in. Lower educated households, on the other hand, are still more likely to be a family with children in a concentration neighbourhood than in a non-concentration neighbourhood (OR: 1.186 (1.054*1.125), p >.1 and p <.05 respectively). Moreover, lower educated households are more likely to be a family with children than higher educated households (OR: 1.215, p <.001).

Turning to the control variables, we see the same patterns as for the previous analysis. Both being born abroad (OR: 2.242, p <0.001) and the age of the respondent (OR for a one year difference: 1.094, p <.001) is related to a higher chance to be a family with children, while the percentage third degree holders (OR for a 1 percentage point difference: 0.982, p <.001) and the percentage multi-household dwellings (OR for a 1 percentage point difference: 0.977, p <.001) in the neighbourhood are related to a lower chance that a household is a family with children. At the city level, we see again that households in cities with more ethnic minorities stemming from Turkey or North-African countries have a higher chance to be a family with children (OR for a 1 percentage point difference: 1.017, p <.01), while the educational ratio lowers this chance (OR for a 1 percentage point difference: 0.994, p <.001). However, now the number of inhabitants is also related to the household type: living in a bigger city is related to a lower chance to be a family with children (OR for a 1000 inhabitants difference: 0.998, p <.05).

[TABLE 3 AROUND HERE]

The findings for the single and living alone higher educated households deviate from the general pattern. To better understand this deviation, we performed an additional analysis excluding inter-ethnic families with children (table 3, intra-ethnic households only). Based on this additional analysis, we assume that this deviation is explained by the differential chances inter- and intra-ethnic couples have to live in (non-)concentration neighbourhoods. This can create a bias as single and living alone households are always mono-ethnic households.

Looking at the first model, one can see that (intra-ethnic) households are more likely to be a family with children in a concentration neighbourhood than in a non-concentration neighbourhood,

both for higher and lower educated households. A higher educated (intra-ethnic) household is 1.260 (p <.001) times more likely to be a family with children in a concentration neighbourhood than its socio-economic peers in non-concentration neighbourhoods. This chance increases to 1.469 (1.260*1.166, p <.001 and p <.01 respectively) for lower educated households. In addition, lower educated households are also more likely to be a family with children than higher educated households (OR: 1.245, p <.001). Both living in a concentration neighbourhood and being lower educated remain significantly associated with the chance to be a family with children after adding the control variables. The interaction between the two, however, is no longer significant. Higher educated households in concentration neighbourhoods remain 1.155 times more likely to be a family with children than their socio-economic peers in non-concentration neighbourhoods (p <.01), while lower educated households are 1.405 times more likely to be a family with children than higher educated households (p <.001).

Discussion

Segregation describes the unequal distribution of ethnic groups over neighbourhoods within cities. Three theories used to explain this are the spatial assimilation theory (Charles, 2003), the self-segregation theory (Thernstrom & Thernstrom, 1997) and the ethnic enclave theory (Zhou, 1997) on the other hand. The former claims that ethnic minorities start in ethnic minority concentration neighbourhoods but aspire and move to less concentrated neighbourhoods as they acculturate and gain socio-economic status (Charles, 2003; Thernstrom & Thernstrom, 1997). The latter states that ethnic minorities – consistently – choose to live segregated as this brings many benefits. These theories link segregation to the residential preferences of ethnic minority households. However, neither theory pays attention to household characteristics despite their importance for residential mobility (i.a.: Clark & Dieleman, 1996; Clark & Onaka, 1983). This study tried to fill this gap by investigating the association between the household type of Turkish or North-African households and living in a concentration neighbourhood focusing on families with children, childless couples and single and living alone households.

The results show clear associations between the neighbourhood a household lives in and its composition. Overall, families with young children are more likely to live in neighbourhoods with a

concentration of Turkish or North-African minorities than either single and living alone households or childless couples. This can be seen firstly in table 1 where the percentages of families with children that live in a concentration neighbourhood are larger than those of the childless couples and those of the single and living alone households the for both the higher and lower educated. These results are interpreted as being in line with the self-segregation theory or the ethnic enclave theory (Zhou, 1997): living in a concentration neighbourhood is more important for families with young children as this offers socialization and care-related benefits.

The results of table 1 are confirmed in table 2, which shows again that there is an association between living in a non-concentration neighbourhood and being a part of a childless couple, even after controlling for several factors related to segregation or the attractiveness of a neighbourhood for families with children. Moreover, this association is independent of the socio-economic status of the respondent. Table 3 offered more mixed results, showing that only lower educated single and living alone households are more likely to live in non-concentration neighbourhoods, while there is no association for higher educated households. However, excluding inter-ethnic households, the results are similar to those for the childless couples, as can also be seen in table 3. Here again, we confirm our hypotheses based on the ethnic enclave theory and reject those based on the spatial assimilation theory.

A first conclusion that can be drawn from these findings is that it is important to consider the composition of ethnic minority households when studying ethnic residential segregation. This paper thus adds to previous studies pointing to this importance (e.g.: Anonymous, working paper; Goyette, Iceland, & Weininger, 2014; Iceland et al., 2010; Marsh & Iceland, 2010). Moreover, we can extend the current empirical evidence by (1) linking household type to neighbourhood concentration, (2) focusing on three different household types simultaneously and (3) developing a theoretical framework by adapting the spatial assimilation theory and the ethnic-enclave and self-segregation theories to the role household characteristics play for residential decisions. As these findings aid the understanding of segregation, city councils could also better implement initiatives aimed at combating the detrimental effects of living in a concentration neighbourhood. These include profound socio-

economic, socio-cultural and health disadvantages (e.g.: Feng, Vlachantoni, Evandrou, & Falkingham, 2016; Gijsberts & Dagevos, 2007; Grady & Darden, 2012; Kramer & Hogue, 2009; Musterd, Andersson, Galster, & Kauppinen, 2008; Schlueter, 2012; Vervoort, 2012). This makes our findings both theoretically and socially relevant.

Two remarks should be formulated. Firstly, although we propose that our results (mostly) align with the ethnic enclave and self-segregation theories, our results could be interpreted differently too. The two household types used to compare families with children against are less traditional household types and many ethnic minorities prefer more traditional household compositions (e.g.: Rahnu, Puur, Sakkeus, & Klesment, 2015; Zorlu & Mulder, 2011). Living in a less traditional household type could then be seen as an expression of acculturation. This interpretation would be in favour of the spatial assimilation theory rather than the ethnic enclave and self-segregation theories. Further research should therefore try to uncover the underlying mechanisms, which could be aided by investigating the influence of life cycle transitions, like marriage and the birth of a first child, and household composition changes.

Secondly, this study investigates Turkish and North-African ethnic minorities. There are difference between these groups, in respect to their countries of origin, their migration histories and the socio-demographic characteristics of the initial guest workers (Reniers, 1999). These differences, in addition to cultural differences, could translate in diverging associations between household characteristics and the type of neighbourhoods households live in. However, we believe that this is not necessarily problematic as there are still similarities between both groups (Anonymous, 2015b; Timmerman et al., 2003) [*Verhaeghe, P. P., Van der Bracht, K., & Van de Putte, B. (2015). Inequalities in social capital and their longitudinal effects on the labour market entry.*] and additional analyses proved that the results for the separate groups are similar to each other (available upon request).

Conclusion

Both the ethnic enclave theory and the spatial assimilation theory link segregation to the residential preferences of ethnic minorities. However, both neglect the importance of household

characteristics for residential mobility. This study contributes to the literature by linking household composition to these theories. The results show that it is important to take household characteristics into account when examining neighbourhood concentration and ethnic residential segregation, despite the fact that the former is often neglected in segregation research. In addition, we can conclude that integrating household composition into the spatial assimilation theory and the ethnic enclave and self-segregation theory proves fruitful. Most associations appear to confirm the ethnic enclave and self-segregation theories. However, to better understand the uncovered associations, it will be necessary to perform additional analyses looking at life cycle transitions, household composition changes and the underlying motives for these movements.

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Table 1.

Distribution of household types according to neighbourhood – separated by educational attainment.

	Concentration neighbourhood?		Concentration neighbourhood?		Concentration neighbourhood?	
	No	Yes	No	Yes	No	Yes
	Full sample		Tertiary education		No tertiary education	
Families with children	29859 (29.88)	70062 (70.12)	6093 (41.62)	8545 (58.38)	23766 (27.87)	61517 (72.13)
Childless couples	3467 (41.80)	4827 (58.20)	1010 (51.14)	965 (48.86)	2457 (38.88)	3862 (61.12)
Single and living alone households	6789 (37.23)	11447 (62.77)	1634 (46.66)	1868 (53.34)	5155 (34.99)	9579 (65.01)
Total	40115 (31.72)	86336 (68.28)	8737 (43.44)	11378 (56.56)	31378 (29.51)	74958 (70.49)

Table 2

Results for the Multilevel Logistic Regressions comparing families with children and childless couples.

Variables	Model 1				Model 2			
	Logodds	S.E.	Odds ratio	*p*	Logodds	S.E.	Odds ratio	*p*
Intercept (uncentred)	1.801	0.040	6.054	***	-1.048	0.109	0.351	***
Concentration neighbourhood	0.397	0.051	1.487	***	0.296	0.054	1.344	***
Lower educated	0.428	0.041	1.535	***	0.464	0.044	1.591	***
Interaction	0.093	0.056	1.098	°	-0.035	0.059	0.966	
Individual level								
Born abroad					1.327	0.029	3.771	***
Age					0.083	0.002	1.086	***
Neighbourhood level								
% 3rd degree holders					-0.018	0.002	0.982	***
% Multi-household dwellings					-0.009	0.001	0.991	***
City level								
% Ethnic minorities					0.018	0.003	1.018	***
Educational ratio					-0.002	0.001	0.998	*
# of inhabitants[1]					0.000	0.000	1.000	
Variance								
Neighbourhood level		0.117				0.011		
Municipality level		0.038				0.025		

Notes. *** $p < .001$, ** $p < .01$, * $p < .05$, ° $p < .1$
[1] divided by 1000

Table 3

Results for the Multilevel Logistic Regressions comparing families with children and single and living alone households.

	Inter- and intra-ethnic households								Intra-ethnic households only							
Variables	Model 1				Model 2				Model 1				Model 2			
	Logodds	S.E.	O.R.	*p*	Logodds	S.E.	O.R	*p*	Logodds	S.E.	O.R.	*p*	Logodds	S.E.	O.R	*p*
Intercept (uncentred)	2.213	0.054	9.144	***	-0.324	0.133	0.723	*	1.740	0.056	5.699	***	-0.526	0.138	0.591	***
Concentration neighbourhood	0.095	0.049	1.099	°	0.053	0.052	1.054		0.231	0.051	1.26	***	0.144	0.055	1.155	**
Lower educated	0.082	0.035	1.085	*	0.194	0.038	1.215	***	0.219	0.036	1.245	***	0.34	0.04	1.405	***
Interaction	0.201	0.046	1.223	***	0.118	0.049	1.125	*	0.153	0.047	1.166	**	0.059	0.051	1.061	
Individual level																
Born abroad					0.808	0.02	2.242	***					1.053	0.021	2.867	***
Age					0.09	0.001	1.094	***					0.083	0.001	1.086	***
Neighbourhood level																
% 3rd degree holders					-0.018	0.002	0.982	***					-0.022	0.002	0.978	***
% Multi-household dwellings					-0.023	0.001	0.977	***					-0.022	0.001	0.979	***
City level																
% Ethnic minorities					0.017	0.006	1.017	**					0.022	0.006	1.023	***
Educational ratio					-0.004	0.001	0.994	***					-0.009	0.002	0.991	***
# of inhabitants[1]					-0.002	0.001	0.998	*					-0.002	0.001	0.998	°
Variance																
Neighbourhood level		0.548				0.285				0.530				0.274		
Municipality level		0.375				0.285				0.394				0.252		

Notes. *** $p < .001$, ** $p < .01$, * $p < .05$, ° $p < .1$
[1] divided by 1000