DISCUSSION PAPER SERIES

No. 5662

'BEND IT LIKE BECKHAM': IDENTITY, SOCIALIZATION AND ASSIMILATION

Alberto Bisin, Eleonora Patacchini,
Thierry Verdier and Yves Zenou

PUBLIC POLICY

Centre for Economic Policy Research

www.cepr.org

Available online at: **www.cepr.org/pubs/dps/DP5662.asp**

ISSN 0265-8003

'BEND IT LIKE BECKHAM': IDENTITY, SOCIALIZATION AND ASSIMILATION

Alberto Bisin, New York University
Eleonora Patacchini, Università di Roma La Sapienza
Thierry Verdier, Paris Jourdan Sciences Economiques and CEPR
Yves Zenou, Research Institute for Industrial Economics (IUI), Stockholm and CEPR

Discussion Paper No. 5662
May 2006

Centre for Economic Policy Research
90–98 Goswell Rd, London EC1V 7RR, UK
Tel: (44 20) 7878 2900, Fax: (44 20) 7878 2999
Email: cepr@cepr.org, Website: www.cepr.org

CEPR Discussion Paper No. 5662

May 2006

ABSTRACT

'Bend It Like Beckham': Identity, Socialization and Assimilation*

We first develop a model of identity formation resulting from the interaction of cultural transmission and socialization inside the family, peer effects and social interactions, and identity choice. We then put the model to data using the UK Fourth National Survey of Ethnic Minorities. We show that the main determinants of ethnic identity include past racial harassment experiences, language spoken at home and with friends, quality of housing, and structure of the family. Most importantly, we find that, consistently with our theoretical analysis, identity and socialization to an ethnic minority are, other things equal, more intense in mixed neighbourhood than in segregated neighbourhoods. We argue that this last result has important and up-to-now unnoticed implications for integration and assimilation policies.

JEL Classification: A14 and J15
Keywords: cultural transmission, ethnicity, identity and intermarriage

Alberto Bisin
Department of Economics
New York University
Room 705
269 Mercer Street
New York, NY 10003
USA
Tel: (1 212) 998 8916
Fax: (1 212) 995 4186
Email: alberto.bisin@nyu.edu

Eleonora Patacchini
Facoltà di Scienze Statistiche
Universita di Roma 'la Sapienza'
Box 83 - RM62
P.le Aldo Moro 5
00185 Roma
ITALY
Tel: (39 06) 4991 0843
Fax: (39 06) 4453 246
Email: eleonora.patacchini@uniroma1.it

Thierry Verdier
Director
Paris-Jourdan Sciences Economiques (PSE)
48 Boulevard Jourdan
75014 Paris
FRANCE
Tel: (33 1) 4313 6308
Fax: (33 1) 4313 6310
Email: verdier@pse.ens.fr

Yves Zenou
IUI
Department of Economics
P.O.Box 55665
10215 Stockholm
SWEDEN
Tel: (46 8) 665 4535
Fax: (46 8) 665 4599
Email: yvesz@iui.se

* Thanks to Andrew Clark for Morissey's quote. This paper is part of the Polarization and Conflict Project CIT-2-CT-2004-506084 funded by the European Commission-DG Research Sixth Framework Programme.

Submitted 07 April 2006

Bengali, bengali / Bengali, bengali / No no no / He does not want to depress you/ Oh no no no no no / He only wants to impress you / Oh.. Bengali in platforms / He only wants to embrace your culture / And to be your friend forever. ['Bengali in Platform,' Morissey, *Viva Hate*, 1988, Reprise/Wea]

1 Introduction

In April 1992, when a mostly white jury acquitted four police officers accused in the videotaped beating of a black motorist (Rodney King), thousands of people in Los Angeles, mainly young black and Latino males, joined in what has often been characterized as a race riot. In the Summer of 2001, ethnic riots occurred on the streets of towns and cities in the north of England (e.g., Oldham, Leeds, Burnley, Bradford), involving young British Asian men and young White British men. More recently, in November 2005, riots emerged in Paris' suburbs, sparked by the accidental deaths of two Muslim teenagers, and then spread to 300 French towns and cities. Most of the rioters were the French-born children of immigrants from Arab and African countries, a large percentage being Muslim.

These race and ethnic riots[1] have all recently placed the issue of racial and ethnic identity at the forefront of political debate in the United States and in Europe. In this paper, we endeavor to study the issue of ethnic identity both theoretically and empirically. Identity is the result of an individual's choice, often the choice not to conform to the accepted norms of behavior but rather to different norms that characterize a social, ethnic, or religious group.[2] Furthermore, ethnic identities often take the form of "oppositional" identities, that is, they require rejection of the dominant ethnic (e.g., white) behavioral norms; see, in particular, Ainsworth-Darnell and Downey (1998). This is the case, for instance, of "ghetto culture" in the US (Wilson, 1987). Also, studies in the U.S. have found, for example, that African American students in poor areas may be ambivalent about learning standard English and performing well at school because this may be regarded as "acting white" and adopting mainstream identities (Delpit, 1995, Fordham and Ogbu, 1986, Ogbu, 1997, Austen-Smith

[1]But also, e.g., the terrorist attacks in the U.S. and Europe (September 11, the March 2004 Madrid train bombings, the July 2005 London bombings), the killing of the author of a documentary about Muslim immigrants by a young Dutch-Moroccan in Amsterdam on November 2004, the riots in many Muslim communities in February 2006 after the publications of vignettes representing the prophet Mohammed in a Danish newspaper, and several others.

[2]In this perspective, identity is related to conformity effects. Identity and conformity are nonetheless clearly distinct. Preferences for conformity in fact limit the choice of individuals, inducing them to conform to social norms of behavior (see e.g., Bernheim, 1994, and Akerlof, 1997).

and Fryer, 2005, Battu, Mwale, and Zenou, 2005, Fryer and Torelli, 2005, Selod and Zenou, 2006).

Oppositional identities often produce significant economic and social conflicts,[3] as in the case of the ethnic and race riots cited above. But how are intense and oppositional identities formed? Which economic and sociological factors mostly contribute to their formation? In particular, does neighborhood segregation induce intense and oppositional identities, as it is commonly observed? In this paper, we attempt to give some first answers to these questions.

A large literature in economics, sociology and anthropology studies how ethnic traits are transmitted from parents to children and how ethnic identity is adopted.[4] In our reading of the evidence, parents directly make various socialization choices, e.g., the rules and beliefs the family conforms to and how much time they spend with their children. Parents also realize that socialization is partially the product of the social interaction their children engage into, which they affect by choosing e.g., which neighborhood to live in, the school children attend, their social circle of friends and acquaintances, the civic/social clubs and churches they belong to. The role of parents in the socialization of their own children is nonetheless limited by the children's pro-active role in choosing who to imitate and learn from, thereby directly shaping their own cultural identity. An individual's general identity, in the words of Akerlof and Kranton (2000, p. 720), "is bound to social categories; and individuals identify with people in some categories and differentiate themselves from those in others."

We model the formation of ethnic traits along these lines, that is, as a mechanism which interacts cultural transmission and socialization inside the family,[5] peer effects and social interactions, and identity choice.

We study theoretically the process of ethnic assimilation (or lack thereof) of minorities and its dependence on the ethnic distribution of the population in the neighborhood in which the family lives and the child is raised. Importantly, we show that it is possible that (and we identify sufficient conditions on preferences such that) ethnic identity and socialization effort are more intense in mixed rather than in segregated neighborhoods. We show that this

[3] The relationship between ethnic diversity and economic performance is extensively studied and surveyed by Alesina and La Ferrara (2005).

[4] See, in particular, Alba (1990), Bernal and Knight (1993), Bisin and Verdier (2000), Bisin, Topa, and Verdier (2004), Boyd and Richerson (1985), Cavalli-Sforza and Feldman (1981), Phinney (1990) for theory and evidence on cultural transmission. See Akerlof and Kranton (2000) for identity formation.

[5] See Bisin and Verdier (2000, 2001) for a formal study of cultural transmission, and Bisin, Topa, and Verdier (2004), Cohen Zada (2003), Jellal and Wolff (2002), and Patacchini and Zenou (2004) for empirical studies of cultural transmission and socialization of, respectively, religious traits, altruism, and preferences for education.

is the case, for instance, if (i) preferences are such that individuals react to an hostile racial or ethnic environment accentuating their ethnic lifestyle, (ii) identity and ethnic segregation act as substitutes in their identity formation choice problem, (iii) children leave in more segregated neighborhoods than their parents were raised in (or in similar neighborhoods in terms of composition), and (iv) parents expect for their children a less hostile environment than they have themselves experienced.

We then put the model to data in the context of the assimilation of ethnic minority populations in the UK. We use data from the Fourth National Survey of Ethnic Minorities (FNSEM), collected in 1993/94 by the Policy Studies Institute (PSI) in the U.K., regarding six ethnic groups: Caribbean, Indian, Pakistani, African-Asian, Bangladeshi, and Chinese.

Our objective is to uncover the main determinants of the process of ethnic assimilation and to assess their relative empirical relevance.[6] In this respect, we find that the main determinants of ethnic identity include past racial harassment experiences, language spoken at home and with friends, quality of housing, and structure of the family.

Most importantly, we aim at uncovering in the data if identity and socialization effort are in fact reduced in more segregated neighborhoods. We find evidence that living in a neighborhood with a higher percentage of own ethnic minority group is associated with a lower sense of identity and with a lower probability of homogamy (i.e., with a higher inclination to ethnic assimilation), other things being equal.[7] Indeed, in the range of ethnic compositions, we observe that the predicted probability of having a strong identity (measured as the probability of reporting the highest allowed value of ethnic identity in the survey) varies from roughly 0.6 in relatively mixed neighborhoods (in which the minority accounts for less that 2 percent) to 0.4 in relatively segregated neighborhoods (in which the minority accounts for more than 33 percent of the population). Similarly, the estimated probability of homogamy of a minority (purged from the effects of controls) increases by more than 10 percentage points switching from segregated to mixed neighborhoods.[8]

We conclude that intense forms of ethnic identity and socialization appear to be formed

[6] The interaction of socialization, social interactions, and identity formation in the assimilation process in the U.K. is masterly described in several recent motion pictures, *Bend it like Beckham* (2002), *East is East* (2000), and *My Son the Fanatic* (1997).

[7] Following the literature, e.g., Bisin and Verdier (2000), we consider homogamy a measure of the effort to socialize children to the minority ethnic trait.

[8] Differently stated, the increase in the probability of homogamy following a marginal increase in identity is roughly doubled (from about 2-3.5% to about 4-6.5%, depending on the chosen proxy for identity) when the percentage of own ethnic minority group in the neighborhood where a minority individual lives decreases from more than 33% to less than 2%.

in social contexts in which the minority ethnic trait is mostly "threatened" either directly by the actions of the majority group (e.g., through explicit acts of rejection or harassment), or indirectly simply by being exposed to the interaction with the majority norm of behavior in mixed neighborhood.

This is consistent with other documented evidence of identity formation. Notably, using a nationally representative sample of more than 90,000 students, from 175 schools, who entered grades 7 through 12 in 1994 in the US (the National Longitudinal Study of Adolescent Health), Fryer and Torelli (2005) find that "acting white" behaviors among blacks (i.e. the higher the test score the less popular a student is) are more developed in racially mixed schools.[9] Also, Bisin, Topa, and Verdier (2004) document that religious socialization across U.S. states is more intense when a religious faith is a minority.[10]

Furthermore, our finding that a stronger identity is induced by whether an individual has experienced harassment or discrimination for racial or ethnic reasons might tend to exacerbate the effects of mixed neighborhoods on identity formation and socialization effort (as measured by homogamy). In mixed neighborhoods, in fact, episodes of harassment and discrimination tend to have relatively higher frequency.[11]

We also address the issue of the alleged specificity of Muslim immigrants with regards to the strength of their identity and their (lack of) assimilation tendencies; an issue which recently surged at the center of the political debate in Europe (see, e.g., Gallis, 2005). We estimate our identity and socialization model on the restricted sample of Muslim respondents. We find that Muslims tend in fact to have stronger identity effects on their assimilation effort for every neighborhood ethnic composition, but these effects are not qualitatively different from the ones found using the whole sample: identity and socialization effort still appear to be reduced in more segregated neighborhoods. This evidence suggests that the relationship between ethnic assimilation effort and ethnic neighborhood composition is not significantly different for Muslims with respect to other minorities.

[9] Anthropologists have also observed that social groups seek to preserve their identity, an activity that accelerates when threats to internal cohesion intensify. Thus, groups may try to reinforce their identity by penalizing members for differentiating themselves from the group. The penalties are likely to increase whenever the threats to group cohesion intensify; for an early analysis of this issues, see Whyte (1943).

[10] Relatedly, Bisin and Verdier (2000) provide many examples of the resilience of ethnic and other cultural traits which can be explained by a similar mechanism, from the case of Orthodox Jews in Brooklyn to the case of aristocrats in France.

[11] Although this evidence holds for most of the distinct types of harassment and discrimination classified by our data, it not however completely univocal. Serious episodes of racial harassment (like e.g., attacks) and serious job-related language problems (like, e.g. in getting work) seem to be less frequent in mixed neighborhoods (see Table 2).

The analysis of the dependence of socialization and identity on the ethnic composition of the neighborhood is of great interest from a policy perspective whenever assimilation is a policy objective and, more generally, when intense socialization practices and the formation of oppositional ethnic identities have important negative externalities. While the failure of assimilation and integration policies in Europe and the U.S. is certainly reflected in the recent ethnic and racial riots, our empirical results suggest that, contrary to presumptions often exposed by social scientists and commentators, the intense and oppositional identities which give rise to such social conflicts are not directly favored by the segregation of the neighborhood in which ethnic and racial minorities tend to live.

Our analysis suggests on the contrary that integration and assimilation policies favoring the formation of mixed neighborhoods, fearing the effects of geographical segregation, are possibly minimally effective, if not counterproductive. Integrationist policies, which include school busing, affirmative action in public schools and in the workplace, forced integration of public housing, and laws barring discrimination in housing and employment, have in fact often had limited effects, consistently with our analysis, and are even being at times opposed by the same minority groups in whose interest they have been pursued (see e.g., Jacoby, 1998, and Thernstrom and Thernstrom, 2002). J. Coleman, for instance, fifteen years after the Coleman Report in 1966, which originally proposed busing, admitted that, "the assumption that busing would improve achievement of lower-class black children has now been shown to be fiction" (cited in Jacoby, 1999).[12] But Moving to Opportunity (MTO) programs in the United States that relocates families from high- to low-poverty neighborhoods (and from racially segregated to mixed neighborhoods) also have had positive but arguably small effects (see, in particular, Ludwig, Duncan, and Hirschfield, 2001, and Kling, Ludwig, and Katz, 2005).[13] In Europe different integration policies and ambitious social programs have been implemented in urban areas where immigrants live but they also have had limited results. This is the case, for instance, for the creations of Zones of Educational Priority (ZEP's, 'Zones d'Education Prioritaire') and for the rehabilitation of bleak housing projects in immigrant neighborhoods under the guise of urban policy ('politique de la ville') in France.Finally, even racially integrated schools have recently lost much of their appeal in African-American communities (see e.g., the ethnographic study of Gussin Paley, 1995, for schooling).

Far from supporting policies promoting segregated neighborhoods, in this paper, we sim-

[12]The failure of the busing and other civil right policies is certainly also due to the whites' flight from de-segregated schools and neighborhoods.

[13]Similarly, the Toronto housing program where adults were assigned as children to different residential housing projects (Oreopoulos, 2003) did not give the expected results in terms of education outcomes.

ply document that the effect of mixed neighborhood on identity formation and socialization might be perverse. This is particularly so if mixed neighborhood are conducive of explicit acts of rejection on the part of the majority group.

The paper is organized as follows. In the next section, we present the theoretical model, which will ground the empirical approach. Section 3 deals with the empirical analysis. In section 4, we discuss some policy issues. All proofs are relegated to Appendix 1.

2 The theoretical model

Suppose that the population is composed of a majority and a minority ethnic trait.[14] We denote with apex i the minority trait. We denote instead with apex 0 the trait of the majority, to which minority individuals might assimilate. We consider the formation of ethnic traits through a mechanism which interacts *(i) cultural transmission* and socialization *inside the family*, *(ii) social interactions* and peer effects, via imitation and learning and *(iii) identity* choice.

Only parents of the minority ethnic trait i are interesting in our model, as we assume for simplicity that parents of the ethnic majority have children of the ethnic majority with no socialization effort. (Consequently we drop the index i when not necessary.) We model the formation of ethnic traits as follows (see also Figure 1). *i)* Families are composed of one parent and a child (both without specified gender). All children are born without defined preferences or cultural traits, and are first exposed to their parent's trait. *Cultural transmission inside the family* to the parent's trait, i, occurs with a probability which is the result of (increases with) costly socialization effort on the part of the parent (see Bisin and Verdier, 2000, 2001). *ii)* If a child from a family with trait i is not directly socialized, he/she interacts with peers, role models, and other cultural parents in the neighborhood in which he/she is raised. As a consequence of such *social interactions* the child adopts the minority trait with a probability which depends on the ethnic composition of the neighborhood. *iii)* Suppose that either cultural transmission inside the family is successful or that a child adopts the ethnic trait of his/her parents through peer effects. The intensity of his/her ethnic *identity* is nonetheless his/her personal choice, that is, it is not transmitted by the family. We conceptualize identity as a psychological defense against the costs of behaving distinctively from the accepted social norm (the preferred behavior of the majority). By

[14] This is just for notational simplicity. The extension of our theoretical analysis to multiple minority traits is straightforward. In the empirical analysis we shall study four minority populations, Pakistani, Indian, Carribean, and Chinese, and their assimilation process to the Anglo-Saxon culture.

choosing a stronger identity an individual can and will behave more closely to his/her ethnic ideal.

[*Insert Figure* 1 *here*]

2.1 Preferences

Consider a parent and a child. We index variables related to the parent (resp. the child) with apex p (resp. c). We describe the preferences and the associated decision problems we study from the vantagepoint of parents, because this is how the empirical analysis in the next section can be formulated. A parent of trait i derives utility both from his/her own actions, x^p, and from the actions of his/her child x^c. In our analysis, these two components of preferences are independent and hence can be introduced in turn.

Own component of preferences. An ethnic trait i is represented by a system of values and preferences summarized by the utility function $u^i(x^p, z^p)$, where x^p is an abstract argument indicating the whole set of choices of the individual (a parent), and $z^p \geq 0$ represents a measure of his/her personal negative experiences/environment, e.g., having being harassed for racial or ethnic reasons, living in an hostile environment.

Living the life prescribed by ethnic trait i, in our model, means choosing

$$x^i(z^p) = \arg\max u^i(x, z^p).$$

Choosing $x^i(z^p)$ is however costly in a socio-economic environment in which the accepted social norm is x^0, the behavior of the majority.

We postulate that the construction of an individual's ethnic identity is the psychological mechanism by which the individual reduces these costs. Formally, let α^p denote the identity of a parent. The fraction of individuals with trait i is denoted by q^i. Let $\lambda(\alpha^p, q^{i,p})(x - x_0)^2/2$ denote the psychological costs associated to choice x.[15] The function $\lambda(\alpha^p, q^{i,p})$ represents the unit costs of lack of assimilation. Such costs depend on identity, α^p, and on the fraction of the population with ethnic trait i in the neighborhood in which the parent lives when forming his/her ethnic identity, $q^{i,p}$.[16] The variable α^p represents the

[15] Observe the fundamental difference with conformity models (see, among others, Akerlof, 1980; Akerlof, 1997; Ballester, Calvo Armengol, and Zenou, 2005; Battu, Mwale, and Zenou, 2005; Bernheim, 1994; Glaeser and Scheinkman, 2001; Kandel and Lazear, 1992; Fershtman and Weiss, 1998) where it is failing to conform to *own* group identity that is costly.

[16] We assume that $q^{i,p}$ is not chosen by parents. We discuss and find support for this assumption in our data (see Section 3.4 below).

parent's identity in the sense that the higher α^p, the lower the psychological costs associated to a choice $x \neq x^0$.[17]

Each parent of ethnic trait i chooses α^p given $q^{i,p}$ and z^p. Identity formation is costly in itself. Higher values of α^p are formed at convexly increasing psychological costs $(\alpha^p)^2/2$. Summarizing, a parent of trait i has own utility given by:

$$u^i(x^p, z^p) - \lambda\left(\alpha^p, q^{i,p}\right)\frac{\left(x^p - x^0\right)^2}{2} - \frac{\left(\alpha^p\right)^2}{2} \tag{1}$$

We impose standard assumptions on preferences.[18] An important element of the analysis of the paper will revolve around the sign of the cross derivative $u_{xz} \equiv \frac{\partial^2 u^i(x^p, z^p)}{\partial x^p \partial z^p}$ of the utility function. When $u_{xz} > 0$ (resp. < 0), then $x^i(z^p)$ increases (resp. decreases) with z^p; namely, an agent would react to an hostile environment by accentuating (resp. moderating) his/her ethnic lifestyle.

The unit costs of lack of assimilation of parents of ethnic trait i are defined to decrease in their identity,

$$\lambda_\alpha \equiv \frac{\partial\lambda\left(\alpha^p, q^{i,p}\right)}{\partial\alpha^p} < 0, \tag{3}$$

and also are required to satisfy standard assumptions.[19] Furthermore, they are assumed to decrease with the fraction of the population sharing the trait, $q^{i,p}$,

$$\lambda_q \equiv \frac{\partial\lambda\left(\alpha^p, q^{i,p}\right)}{\partial q^{i,p}} < 0, \tag{5}$$

[17] Our model of identity formation is inspired by Akerlof and Kranton (2000). Using their terminology, we have two *categories*, traits i and 0, whose *prescription* are respectively represented by $x^i(z^p)$ and x^0; and identity affects the individual's utility. Saez-Marti and Sjogren (2006) also study theoretically the interactions between cultural transmission and identity. They model identity formation, however, as a bias in the transmission of culture rather than as a choice of the individual.

[18] That is, $u^i(x^p, z^p)$ is twice continuously differentiable with $u_{xx} \equiv \frac{\partial^2 u^i(x^p, z^p)}{\partial (x^p)^2} < 0$. Naturally, we require $u_z \equiv \frac{\partial u^i(x^p, z^p)}{\partial z^p} < 0$. Furthermore, to avoid trivial cases, we assume that $x^i(z^p) = \arg\max u^i(x^p, z^p) \neq x^0$; in fact, without loss of generality, we can assume

$$x^i(z^p) > x^0 \text{ for all } z^p \tag{2}$$

[19] In particular, when $\alpha^p \to 0$, costs are so high, $\lambda\left(\alpha^p, q^{i,p}\right) \to \infty$, that the agent chooses $x^p = x^0$. We also assume that

$$\lambda_{\alpha\alpha} \equiv \frac{\partial^2\lambda\left(\alpha^p, q^{i,p}\right)}{\partial\left(\alpha^p\right)^2} > 0 \tag{4}$$

so as to guarantee concavity of the identity formation process.

In other words, deviating from the behavioral norm of the majority is less costly the less widespread is the norm in the population.

Imperfect empathy component of preferences. Parents are altruistic but in a paternalistic manner. That is, parents care about their child's future well-being, but they evaluate their children' future utility as if it were their own. Bisin and Verdier (2000, 2001) refer to this form of paternalistic altruism in the context of cultural transmission models as *imperfect empathy.*

Thus, the utility a parent obtains from the socialization of his/her son to trait i is equal to:

$$u^i\left(x^{c*}, z^p\right) - \lambda\left(\alpha^p, q^{i,p}\right)\frac{\left[x^{c*} - x^0\right]^2}{2}$$

where x^{c*} represents the child's decisions (as expected by the parent), given the child's environment z^c. Therefore, while parents perceive and evaluate altruistically the behavior of their children, x^{c*}, through the lenses of their own identity and experiences, $\lambda\left(\alpha^p, q^{i,p}\right)$ and z^p, they anticipate correctly the environment z^c of their child (possibly different from the environment z^p of the parent) and his/her choice x^{c*}.

On the contrary, a parent of ethnic trait i whose socialization effort is not successful, and hence who has an assimilated child, has perceives altruistically a utility $u^i\left(x^0, z^p\right)$ from the behavior of his child.

2.2 Socialization and identity choice

Consider one of our families composed of a parent of trait i and a child. The parent chooses his/her own identity α^p as well as x^p. He/she also chooses τ, the direct socialization of his/her child. His/her child then, in turn, possibly acquires his/her particular trait i through an intergenerational transmission mechanism which depends on parents' socialization effort, τ, and on the social environment where parent lives and the child is raised, $q^{i,c}$. If socialization to trait i is not successful, the child is assimilated to the majority and chooses x^0. If on the contrary socialization to trait i is successful, the child's identity formation process determines his/her final choice x^c.

2.2.1 Identity choice

We first formulate the identity choice problem of a parent of trait i:[20]

$$\max_{x^p,\alpha^p} u^i(x^p, z^p) - \lambda\left(\alpha^p, q^{i,p}\right)\frac{\left(x^p - x^0\right)^2}{2} - \frac{\left(\alpha^p\right)^2}{2} \tag{6}$$

The first order conditions of problem (6) are:[21]

$$\frac{\partial u(x^p, z^p)}{\partial x^p} - \lambda\left(\alpha^p, q^p\right)\left(x^p - x^0\right) = 0 \tag{8}$$

$$-\frac{\partial \lambda\left(\alpha^p, q^p\right)}{\partial \alpha^p}\frac{\left(x^p - x^0\right)^2}{2} - \alpha^p = 0 \tag{9}$$

Let x^{p*}, α^{p*} denote the optimal choice of a parent of trait i and use the following notation: $\lambda^p_{\alpha q} \equiv \frac{\partial \lambda^p}{\partial \alpha^p \partial q^{i,g}}$. We are now ready for our first characterization result:

Proposition 1 *Under our assumptions, x^{p*} and α^{p*} are both decreasing in $q^{i,p}$ if $\lambda_{\alpha q} > 0$ and large enough. Otherwise, and in particular if $\lambda_{\alpha q} \leq 0$, they are both increasing in $q^{i,p}$.*

The intuition for this result is straightforward. There are two effects on a parent's identity formation choice induced by a change in the ethnic composition of the neighborhood in which he/she is raised. First of all an increase in the share of the minority population $q^{i,p}$ reduces *per se* the costs of conforming to the minority behavior, $\lambda(\alpha^p, q^{i,p})$. As a consequence, x^{p*} is optimally closer to x^i (that is, it is higher and farther from x^0). This has the added effect of favoring the choice of stronger ethnic identity, that is, of increasing α^p (this is clear from (9)). But an increase in the share of the minority population $q^{i,p}$ also has a second, possibly countervailing, effect on x^{p*} and α^{p*}. The choice of identity, α^{p*} depends crucially on the effect of the change in $q^{i,p}$ on $\frac{\partial \lambda}{\partial \alpha^p}$, the marginal effect of α^p on the unit cost of lack of assimilation. Consider first the case in which $\lambda_{\alpha q} \leq 0$. In this case α^p and $q^{i,p}$ enter as

[20] Note that we assume that the parent does not consider the effect of his/her own choice α^p on the socialization process of his/her future child. In Appendix 2, we relax this simplifying assumption and consider the more general case where identity and socialization are not determined independently from each other.

[21] Observe that the second order conditions hold if the Hessian matrix is negative semi-definite, that is $u_{xx} < 0$ and $u_{\alpha^p\alpha^p} < 0$ (which are always true because of the strict concavity of $u^i(.)$ and (4)) and if

$$D = -\left(u_{xx} - \lambda^p\right)\left[1 + \lambda_{\alpha\alpha}\frac{\left(x^{p*} - x^0\right)^2}{2}\right] - \left(\lambda_\alpha\right)^2\left(x^{p*} - x^0\right)^2 > 0 \tag{7}$$

where $\lambda \equiv \lambda\left(\alpha^p, q^{i,g}\right)$, $\lambda_\alpha \equiv \frac{\partial \lambda}{\partial \alpha^p}$ and $\lambda_{\alpha\alpha} \equiv \frac{\partial \lambda_\alpha}{\partial^2 (\alpha^p)^2}$. The inequality (7) is assumed to be true throughout.

complements (recall that $\frac{\partial \lambda}{\partial \alpha^p} < 0$) in the parent's identity formation choice problem. As a consequence, an increase in $q^{i,p}$ is accompanied by an increase in α^{p*}, that is, more intense ethnic identity choices on the part of the parent (and hence by an increase in x^{p*} as well). But consider instead the case in which $\lambda_{\alpha q} > 0$. In this case α^p and $q^{i,p}$ enter as substitutes in the parent's identity formation choice problem. This has a countervailing effect to the direct positive effect of $q^{i,p}$ on x^{p*} and α^{p*}. When this effect is large enough, that is, when $\lambda_{\alpha q} > 0$ is large enough, it is possible that the total effect of $q^{i,p}$ is reversed and x^{p*} and α^{p*} are both decreasing in $q^{i,p}$.

Let us now consider the comparative statics result with respect to z^p.

Proposition 2 *Under our assumptions, the variables x^{p*} and α^{p*} are increasing (resp. decreasing) in z^p if and only if $u_{xz} > 0$ (resp. < 0).*

When $u_{xz} > 0$, the individual perceives an incentive to react to a more hostile personal environment/experience by accentuating his/her ethnic norms of behavior, that is, by increasing x^p further away from the conventional behavior x^0. This, in turn, increases his/her incentives to a stronger ethnic identity, which reduces the costs of not assimilating. As a consequence in this case, x^p and α^{p*} increase with z^p. On the contrary, when $u_{xz} < 0$, the individual reacts to a more hostile personal environment/experience by moderating the ethnic norms of behavior, adopting behavior closer to the majority's norm, x^0, in turn reducing the incentives to strongly identifying to the value of the minority.

2.2.2 Parent's socialization choice

The cultural transmission and socialization process we adopt here is as in Bisin and Verdier (2000, 2001). Consider a parent of trait i. He first decides how much effort τ he/she puts in direct vertical socialization. As a consequence, the child is directly socialized to trait i with probability τ. If the child is not directly socialized (which happens with probability $1 - \tau$), he/she picks a cultural parent, a role model, at random from the population of the neighborhood in which he is raised, and adopts the trait i if the role model happen to have the trait. Otherwise the child assimilates to the majority.[22] Therefore, the probability that a parent of trait i has a child of trait i, under the socialization process we have postulated, is

$$P^{ii} = \tau + (1 - \tau)q^{i,c}, \tag{10}$$

[22] In particular, when extending the analysis to multiple minority traits, we assume that a child whose parent has trait i can never acquire a different minority trait.

while the probability that a child does not adopt the trait i and is assimilated to the majority is instead

$$P^{i0} = (1-\tau)\left(1-q^{i,c}\right) \tag{11}$$

Note that P^{ii} and P^{i0} depend on $q^{i,c}$, the ethnic composition of the neighborhood in which the parent raise the child, which is not necessarily the same in which the parent himself has been raised and which has influenced the parent's identity choice, $q^{i,p}$

If the child adopts trait i, he/she then chooses x^{c*}, α^{c*}. The child identity formation process is analogous to the problem of his/her parent, characterized in the previous section:

$$(x^{c*}, \alpha^{c*}) = \arg\max\ u^i(x^c, z^c) - \lambda\left(\alpha^c, q^{i,c}\right)\frac{\left(x^c - x^0\right)^2}{2} - \frac{\left(\alpha^c\right)^2}{2} \tag{12}$$

When making socialization choices parents correctly anticipate the identity formation process that their children will possibly undergo. Thus, the parent's socialization problem consists in:

$$\max_{\tau}\left(\tau + (1-\tau)q^{i,c}\right)\left(u^i\left(x^{c*}, z^p\right) - \lambda\left(\alpha^p, q^{i,p}\right)\frac{\left(x^{c*} - x^0\right)^2}{2}\right) + (1-\tau)\left(1-q^{i,c}\right)u^i\left(x^0, z^p\right) - \frac{(\tau)^2}{2} \tag{13}$$

subject to (10),(11), and (12).

The first order condition of this problem is given by:

$$\tau = \left(1-q^{i,c}\right)\Delta V \tag{14}$$

where

$$\Delta V = u^i\left(x^{c*}, z^p\right) - \lambda\left(\alpha^p, q^{i,p}\right)\frac{\left(x^{c*} - x^0\right)^2}{2} - u^i\left(x^0, z^P\right) \tag{15}$$

is the perceived altruistic utility gains of parents of trait i from having a non-assimilated child. In this respect, ΔV captures the identity of the parent since it measures how important it is for him/her that his/her child adopts his/her own trait i. Let τ^* denote the parent's socialization choice, the solution of socialization problem (13). Then we are ready for our second characterization result.

Proposition 3 *Under our assumptions, τ^* is decreasing in $q^{i,c}$ if either*

1) *$z^p, z^c, q^{i,p}, q^{i,c}$ are such that $x^c \leq x^p$ and $\lambda^c_{\alpha q} > 0$ and large enough (so that x^c is decreasing in $q^{i,c}$), or*

2) *$z^p, z^c, q^{i,p}, q^{i,c}$ are such that $x^c \geq x^p$ and $\lambda^c_{\alpha q} \leq 0$ (so that x^c is increasing in $q^{i,c}$).*

Otherwise, and in particular if e.g., $z^p, z^c, q^{i,p}, q^{i,c}$ *are such that* $x^c > x^p$ *and* $\lambda^c_{\alpha q} > 0$ τ^* *might be increasing in* $q^{i,c}$.

We provide an intuition for this result which identifies the different effects of a change in the ethnic composition of the neighborhood in which the child grows up on the parent's socialization choice.[23] An increase in $q^{i,c}$ increases the chance to transmit trait i, keeping constant socialization effort τ (that is, P^{ii} increases and P^{i0} decreases, see (10-11)). Even if direct parental socialization is not successful, the child has therefore a higher probability of adopting trait i through his/her interactions with a (random) cultural parent in the population of the neighborhood. As a result, an increase in $q^{i,c}$ directly induces parents to reduce their socialization effort τ (this effect is referred to in Bisin-Verdier (2000, 2001) as *cultural substitution*). However, the expected utility of socialization for a parent depends also on ΔV, the perceived altruistic utility gains from having a non-assimilated child. If $\frac{\partial \Delta V}{\partial q^{i,c}} > 0$ an increase in $q^{i,c}$ can have a countervailing effect on τ^*[24] which dominates the cultural substitution effect. In this case τ^* is instead increasing with $q^{i,c}$.

Sufficient conditions for $\frac{\partial \Delta V}{\partial q^{i,c}} \leq 0$ and hence for $\frac{\partial \tau^*}{\partial q^{i,c}} < 0$, as 1) and 2) in the statement of the proposition, are easily derived. We provide here the intuition for 1) and leave 2) to the reader. *Imperfect empathy* implies that the parent's altruistic utility gains are maximized when $x^{c*} = x^{p*}$. This is only the case, however when $z^c = z^p$, $q^{i,c} = q^{i,p}$. Suppose instead that $z^p, z^c, q^{i,p}, q^{i,c}$ are such that $x^c < x^p$, that is, the parent expect his/her child to behave in a less characteristically ethnic manner than himself/herself (recall that, without loss of generality, we ordered x so that $x^0 < x^i$, see (2), and hence $x^0 < x^c < x^p < x^i$). In this case, the parent's altruistic utility gains decrease in $q^{i,c}$ if x^c is decreasing in $q^{i,c}$, that is, from Proposition 1, if $\lambda^c_{\alpha q} > 0$ and large enough.

To better understand the economic implication of this result, we can consider more in detail the interesting case in which the parent expect his/her child to behave in a less characteristically ethnic manner than himself/herself. In particular we can ask when would this be the case, in terms of the ethnic environment the parent faces and expects the child to face in the future, that is, in terms of $z^p, z^c, q^{i,p}, q^{i,c}$. It is easy to see that $x^c < x^p$ would obtain, for instance, if

$u_{xz} > 0$ and $z^c < z^p$, and

[23] This result summarizes the most interesting implications of the model; in particular those that we can study empirically. However, we report in the Appendix, for completeness, the explicit comparative statics of τ^* with respect to $z^p, z^c, q^{i,p}, q^{i,c}$.

[24] As stated in the proposition, this is the case, for instance, if e.g., $z^p, z^c, q^{i,p}, q^{i,c}$ are such that $x^c > x^p$ and x^c is increasing in $q^{i,c}$ (that is, by Proposition 1, if $\lambda^c_{\alpha q} > 0$ and large enough).

$q^{i,c} \geq q^{i,p}$ (with $\lambda^c_{\alpha q} > 0$).

In other words, parents' socialization effort is reduced the more segregated is the neighborhood in which children are raised, e.g., if children leave in more segregated neighborhoods than their parents were raised in (or in similar neighborhoods in terms of composition) and if parents expect for their children a less hostile environment than they have themselves experienced. This is the case, in particular, if preferences (the same for parents and children) are such that individuals react to an hostile environment accentuating his/her ethnic lifestyle and if identity and ethnic segregation act as substitutes in their identity formation choice problem.

We can also study the effects of a more hostile environment faced by parents when growing up, z^p, on their future socialization effort τ^*. In fact τ^* increases with z^p if and only if the parents' altruistic utility gain ΔV increases with z^p.

Proposition 4 *Under our assumption, τ^* is increasing in z^p if and only if $u_{xz} > 0$.*

The intuition is straightforward. An increase in z^p has two effects on ΔV. First, for any given anticipated behavior of the child $x^{c*} > x^0$, the utility gain $u^i(x^{c*}, z^p) - u^i(x^0, z^p)$ of having him being successfully socialized to the ethnic trait is affected by a change of the environment z^p. As a matter of fact given that the child' behavior x^{c*} is always larger than the assimilated behavior x^0, this utility gain is increased if and only if behavior x and hostile environment z are complements in the utility function (ie. $u_{xz} > 0$). On the other hand, an increase in z^p, if $u_{xz} > 0$, has also the effect to increase the parent's identity α^p. As a consequence the psychological costs associated by the parent to his/her child's behavior x^{c*} are smaller and his/her perceived altruistic utility gains, ΔV is again higher.

When we put the model to data, in the next section, we will document that socialization effort is in fact less intense in more segregated neighborhood. We will assume that parents and children have the same preferences and that (not without carrying over appropriate robustness analysis) the neighborhood in which parents have been raised is not too dissimilar in terms of ethnic composition than the neighborhood in which their children are raised. Under these conditions, we will document that individuals react to an hostile environment accentuating his/her ethnic lifestyle and that segregation induces less intense ethnic identity and socialization choices, other things equal.

These results when interpreted through our theoretical model suggest that, in our data, identity and ethnic segregation act as substitutes in the parents' identity formation choice problem and that ethnic preferences are reinforced in an hostile environment.

3 Empirical analysis of socialization and assimilation

In this section we put our model to the data. Our objective is to uncover the main determinants of the process of ethnic assimilation and to assess their relative empirical relevance. In particular, we aim at providing a quantitative assessment of the relationship between neighborhood ethnic composition and socialization and identity formation.

Data. The scarcity of empirical work examining the importance of ethnic preferences on individual behavior is partly due to the limited information and sample sizes on cultural variables. Our analysis is made possible by the use of a unique UK data set, the Fourth National Survey of Ethnic Minorities (FNSEM), which was collected in 1993/94 by the Policy Studies Institute (PSI). FNSEM over-samples ethnic minority groups and explicitly acknowledges the heterogeneity within the non-white population where the ethnic population is composed of six groups (Caribbean, Indian, Pakistani, African-Asian, Bangladeshi, and Chinese).[25] It also contains detailed information about respondents' identification with their own ethnic group (e.g. attitudes towards inter-marriage, importance of religion and other aspects of individual's ethnic preferences) as well as variables aiming at capturing the heterogeneity within the non-white population in terms of individual, demographic, family and socio-economic characteristics (see Modood et al. 1997 for details). The data are merged with the 1991 Census in order to get valuable information of each individual's residential ward.[26]

The respondents in the survey are the generations of the parents. We do not have information about children after they have left the parents' residence. Consequently, we center the empirical analysis of our model on the identity choices and socialization decisions of the parents. In terms of our theoretical model, this analysis requires proxies for different key variables, notably for: *(i)* the ethnic composition of the neighborhood in which parents and children live when socialization effort is made, $q^{i,c}$, and the ethnic composition in the neighborhoods in which the parents were raised and formed their identity, $q^{i,p}$, *(ii)* the intensity of the parents' ethnic identity, α^p, and their perceived altruistic utility gains ΔV, *(iii)* the exogenous determinants of the parents' psychological costs of deviating from the majority's norms of behavior, z^p, *(iv)*, the parents' socialization effort, τ. Let us now discuss the different empirical proxies for these key variables.

(i) The ethnic composition of the neighborhood in which parents and children live, $q^{i,c}$,

[25] For historical reasons Black Africans were not included. Furthermore, the survey only covers England and Wales.

[26] A UK Census ward contains on average 3,000-4,000 residents.

is observed at the level of the residential ward from the 1991 Census data. It has been divided in seven classes, $q^{i,c} \leq 2\%$, $2\% < q^{i,c} \leq 5\%$, $5\% < q^{i,c} \leq 10\%$, $10\% < q^{i,c} \leq 15\%$, $15\% < q^{i,c} \leq 25\%$, $25\% < q^{i,c} \leq 33\%$, $q^{i,c} \geq 33\%$. As usual, the mean value of each interval is used in the regression analysis. Unfortunately, the data contain no information regarding the neighborhood in which parents have been raised and have formed their identity, $q^{i,p}$. We therefore proxy $q^{i,p}$ with $q^{i,c}$.

(ii) The intensity of the parents' ethnic identity, α^p and their perceived altruistic utility gains, ΔV, are distinct in the theoretical analysis. Other things equal, however, they are positively related (see equation (15)). Unfortunately, they cannot be separately proxied for in the data. We therefore proceed using two alternative proxies for both α^p and ΔV (and we generally refer to them as measures of identity). The first proxy, denoted by ΔV_1, is derived from the responses to a direct question about the importance of ethnic identification. In fact, in the FNSEM, the interviewees were asked if they agreed or disagreed and if so, whether strongly or just a little, with the statement: "In many ways, I think of myself as [respondent's ethnic group]". Over 80% of each group either agreed strongly or agreed that they thought of themselves in terms of their own ethnic group, revealing that there is a strong sense of ethnic identity amongst minority groups.

The second proxy, ΔV_2, is instead a multidimensional measure constructed following the standard approach in the sociological literature to derive quantitative information on sensitive topics, such as delinquency or tobacco, alcohol and drug usage using qualitative answers to a battery of related questions. The FNSEM contains a number of questions providing information on different dimensions of identity, in particular importance of religion, attitudes towards inter-marriage and the relevance of ethnicity in influencing the kind of school that people want for their children. The precise questions are the following ones: "Is religion to the way you live your life not at all important, not very important, fairly important or very important?"; "If a close relative were to marry a white person would you not mind, mind only a little, mind, mind very much?"; "Is ethnicity in choosing a school for an eleven-years old child of yours not important, not very important, fairly important or very important?" and "If the available schools were similar in other ways, what proportion of one's ethnic group would you like in your children's school?", with possible answers: no preference, fewer than a half, about a half, more than a half. On the basis on this information, a summated index is calculated for each respondent.[27] The Crombach$-\alpha$ measure is then

[27] It ranges from 1 to 4 with mean and standard deviation equal to 3.52 and 0.69 respectively. We preserve the 1 to 4 scale of the original questions by coding the index in four categories (1 to 4). The results using the index as a continuous variable remain, however, qualitatively unchanged.

used to assess the quality of the derived variable. In our case, we obtain an α equal to 0.82 ($0 \leq \alpha \leq 1$) indicating that the different items incorporated in the index have considerable internal consistency.

(iii) Information on whether the parent has been harassed or discriminated for racial or ethnic reasons is used to indicate personal experiences, that have an exogenous effect on the identity formation, z^p. More specifically, to construct z^p, we use whether the individual has been a victim of serious or light racial harassment (i.e., whether he/she has been attacked or had their property damaged for reasons related to race or religion or simply insulted), whether he/she has experienced racial discrimination in getting a job and how many times, whether he has ever had language-related problems at work (e.g. difficulty in getting a job or over pay, health and safety or the union).

(iv) Parental socialization effort, τ, is measured using a dummy variable taking value one if the respondent is married with a person of her/his own ethnic group and zero otherwise.[28] It has been extensively documented in fact that interracial marriage is typically considered as a sign of inclination toward cultural assimilation (see, in particular, Al-Johar, 2005; Qian, 1999; Meng and Gregory, 2005; Tucker and Mitchell-Kernan, 1990) and that marriage choices are at least in part determined by parents' preferences to socialize their children to their own (the parents') trait (see Bisin, Topa, and Verdier, 2004, and the evidence cited in Bisin and Verdier, 2000).

Excluding the individuals with missing or inadequate information on our target variables, we obtain a final sample of 3,420 individuals. Table 1 contains summary statistics on our key variables.

[*Insert Table* 1 *here*]

Table 2 reports simple correlation coefficients between racial and ethnic personal experiences, z^p and the ethnic composition of the residential neighborhood, $q^{i,c}$. Although the correlations are low, it is interesting to note that most of the values are negative. This indicates that episodes of harassment and discrimination tend to have relatively higher frequency in mixed neighborhoods, i.e. when $q^{i,c}$ decreases.

[*Insert Table* 2 *here*]

[28] The empirical analysis has also been performed using information on the frequency of attendance to religious services as an alternative proxy of socialization effort. The results remains qualitatively unchanged.

Empirical strategy The first prediction of the theoretical model we study empirically is the parents' socialization decision (equation (14)):

$$\tau = \left(1 - q^{i,c}\right) \Delta V.$$

While we can estimate this equation directly with our data, a correct identification of the effects is more delicate. First of all, we need to account for the possibility that $q^{i,c}$ is endogenous. For instance, whether a marriage is homogamous (which proxies for τ in our analysis) can in principle affect where the family resides. Furthermore, the respondents might have chosen a specific ward to reside in, before marriage, so as to facilitate the search for a spouse of the same ethnic group. To address this issue we will restrict the sample to a subset of respondents who are arguably "constrained" on where they live.

A second econometric issue in the estimation of equation (14) is the possible endogeneity of ΔV. Whether a marriage is homogamous can also affect the preferences of the parents, and in particular the intensity of their ethnic identity. To this end we proceed by instrumenting ΔV. In this respect, the theoretical model directly suggests z^p as an appropriate instrument. In fact, z^p affects τ only through its effect on α^p and therefore on ΔV.[29]

Furthermore, estimating the relationship between ΔV (and α^p, recall they cannot be proxied separately) and z^p and $q^{i,p}$ is of interest by itself as an analysis of the determinants of identity.

We proceed as follows. In Section 3.1 we obtain a first quantitative evaluation of the impact of $(1 - q^{i,c}) \Delta V$ on the socialization effort τ by performing a straight estimation of equation (14). By doing so, we ignore the endogeneity problem associated to the identity choice ΔV. In Section 3.2, we then present an estimate of this effect obtained from the two-stage instrumental variable approach, which is grounded on the theoretical model. Specifically, we first estimate the likelihood to have a strong identity identity ΔV using z^p as an instrument. Then, using the estimated value of ΔV denoted by $\widehat{\Delta V}$ from the first stage, we evaluate the impact of $(1 - q^{i,c}) \widehat{\Delta V}$ on τ. In this analysis we use the whole sample of respondents. In Section 3.3, however, we deal with the endogeneity of $q^{i,c}$ by restricting the sample, as already noted, to a subset of the agents whose residential location is arguably exogenous.

[29] This is formally apparent from (14) and (15) as well as from the first order conditions of the parents identity choice problem, (8) and (9).

3.1 The direct estimation results

We first directly estimate equation (14) ignoring the endogeneity issue stemming from the parents' identity choice. Specifically, we consider the following regression model:[30]

$$\tau = a(1 - q^{i,c})\Delta V + \sum_{m=1}^{M} \beta_m y_m + \epsilon, \tag{16}$$

where y_m (for $m = 1, ..., M$) is a set of M control variables accounting for individual, family and residential neighborhood characteristics, and ϵ is a random error term. Our theoretical analysis predicts the parameter a to be positive. Precise definitions of the control variables used can be found in Appendix 3. Table A1 contains our sample descriptive statistics.

Table 3 reports the probit estimation results of model (16), where only a set of basic controls is added (sex, age, education, household income and ward unemployment rate). The first three columns (estimated coefficients, marginal effects and $p-$values respectively) refer to the model specification where the first proxy for identity, ΔV_1, is used, whereas the last three columns contains the results based on the adoption of the alternative proxy ΔV_2. It appears that the estimated coefficient $\widehat{a}$ is as expected positive and highly significant regardless of the proxy adopted, indicating that the effect of individual identity on the probability of homogamy depends on the neighborhood ethnic composition. When the marginal effects of identity for different levels of $(1 - q^{i,c})$ are calculated (bottom panel in Table 1), we find that the (positive) impact gets larger in magnitude (with increasing levels of statistical significance) the lower is $q^{i,c}$, i.e. the more the individual ethnic group is in minority. For instance using ΔV_1, a marginal increase in identity, ΔV_1, increases the probability of homogamy by 0.17% when $q^{i,c}$ is roughly greater than 25%, and the effect rises by roughly 50% (+0.25%) when $q^{i,c}$ is lower than 5%. These results are robust with respect to alternative proxies of identity, i.e. they are qualitatively the same and comparable in magnitude (only showing slightly higher effects) when using ΔV_2.

[*Insert Table 3 here*]

3.2 The two-stage estimation results

We now proceed with the two-stage instrumental variable estimation procedure. In the first stage, we estimate the impact of $q^{i,p}$ and z^p on ΔV. Recall however that we do not observe

[30] We do not add an index for individual observations to save on notational complexity.

$q^{i,p}$ and we proxy it by $q^{i,c}$.[31] In particular, in the first stage we estimate the following regression model

$$\Delta V = \delta q^{i,p} + \sum_{l=1}^{L} \gamma_l z_l^p + \sum_{m=1}^{M} \beta_m y_m + \upsilon,$$

where $y_m s$ are the controls for individual, family and residential neighborhood characteristics (as in model (16), see Appendix 3 and Table A1), and υ is a random error term. The vector of instruments z_l^p (for $l = 1, ..., L$) collects personal negative race-related experiences of an individual and it includes seven variables ($L = 7$), e.g., racial harassment episodes, personal attacks due to race or religion, job discrimination. They are detailed in Appendix 3 (see Table 1 for our sample descriptive statistics). It is reasonable to postulate that these experiences do not affect the probability of homogamy other than through their effects on the development of the individual identity. Using a likelihood ratio test, we find in fact that we cannot reject the hypothesis that the chosen exclusion restrictions are valid.

We perform the analysis for both proxies of identity ΔV_1 and ΔV_2. In other words, we use as dependent variable an ordered response variable capturing the individual's importance of ethnic identification obtained using the responses to a direct question about ethnic identity (i.e. ΔV_1) or using the indirect information about different dimensions of identity (i.e. ΔV_2). A standard ordered probit estimator is adopted to predict the probability to have a strong preference for his/her ethnic group (i.e. to be in the last category in both proxies). In addition to an extensive set of individuals' observable characteristics (i.e., education, age, sex, fertility choices, health conditions, employment status, job qualification, macro-region of residence and year of arrival in UK), we gradually introduce in the control vector variables aiming at capturing the influence of the social environment (family, friends, neighbors) and workplace using the language typically spoken in the family, with friends and work. Differences in income and wealth across individuals are accounted by the inclusion of household income, household bedrooms per component and household house ownership. We also include the ward unemployment rate and the ward percentage of car owners. Observe that these controls are also used at the second stage, allowing these variables to have a different impact on different outcomes.

The first stage estimation results for the model specification including the more extensive set of controls are contained in Table 4 (the first two columns concern the first measure of

[31] To assess the robustness of our results to this proxy, we have reproduced our empirical analysis on the restricted sample containing only families in which parents and grand-parents live together. We expect this sub-sample to contain a large fractions of parents who have not moved after marriage, for whom, therefore, $q^{i,p} = q^{i,c}$. Results in this sub-sample are not qualitatively different.

identity ΔV_1, while the last two columns are for the second measure, namely ΔV_2). It can be seen that the directions of the effects of the instruments are the same for both proxies and this is in line with the expectations.[32] Observe that a higher density of own ethnic group people in the ward, $q^{i,p}$, is not associated with stronger ethnic identity. It shows a negative effect regardless of the proxy of identity, although it is statistically significant only when using the first proxy ΔV_1.

[*Insert Table 4 here*]

In the second stage of our instrumental variable estimation procedure the predicted level of ethnic identification is used in the estimation of the socialization equation (14) (model (16).[33] A standard probit estimator is employed. The estimation results for the model specification including the more extensive sets of controls are contained in Table 5.[34] This table has the same structure as Table 3, i.e. the first and last three columns contain the results using the (predicted) values of the first (ΔV_1) and second (ΔV_2) proxy for identity respectively.

The estimated effects of the control variables are in line with the expectations. For instance, being uneducated or having any kind of British qualification decreases the probability of homogamy whereas, on the contrary, having been educated in a foreign country has a positive impact (although not statistically significant). A positive and significant effect is also found if the respondent lives away from his/her parents or, on the other hand, if there is a strong parental presence (i.e. high frequency of parental visits). Being female and having children increase the probability of homogamy whereas household income seems to decrease this likelihood. We also find that speaking English at home with older people, probably happening in less conservative families, as well as speaking English in the workplace, suggesting a mixed working environment, decrease the probability of homogamy.

[32] Chi-squared tests confirm that the estimated coefficients of the instruments are jointly different from zero in both model specifications.

[33] The first step residuals, i.e., the differences between actual ethnic identities and the first step predictions are incorporated in the second-stage model.

[34] Because we use a generated variable, the variance-covariance matrix estimate of the second stage needs to be adjusted (see Wooldridge, 2002, p. 116). Using non-linear models (both in the first and second stage), the adjusted standard error estimates have no closed-form formula (Wooldridge, 2002, p.44). We report the unadjusted ones. However, the results based on bootstrapping 200 replications present slightly lower $t-$statistics, but they remain qualitatively unchanged. Also, the estimation results obtained using linear probability models (that allows us to adjust the standard errors using a closed-form formula) are roughly the same and qualitatively unchanged.

Let us now focus on our target variable, namely identity and let us investigate whether the basic results of the impact of identity on the probability of homogamy contained in Table 3 still hold once the effects of other confounding factors and endogeneity issues likely to affect the identity variable are taken into account (Table 5). Similarly to Table 3, Table 5 reports in the bottom panel the marginal effects of identity for different levels of $(1-q^{i,c})$. The evidence collected in Table 3 is confirmed and the results are qualitatively the same. The effects are only higher in magnitude, showing a more marked pattern across different levels of $(1-q^{i,c})$. Indeed, the increase in the probability of homogamy following a marginal increase in identity, ΔV, at the observed increasing levels of $q^{i,c}$ raises from roughly 2% to roughly 4% when using ΔV_1 and from about 3.5% to about 6.5% when using ΔV_2.

[*Insert Table 5 here*]

To summarize the results of the empirical analysis as a whole it is useful to refer to Propositions 1-4. The theoretical results contained in the propositions identify the different (often possibly countervailing) effects of ethnic composition and personal experiences, $q^{i,c}$ and of z^p, on identity and socialization, α^p and τ. Recall that in the empirical analysis we consider ΔV as a proxy for identity α^p.

Consider first of all the effect of $q^{i,c}$ on ΔV (and α^p) and τ. In this respect, in the empirical analysis we find evidence that living in a ward with a higher percentage of own ethnic minority group, $q^{i,c}$, is associated with a lower identity, ΔV. This relationship is represented in the upper portion of Figure 2. In the range of ethnic compositions we observe in the data, the predicted probability of having a strong identity when using ΔV_1 (measured as the probability of reporting the highest allowed value of ethnic identity in the survey) goes from roughly 0.60 to 0.42, respectively, in mixed and segregated neighborhood (we take the average (predicted) probability for each observed level of $q^{i,c}$). The use of our alternative measure of identity, ΔV_2, leads to a very similar range of (average) predicted values (from about 0.58 in mixed neighborhood to about 0.39 in segregated neighborhoods).[35]

Furthermore, we document that, in terms of our model, socialization (as measured by the homogamy rate τ) declines with segregation both due to the cultural substitution effect and due to the effect of segregation on identity. The combined effect of $q^{i,c}$ on τ is represented in the lower portion of Figure 2, which plots the total contribution of identity to homogamy as a function of ethnic composition purged of the effects of the controls, that is, $\hat{\tau} = \widehat{a}\,(1-q^{i,c})\,\Delta V$ in the notation of equation (16).[36] When identity is proxied by ΔV_1,

[35] These conclusion however depends on our proxying $q^{i,p}$ with $q^{i,c}$.

[36] As before, we consider the average estimated τ for each level of $q^{i,c}$.

the contribution of identity to homogamy reduces by more than a half going from mixed to segregated neighborhood (i.e., from nearly 0.22 to 0.10 respectively). The range of the effects is even wider and higher in magnitude with the alternative measure of identity, ΔV_2, going from about 0.48 to about 0.23, respectively, in mixed and segregated neighborhood.

[*Insert Figure 2 here*]

Our empirical analysis also documents a positive dependence of identity, α^p, on the negative racial and ethnic personal experiences, z^p. This effect might exacerbate the effects of mixed neighborhoods on identity formation and socialization. In mixed neighborhoods, in fact, we find that episodes of light harassment and all types of episodes of discrimination tend to have relatively higher frequency (see Table 2).

3.3 Endogeneity of location choices

Because of the possible endogeneity of location choice, in order to obtain unbiased results in our context, we should be able to rule out the possibility that individuals decide to reside in a ward for ethnicity-related issues.

Unfortunately our data source does not provide a direct question on the reasons underlying the location of individuals in a given neighborhood. However, the questionnaire asks the individuals their judgment on the quality of the residential area in terms of ethnic composition and whether, given a location choice, they would prefer to move or to stay in the area. We therefore select a sub-sample of respondent composed of individuals *i)* who state that the neighborhood in which they reside is "poor" for "being with other people of their own ethnic group" but nonetheless declare they do not wish to move; and individuals *ii)* who state that the neighborhood in which they reside is "good" for "being with other people of their own ethnic group" but nonetheless declare they do wish to move. These two groups contain the individuals for whom, in our interpretation, the choice of the residential neighborhood is likely to be exogenous with respect to their concerns about the ethnic composition of the neighborhood. Consider indeed, for example, the individuals belonging to the group in *i)*. If their residential choice is driven by their concerns about ethnicity-related issues, they should have declared to prefer to move out in order to search for more satisfactory neighborhoods in terms of ethnic composition. The fact that they say that they prefer to stay in that neighborhood signals that other reasons are driving their location choice, such as budget constraint, distance to jobs, availability of local services or other amenities, quality of accommodation, their concerns about their children's education, closeness to parents or other family reasons.

A similar reasoning applies for the individual belonging to the group in *ii)*.

Thus, in order to check whether our evidence is driven by endogeneity issues stemming from the individuals' residential location choices, we run our analysis on these two sub-samples. Unfortunately, because detailed questions about opinions and residential area are not asked to the same people,[37] the direct question about the importance of ethnic identification (from which ΔV_1, is derived) is not in the questionnaire of the people in our two sub-samples. Thus, we use in our analysis as a measure of ethnic identity only the indirect information about different dimensions of identity (i.e. ΔV_2). We display in Table 6 the marginal effects of identity on the probability of homogamy for different levels of $(1 - q^{i,p})$ derived from the second stage results when the analysis is run on the two different sub-samples.[38] It appears that the results are not different across sub-samples and from the ones referring to the whole sample (Table 5, bottom panel). Thus, the endogeneity of location choices does not seem to be a major concern in our analysis.

[*Insert Table* 6 *here*]

As a consequence of the stringent requirements of our sub-samples selection, this exercise is affected by small sample sizes (roughly 330 and 510 individuals in the two groups respectively). Nevertheless, it contributes to gain confidence in the empirical test of our model by providing a robustness check on difficult issues to tackle empirically.

4 Is Muslim identity different?

Many recent ethnic riots in Europe have concerned predominantly Muslim populations. This is the case, for instance, of the riots in England in 2001 and in France in 2005, cited in the Introduction. A large debate has consequently spurred in the press about the alleged specificity of Muslim immigrants with regards to the strength of their identity and their (lack of) assimilation tendencies.[39]

[37] In the FSEM sample design, in each ethnic minority household, up to two adults were selected at random to answer questions about themselves. Because the number of questions to be asked would have made the interview too long if everybody had been asked all of the possible questions, two versions of the questionnaire were used. They contain different level of detail on the different topics. In single adult households, the questionnaire was assigned at random.

[38] The complete list of both first and second stage results on all the control variables and for the two sub-samples is not reported here for brevity. The results remain qualitatively the same to the ones for the whole sample and very similar across sub-samples. They are available upon request.

[39] This position has been taken, in a rather extreme form, by several nationalist parties, e.g., the Lega in Italy, the Front National in France. But similar though less extreme positions have been taken by center-

Several of the ethnic groups for which we have data have in fact a significant Muslim population; notably Pakistani and Bangladeshi are predominantly Muslim, while Indians and African-Asian have substantial Muslim minorities. Furthermore, the FNSEM survey contains a question asking the respondent to identify his religious faith. In this section we exploit therefore our data to address directly the alleged Muslim specificity issue.

To this end we estimate our identity and socialization model on the restricted sample of Muslim respondents (roughly the 43 percent of the whole sample). We maintain however the distribution by ethnic group as the relevant neighborhood composition variable in the identity formation and socialization processes.

Table 7 reports the marginal effects of identity on ethnic assimilation for different neighborhood ethnic compositions (derived from the second step results).[40] Comparing the results obtained for the Muslim sub-sample (Table 7) with those obtained for the whole sample (Table 5) it appears that *i)* Muslims tend to have in fact stronger identity effects in both mixed and segregated neighborhood, but that *ii)* the qualitative results remain unchanged. Specifically, the increase in the probability of homogamy following a marginal increase in Muslim identity, ΔV, when $q^{i,c}$ increases, raises roughly from 3% to 7% when using ΔV_1 and from 8% to 11% when using ΔV_2 (while these effects range approximately from 2% to 4% and from 3.5% to 6.5% respectively in the whole sample, see Table 5, bottom panel). However, the fact that we still obtain a decreasing impact of identity on ethnic assimilation at increasing levels of $q^{i,c}$ signals that the relationship between ethnic assimilation effort and ethnic neighborhood composition is not different for Muslims in respect of other minorities. In other words, we still find evidence in line with the possibility that ethnic identity and socialization effort are more intense in mixed rather than in segregated neighborhoods when only the Muslim identity is considered.

[*Insert Table 7 here*]

5 Discussion of results and policy implications

In summary, our analysis of ethnic preferences and individual behavior of Caribbean, Indian, Pakistani, African-Asian, Bangladeshi, and Chinese minorities in U.K. (1993/4), documents

right parties essentially all over Europe. A clear example of the inflamed rhetoric that often accompanies this debate is Fallaci (2006).

[40] First step results and the complete list of second step results (as reported, respectively, in Table 4 and 5 for the whole sample) are available upon request.

the following empirical regularities. The main determinants of ethnic identity include personal negative racial or ethnic experiences as well as language spoken at home and with friends, quality of housing, and structure of the family. Moreover, other things equal: *i)* identity is less intense in more segregated neighborhoods; *ii)* socialization effort is less intense in more segregated neighborhoods. Muslims do seem to display significantly specific identification and socialization processes.

As already noted in the Introduction, all these results suggest that, while the different integration policies implemented both in the U.S. and in Europe seem to have failed, this might not be due uniquely to the persistence of segregated neighborhood, but possibly also to the perverse effects of integrationist policies which might induce more intense ethnic identities and stronger ethnic socialization efforts on the part of parents.

Furthermore, our results also might impact on the recent debate over the pros and cons of the different assimilation policies adopted in the Anglo-Saxon world and in France. Immigration in France is based on the precept that everyone should assimilate to French values and culture, while in the U.K. and in the U.S. a model of *separate development* is more openly adopted. The documented reaction to mixed neighborhoods through identity choices and socialization efforts seems to support, in this respect, the efficacy of separate development.

References

[1] Ainsworth-Darnell, J.W. and D.B. Downey (1998), "Assessing the Oppositional Culture Explanation for Racial/Ethnic Differences in School Performance," *American Sociological Review* 63, 536-553.

[2] Alba, R.D. (1990), *Ethnic Identity: The Transformation of White America*, New Haven: Yale University Press.

[3] Akerlof, G.A. (1980), "A Theory of Social Custom of which Unemployment May be One Consequence," *Quarterly Journal of Economics* 94, 749-775.

[4] Akerlof, G.A. (1997), "Social Distance and Social Decisions", *Econometrica* 65, 1005-1027.

[5] Akerlof, G.A. and R.E. Kranton (2000), "Economics and Identity," *Quarterly Journal of Economics* 115, 715-753.

[6] Al-Johar, D. (2005), "Muslim Marriages in America: Reflecting New Identities," *The Muslim World* 95, 557-574.

[7] Alesina, A.F. and E. La Ferrara (2005), "Ethnic Diversity and Economic Performance, "*Journal of Economic Literature* 43, 721-761.

[8] Austen-Smith, D. and R.D. Fryer, Jr (2005), "An Economic Analysis of 'Acting White'," *Quarterly Journal of Economics* 120, 551-583.

[9] Ballester, C., Calvó-Armengol, A. and Y. Zenou (2005), "Who's Who in Networks. Wanted: The Key Player," CEPR Discussion Paper No. 5329.

[10] Battu, H., M. Mwale and Y. Zenou (2005), "Oppositional Identities and the Labor Market," CEPR Discussion Paper No. No. 5351.

[11] Bernal, M.E. and G.P. Knight (1993), *Ethnic Identity: Formation and Transmission among Hispanics and Other Minorities*, Albany: State University of New York Press.

[12] Bernheim, B.D. (1994), "A Theory of Conformity," *Journal of Political Economy* 102, 841-877.

[13] Bisin, A. and T. Verdier (2000), "Beyond the Melting Pot: Cultural Transmission, Marriage, and the Evolution of Ethnic and Religious Traits," *Quarterly Journal of Economics* 115, 955-988.

[14] Bisin, A. and T. Verdier (2001), "The Economics of Cultural Transmission and the Dynamics of Preferences," *Journal of Economic Theory* 97, 298-319.

[15] Bisin, A., Topa, G. and T. Verdier (2004), "Religious intermarriage and socialization in the United States," *Journal of Political Economy* 112, 615-664.

[16] Boyd, R. and P. J. Richerson (1985), *Culture and the Evolutionary Process*, Chicago: University of Chicago Press.

[17] Cavalli-Sforza,L.L., and M. W. Feldman (1981), *Cultural Transmission and Evolution*. Princeton: Princeton University Press.

[18] Cohen Zada, D. (2003), "Preserving Religious Values Through Education: Economic Analyis and Evidence from the U.S.," mimeo, Ben-Gurion University.

[19] Delpit, L. (1995), *Other People's Children: Cultural Conflict in the Classroom*, New York: The Free Press.

[20] Fall Fallaci, O. (2006), *The Force of Reason*, New York, Rizzoli.

[21] Fershtman, C. and Y. Weiss (1998), "Social Rewards, Externalities and Stable Preferences," *Journal of Public Economics* 70, 53-73.

[22] Fordham, S. and J. Ogbu (1986), "Blacks Students' School Successes: Coping with the Burden of 'Acting White'," *The Urban Review* 18, 176-206.

[23] Fryer, R.G. Jr. and P. Torelli (2005), "An Empirical Analysis of 'Acting White'," NBER Working Paper No. 11334.

[24] Gallis, P. (Coordinator) (2005): 'Muslims in Europe: Integration Policies in Selected Countries,' CRS Report for Congress, Congressional Research Service, The Library of Congress.

[25] Glaeser, E.L. and J. Scheinkman (2001), "Measuring social interactions," in S.N. Durlauf and H.P. Young (Eds.), *Social Dynamics*, Cambridge: MIT Press, pp. 83-132.

[26] Gussin Paley, V. (1995), *Kwanzaa and Me: A Teacher's Story*, Cambridge (MA.): Harvard University Press.

[27] Jacoby, T. (1998), *Someone Else's House: America's Unfinished Struggle for Integration*, New York, Free Press.

[28] Jacoby, T. (1999), "Beyond Busing," *The Wall Street Journal*, July 21st.

[29] Jellal, M. and F.C. Wolff (2002), "Cultural Evolutionary Altruism: Theory and Evidence," *European Journal of Political Economy* 18, 241-62.

[30] Kandel, E. and E.P. Lazear (1992), "Peer Pressure and Partnerships," *Journal of Political Economy* 100, 801-817.

[31] Kling, J.R., Ludwig, J. and L.F. Katz (2005), "Neighborhood Effects on Crime for Female and Male Youth: Evidence from a Randomized Housing Voucher Experiment," *Quarterly Journal of Economics* 120, 87-130.

[32] Ludwig, J., Duncan, G.J. and Hirschfield, P. (2001), "Urban Poverty and Juvenile Crime: Evidence from a Randomized Housing-Mobility Experiment," *Quarterly Journal of Economics* 116, 655-679.

[33] Meng, X. and R.G. Gregory (2005), "Intermarriage and the Economic Assimilation of Immigrants," *Journal of Labor Economics* 23, 135-176.

[34] Modood, T., R. Berthoud, J. Lakey, J. Nazroo, P. Smith, S. Virdee, S. Beishon (1997), *Ethnic Minorities in Britain: Diversity and Disadvantage*, London: Policy Studies Institute.

[35] Ogbu, J.U. (1997), "Beyond Language: Ebonics, Proper English and Identity in a Black American Speech Community," Unpublished manuscript, University of California at Berkeley, Department of Anthropology.

[36] Oreopoulos, P. (2003), "The Long-Run Consequences of Living in a Poor Neighborhood," *Quarterly Journal of Economics* 4, 1533-75.

[37] Patacchini, E. and Y. Zenou (2004), "Intergenerational Education Transmission: Neighborhood Quality and/or Parents' Involvement?", CEPR Discussion Paper No. 4744.

[38] Patacchini, E. and Y. Zenou (2005), "Crime and Conformism," CEPR Discussion Paper No. 5331.

[39] Phinney, J.S. (1990), "Ethnic identity in adolescents and adults: Review of research," *Psychological Bulletin* 108, 499-514.

[40] Qian, Z. (1999), "Who Intermarries? Education, Nativity Region, and Interracial Marriage 1980 and 1990," *Journal of Comparative Family Studies* 30, 579-597.

[41] Saez-Marti, M. and A. Sjogren (2006), "Peers and Culture," mimeo, The Research Institute of Industrial Economics, Stockholm.

[42] Selod, H. and Y. Zenou (2006), "Does City Structure Affect the Labor Market Outcomes of Black Workers?", *Economic Journal*, forthcoming.

[43] Thernstrom A. and S. Thernstrom (2002), *Beyond the Color Line: New Perspectives on Race and Ethnicity in America*, New York, Hoover Press and the Manhattan Institute.

[44] Tucker, M. B. and C. Mitchell-Kernan (1990), "New Trends in Black American Interracial Marriage: The Social Structural Context," *Journal of Marriage and the Family*, 52, 209-218.

[45] Wilson, W. J. (1987), *The truly Disadvantaged: The Inner City, the Underclass, and Public Policy*, Chicago: University of Chicago Press.

[46] Wooldridge, J. (2002), *The Econometric Analysis of Cross Section and Panel Data*, Cambridge: MIT Press.

[47] Whyte, W.F. (1943), *Street Corner Society*, Chicago, University of Chicago Press (New Edition: 1993).

Appendix 1: Proofs of all propositions in the main text

Proof of Proposition 1: Let $\lambda_{\alpha}^{p} = \frac{\partial \lambda^{p}}{\partial \alpha^{p}}$ and similarly for $\lambda_{q}^{p},\ \lambda_{\alpha\alpha}^{p},\ \lambda_{\alpha q}^{p},\ u_{x}^{p},\ u_{xx}^{p}$. The statement follows directly from an application of the Implicit Function Theorem to (8)−(9), which gives:

$$\frac{\partial x^{p*}}{\partial q^{i,p}} = \frac{-\lambda_{q}^{p}\left(x^{p*}-x^{0}\right)\left[\lambda_{\alpha\alpha}^{p}\left(x^{p*}-x^{0}\right)^{2}/2+1\right]+\lambda_{\alpha}^{p}\lambda_{\alpha q}^{p}\left(x^{p*}-x^{0}\right)^{3}/2}{D}$$

$$\frac{\partial \alpha^{p*}}{\partial q^{i,p}} = \frac{\left(x^{p*}-x^{0}\right)^{2}\lambda_{\alpha}^{p}\lambda_{q}^{p}+\left(u_{xx}^{p}-\lambda\right)\lambda_{\alpha q}^{p}\left(x^{p*}-x^{0}\right)^{2}/2}{D}$$

where $D>0$ is the second order condition and defined by (7). ∎

Proof of Proposition 2: Again the statement follows directly from an application of the Implicit Function Theorem to (8)−(9), which gives:

$$\frac{dx^{p*}}{dz^{p}} = \frac{\left[\lambda_{\alpha\alpha}^{p}\left(x^{p*}-x^{0}\right)^{2}/2+1\right]u_{xz}^{p}}{D}$$

$$\frac{d\alpha^{p*}}{dz^{p}} = \frac{-\lambda_{\alpha}^{p}\left(x^{p*}-x^{0}\right)u_{xz}^{p}}{D}$$

where $D>0$ is the second order condition and defined by (7). ∎

Proof of Proposition 3: The statement follows directly from an application of the Implicit Function Theorem to (14), which gives:

$$\frac{\partial \tau}{\partial q^{i,c}} = -\Delta V + \left(1-q^{i,c}\right)\frac{\partial \Delta V}{\partial q^{i,c}}$$

where $u^{i}\left(x^{c*},z^{p}\right)-\lambda\left(\alpha^{p},q^{i,p}\right)\frac{\left(x^{c*}-x^{0}\right)^{2}}{2}-u^{i}\left(x^{0},z^{P}\right)$

$$\frac{\partial \Delta V}{\partial q^{i,c}} = \left[u_{x}^{i}\left(x^{c*},z^{p}\right)-\lambda\left(\alpha^{p},q^{i,p}\right)\left(x^{c*}-x^{0}\right)\right]\frac{\partial x^{c*}}{\partial q^{i,c}}$$

By definition, x^{p*} maximizes the function $\Theta(x)=u^{i}\left(x,z^{p}\right)-\lambda\left(\alpha^{p},q^{i,p}\right)\frac{\left(x-x^{0}\right)^{2}}{2}$

1) When $x^{c*}<x^{p*}$, we have $\Theta'(x^{c*})>0=\Theta'(x^{p*})$. Hence

$$\Theta'(x^{c*}) = \left[u_{x}^{i}\left(x^{c*},z^{p}\right)-\lambda\left(\alpha^{p},q^{i,p}\right)\left(x^{c*}-x^{0}\right)\right]>0$$

and the sign of $\frac{\partial \Delta V}{\partial q^{i,c}}$ is the same as the sign of $\frac{\partial x^{c*}}{\partial q^{i,c}}$. Thus when $\lambda^c_{\alpha q} > 0$ and large enough (so that $\frac{\partial x^{c*}}{\partial q^{i,c}} < 0$), we immediately get$\frac{\partial \Delta V}{\partial q^{i,c}} < 0$. and $\frac{\partial \tau}{\partial q^{i,c}} < 0$

2) When $x^{c*} \geq x^{p*}$, we have $\Theta'(x^{c*}) \leq 0 = \Theta'(x^{p*})$. Hence

$$\Theta'(x^{c*}) = \left[u^i_x\left(x^{c*}, z^p\right) - \lambda\left(\alpha^p, q^{i,p}\right)\left(x^{c*} - x^0\right)\right] \leq 0$$

and the sign of $\frac{\partial \Delta V}{\partial q^{i,c}}$ is the same as the sign of $-\frac{\partial x^{c*}}{\partial q^{i,c}}$. Thus when $\lambda^c_{\alpha q} \leq 0$ (so that $\frac{\partial x^{c*}}{\partial q^{i,c}} > 0$), we immediately get again $\frac{\partial \Delta V}{\partial q^{i,c}} \leq 0$. and therefore $\frac{\partial \tau}{\partial q^{i,c}} < 0$.

- Note for completeness, we may also derive the impact of $q^{i,p}$ on the socialization $\tau^*$of parents:

- When $\lambda^p_{\alpha q} > 0$ and large enough,

$$\frac{\partial \tau}{\partial q^{i,p}} < 0$$

$$\frac{\partial \tau}{\partial q^{i,p}} = \left(1 - q^{i,c}\right)\frac{\partial \Delta V}{\partial q^{i,p}} = \left(1 - q^{i,c}\right)\frac{\left(x^{c*} - x^0\right)^2}{2}\left[-\lambda^p_q - \lambda^p_\alpha \frac{\partial \alpha^p}{\partial q^{i,p}}\right]$$

Now using:

$$\frac{d\alpha^p}{dq^{i,p}} = \frac{\left(x^{p*} - x^0\right)^2 \lambda^p_\alpha \lambda^p_q + \left(u^p_{xx} - \lambda^p\right)\lambda^p_{\alpha q}\left(x^{p*} - x^0\right)^2/2}{D}$$

and

$$D = -\left(u^p_{xx} - \lambda^p\right)\left(\lambda^p_{\alpha\alpha}\frac{\left(x^{p*} - x^0\right)^2}{2} + 1\right) - \left[\lambda^p_\alpha\left(x^{p*} - x^0\right)\right]^2 > 0$$

on obtains:

$$-\lambda^p_q - \lambda^p_\alpha \frac{\partial \alpha^p}{\partial q^{i,p}} = \frac{1}{D}\left[\begin{array}{c} \lambda^p_q\left(u^p_{xx} - \lambda\right)\left(\lambda^p_{\alpha:\alpha}\frac{\left(x^{p,*} - x^0\right)^2}{2} + 1\right) + \lambda^p_q\left(\lambda^p_\alpha\left(x^{p*} - x^0\right)\right)^2 \\ -\left(x^{p*} - x^0\right)^2\left(\lambda^p_\alpha\right)^2\lambda^p_q - \lambda^p_\alpha\left(u^p_{xx} - \lambda\right)\lambda^p_{\alpha q}\frac{\left(x^{p,*} - x^0\right)^2}{2} \end{array}\right]$$

Hence

$$\begin{aligned} -\lambda^p_q - \lambda^p_\alpha \frac{\partial \alpha^p}{\partial q^{i,p}} &= \frac{-\left(u^p_{xx} - \lambda^p\right)}{D}\left[-\lambda^p_q\left(\lambda^p_{\alpha\alpha}\frac{\left(x^{p*} - x^0\right)^2}{2} + 1\right) + \lambda^p_\alpha \lambda^p_{\alpha q}\frac{\left(x^{p*} - x^0\right)^2}{2}\right] \\ &= \frac{-\left(u^p_{xx} - \lambda\right)}{D\left(x^{p*} - x^0\right)}\frac{\partial x^{p*}}{\partial q^{i,p}} \end{aligned}$$

So according to Proposition 1, when $\lambda^p_{\alpha q} > 0$ and large enough, $\frac{\partial x^{p*}}{\partial q^{i,p}} < 0$ and therefore $-\lambda^p_q - \lambda^p_\alpha \frac{\partial \alpha^p}{\partial q^{i,p}} < 0$ as well as $\frac{\partial \Delta V}{\partial q^{i,p}} < 0$. It follows directly that $\frac{\partial \tau}{\partial q^{i,p}} = \left(1 - q^{i,c}\right)\frac{\partial \Delta V}{\partial q^{i,p}} < 0$. ∎

Proof of Proposition 4: Once again the statement follows directly from an application of the Implicit Function Theorem to (14), which gives:

$$\frac{\partial \tau}{\partial z^p} = \left(1 - q^{i,c}\right) \frac{\partial \Delta V}{\partial z^p}$$

where

$$\frac{\partial \Delta V}{\partial z^p} = \left[u_z^i\left(x^{c*}, z^p\right) - u_z^i\left(x^0, z^p\right)\right] - \frac{\left(x^{c*} - x_0\right)^2}{2} \lambda_\alpha^p \frac{\partial \alpha^p}{\partial z^p}$$

As $x^{c*} > x^0$, the sign of the first term in bracket $\left[u_z^i\left(x^{c*}, z^p\right) - u_z^i\left(x^0, z^p\right)\right] > 0$ if and only if $u_{xz} > 0$. Similarly from Proposition (2), $-\lambda_\alpha^p \frac{\partial \alpha^p}{\partial z^p} > 0$ if and only if $u_{xz} > 0$. Hence $\frac{\partial \Delta V}{\partial z^p} > 0$ if and only if $u_{xz} > 0$ and $\frac{\partial \tau}{\partial z^p} > 0$ if and only if $u_{xz} > 0$. ∎

- We derive, for completeness, the impact of expected environment z^c of the kid on the socialization effort τ^*. Again, applying the Implicit Function Theorem to (14) gives:

$$\frac{\partial \tau}{\partial z^{,c}} = \left(1 - q^{i,c}\right) \frac{\partial \Delta V}{\partial z^c}$$

but

$$\frac{\partial \Delta V}{\partial z^c} = \left[u_x^i\left(x^{c*}, z^p\right) - \lambda\left(\alpha^p, q^{i,p}\right)\right)\ \left(x^{c*} - x_0\right)] \frac{dx^{c*}}{dz^c}$$

Hence:

1) if $u_{xz} > 0$, then $\frac{\partial \tau}{\partial z^{,c}} \geq 0$ if and only if $z^p, z^c, q^{i,p}, q^{i,c}$ are such that $x^c \leq x^p$
2) if $u_{xz} < 0$ then $\frac{\partial \tau}{\partial z^{,c}} \geq 0$ if and only if $z^p, z^c, q^{i,p}, q^{i,c}$ are such that $x^c \geq x^p$

Appendix 2: Socialization and identity in the non-myopic case

We assume in this appendix that the parent considers now jointly his/her behavior x^p, his/her identity choice α^p as well as his/her socialization effort τ. The problem of the parent is given by:

$$\begin{aligned} & \max_{x^p,\alpha^p,\tau} u^i(x^p,z^p) - \lambda\left(\alpha^p,q^{i,p}\right)\frac{\left(x^p-x^0\right)^2}{2} - \frac{\left(\alpha^p\right)^2}{2} - \frac{\left(\tau\right)^2}{2} \\ & +P^{ii}\left[u^i\left(x^{c*},z^p\right) - \lambda\left(\alpha^p,q^{i,p}\right)\frac{\left(x^{c*}-x^0\right)^2}{2}\right] + P^{i0}u^i\left(x^0,z^p\right) \\ s.t. \qquad P^{ii} &= \tau + (1-\tau)q^{i,c} \text{ and } P^{i0} = (1-\tau)\left(1-q^{i,c}\right) \end{aligned} \tag{17}$$

The first order conditions of problem (17) are:

$$\frac{\partial u(x^p,z^p)}{\partial x^p} - \lambda\left(\alpha^p,q^{i,p}\right)\left(x^p-x^0\right) = 0 \tag{18}$$

$$-\frac{\partial\lambda\left(\alpha^p,q^{i,p}\right)}{\partial\alpha^p}\left[\frac{\left(x^p-x^0\right)^2}{2} + P^{ii}\frac{\left(x^{c*}-x_0\right)^2}{2}\right] - \alpha^p = 0 \tag{19}$$

$$\left(1-q^{i,c}\right)\Delta V(\alpha^p,q^{i,c},q^{i,p}) - \tau = 0 \tag{20}$$

with

$$\Delta V = \Delta V(\alpha^p,q^{i,c},q^{i,p}) \ = u^i\left(x^{c*},z^p\right) - \lambda\left(\alpha^p,q^{i,p}\right)\frac{\left(x^{c*}-x_0\right)^2}{2} - u^i\left(x^0,z^p\right)$$

We adopt, for convenience, the following notation:

$$A = \frac{\left(x^{p*}-x^0\right)^2}{2} + P^{ii}\frac{\left(x^{c*}-x_0\right)^2}{2}$$

Then, differentiation of (18), (19) and (20) gives:

$$\begin{aligned} & \begin{bmatrix} u^p_{xx}-\lambda^p & -\lambda^p_\alpha(x^{p*}-x^0) & 0 \\ -\lambda^p_\alpha(x^{p*}-x^0) & -(1+\lambda^p_{\alpha\alpha}A) & -\lambda^p_\alpha(1-q^{i,c})\left(x^{c*}-x^0\right)^2/2 \\ 0 & -\lambda^p_\alpha(1-q^{i,c})\left(x^{c*}-x^0\right)^2/2 & -1 \end{bmatrix}\begin{bmatrix} dx^p \\ d\alpha^p \\ d\tau \end{bmatrix} \\ = & \begin{bmatrix} \lambda^p_q(x^p-x^0)dq^{i,p} - u_{xz}dz^p \\ \lambda^p_{\alpha q}Adq^{i,p} + \left[\lambda^p_\alpha(1-\tau)\left(x^{c*}-x^0\right)^2/2 + \lambda^p_\alpha P^{ii}\left(x^{c*}-x^0\right)\frac{dx^{c*}}{dq^{i,c}}\right]dq^{i,c} \\ B \end{bmatrix} \end{aligned}$$

where

$$B = \left[(1-q^{i,c})\lambda_q^p\left(x^{c*}-x^0\right)^2/2\right]dq^{i,p}+\left[\Delta V-(1-q^{i,c})\left[u_x^{i\,c}-\lambda^p\left(x^{c*}-x^0\right)\right]\frac{dx^{c*}}{dq^{i,c}}\right]dq^{i,c} \\ -(1-q^{i,c})\left[u_z^{ic}-u_z^{i0}\right]dz^p$$

By the Second Order Condition (which are assumed to hold) the determinant Σ of the left hand side matrix is negative and after inverting, we obtain:

$$\begin{bmatrix} dx^p \\ d\alpha^p \\ d\tau \end{bmatrix} = [C]\begin{bmatrix} \lambda_q^p(x^p-x^0)dq^{i,p}-u_{xz}^p dz^p \\ \lambda_{\alpha q}^p A dq^{i,p}+\left[\lambda_\alpha^p(1-\tau)\left(x^{c*}-x^0\right)^2/2+\lambda_\alpha^p P^{ii}\left(x^{c*}-x^0\right)\frac{dx^{c*}}{dq^{i,c}}\right]dq^{i,c} \\ \left[(1-q^{i,c})\lambda_q^p\left(x^{c*}-x^0\right)^2/2\right]dq^{i,p}+\left[\Delta V-(1-q^{i,c})\left[u_x^{i\,c}-\lambda^p\left(x^{c*}-x^0\right)\right]\frac{dx^{c*}}{dq^{i,c}}\right]dq^{i,c} \end{bmatrix} \tag{21}$$

where

$$[C]=\frac{1}{\Sigma}\begin{bmatrix} (1+\lambda_{\alpha\alpha}^p A)-\left[\lambda_\alpha^p(1-q^{i,c})\left(x^{c*}-x^0\right)^2/2\right]^2 & -\lambda_\alpha^p(x^{p*}-x^0) & Z_1 \\ -\lambda_\alpha^p(x^{p*}-x^0) & -(u_{xx}^p-\lambda^p) & Z_2 \\ Z_1 & Z_2 & Z_3 \end{bmatrix}$$

where

$$\begin{aligned} Z_1 &= \left(\lambda_\alpha^p\right)^2(1-q^{i,c})(x^{p*}-x^0)\frac{\left(x^{c*}-x^0\right)^2}{2}>0 \\ Z_2 &= (u_{xx}^p-\lambda^p)\lambda_\alpha^p(1-q^{i,c})\frac{\left(x^{c*}-x^0\right)^2}{2}>0 \\ Z_3 &= -(u_{xx}^p-\lambda^p)(1+\lambda_{\alpha\alpha}^p A)-\left(\lambda_\alpha^p\right)^2(x^{p*}-x^0)^2>0 \end{aligned}$$

In term of socialization, we have then a characterization similar to that of in the main text

Proposition A1 *The effect of $q^{i,p}$ on τ^* is generally ambiguous. However, for $\lambda_{\alpha q}>0$ and large enough, τ^* is decreasing in $q^{i,c}$.*

Proof. Using (21) and recalling that $\Sigma<0$, the sign of $\frac{d\tau^*}{dq^{i,c}}$ is given by the sign of:

$$-(u_{xx}^p-\lambda^p)\lambda_\alpha^p(1-q^{i,c})\frac{\left(x^{c*}-x^0\right)^2}{2}\left[\lambda_\alpha^p(1-\tau)\left(x^{c*}-x^0\right)^2/2+\lambda_\alpha^p P^{ii}\left(x^{c*}-x^0\right)\frac{dx^{c*}}{dq^{i,c}}\right] \tag{22}$$
$$+\left[(u_{xx}^p-\lambda^p)(1+\lambda_{\alpha\alpha}^p A)+\left(\lambda_\alpha^p\right)^2(x^p-x^0)^2\right]\left[\Delta V-(1-q^{i,c})\left[u_x^{i\,c}-\lambda^p\left(x^{c*}-x^0\right)\right]\frac{dx^{c*}}{dq^{i,c}}\right]$$

The first term

$$-(u^p_{xx}-\lambda^p)\left(\lambda^p_\alpha\right)^2(1-q^{i,c})\frac{\left(x^{c*}-x^0\right)^2}{2}\left[(1-\tau)\left(x^{c*}-x^0\right)^2/2+P^{ii}\left(x^{c*}-x^0\right)\frac{dx^{c*}}{dq^{i,c}}\right]<0 \tag{23}$$

when $\lambda_{\alpha q}>0$ and large enough. Indeed in such a case $\frac{dx^{c*}}{dq^{i,c}}$ is negative and

$$\left[(1-\tau)\left(x^{c*}-x^0\right)^2/2+P^{ii}\left(x^{c*}-x^0\right)\frac{dx^{c*}}{dq^{i,c}}\right]$$

can be as well negative (if $\frac{dx^{c*}}{dq^{i,c}}$ is sufficiently negative)

The sign of the second term in bracket is:

$$\left[(u^p_{xx}-\lambda^p)(1+\lambda^p_{\alpha\alpha}A)+\left(\lambda^p_\alpha\right)^2\left(x^p-x^0\right)^2\right]\left[\Delta V-(1-q^{i,c})\left[u^{i\,c}_x-\lambda^p\left(x^{c*}-x^0\right)\right]\frac{dx^{c*}}{dq^{i,c}}\right]<0 \tag{24}$$

Indeed, this sign is negative when the partial maximization problem on x^p and α^p holding τ constant is convex and well defined as : $D=-\left(u^p_{xx}-\lambda^p\right)\left[\lambda^p_{\alpha\alpha}\left(x^{p*}-x^0\right)^2/2+1\right]-\left[\lambda^p_\alpha\left(x^{p*}-x^0\right)\right]^2>0$ (as would be implied by the Second Order Condition of that maximization problem) and when the cultural "substitutability" effect of $q^{i,c}$ on τ^* (see Bisin and Verdier 2001) is strong enough. Indeed when , $z^p, z^c, q^{i,p}, q^{i,c}$ are such that $x^c\leq x^p$ (ie.$u^{i\,c}_x-\lambda^p\left(x^{c*}-x^0\right)>0$) and $\lambda^c_{\alpha q}>0$ and large enough (ie. so that x^c is decreasing in $q^{i,c}$) we have that $\left[\Delta V-(1-q^{i,c})\left[u^{i\,c}_x-\lambda^p\left(x^{c*}-x^0\right)\right]\frac{dx^{c*}}{dq^{i,c}}\right]>0$. and the second term in bracket in (24) is negative

Hence, in general, the sign of $\frac{d\tau^*}{dq^{i,p}}$ is ambiguous. However, when $\lambda^p_{\alpha q}>0$ and large enough, the two terms in (24) are negative and thus $\frac{d\tau^*}{dq^{i,c}}<0$. ∎

There are intuitively three effects of a change of $q^{i,c}$ on τ^*. First, an increase in $q^{i,c}$, by the standard cultural substitutability effect, tends to reduce the socialization effort τ. (ie the term

$$\left[(u^p_{xx}-\lambda^p)(1+\lambda^p_{\alpha\alpha}A)+\left(\lambda^p_\alpha\right)^2\left(x^p-x^0\right)^2\right]\Delta V<0$$

in (24)). At the same time, however, the optimal expected behavior of the child x^{c*} is also affected. When $x^{c*}\leq x^{p*}$ and that x^{c*} is decreasing in $q^{i,c}$ this effect, as in the myopic case of the main text, tends to reduce the gains from socialization ΔV. (ie the term

$$\left[(u^p_{xx}-\lambda^p)(1+\lambda^p_{\alpha\alpha}A)+\left(\lambda^p_\alpha\right)^2\left(x^p-x^0\right)^2\right]\left[-(1-q^{i,c})\left[u^{i\,c}_x-\lambda^p\left(x^{c*}-x^0\right)\right]\frac{dx^{c*}}{dq^{i,c}}\right]<0$$

in (24)). This as well decreases τ.

The third effect is indirect and goes through how an increase in $q^{i,c}$ affects the identity choice α^p. This can be itself decomposed into two elements. First, an increase in $q^{i,c}$ increases the probability P^{ii} to transmit successfully trait i. This, in turn, enhances the incentives to identify to the values of that group and therefore increases α^p. This effect leads in turn to an increase in ΔV, and τ is positively affected (this is related to the term

$$-(u^p_{xx}-\lambda^p)\left(\lambda^p_\alpha\right)^2(1-q^{i,c})\left(x^{c*}-x^0\right)^2/2\left[(1-\tau)\left(x^{c*}-x^0\right)^2/2\right]>0$$

in (23)). Second, an increase in $q^{i,c}$ again tends to affect the optimal expected behavior of the child x^{c*}. As a matter of fact when x^{c*} is decreasing in $q^{i,c}$, this tends to decreases the psychological cost of a parent to perceive his child deviating from the norm $\lambda P^{ii}\frac{(x^{c*}-x_0)^2}{2}$, which in turn leads to a lower value of identification α^p. The consequence of this is negative impact on τ (the term

$$-(u^p_{xx}-\lambda^p)\left(\lambda^p_\alpha\right)^2(1-q^{i,c})\frac{\left(x^{c*}-x^0\right)^2}{2}P^{ii}\left(x^{c*}-x^0\right)\frac{dx^{c*}}{dq^{i,c}}<0$$

in (23)). When $\lambda^p_{\alpha q}>0$ and large enough, this negative term dominates the other one and the indirect effect of $q^{i,c}$ on τ through changes in identity choice α^p is negative.

The comparative statics with regards to z^p is straightforward.

Proposition A.2 The variable τ^* is increasing in z^p iff $u^p_{xz}>0$. It is decreasing otherwise.

Proof. Using (21) and recalling that $\Sigma<0$, the sign of $\frac{d\tau^*}{dz^p}$ is the same as the sign of

$$\left(\lambda^p_\alpha\right)^2(1-q^{i,c})(x^p-x^0)\frac{\left(x^{c*}-x_0\right)^2}{2}u^p_{xz}-\left[(u^p_{xx}-\lambda^p)(1+\lambda^p_{\alpha\alpha}A)+\left(\lambda^p_\alpha\right)^2(x^p-x^0)^2\right](1-q^{i,c})\left[u^{ic}_z-u^{i0}_z\right]$$

which is strictly positive if and only if $u^p_{xz}>0$. ∎

When z^p increases, the optimal behavior of the parent becomes higher if and only if the parent "overacts". This first leads to a larger identification choice α^p, which increases ΔV, and socialization effort τ^*. Second it also affects directly ΔV by changing the preceived utility gain of socialization $u^i\left(x^{c*},z^p\right)-u^i\left(x^0,z^p\right)$. As $x^{c*}>x^0$, the sign of the rate of change of that term $\left[u^i_z\left(x^{c*},z^p\right)-u^i_z\left(x^0,z^p\right)\right]>0$ if and only if $u_{xz}>0.$, which again in this case will increase ΔV, and socialization effort τ^*.

Appendix 3: Definition of variables

Serious racial harassment: dummy variable taking value one if the respondent has been attacked in the last year for reasons to do with race or color.

Racial harassment: dummy variable taking value one if the respondent has been insulted in the last year for reasons to do with race or color.

Serious job related language problems: dummy variable taking value one if the respondent had any sort of difficulties getting work and at work because of language problems.

Job related language problems at work: dummy variable taking value one if the respondent had any sort of difficulties either getting work or at work because of language problems.

Discrimination in getting a job: dummy variable taking value one if the respondent had been refused a job for reasons which were to do with race or color, or religious or cultural background.

Serious discrimination in getting a job: dummy variable taking value one if the respondent had been refused a job for reasons which were to do with race or color, or religious or cultural background more than once.

Discrimination in the workplace: dummy variable taking value one if the respondent had been treated unfairly at work with regard to promotion or a move to a better position for reasons which were to do with race or color, or religious or cultural background more than once.

Age: respondent's age in years.

Good health: dummy variable taking value one if the respondent had no long-standing illness, disability or infirmity.

Children: dummy variable taking value one if the respondent has children.

Number of children: number of respondent's children.

Female: dummy variable taking value one if the respondent is female.

Years since arrival: number of years since respondent's arrival in UK.

No parents: dummy variable taking value one if both respondent's parents are dead or if both live away from respondent.

Parents' physical contacts: number of times the respondent has seen the parents in the last four weeks.

Parents' telephone calls: number of times the respondent has spoken to the parents on the telephone in the last four weeks.

Parents' letters: number of letters received by the parents in the last four weeks.

No British qualification: dummy variable taking value one if the respondent has no UK qualification

British basic qualification: dummy variable taking value one if the respondent has a UK basic level of education.

British O-level qualification: dummy variable taking value one if the respondent has a UK O-level qualification (or equivalent).

British A-level or higher qualification: dummy variable taking value one if the respondent has a UK A-level (or equivalent) or above qualification.

Foreign qualification: dummy variable taking value one if the respondent has a qualification achieved abroad.

Unemployed: dummy variable taking value one if the respondent is unemployed (occupational groups dummies).

Self-employed: dummy variable taking value one if the respondent is self-employed (occupational groups dummies).

Manager: dummy variable taking value one if the respondent is a manager (occupational groups dummies).

Employees: dummy variable taking value one if the respondent is an employee (occupational groups dummies).

English spoken at home (older): dummy variable taking value one if English is the language normally spoken at home by the respondent to members of the family who are older.

English spoken at home (younger): dummy variable taking value one if English is the language normally spoken at home by the respondent to members of the family who are younger.

English spoken at work: dummy variable taking value one if English is the language normally spoken at work by the respondent.

English spoken with friends: dummy variable taking value one if English is the language normally spoken with friends (outside work) by the respondent.

Ward density of no car owners: percentage of no car owners in the ward (divided in four classes, coded 1 to 4).

Ward unemployment rate: ward unemployment rate (divided in five classes: 2%-5%, 5%-10%, 10%-15%, 15%-20%, 20% and above; mean value taken for each class).

Bedrooms per person: number of bedrooms per household component.

Home owner: dummy variable taking value one if the respondent's household owns the house.

Household income: respondent's household total income from all sources, before tax (divided in sixteen classes, mean value taken for each class).

Table A1: Descriptive Statistics for control variables

Variable	*Mean*	*St.dev.*	*Min*	*Max*
Age	41.12	13.09	18	97
Female	0.47	0.50	0	1
Children	0.82	0.39	0	1
Number of children	1.92	1.06	1	6
Years since arrival	26.88	10.38	1	55
Good health	0.78	0.41	0	1
British basic qualification	0.12	0.32	0	1
British O-level qualification	0.15	0.36	0	1
No British qualification	0.68	0.47	0	1
British A-level or higher qualification	0.23	0.42	0	1
Foreign qualification	0.28	0.45	0	1
Unemployed	0.13	0.33	0	1
Self-employed	0.12	0.33	0	1
Manager	0.03	0.17	0	1
Employee	0.51	0.50	0	1
No parents	0.33	0.47	0	1
Parents' physical contacts	3.52	7.05	0	28
Parents' telephone calls	4.16	7.33	0	60
Parents' letters	0.50	0.94	0	7
English spoken at home (older)	0.06	0.24	0	1
English spoken at home (younger)	0.23	0.42	0	1
English spoken with friends	0.25	0.44	0	1
English spoken at work	0.24	0.43	0	1
Household income	272.01	190.04	77	789
Bedrooms per person	0.77	0.35	0.16	2.5
Home owner	0.76	0.43	0	1
Ward unemployment rate	14.35	5.23	3.5	20
Ward density of no car owners	3.52	0.69	1	4

Table 1: Descriptive statistics for key variables

Variable	*Mean*	*St.dev.*	*Min*	*Max*
Homogamy marriage (τ)	0.81	0.29	0	1
Ward density of own ethnicity (q)	13.16	10.67	2	33
Ethnic identity (ΔV_1)	4.33	0.82	1	5
Ethnic identity (ΔV_2)	3.52	0.69	1	4
Serious racial harassment	0.01	0.10	0	1
Racial harassment	0.09	0.29	0	1
Serious job related language problems	0.03	0.17	0	1
Job related language problems	0.01	0.10	0	1
Discrimination in getting a job	0.06	0.24	0	1
Serious discrimination in getting a job	0.05	0.22	0	1
Discrimination in the workplace	0.04	0.20	0	1

Table 2: Ethnic neighborhood composition, racial harassment and discrimination

Variable	Ward density of own ethnicity (q)
Serious racial harassment	0.0149
Racial harassment	-0.0788
Serious job related language problems	0.0550
Job related language problems	-0.0070
Discrimination in getting a job	-0.0640
Serious discrimination in getting a job	-0.0429
Discrimination in the workplace	-0.0517

Table 3: Model (16) Probit Estimation Results

Dependent variable: Homogamy marriage (τ)

Variable	Coefficient	Marginal effect	p-value	Coefficient	Marginal effect	p-value
$(1-q)\Delta V_1$	0.0013**	#	(0.0313)			
$(1-q)\Delta V_2$				0.0029***	#	(0.0037)
Female	0.1115	0.0201	(0.3949)	0.0932	0.0127	(0.5207)
Age	0.0102	0.0018	(0.1433)	-0.0002	-0.0000	(0.9821)
British basic qualification	-0.2306	-0.0460	(0.1893)	-0.5373***	-0.0958	(0.0069)
British O-level qualification	-0.1306	-0.0248	(0.4180)	-0.0930	-0.0132	(0.6090)
British A-level or higher qualification	-0.3591*	-0.0705	(0.0719)	-0.6221***	-0.1021	(0.0059)
No British qualification	0.4732**	0.0902	(0.0496)	0.1607	0.0225	(0.5480)
Foreign qualification	0.2614*	0.0435	(0.0988)	0.2464	0.0308	(0.1643)
Household income	0.0002	0.0000	(0.5552)	0.0001	0.0000	(0.8605)
Ward unemployment rate	0.0498***	0.0090	(0.0010)	0.0572***	0.0078	(0.0006)
Pseudo R-squared	0.1926			0.2224		
	# Marginal effect of identity for different levels of (1-q)					
1-q<67		0.0016**	(0.0401)		0.0041**	(0.0136)
67<1-q<75		0.0017**	(0.0312)		0.0043**	(0.0105)
75<1-q<85		0.0019**	(0.0111)		0.0045***	(0.0052)
85<1-q<90		0.0022***	(0.0053)		0.0056***	(0.0037)
90<1-q<95		0.0023***	(0.0009)		0.0059***	(0.0011)
95<1-q<98		0.0024***	(0.0007)		0.0061***	(0.0009)
1-q>98		0.0025***	(0.0003)		0.0064***	(0.0005)

Notes:

- robust p-values in parentheses.
- * significant at 10%; ** significant at 5%; *** significant at 1%
- a constant and regional dummies are included
- results weighted for population proportions

Table 4: First Stage Ordered Probit Estimation Results

(1) Dependent variable: Ethnic group identification (ΔV_1)

(2) Dependent variable: Ethnic group identification (ΔV_2)

	(1)		(2)	
Variable	Coefficient	*p*-value	Coefficient	*p*-value
Serious racial harassment	1.1826*	(0.0778)	0.0249	(0.9687)
Racial harassment	0.0265	(0.9241)	0.3132	(0.3669)
Serious job related language problems	0.0081	(0.9879)	1.5024***	(0.0062)
Job related language problems at work	8.7407***	(0.0000)	6.1505***	(0.0000)
Discrimination in getting a job	-0.9352*	(0.0501)	-0.6211	(0.3046)
Serious discrimination in getting a job	1.1710**	(0.0368)	1.6266**	(0.0190)
Discrimination in the workplace	-0.2857	(0.4275)	-0.1477	(0.6557)
Ward density of own ethnic group (*q*)	-0.0174*	(0.0874)	-0.0090	(0.4360)
Years since arrival	-0.0161	(0.2413)	-0.0457**	(0.0109)
English spoken at home (older)	-0.7359**	(0.0425)	-0.4007	(0.3582)
English spoken at home (younger)	0.2266	(0.4229)	-0.3771	(0.2473)
English spoken at work	0.7853***	(0.0037)	0.3687	(0.2518)
English spoken with friends	-0.6561***	(0.0085)	0.0902	(0.7917)
No parents	-0.1446	(0.4718)	-0.0532	(0.8176)
Parents' physical contacts	-0.0008	(0.9556)	0.0093	(0.6385)
Parents' telephone calls	0.0272*	(0.0560)	0.0254	(0.1258)
Parents' letters	0.1545	(0.1118)	0.2312**	(0.0500)
Female	-0.0076	(0.9740)	0.4245*	(0.0786)
Age	-0.0018	(0.9043)	0.0771***	(0.0000)
Children	-0.1433	(0.7436)	0.2406	(0.5259)
Good health	0.2323	(0.3426)	0.2967	(0.2698)
British basic qualification	0.1908	(0.6015)	0.5947*	(0.0759)
British O-level qualification	-0.2836	(0.3749)	-0.5674*	(0.0948)
British A-level or higher qualification	0.4357	(0.2233)	-0.1645	(0.6406)
No British qualification	0.2218	(0.5732)	-0.4957	(0.2673)
Foreign qualification	-0.7300***	(0.0066)	-0.2519	(0.3517)
Unemployed	-0.2566	(0.4336)	0.6299*	(0.0802)
Self-employed	0.1441	(0.7238)	-0.4560	(0.3048)
Manager	0.7228	(0.1966)	-0.0385	(0.9550)
Employee	2.0171**	(0.0157)	0.1594	(0.8220)
Bedrooms per person	-0.0506	(0.9034)	-1.0398***	(0.0037)
Household income	-0.0003	(0.6141)	-0.0004	(0.5249)
Home owner	-0.4073*	(0.0930)	-0.0267	(0.9262)
Ward unemployment rate	-0.0068	(0.7861)	0.0267	(0.3232)
Number of children	0.2522**	(0.0246)	-0.1602	(0.1763)
Ward density of no car owners	0.1727	(0.2924)	0.1382	(0.3117)
Pseudo R-squared	0.1284		0.3005	

Notes:

- robust p-values in parentheses.
- * significant at 10%; ** significant at 5%; *** significant at 1%
- a constant and regional dummies are included
- results weighted for population proportions
- variables used as instruments (*z*) are in italics

Table 5: Second Stage Probit Estimation Results

Dependent variable: Homogamy marriage (τ)

Variable	Coefficient	Marginal effect	*p*-value	Coefficient	Marginal effect	*p*-value
$(1-q)\Delta V_1$	0.0297*	#	(0.0999)			
$(1-q)\Delta V_2$				0.0842**	#	(0.0342)
Years since arrival	-0.1492***	-0.0332	(0.0018)	-0.2896***	-0.0684	(0.0083)
English spoken at home (older)	-1.9610*	-0.0156	(0.0754)	-3.1962**	-0.0334	(0.0243)
English spoken at home (younger)	1.6163**	0.0099	(0.0293)	1.7121*	0.0000	(0.0718)
English spoken at work	-1.4263*	-0.0456	(0.0985)	-2.3838**	-0.0567	(0.0222)
English spoken with friends	4.1402***	0.0777	(0.0092)	5.1449***	0.0656	(0.0015)
No parents	2.3300**	0.0598	(0.0175)	3.4804***	0.0344	(0.0004)
Parents' physical contacts	0.5240***	0.0215	(0.0095)	0.9890***	0.0108	(0.0040)
Parents' telephone calls	-0.0190	-0.0005	(0.7036)	-0.1012	-0.0009	(0.1432)
Parents' letters	0.0915	0.0088	(0.6712)	0.4929	0.0000	(0.1744)
Female	2.1656***	0.0511	(0.0038)	3.7997***	0.0234	(0.0003)
Age	0.0571*	0.0023	(0.0895)	0.0749	0.0000	(0.2551)
Children	2.6066**	0.0000	(0.0403)	5.1203***	0.0000	(0.0001)
Good health	-0.0394	-0.0000	(0.9339)	-1.1129	0.0002	(0.1916)
British basic qualification	-2.3320**	-0.0600	(0.0115)	-3.9137***	-0.0785	(0.0024)
British O-level qualification	-1.9414***	-0.0588	(0.0044)	-3.1368**	-0.0354	(0.0116)
British A-level or higher qualification	-13.0458***	-0.0978	(0.0000)	-15.8200***	-0.1687	(0.0001)
No British qualification	-13.1738***	-0.1089	(0.0000)	-16.7169***	-0.0999	(0.0000)
Foreign qualification	0.9580	0.0509	(0.2448)	0.7249	0.0906	(0.5291)
Unemployed	0.2034	0.0002	(0.7480)	-1.4035	-0.0000	(0.1265)
Self-employed	-0.3807	-0.0003	(0.7686)	2.8890	0.0000	(0.1860)
Manager	2.9421***	0.0710	(0.0092)	10.0067***	0.0889	(0.0030)
Employee	-1.0315	-0.0404	(0.3931)	1.4450	0.0555	(0.3773)
Bedrooms per person	2.7165	0.0643	(0.1132)	2.9900**	0.0932	(0.0318)
Household income	-0.0083**	-0.0018	(0.0129)	-0.0136***	-0.0000	(0.0001)
Home owner	1.5223*	0.0043	(0.0916)	-0.6763	0.0221	(0.4752)
Ward unemployment rate	0.0231	0.0052	(0.6049)	-0.0489	-0.0010	(0.5268)
Number of children	1.9528***	0.4344	(0.0029)	2.3196***	0.2808	(0.0005)
Ward density of no car owners	-0.3746	-0.0833	(0.2530)	0.1434	0.0077	(0.7776)
Pseudo R-squared	0.7076			0.7317		
		# Marginal effect of identity for different levels of (1-*q*)				
1-*q*<67		0.0199*	(0.0744)		0.0343**	(0.0273)
67<1-*q*<75		0.0225**	(0.0431)		0.0398**	(0.0201)
75<1-*q*<85		0.0266**	(0.0321)		0.0425**	(0.0145)
85<1-*q*<90		0.0303**	(0.0113)		0.0450***	(0.0063)
90<1-*q*<95		0.0323***	(0.0028)		0.0569***	(0.0022)
95<1-*q*<98		0.0365***	(0.0011)		0.0606***	(0.0006)
1-*q*>98		0.0394***	(0.0008)		0.0646***	(0.0000)

Notes:

- robust p-values in parentheses.
- * significant at 10%; ** significant at 5%; *** significant at 1%.
- a constant and regional dummies are included.
- results weighted for population proportions.

Table 6: Marginal effect of identity on ethnic assimilation for different levels of (1-*q*) in different sub-samples

Sub-sample (1): individuals declaring that their residential area is poor for being with other people of their own ethnic group but prefer to stay

Sub-sample (2): individuals declaring that their residential area is good for being with other people of their own ethnic group and are willing to move out from the area

	Sub-sample (1)		Sub-sample (2)	
	Marginal effect	*p*-value	Marginal effect	*p*-value
1-*q*<67	0.0401**	(0.0301)	0.0321**	(0.0355)
67<1-*q*<75	0.0419**	(0.0213)	0.0363**	(0.0310)
75<1-*q*<85	0.0459**	(0.0177)	0.0395**	(0.0252)
85<1-*q*<90	0.0492***	(0.0099)	0.0452**	(0.0203)
90<1-*q*<95	0.0562***	(0.0055)	0.0509***	(0.0100)
95<1-*q*<98	0.0625***	(0.0016)	0.0557***	(0.0038)
1-*q*>98	0.0699***	(0.0012)	0.0588***	(0.0025)

Table 7: Marginal effect of identity on ethnic assimilation for different levels of (1-*q*) in the Muslim sub-sample

(1): predicted ΔV_1

(2): predicted ΔV_2

	(1)		(2)	
	Marginal effect	*p*-value	Marginal effect	*p*-value
1-*q*<67	0.0303**	(0.0298)	0.0813**	(0.0488)
67<1-*q*<75	0.0312**	(0.0255)	0.0836**	(0.0437)
75<1-*q*<85	0.0349**	(0.0201)	0.0866**	(0.0394)
85<1-*q*<90	0.0404**	(0.0109)	0.0945**	(0.0301)
90<1-*q*<95	0.0514***	(0.0076)	0.0985**	(0.0221)
95<1-*q*<98	0.0655***	(0.0044)	0.0995**	(0.0131)
1-*q*>98	0.0701***	(0.0031)	0.1077***	(0.0098)

Figure 1

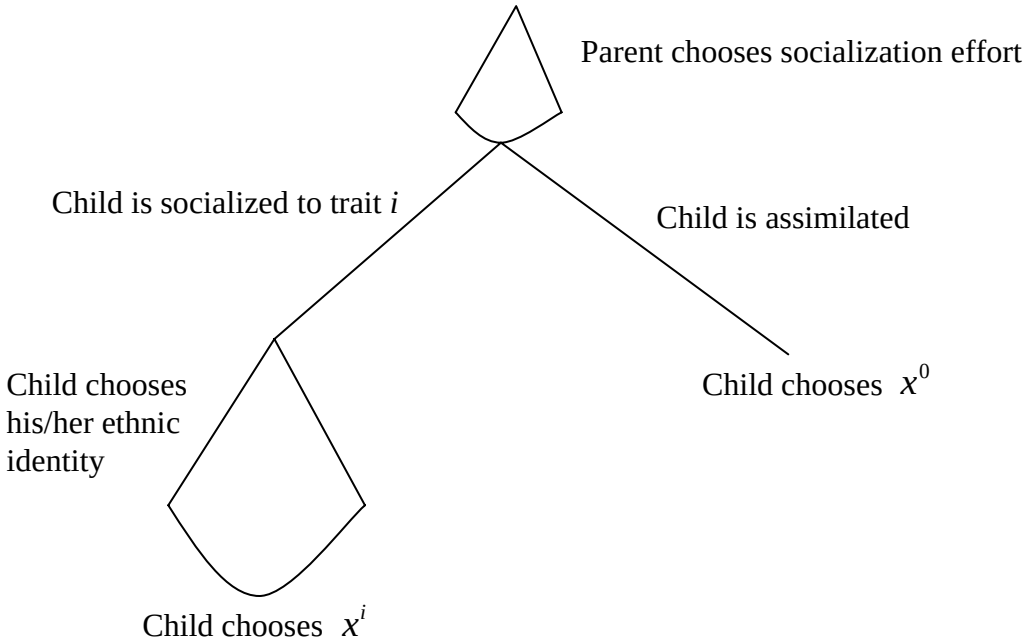
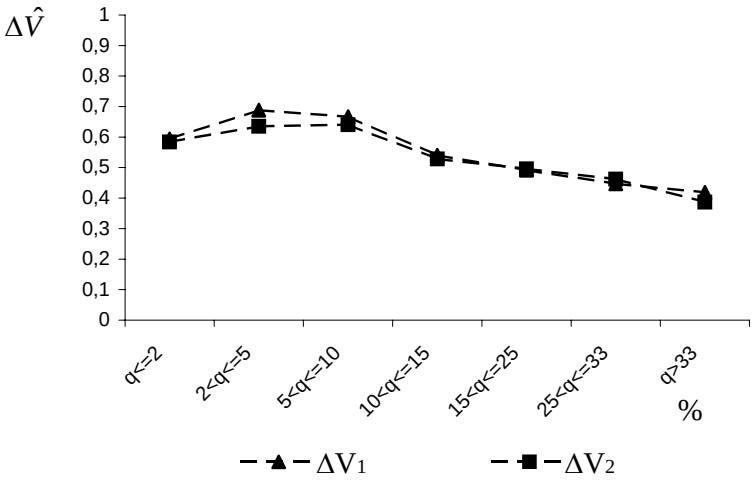
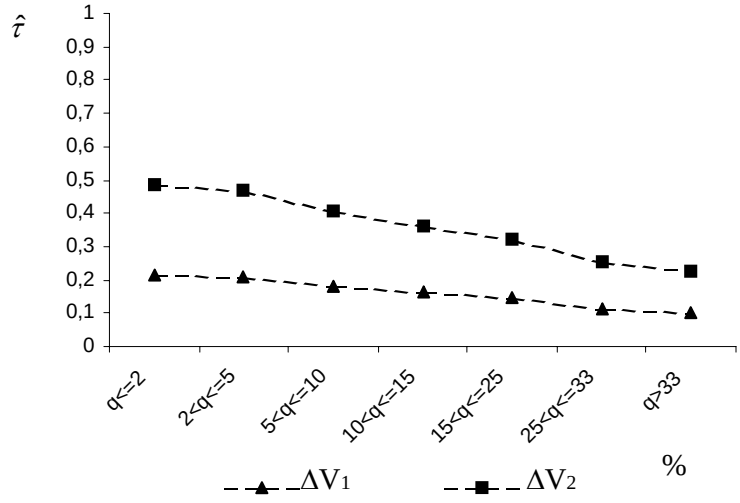

Parent chooses socialization effort
Child is socialized to trait *i*
Child is assimilated
Child chooses his/her ethnic identity
Child chooses x^0
Child chooses x^i

Figure 2


$\Delta\hat{V}$
1
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
q<=2
2<q<=5
5<q<=10
10<q<=15
15<q<=25
25<q<=33
q>33
%
ΔV1
ΔV2


$\hat{\tau}$
1
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
q<=2
2<q<=5
5<q<=10
10<q<=15
15<q<=25
25<q<=33
q>33
%
ΔV1
ΔV2