Ethnic enclaves and cultural behavior: Quasi-experimental evidence

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Abstract

Does growing up in an ethnic enclave slow down the process of cultural assimilation by immigrants? To measure cultural behavior, I use administrative data on contraceptives prescription to women aged 15 to 20. To observe exogenous variation in the ethnic concentration of (close) neighborhoods, I rely on the random allocation of asylum seekers to temporary housing in the Netherlands in the mid 1990s and early 2000s. A larger ethnic community is associated with a lower probability of taking the pill. Doubling the size of the community is equivalent to arriving four years younger in the Netherlands.

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1 Introduction

The public debate over immigration, which originally focused on the economic assimilation of immigrants, has become increasingly concerned with the issue of cultural identity. Even though immigrants have lived in the destination country for a long time or even grew up in it, do they adopt the mainstream culture? The existence of ethnically concentrated neighborhoods is both a symptom of the limited ethnic mixing and potentially a factor slowing down the convergence process. It is difficult to provide scientific evidence on these topics for two reasons: How to measure culture? Especially how to isolate a dimension in which immigrants and natives differ? How to make inference on the effects of ethnic concentration considering that residential choices are highly endogenous?

In this paper, I propose to tackle these two problems. I measure cultural behavior with prescription of the pill. Since taking contraceptives relates to female sexuality and control over fertility, its usage differ widely between origin countries. To provide exogenous variation in neighborhood characteristics, I focus on asylum seekers who lived in temporary housing when they arrived in the Netherlands. Since families could not choose where they would live and were allocated in a quasi random fashion over the country, this assignment provides an exogenous variation in neighborhood characteristics. Looking at prescription of contraceptives and using a quasi experimental allocation of asylum seekers, mostly from the middle East and Africa, is an ideal combination to study immigrants cultural behavior and ethnic enclaves.

First, I show that prescription of the pill to young women aged 15 to 20 is a good measure to capture cultural behavior. There are large disparities between prescription rates of natives and immigrants, so there is a difference to be explained. This behavior changes over time, women who arrived younger in the Netherlands are more likely to take the pill once they are teenagers. This measure is not inelastic. It varies with time, maybe it does with the size of the ethnic community in the neighborhood.

Then I show that the allocation of asylum seekers to temporary housing is a satisfactory quasi-experimental setting. There is evidence, both from the institutional setting and statistical balancing tests against sorting from the side of asylum seekers and from the side of the government agency in charge of housing them, the COA. This assignment is a meaningful first geographical anchorage in the country. Asylum seekers stay on average 9 months in these centers and many of them settled in a close neighborhood after they left these temporary accommodation. Five years after having been assigned, around 20% of asylum seekers still lived in the same extended neighborhood (area of average size 20,000 inhabitants).

The strengths of the paper is that I can combine a narrow geographical focus and a large temporal dimension. I can both focus on very geographically disaggregated data which enables me to calculate ethnic concentration at a sub-municipal level (close neighborhoods of median size 5000 people, median 600 individuals who are first or second generation immigrants) while

being able to track asylum seekers over a long period of time (the median age of arrival of the women whose behavior I observe between ages 15 to 20 is 6 years old). This brings credible variation in the close environment in which one grew up.

The other main advantage of this outcome is that it is repeated, I observe it for every age between 15 and 20. This adds another dimension to the study. In addition to the outcome "do young women take more the pill if they live in an environment with fewer immigrants?", I can focus on the question "at what age do young women start taking the pill?". Neighborhood characteristics can change the results on the finish line as well as the process which leads to it. This enriches considerably the picture that can be drawn from this paper. For instance at age 20 women who grew up in highly concentrated neighborhoods could not differ from those who did not grow up in ethnic enclaves. However they may have started taking contraceptives much later, at age 19 or 20, when their counterparts started at 15 or 16. Another scenario could be that the starting point is the same, there is no difference at age 15 but when women become adults, at 18-19, their paths start diverging. In both cases, this extra dimension would be informative on how neighborhood characteristics affect cultural behaviors.

My main findings are that growing up in an ethnic enclave diminishes the probability of taking the pill. Doubling the size of the ethnic community in the close neighborhood is equivalent to arriving four years older in the Netherlands. The divergence in behavior appears at the age of 18 and is maintained until age 20. Both early (before age 8) and late exposures affect behaviors. The effect is linear when one focuses on the close neighborhood but appears quadratic when looking at an extended neighborhood.

The rest of the paper is organized as follows: section 2 reviews the literature and details the contribution. Section 3 presents descriptive evidence on the use of contraceptives by immigrants. Section 4 presents how the placement of asylum seekers placement can be used as a quasi-experiment. Section 5 describes the data. Section 6 details the identification strategy and the results of the balancing tests. Section 7 presents the results and section 8 concludes.

2 Review of the literature and contribution

This paper lies at the intersection of two streams of literature. The closest literature, on cultural assimilation, matches topic-wise. The second closest, on ethnic enclaves, matches in terms of empirical strategy. In broad terms, I use the identification strategy of the ethnic enclave literature to study a research question from the cultural assimilation literature.

2.1 Literature on cultural assimilation

Although this paper is empirical, it is related to the vast theoretical literature that has studied cultural transmission (Bisin and Verdier, 2000, 2001, 2010) and cultural assimilation (Olcina

et al., 2017; Verdier and Zenou, 2017; Kuran and Sandholm, 2008). In the first set of papers the decision is to transmit or not the cultural heritage. In an empirical application, those would be first generation immigrants. In the second set of papers the decision maker decides to assimilate or stick to a distinct cultural background (Bisin et al., 2016). In am empirical application, those would ideally be second generation immigrants. Because I look at the adoption of a behavior by immigrants who arrived very young in the Netherlands, the literature on assimilation is the most relevant for this paper.

While mainly theoretical, this literature has provided empirical illustration (Bisin et al., 2004) on the importance of looking at residential ethnic concentration on intermarriage and cultural identity. However it is hard to assess the role of the environment since residential choices are highly endogenous. My main contribution to this literature is to develop an identification strategy based on an exogenous variation in where people live (a noticeable exception is (Algan et al., 2013)). My second contribution is to isolate a consumption choice that can be labeled cultural: taking the pill when you are a teenager.

2.2 Literature on ethnic enclaves

Recent papers studying the effects of living in more or less ethnically concentrated neighborhoods have relied on so-called "dispersal policies" implemented in the late 1980s, early 1990s mostly in Denmark (Damm and Dustmann, 2014; Damm, 2009) and Sweden (Åslund and Rooth, 2007; Åslund and Fredriksson, 2009; Edin et al., 2003; Åslund et al., 2011). The purpose of these policies was to spread out asylum seekers throughout the country once they were granted asylum status to avoid ethnic clustering. A central allocation office would decide where asylum seekers would live on the basis of only observational characteristics. That generated an exogenous variation that was used for identification. I rely on a similar natural experiment, following the work of (Beckers and Borghans, 2011).

I also focus on asylum seekers but at a slightly different stage of their settling in the destination country. The procedure for asylum seekers is similar in most countries and is made of two stages: first, after arrival, they are sent to temporary housing while their asylum application is being reviewed. In a second stage, if they are granted asylum status, they are free to go where they want. The policies in Denmark and in Sweden have relied on specific policies in the second stage. There is no such policy in the Netherlands but there is information available at the first stage that can be used for identification (a strategy also used by (Beaman, 2012)). Since asylum seekers do not chose in which center they will live while waiting for being granted asylum status and there is no evidence of sorting along cultural lines by the authorities, this setting can be used for identifying neighborhoods effects.

The main difference in institutional setting between the Dutch and the Danish and Swedish

cases is not so much the stage at which it happens but how it allows to look at assignment. The policies in Denmark and in Sweden have randomly dispatched asylum seekers to municipalities. Everything that is averaged at the municipality level at the time of assignment can be considered orthogonal to the characteristics of asylum seekers. Nothing ensures that characteristics at the infra-municipal, for instance at neighborhood level, are not endogenous. In the Netherlands, assignment is made to a specific address, the one of the center in which asylum seekers were temporarily living. The boundaries of the neighborhood, whose characteristics can be considered orthogonal, are not fixed. What was assigned randomly is the center of the circle not the limit of the circle. This allows me to focus on neighborhood characteristics at a very disaggregated level (median size 5,000 inhabitants) while still being confident that there is no sorting.

The literature has found positive effects of a larger community on labor markets outcomes of first generation, the parents (Damm, 2009; Edin et al., 2003; Beckers and Borghans, 2011), and educational achievements of the second generation, the children (Åslund et al., 2011). This paper highlights a potential backlash of theses positive results. Living in a more ethnically concentrated area may provide more opportunities for parents to find a job and a more stable environment, a more structured community for children to study. However, it also provides role model that are more distant from the mainstream culture. This paper is the first in this literature to focus on the second part of the story.

3 Does contraceptives prescription capture cultural behavior?

Since part of the contribution of the paper is to use an outcome variable observable in prescription records, it is important to make sure it captures "culture", which is defined as a behavior characteristic of a (majority or minority) group.

3.1 What is measured with the pill?

The first thing that comes to mind is being sexually active. This is very interesting for the research question addressed in this paper since attitudes towards female teen sexuality differ a lot across countries. However, teenagers can have intercourses, use condoms and not take the pill. Although taking the pill does not fully capture sexual behavior, it can only be an informative proxy. Besides, female sexuality, taking contraceptives also measure control over fertility whose attitudes towards also differ between countries.

I use two criteria to determine whether it is a good measure or not: (i) difference in consumption between immigrants and natives (there is something to be explained), and (ii) evolution of immigrants behavior through time (this behavior is not fully inelastic and it is relevant to see if the environment influences it).

To make sure that the contraceptive pill captures cultural behavior and not economic constraints, it should be free and easily available. In the Netherlands, every insurance scheme has to reimburse the pill for women below 21 years old. This ensures that money per se is not a constraint. Every doctor can prescribe it, meaning a general practitioner and not necessarily a gynecologist can. Even if you do not see or have access to a gynecologist, you can get a prescription. Teenagers do not need parental approval to get the pill.

Unfortunately, by focusing on the pill, I can only look at cultural behavior of women. Nothing insures that the process for cultural convergence is similar between men and women and it is indeed one of the limitations of the paper. Another relevant result would be getting married to a native and I could observe it for both men and women. Going this direction generates a trade-off. There is not enough people who arrived young in the Netherlands (say below 12) who are now in the age range 25 to 30 where one observes marriages. Increasing the sample size implies increasing the age at which asylum seekers arrive. However, focusing on a group who arrived below 12 is very different in terms of cultural convergence than looking at a group who arrived after age 15. The first group is more interesting as it is closer to one of second generation immigrants.

3.2 Are immigrant women less likely than natives to take contraceptives?

To answer this question, I report in table 1 the probability of being prescribed the pill at all ages between 15 and 20. The first three columns show raw numbers and the last three columns percentages. I divide the population of all young women in three groups, natives, first generation immigrants and second generation immigrants. I group immigrants from all origins for simplicity. The picture does not change if I focus on extra European immigration, it is just exacerbated.

Table 1 here

Three main elements emerge from this table: first, there is a striking difference between the prescription behavior of natives and (first and second generation) immigrants. Second, although disparities are sharper at early ages, 15 to 17 years old, they can observed throughout the spell. Finally there are differences between the behavior of first and second generation immigrants. First generation must have arrived relatively early, since they can be observed without interruption from 15 to 20, and thus are not fully socializes in their country of origin. They, however, appear more conservatives than the second generation. It gives indicative evidence that over the long run, from one generation to the next, behaviors change. To

capture the evolution of norms and behaviors, it is important to focus on a measure that is not fully inelastic.

3.3 Are immigrant women more likely to take contraceptives as they stay longer in the Netherlands?

Comparing the behavior of first and second generation has limitations since it cannot tell us whether the same person is more likely to behave like a native if she stays longer in the Netherlands. To answer this question, I run the following regression:

$$y_{i,c,t} = \alpha + \Sigma\lambda_c + \Sigma\theta_t + \beta * age_t + \epsilon_{i,c,t}$$

Where $y_{i,c,t}$ is a dummy for taking the pill for individual i from country c who arrived in year t in the Netherlands. λ_c are country of origin fixed effects and θ_t are year of arrival fixed effects. The variable of interest is age_t is the age (expressed in years) at which individual i arrived in the country. This regression is run separately for every age from 15 to 20. Results are reported in table 2. The coefficient of interest is β, it tells if someone who arrived one year older in the Netherlands in more or less likely to take contraceptives at a given age between 15 and 20. I do not put year of prescription fixed effects in order to identify β. This corresponds to the behavioral assumption that taking the pill at age 17 is similar in different years between 2006 and 2016 (for someone from the same country and who arrived the same year)[1].

Table 2 here

There is evidence of convergence in behavior. Arriving older decreases the probability of behaving like a native. Let's compare two hypothetical young girls who arrived at age 5 and 10 years old. The latter is 2.4 percentage points less likely to take the pill at age 15 than the former for an unconditional probability of 7 percent. The effect of arriving younger is quite sizable. It gives support to the idea that immigrants (at least those who arrive young, before 15 years old) adapt their behavior to the prevailing mainstream norm. The effect of arriving older is sharper at earlier ages (compare to unconditional mean) but remains throughout. At age 20, our hypothetical girl who arrived at 5 is still 9 percent more likely to take the pill than her counterpart who arrived at 10.

[1] In regressions not shown in the paper but available upon request, I show that the environment is "stationary". There is little variation in the probability of taking the pill at a given age for someone from a certain origin country. This variation is statistically significant but not quantitatively meaningful.

4 Can the first placement of asylum seekers in the Netherlands be used as a residential experiment?

Once the descriptive evidence on the convergence in cultural behavior has been established, it is interesting to dig into the mechanisms that can increase or slow down its pace. One contender is the ethnic concentration in which young asylum seekers grew up. To study this question, it is critical to rely on some exogenous variation in residential choices. Otherwise some unobserved individual characteristic, for instance family conservatism could drive both the decision to live in certain neighborhoods (with a bigger/smaller ethnic community) and influence the decision of the children to take the pill. Below I describe the ideal experiment that one would run to estimate this effect and show how the settling of asylum seekers in the Netherlands relate to this experience.

The ideal large-scale real-life experiment would be to take young girls whose cultural background is different from that of natives, allocate them randomly in different environments, let them grow up in the same places where they were assigned until they become teenagers/young women and then observe their behaviors.

The natural experiment used in this paper fulfill most of these requirements. I observe young girls who arrived in the Netherlands as asylum seekers. Almost all of them arrive before age 12 from countries whose cultural background is arguably different from the Netherlands (Afghanistan, Iraq, Iran, Somalia ...). When they arrive in the country they are sent to temporary accommodation managed by a governmental body in charge of welcoming asylum seekers (the COA). They do not choose where they go and COA does not cluster them along cultural lines. I later observe the behavior of women between ages 15 and 20.

This setting departs from the ideal experiment in that asylum seekers do not always stay in government provided temporary housing. At some point, they are out of COA responsibility and move to traditional housing. This is why only the characteristics at the time of first settlement can be considered exogenous. To make sure that the setting is still valid, I will look at two things: (i) how long asylum seekers stay in the neighborhood in which they were first assigned? This provides support to the idea that assignment meaningfully influence future residential choices, (ii) is there variation in the ethnic composition of these neighborhoods? This ensures that there is variation in the intensity of treatment.

4.1 Institutional Setting

4.1.1 The COA and asylum seekers placement upon arrival

Asylum can be claimed upon arrival in four different centers, Schiphol Airport, Zenevar, Ter Apel or Rijsbergen. Applicants first spend 48 hours with the immigration services (IND) to check their identity and their motives for seeking asylum. At the end of these two days, they can either be denied further stay in the country or their application needs more time to be processed[2]. At this stage, asylum seekers who can stay in the country waiting for a final decision are sent to COA welcome centers.

How is first placement decided? There is no legal framework regulating how asylum seekers are allocated to different centers. Critical to the random assignment is that asylum seekers do not chose where they will live and that there is no sorting done by COA. The first one is the rule. The last one follows from the fact that COA makes its choices based on observable characteristics, gender, country of origin, number of people to host. I provide below evidence on the absence of selection from both sides on observables.

I cannot formally test the absence of selection on unobservables. However it seems very unlikely in this setting. First of all because I allow for sorting along country of origin and year of arrival since I include these controls in the main regressions and the balancing tests. I allow for COA to account for country of origin when deciding on the placement. This is probably the main source of sorting. Selection on unobservables would mean that at a very early stage and with little information available COA is able to distinguish more conservative asylum seekers from the same country and send them to more (or less) ethnically concentrated area. If there is one center for conservatives from country X and one center for non conservatives from the same country, it also requires that there is space available in both centers at any time. The measure of ethnic community in the neighborhood comprises other asylum seekers from the same region of origin living in the center but also other Dutch residents with the same ethnic background not living in COA accommodation. Placement officers should have detailed information on the ethnic composition of more than 4000 neighborhoods, 4 digit zipcode areas. This would require a lot of thought and preparation when deciding on the temporary placement of individuals who are not sure to be granted asylum at a moment where the main concern is finding a roof. All that while not triggering selection on observables. This makes the assignment to COA accommodation, a credible exogenous source of variation.

How are subsequent placements decided? Asylum seekers can ask to be relocated to another center if for instance they have first grade family members in another center of if they have an employment opportunity somewhere else. It can also be that some centers close down and asylum seekers are sent to another center somewhere else. The latter case is arguably random,

[2]Another possibility is that they are granted refugee status but this almost never happens, see Beckers and Borghans (2011)

the former not. To make sure that I capture an exogenous variation, I focus only on first placement.

4.1.2 Subsequent information on the natural experiment in the Netherlands

It is paramount for the identification of neighborhood effect that there is exogenous variation in the initial assignment. However, certain other features are important, in particular it is important that there is variation in the size of the ethnic community on the neighborhood and that the assignment is meaningful in the sense that people stay living close the center after they are allowed to leave it.

How long do asylum seekers stay in COA accommodation and adjacent neighborhoods? To do so, I calculate the number of asylum seekers still residing in the Netherlands after 2, 5, 8 and 10 years and see how many live in the same 4 digits zipcode than the one they were assigned to. Results are reported in table 3. One difficulty is that the neighborhood level is very small and expecting people to live there after a few years is probably too restrictive. At the same time, the 2 digits zipcode level is very large and it is far fetched to assume that it is a relevant level of interaction between people. To find a strata in between, I geocode all the adjacent 4 digits zipcode areas. This creates a series a larger overlapping entities with median population around 20 000 inhabitants. After 5 years, 20% of the assigned girls are living in an adjacent neighborhood and after 10 years, this number is down to 13%. This shows that the assignment was indeed significant in influencing future residential choices.

Table 3 here

Is there variation in the ethnic composition of the neighborhoods? The median neighborhood ethnic community size is 90 individuals, the 25th percentile is 39 and the 75th is 152. The size is multiplied by almost 4 when one moves from 25th to 75th percentiles.

I take it as evidence that there is meaningful (since assignment matters for future residential choices), exogenous and large (by looking at ethnic community size) variation to be exploited.

5 Description of the data

I use two main datasources: Dutch administrative data collected and maintained by CBS (Centraal Bureau Statistik) and information on the location and operating dates of COA centers for hosting asylum seekers. CBS offers a very rich set of administrative datasets linkable through a unique individual identifier. This allows to put together information of

various kind (prescription of drugs, location, family situation) and to link parents to children. One particular feature worth mentioning is that buildings in the Netherlands also have a unique identifier which allow to identify at which address exactly everyone lives.

5.1 Data on drug prescription

The database used to extract the outcome variable is Medicinjtab. It records the prescribed drugs (covered by any insurance company) every year. More precisely, using the ATC4 classification, it records whether someone has been prescribed a drug of a certain category in this year. For contraceptives, I use the entry G03A, "Hormonal contraceptives for systemic use". I consider that a woman takes contraceptives at a certain age if during the year in which she turns that age she is prescribed contraceptives.

I observe prescription not consumption. However it is compulsory to have a prescription to take the pill. The main outcome variable is having been prescribed once between age 15 and 20, it is difficult to imagine that one could regularly take the pill without having had a prescription once.

This data is only available for the years 2006-2016. To have the full picture, I focus on complete spells (observations for all ages 15 to 20). This means that I look at the prescription behavior of women who turned 15 in 2006 up until those who turned 20 in 2016, so who were born earliest in 1991 and latest in 1996. Because I want women to already be in the Netherlands at age 15, the latest they can arrive is 2011. This means that I cannot use measures of behaviors (other women taking the pill) as main explanatory variable since it would split my sample and decrease greatly my sample size. This is why I use ethnic concentration.

5.2 Data on COA accommodation and ethnic concentration

5.2.1 Registry information

Since I focus on the ethnic concentration, I need to calculate the number of (i) people from the same origin, (ii) who live in the same neighborhood. I detail the information I have access to and how I use.

Regarding where people live, it is important to first define the main administrative layers in the Netherlands. A zipcode is composed of 4 digits and 2 letters. The first two digits divide the country in 90 areas with an average population of 190 000 inhabitants. The four digits divide the country in more than 4000 areas with a average population 4250 inhabitants. The entire zipcode roughly corresponds to the street level. The 4 digits level is a good candidate to study adoption of behaviors, it is still very narrow and identify neighborhoods (contrary to the 2 digits level) while not being too small (as would be the street level). To generate an intermediary level between 2 and 4 digits, I also create an extended neighborhood by geocoding all the adjacent 4 digits areas. This creates an equal number of areas that are overlapping

each other. Their median population is 20,000 inhabitants. I do not use this extra level to divide the country but to look at a broader set of peers (yet still living close).

Regarding origins, the main population registry provide information on whether people are natives, 1st generation immigrants (born outside the Netherlands from non-Dutch parents), 2nd generation immigrants (born in the Netherlands from 1st generation immigrant parents) and the country they relate to.

Another valuable source of information provided by CBS is (for first generation immigrants) the migration motive, whether it is economical or for seeking asylum. That allows to differentiate these two populations for individuals from the same country.

When I calculate ethnic concentration at a given administrative level, I pool together 1st and 2nd generation immigrants not living under COA care together with people who are living in COA facilities.

5.2.2 COA information

I use the exact addresses and operating periods of all COA welcome facilities for the period 1995 to 2016. To identify my experimental population, i.e. the asylum seekers that have been spread out randomly over the country, I use the following criteria: (i) immigrants must have come to the Netherlands for asylum motives, (ii) the first address they were registered was used at the time by COA.

Do note that I have exact address of registration, so I only look at people registered in the building indicated by COA and not the 6 digit zipcode level (i.e. the street). I also use the exact day of registration and opening and closing of the centers which ensures that a particular address was a COA center before asylum seekers moved in.

5.3 Additional data for control variables and neighborhood characteristics

The very rich Dutch administrative registries allow to link parents with children and to gather additional characteristics on both. These can be used for balancing tests and as control variables in regressions.

In particular, I observe the age, gender, marital status of parents and the number of children they had at the time of migration. The information on marriage is available for residents that got married before arriving to the Netherlands as they need to register their union. For children, the only relevant variable is their age.

The objective of this paper is to measure the effect of the quantity of people from the same ethnic background on the adoption of behaviors that are typical of natives. It is important to check whether the effect is driven by quantity of other people with the same background and not "quality" of the neighborhood (high unemployment, high crime rate ...). This is important as it could be harder in low "quality" neighborhood to have access to a doctor

or a pharmacy. I use information on the status score measure provided by the Netherlands Institute for Social Research at the 4 digits zipcode level. Every four years, this government agency produces a ranking of all the 4 digit zipcode areas based on the average income in a neighborhood, the percentage of people with a low income, the percentage of low-educated people and the percentage of people who do not work. By means of a factor analysis (principal components analysis), these characteristics are summarized in one composite characteristic: the social status. I use the normalized measure provided by the Institute for Social Research for the years were they are available and fit lines between these years to predict the missing observations.

6 Identification strategy and balancing tests

6.1 Identifying assumptions

I pursue two types of analysis in this paper: (i) an ITT strategy in which I use the neighborhood ethnic concentration at the time of arrival as the variable of interest and (ii) an IV strategy where I instrument concentration at age 15 with concentration at the time of arrival.

The identifying assumption of the ITT strategy is that conditional on year of arrival and country of origin, ethnic concentration of the neighborhood is exogenous. This means that an individual who arrived from a certain country in a certain year could be sent to different types of neighborhoods, i.e. there was no reason why he or she would be sent to one in particular. Do note that this identifying assumption allows for clustering of individuals from the same country as long as specific individuals are not sent to specific places. Under these assumptions, results indicate what would be the effect if everybody had stayed where they were allocated.

In addition to the ones just listed, an instrumental variable needs to satisfy relevance (ethnic concentration at age 15 is significantly related to concentration at arrival), the exclusion restriction (ethnic concentration affects the decision of taking contraceptives only through its influence on ethnic composition are age 15) to be valid. To be given a LATE interpretation, it must also satisfy monotonicity (a high/low ethnic concentration at arrival means a higher or lower concentration at age 15). Under these assumptions, the effect identified is the change in behavior for those who live in a higher/lower (depending on the sense of the monotonicity) ethnic neighborhood because they were assigned to a high/low ethnic neighborhood when they arrived.

6.2 Balancing tests

To provide evidence of no sorting along observable characteristics, I provide balancing tests taken from the literature that exploited similar exogenous variation. I can use two sets of observable characteristics, those of the girls who arrive young in the country and whose behavior I later follow and those of their household head. The latter is the real test as it is the assignment of the young girls that should be exogenous. However there is only one observable characteristic that can be used, age at arrival. More observable characteristics of the household head are available, the age at migration but also the marital status, the number of children and the gender[3]. To measure concentration, I follow the specification initiated in Bertrand et al. (2000) and which became standard in the literature and use the log of the size of the ethnic community. It is defined as number of people from the same region of the world. I divide the world in five regions: Maghreb, Middle East, Eastern Europe, Asia, Africa, South America. This departs from the traditional definition in this literature that uses country of origin. Considering the small geographical focus that I use, relying on country origin would generate many zeros and very small communities.

In a first series of tests I regress each observable on country of origin and year of arrival fixed effects and a dummy whether the neighborhood of assignment is below/above the median concentration level of asylum seekers assigned that year. This captures whether the people arriving the same year from the same country end up in neighborhoods with different ethnic composition if they are younger/older, have more or less children ...

Tables 4 and 5 here

The results are reported in table 4 with 2 digits zip code fixed effects and in table 5 without, as my baseline regressions will explore both specifications. In both cases, the results point to the absence of sorting along observables. All the individual tests fail to reject the null for outcomes of the household head. There is a significant difference on the age at which children arrived but the magnitude is very small, girls from the same country arriving the same year in neighborhoods with an above median concentration are on average 3 months older.

For household head characteristics, I perform a joint F test of all the characteristics pooled together in the same regression. I run two separate regressions, with and without 2 digits zipcode level fixed effects. Resultas are reported in table 6. In both cases, I fail to reject the null with a test p-value of at least 0.20.

Table 6 here

[3]I define household head for young girls travelling with their parents as the father if he also moved to the Netherlands or as the mother if the father is absent.

6.3 Evidence in support of the IV strategy

Relevance will be assessed in the first stage of the IV procedure. It is not automatic that this instrument satisfy the exclusion restriction. For instance, when assessing the effect of living in an ethnic enclave on employment and wages of first generation immigrants, Damm (2009) moved away from this identification strategy. The argument was that having a higher stock of immigrants at the time of arrival could influence employment possibilities by having a larger network available, access to more job offers and not just by having a large community later.

I nevertheless follow the original strategy laid out by Edin et al. (2003). The first reason to do so is that it is less clear what would in this case be a violation of the exclusion restriction. The second reason is that I am not able to carry out the second instrumental variable strategy suggested by Damm (2009). This strategy uses the flow of asylum seekers that have been sent to a municipality (in the context of the dispersion policy in Denmark) before arrival. In my case this is a weak instrument. The reason is that many housing options used by COA are temporary. Only few neighborhoods would receive asylum seekers for several years. Although this limits the specification options, it reassures the claim that asylum seekers can be sent throughout the country.

To make sure that IV identifies a LATE-type effect, I check the monotonicity assumption by plotting log of the size of the community at arrival and at age 15 and fit a local polynomial regression. The result almost looks like a line with positive slope. This graph is not shown but available upon request. I take it as evidence that the IV estimator identifies an effect for a clearly defined sub-population, asylum seekers who ended up living in neighborhoods with a higher community size because they were assigned to neighborhoods with a large community at assignment.

7 Empirical results

In this section, I present three sets of results. The baseline results which answer the question does growing up in an environment with a larger ethnic community changes the probability that women between 15 and 20 ever take contraceptives? In a second set of regressions, I break down the regressions by age. Instead of looking at at an outcome having been prescribed contraceptives at least once between 15 and 20, I focus on having taken contraceptives at every age between 15 and 20. In a third set of results, I look at two extensions of this initial result, in particular is the effect liner or quadratic, i.e. is there a tipping point above which the size of the community has a different effect and is the effect different depending the age at which girls arrived in the Netherlands.

I estimate the following equation:

$$y_{i,t} = \alpha + \Sigma\lambda_c + \Sigma\theta_t + \beta * \ln e_{j,g,t} + \epsilon_{i,t}$$

with $y_{i,t}$ having or not taking contraceptives for individual i who arrived in year t, $e_{j,g,t}$ ethnic community g in neighborhood j in year t. I produce three types of analysis: a naive estimator where I regress the behavior on the ethnic concentration at age 15 followed by an itt and an iv estimator (as explained above). I show three specifications, (i) one with only country of origin and year of arrival fixed effects (the λ_c and θ_t in the equation above), (ii) one that adds 2 digits zipcode of assignment fixed effects to and (iii) one that adds individual characteristics of the household head as controls.

I show results of linear regressions on a sample of asylum seekers whose complete spell (prescription from age 15 to age 20) is observed.

7.1 Baseline results: effect of ethnic concentration

The model estimated is level log, so the interpretation of the coefficients go as follows, an increase of the community size by 1% increases the probability of taking the pill by $\frac{\beta}{100}$, meaning doubling the size of the community changes the probability by β percentage points. Recall that the effect at age 20 of having arrived one year older in the Netherlands is associated with a -0.006 percentage points probability of taking the pill.

Table 7 here

Results are reported in table 7. Three things stand out in these regressions : the first one is that the effect is negative. This brings an unambiguous answer to the question on the effect of ethnic community size on cultural behavior. The itt estimate becomes larger when adding 2 digits zipcode fixed effect. There are probably differences with the Netherlands in the usage of the pill and focusing on a comparison within smaller areas allows for more precise estimates. The magnitude of the effect can be expressed in terms of how many years older a girl should have entered the Netherlands, the itt is equivalent to arriving between 3 and 4 years older depending on the specification.

The second one is that the effect is not sensitive to the inclusion of controls at the individual level. This is reassuring as it gives credit to the identification strategy. The third one is that the iv is substantially larger (roughly ten times) than the itt. It points to the effect of ethnic composition of neighborhoods as being significantly underestimated when one does not account for sorting and to the itt being a lower bound of the effect. The instrument is valid as in all specifications the F-test associated with the first stage is above the rule of thumb of 10.

7.2 Breaking down the results by age

One of the advantages of having a repeated measure is that it enriches the picture of cultural integration and the role ethnic concentration plays in it. Results of itt and iv estimates broken up by age are reported in tables 8 and 9 respectively. What we clearly observe is that the size of the neighborhood does not affects behaviors at early ages, 15 to 17 years old but from age 18 and above.

Tables 8 and 9 here

This is consistent with the following story: different neighborhoods provide different models and different levels of social control. Being in a low concentrated neighborhood facilitates the adoption of behaviors by immigrants (reason why there is a difference) but not to the extent that one would oppose the traditional view in the household. Only when girls grow up and become of legal age do they challenge it.

7.3 Extensions: non-linearity and age at arrival

Two extensions of the baseline regressions come straight to mind. Is the effect different depending on the age of arrival and is the effect linear in the community size?

It could be that preferences are shaped early in life and that neighborhood would affect the behaviors of those for were exposed very young to more/less ethnic concentration. On the other hand, those who arrive older feel more strongly the cultural difference, feel more at oods and are more prone to outside influence. To distinguish between the two explanations, I run the following regression

$$y_{i,t} = \alpha + \Sigma\lambda_c + \Sigma\theta_t + \beta_1 * \ln e_{j,g,t} * 1\left(age_{i,t} < 8\right) + \beta_2 * \ln e_{j,g,t} * 1\left(age_{i,t} \geqslant 8\right) + \epsilon_{i,t}$$

where the variable capturing ethnic concentration is interacted with a dummy arrived below or above the age of 8 years old. Results are reported in table 10.

Table 10 here

The itt estimates point towards the effect of late arrival being stronger. However the iv results are very close for the two subgroups. What can be concluded is that exposure even at different stages of one's life has an effect. The group who was above 8 years old when it arrived seems more receptive to the influence of the environment. Contrary to children who

arrived very young and who fully acclimated to the Dutch environment, those at little older may feel more strongly the cultural difference between the household rules and the mainstream behavior. The environment becomes more influential.

The second natural extension is to see if the effect is linear or quadratic. To do so, I estimate the following equation:

$$y_{i,t} = \alpha + \Sigma\lambda_c + \Sigma\theta_t + \beta_1 * \ln e_{j,g,t} + \beta_2 * (\ln e_{j,g,t})^2 + \epsilon_{i,t}$$

Results are reported in table 11. I report ITT and IV estimates when $e_{j,g,t}$ is calculated at the 4 digits zipcode level, the close neighborhood. However this geographical delimitation is quite narrow and maybe the tipping point where the size changes effect is not reached unless you look at a bigger community. This is why I all calculate the size of the community in an extended neighborhood when I use all the adjacent 4 digits zipcode areas.

Table 11 here

When one focuses on very close neighborhoods the effect does not seem quadratic. It becomes however quadratic when the focus is put on an extended neighborhood. By enlarging the definition, I focus on different peers and do not expect to have the same picture. In this case, social control is stronger within the close community but decreases as one looks at the broader community, probably because it is harder to ensure conformity.

7.4 Robustness checks

7.4.1 Using duration models

I also run the same analysis with a parametric hazard rate model, for simplicity a Weibull distribution, with the same naive estimator and itt interpretation. The linear iv is replaced with a control function where the first stage is the same as in the linear model but the residuals are plugged in the Weibull specification. The results are very similar and available upon request.

Using a duration model allows to include individuals who have not completed the entire spell, meaning girls who are observed from age 15 but not until age 20. The results hold.

7.4.2 Is it quantity of immigrants or "quality" of the neighborhood?

To make sure the effect is driven by a quantity and not a quality effect, I add the information on the status score of a neighborhood at the time of arrival as an extra control. The results

available upon request show no difference ensuring that quantity of the ethnic community is the driving phenomenon.

8 Conclusion

In this paper, I study the cultural behavior of immigrants and see if and how it converges to that of natives. I measure culture with prescription of the pill to young women. Taking contraceptives, while a very personal and intimate choice, is available in administrative prescription registries. In a first round of descriptive analysis, I show that there are very strong differences in contraceptive usage between immigrants and natives but that there is evidence of convergence in behaviors: immigrants who arrived older are less likely to take it. I then exploit the placement of asylum seekers in temporary welcome centers as an experiment which brings exogenous variation in neighborhood characteristics. I find that growing up in a environment with a large ethnic community decreases the probability of taking the pill in the ages 15 to 20.

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Table 1: Probability of taking contraceptives

Age	Number of observations			Probability		
	Natives	1st gen Imm	2nd gen Imm	Natives	1st gen Imm	2nd gen Imm
15	369271	21529	79762	24%	8%	12%
16	365931	21293	79290	44%	16%	23%
17	365162	21222	79167	60%	26%	33%
18	364336	21153	79013	70%	32%	40%
19	364044	21170	78812	72%	32%	42%
20	369271	21529	79762	73%	38%	45%

Note: This table shows the probability for women aged 15 to 20 years old to be prescribed hormonal contraceptives. Only women with complete spells, observations from 15 to 20 are reported.

Table 2: Is there convergence in behaviors with time?

	coeff	t test	Nb of obs	Mean
Age 15	-0.0048	-3.18	15830	0.07
Age 16	-0.0050	-2.50	15658	0.15
Age 17	-0.0065	-2.80	15633	0.23
Age 18	-0.0023	-0.918	15578	0.29
Age 19	-0.0069	-2.66	15585	0.33
Age 20	-0.0060	-2.22	15830	0.35

Note: This table shows the coefficients of the variable age at migration of a regression where the dependent variable is a dummy, having been prescribed contraceptives the year in which a woman turns a certain age and the explaining variables are country of origin fixed effects, age of arrival fixed effects and age at migration. Only women with complete spells, observations from 15 to 20 are reported.

Table 3: How many a.s. stay close to centers?

	Nb in NL	Nb in 4 digit zip	Nb in adjacent 4 digit zip
After 2 years	8886	2091	2911
After 5 years	8085	485	1618
After 8 years	7293	281	1098
After 10 years	6797	214	916

Note: This table shows the number of female asylum seekers who were between 15 and 20 during the years 2006 and 2016 and were first assigned to a COA welcome center. It calculates how many are still in the Netherlands after a few years and how many still live in the same four digits zipcode area or any adjacent four digits zipcode area.

Table 4: Balancing (with 2 digits zipcode FE)

	Dummy above median	t-test	nb Obs
For household head			
Male	-0.005	-0.43	5433
Age Migration	0.103	0.34	5433
Married	-0.010	-0.77	5433
Nb children	-0.046	-1.23	5433
For children			
Age at migration	0.20	2.67	7721

Note: The upper part of the table reports coefficients of a regression where the dependent variable is a characteristic of the household head on country of origin fixed effects, year of arrival fixed effects, two digits zipcode fixed effects and a dummy variable for having been allocated to a neighborhood with above a community size above the median of all allocations that year. Observations are household heads whose daughter has been between 15 and 20 during the years 2006 to 2016. The lower part is the same the young women.

Table 5: Balancing (without 2 digits zipcode FE)

	Coeff	t-test	nb Obs
For household head			
Male	0.008	0.72	5433
Age Migration	0.140	0.51	5433
Married	0.001	.086	5433
Nb children	-0.044	-1.31	5433
For children			
Age at migration	0.25	3	7721

Note: The upper part of the table reports coefficients of a regression where the dependent variable is a characteristic of the household head on country of origin fixed effects, year of arrival fixed effects and a dummy variable for having been allocated to a neighborhood with above a community size above the median of all allocations that year. Observations are household heads whose daughter has been between 15 and 20 during the years 2006 to 2016. The lower part is the same the young women.

Table 6: Joint test of selection on observables

	F-test	p-value	Nb Obs
With 2 digits zipcode FE	1.48	.21	5433
Without 2 digits zipcode FE	1.50	.20	5433

Note: This table reports the F-test statistics of a regression where the dependent variable is the log of the ethnic community at the time of arrival and the explaining variables: country of origin and year of arrival fixed effects and all observable characteristics at the time of arrival of the household head. Observations are household heads whose daughter has been between 15 and 20 during the years 2006 to 2016.

Table 7: Baseline results

	Naive Estimator		
	-0.0184**	-0.0205**	-0.0253**
	[-0.0355,-0.00127]	[-0.0401,-0.000811]	[-0.0474,-0.00322]
N Obs	2387	2387	1843
Mean Outcome	0.422	0.422	0.418
	ITT Estimator		
	-0.0120	-0.0218**	-0.0257**
	[-0.0305,0.00659]	[-0.0414,-0.00231]	[-0.0484,-0.00296]
N Obs	2358	2358	1811
Mean Outcome	0.416	0.416	0.412
	IV Estimator		
	-0.107	-0.229**	-0.277**
	[-0.270,0.0558]	[-0.446,-0.0114]	[-0.543,-0.00994]
N Obs	2320	2320	1789
Mean Outcome	0.419	0.419	0.414
F test	22.86	15.90	11.08

Note: This table reports the coefficients of regressions where the dependent variable is having taken the pill at least once between age 15 and 20 years old. The explanatory variables are country of origin fixed effects, year of arrival fixed effects and log of the size of the ethnic community. The first column reports the estimates without control, the second with geographical controls (two digits zipcode fixed effects) and the third one geographical and characteristics of the household head. The sample is limited to women with complete spells (observed from ages 15 to 20).

Table 8: Baseline results: ITT at different ages

	At age 15		
	0.00306	0.00208	0.00368
	[-0.00559,0.0117]	[-0.00672,0.0109]	[-0.00688,0.0142]
N Obs	2250	2250	1743
Mean Outcome	0.0502	0.0502	0.0516
	At age 16		
	0.000904	-0.00359	-0.00497
	[-0.0109,0.0127]	[-0.0163,-0.00911]	[-0.0195,-0.00953]
N Obs	2332	2332	1798
Mean Outcome	0.0939	0.0939	0.0895
	At age 17		
	0.000934	-0.00891	-0.00649
	[-0.0121,0.0139]	[-0.0229, 0.00508]	[-0.0225,-0.00952]
N Obs	2313	2313	1784
Mean Outcome	0.153	0.143	0.151
	At age 18		
	-0.0119*	-0.0151**	-0.0157*
	[-0.0250,0.00116]	[-0.0299,-0.000346]	[-0.0326,0.00123]
N Obs	2305	2305	1775
Mean Outcome	0.2	0.2	0.193
	At age 19		
	-0.0107	-0.0150*	-0.0124
	[-0.0257,0.00435]	[-0.0320,0.00192]	[-0.0314,0.00652]
N Obs	2292	2292	1768
Mean Outcome	0.236	0.236	0.236
	At age 20		
	-0.00922	-0.0142*	-0.0150
	[-0.0254,0.00699]	[-0.0305,0.00204]	[-0.0338,0.00376]
N Obs	2322	2322	1788
Mean Outcome	0.255	0.255	0.248

Note: This table reports the coefficients of regressions where the dependent variable is having taken the pill separetly for every age between 15 and 20 years old. The explanatory variables are country of origin fixed effects, year of arrival fixed effects and log of the size of the ethnic community. The first column reports the estimates without control, the second with geographical controls (two digits zipcode fixed effects) and the third one geographical and characteristics of the household head. The sample is limited to women with complete spells (observed from ages 15 to 20). This table only reports IIT estimates.

Table 9: Baseline results: IV at different ages

	At age 15		
	0.0297	0.0251	0.0507
	[-0.0538,0.113]	[-0.0791,0.129]	[-0.0968,0.198]
N Obs	2250	2250	1743
Mean Outcome	0.0502	0.0502	0.0516
F test	17.94	11.34	6.628
	At age 16		
	0.0094	-0.0398	-0.0644
	[-0.108,0.126]	[-0.194,0.115]	[-0.262,0.133]
N Obs	2227	2227	1731
Mean Outcome	0.0952	0.0952	0.0901
F test	17.23	10.85	6.669
	At age 17		
	-0.00716	-0.127	-0.120
	[-0.136,0.122]	[-0.307,0.0523]	[-0.349,0.110]
N Obs	2208	2208	1717
Mean Outcome	0.156	0.156	0.153
F test	17.15	11.03	6.559
	At age 18		
	-0.138**	-0.206**	-0.232*
	[-0.274,-0.00260]	[-0.402,-0.00902]	[-0.494,0.0303]
N Obs	2198	2198	1707
Mean Outcome	0.202	0.202	0.194
F test	20.13	12.88	7.569
	At age 19		
	-0.117	-0.185*	-0.176
	[-0.268,0.0347]	[-0.402,0.0307]	[-0.429,0.0764]
N Obs	2186	2186	1701
Mean Outcome	0.239	0.239	0.239
F test	19.86	12.69	8.146
	At age 20		
	-0.096	-0.176	-0.217
	[-0.260,0.0683]	[-0.393,0.0406]	[-0.498,0.0646]
N Obs	2322	2322	1788
Mean Outcome	0.259	0.259	0.25
F test	18.71	12.35	7.819

Note: This table reports the coefficients of regressions where the dependent variable is having taken the pill separetly for every age between 15 and 20 years old. The explanatory variables are country of origin fixed effects, year of arrival fixed effects and log of the size of the ethnic community. The first column reports the estimates without control, the second with geographical controls (two digits zipcode fixed effects) and the third one geographical and characteristics of the household head. The sample is limited to women with complete spells (observed from ages 15 to 20). This table only reports IV estimates.

Table 10: Extension: age at arrival

Naive Estimator			
Early arrival	-0.0157*	-0.0181*	-0.0233**
	[-0.0329,0.00150]	[-0.0379,0.00169]	[-0.0458,-0.000797]
Late arrival	-0.0258**	-0.0263**	-0.0300**
	[-0.0448,-0.00689]	[-0.0476,-0.00507]	[-0.0534,-0.00672]
N Obs	2387	2387	1843
Mean Outcome	0.422	0.422	0.418
ITT Estimator			
Early arrival	-0.00880	-0.0185*	-0.0235**
	[-0.0278,0.0102]	[-0.0384,0.00138]	[-0.0463,-0.000636]
Late arrival	-0.0200*	-0.0307**	-0.0317**
	[-0.0404,0.000518]	[-0.0524,-0.00894]	[-0.0575,-0.00593]
N Obs	2358	2358	1811
Mean Outcome	0.416	0.416	0.412
IV Estimator			
Early arrival	-0.0996	-0.222**	-0.272**
	[-0.262,0.0629]	[-0.438,-0.00622]	[-0.538,-0.00697]
Late arrival	-0.110	-0.233**	-0.279**
	[-0.272,0.0522]	[-0.450,-0.0163]	[-0.546,-0.0130]
N Obs	2320	2320	1789
Mean Outcome	0.419	0.419	0.414
F test	2078	1909.1	1550.2

Note: This table reports the coefficients of regressions where the dependent variable is having taken the pill at least once between age 15 and 20 years old. The explanatory variables are country of origin fixed effects, year of arrival fixed effects, log of the size of the ethnic community interacted with a dummy having arrived in the Netherlands before 8 years old. The first column reports the estimates without control, the second with geographical controls (two digits zipcode fixed effects) and the third one geographical and characteristics of the household head. The sample is limited to women with complete spells (observed from ages 15 to 20).

Table 11: Extension: is the effect quadratic?

ITT Estimator			
Close neighborhood: 4 digits zipcode area			
concentration	-0.0516	-0.0460	-0.0474
$concentration^2$	0.00523	0.00324	0.00294
N Obs	2358	2358	1811
Mean Outcome	0.416	0.416	0.412
Extended neighborhood: adjacent 4 digits zipcode areas			
concentration	-0.112**	-0.128**	-0.193**
$concentration^2$	0.00933**	0.0101*	0.0157**
N Obs	2428	2428	1867
Mean Outcome	0.420	0.420 0.416	
IV Estimator			
Close neighborhood: 4 digits zipcode area			
concentration	-1.501	-1.878	-3.441
$concentration^2$	0.151	0.182	0.335
N Obs	2320	2320	1789
Mean Outcome	0.419	0.419	0.414
Extended neighborhood: adjacent 4 digits zipcode areas			
concentration	-1.632*	-2.533*	-8.579
$concentration^2$	0.125*	0.191*	0.634
N Obs	2390	2390	1846
Mean Outcome	0.423	0.423	0.418

Note: This table reports the coefficients of regressions where the dependent variable is having taken the pill at least once between age 15 and 20 years old. The explanatory variables are country of origin fixed effects, year of arrival fixed effects, log of the size of the ethnic community and its square. The first column reports the estimates without control, the second with geographical controls (two digits zipcode fixed effects) and the third one geographical and characteristics of the household head. The sample is limited to women with complete spells (observed from ages 15 to 20).