Assimilation, Transnationalism and the Fertility Behavior of Sub-Saharan African Migrants in France: Examining the Theories of Migrant Fertility

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INTRODUCTION

Understanding migrant fertility is important because of its effects on population growth and composition, hence distribution of public goods. The underlying mechanisms are however still unclear. The mechanisms theorized to explain migrant fertility include: socialization, adaptation, disruption and selection (Kulu 2005). These theories have been tested in various populations with differing support for each. Studies on sub-Saharan African migrants (SSAMs) have however generally focused on internal (rural-urban) migration. The few in the international contexts are based mostly on census data, thus have limited information to examine the underlying mechanisms (Genereux 2007). The socialization and adaptation theories can broadly speaking be grouped under assimilation theories. But, while the assimilation literature has been challenged by notions of transnationalism, few studies have considered how sustained connections to origin may influence fertility of migrants. Also, most studies on migrant fertility evaluate a limited set of variables; commonly nativity (or generational status) and length of stay, which may not be very good indicators of socialization or adaptation. Furthermore, both socialization and adaptation suggests changes in fertility ideals of migrants, but studies testing these theories tend to only test the relationships with actual fertility, thus do not examine if

fertility ideals actually change over time and if these are consistent with changes in actual fertility.

This study extends the migrant fertility literature by examining the effects of assimilation and transnationalism on the fertility and fertility ideals of SSAMs in an international context (France) through the lens of the migrant fertility theories. The study also draws on measures used in the general assimilation literature to more adequately understand the role of adaptation, socialization and disruption. Selection is not examined due to data constraints. The study utilizes a unique dataset that contains several of the variables of interest and also allows for between-group comparison of SSAMs with non-immigrants and other migrant groups in France; and within-group comparison in the sub-set of SSAMs. Understanding the mechanisms underlying the fertility behavior of sub-Saharan African migrants (SSAMs) in France is especially useful because of the wide gap in fertility between the two regions – total fertility rate of 2.0 children per woman in France compared to 5.1 children per woman in SSA (PRB 2012).

Sub-Sahara Africa presents an ideal region for studying the effects of migration on fertility because of the high fertility rates of its people who tend to migrate to countries with low fertility rates. Compared to Total Fertility Rate (TFR) below replacement level in more developed countries – 1.6 children/woman in Europe and 1.9 in North America; Africa has a TFR of 4.7. Sub- Saharan Africa has the highest fertility rates in the world at 5.1. There is however wide variation between countries in this region, with rates as high as 7.1 children/woman in Niger and as low as 2.4 in South Africa (PRB 2012). Some of the factors explaining the variation in fertility in Africa include socio-economic development, mortality decline, cultural issues including a desire for large families, the predominance of the extended family structure, gender relations, education, residential location, national family planning

initiatives and access to contraceptives, as well as other social policies (Brockerhoff 1995, 1998; Genereux 2007).

Most studies on SSAM fertility have been focused on rural-urban migration within countries. These generally find that fertility is lower among urban women; attributed to later age at first union and higher rates of contraceptive use influenced by greater access to family planning clinics, among other things (Brockerhoff 1995, 1998; Genereux 2007). The few studies of SSAMs' fertility in the international context generally find that SSAMs have higher fertility than non-immigrants in the destination place. For example, the TFR of Gambians in Spain is 3.67 children per woman, which is much higher than that of native Spaniards – 1.4 ; though lower than that of non-immigrants in Gambia (Bledsoe, Houle, and Sow 2007). The TFR of SSAMs in France is estimated at 2.86, which is significantly lower than that for SSA but still higher than that of the native French (Toulemon 2004). The mechanisms underlying these findings have however not being sufficiently explored due to limited variables in census data which has mostly been used in previous studies (Genereux 2007). In the next section I briefly review the migrant fertility theories and attempt to integrate them with the general migrant incorporation theories –assimilation and transnationalism.

Theories of Migrant Fertility, Assimilation and Transnationalism

There are a number of competing theories (hypothesis) on the mechanisms underlying migrant fertility; described in more detail elsewhere (Genereux 2007; Georgiadis 2008; Kulu 2005). The ***selection*** theory which is not examined in this paper posits that immigrants are a non-random group of people who already possess certain characteristics which make them prone to either high or low fertility. Thus immigrants display similar fertility to non-immigrants in the destination place, not because they have undergone any changes in the destination place, but

because they are different from non-immigrants in their place of origin. While this is important to consider, the data for this analysis does not enable us to examine selection. At the same time, immigration in itself is transformative; thus it is reasonable to assume that selection alone cannot explain all the variation in migrant fertility, hence the need to examine the other mechanisms.

The ***disruption*** theory posits that immediately following migration, migrants show particularly low levels of fertility due to the disruption associated with migration. This disruption can be due to long term separation of a husband and wife or a result of the preparation and anticipation to migrate and subsequent difficulty in adapting to a new place. The decline in fertility is however temporary and may increase again, when disruptions become less constraining. Frequent disruptions on the other hand may be sufficient to permanently lower completed family size. Moreover, the greater the prevalence of disruption in the migration process, the greater the disparity in fertility ideals and behavior. Thus, in this analysis, if disruption predominates we will expect fertility (and not necessarily fertility ideals) of SSAMs to increase with time spent in France (assuming that disruption does not persist).

The ***socialization*** theory posits that people's values and beliefs concerning reproduction are formed at an early age and become deeply ingrained. Thus when migrants move to a foreign environment, they do not immediately adopt the norms and attitudes of the host population, but go through a gradual process of developing new approaches to family-formation which may take several generations before it is accomplished. The assumption here is that habits and values are hard to change and that cultural influences from early childhood are powerful enough to override the effects of other conditions that migrants might encounter when they settle in their new surroundings. Thus, first generation migrants are expected to exhibit similar fertility levels to those in their place of origin, with convergence towards fertility levels of the destination

occurring only in subsequent generations. While some have found support for this theory, it is important to note that migrants do change in many ways to adapt to the destination place; thus higher migrant fertility than that of the destination place does not imply a lack of change. In addition, the socialization (and re-socialization) of first generation migrants will be inherently different from that of subsequent generations who may have little exposure to the norms of the origin place hence have no need for re-socialization.

The ***adaptation*** theory in contrast suggests that fertility ideals and behavior of immigrants do not remain constant from place of origin to destination. But the peculiar circumstances of destination settings force migrants to adjust their views and practices to suit their latest needs. Adaptation theory identifies two major factors that impact migrant fertility behavior: resources and cultural adaptation. That migrants' first decrease their fertility due to the resource constraints related to childbearing in the destination place, and subsequently as a result of changing fertility ideals related to greater interaction with others in the new environment. This theory predicts that re-socialization of individuals is possible even among first generation migrants, and the fertility behavior of even first generation migrants can be similar to that of non-immigrants in the host place depending on their level of exposure.

Separating out the effects of socialization and adaptation is difficult, because they occur simultaneously (Lindstrom and Saucedo 2002). A major difference between socialization and adaptation is however in the expected time for convergence of migrant fertility to that of the host population; with socialization suggesting it only starts with the second generation and adaptation suggesting it can occur even in the first generation (Stephen and Bean 1992). Also implicit in socialization is that fertility ideals need to change before actual fertility changes, while adaptation implies fertility can change without a change in ideals. In this analysis, If

socialization is the predominant mechanism, the fertility and fertility ideals of first generation SSAMs should be much higher than that of non-immigrants (and closer to that in SSA); and that of second generation SSAMs should be converging towards that of non-immigrants (though not yet converged). On the other hand if adaptation is the predominant mechanisms, the fertility (and not necessarily fertility ideals) of SSAMs should be closer to that of non-immigrants in France than to that in SSA.

The theories are not mutually exclusive. They have all been supported as well as challenged; and there is no consensus in the literature as to which one best captures the general fertility experiences of migrants (Kulu 2005). For example, a study of migrants in Sweden found greater support for adaptation (Andersson 2004). Studies of Mexican migrants in the US on the other hand found more support for socialization and disruption (Stephen and Bean 1992). Among the studies of rural-urban migrants in SSA, while some argue for adaptation – that it is the circumstances of living in an urban area that leads to fertility behavior change; others attribute it to a selection or disruption effect (Bongaarts, Frank, and Lesthaeghe 1984; Brockerhoff and Yang 1994; Chattopadhyay, White, and Debpuur 2006). Studies of rural-urban migrants in Thailand also found support for disruption (Goldstein and Goldstein 1981).

Several reasons are attributed to the variation in the reproductive behavior of migrants. One of these is a group's willingness to shed its traditional ways of thinking about childbearing and to adopt new ones (Georgiadis 2008). This in turn depends on other factors, such as the strength and character of migrants' cultural or religious beliefs in relation to those of their hosts, their educational status, the reasons for migrating, and the amount of contact they sustain with their home country (Ng and Nault 1997; Lindstrom and Saucedo 2002; Ng and Nault 1997; Penn and Lambert 2002; Schoenmaeckers et al. 1999). Another potential determinant of a migrant

group's likelihood to integrate with the host society and adopt its fertility practices is its ability to do so. This also depends on factors such as their linguistic skills, the amount of contact with local institutions, the extent to which immigration policies encourage their integration, and whether they intend to stay or eventually return to their country of origin (Bledsoe et al. 2007; Georgiadis 2008; Lindstrom and Saucedo 2002; Sargent and Cordell 2003). Because of the wide variation in underlying factors, whether and how a particular migrant group will change its fertility practices is still difficult to predict (Georgiadis 2008).

The socialization and adaptation theories can broadly speaking be grouped under *assimilation theories* as used in the general migrant incorporation literature*;* which imply that migrants eventually become like the host population with greater exposure – through the adaptation of the customs and values of that society. For example, the classic assimilation theory posits an inevitable endpoint in the process of immigrant incorporation where immigrants eventually shed their own cultures and adopt that of the mainstream. The neo-assimilation theory on the other hand emphasizes an attenuation in distinctions of salience – that individuals' ethnic origins become less and less significant in relation to the members of the majority ethnic group, but does not necessarily disappear (Alba and Nee 2003). In both cases however, the expectation is that immigrants residing the longest in the host society, as well as the members of later generations, will show greater similarities with the majority group than immigrants who have spent less time in the host society (Brown and Bean 2006). When the outcome of interest is fertility, this basically translates to the adaptation theory. This is evident by the fact that length of stay, the commonly used measure of adaptation is also a common measure of assimilation. The socialization theory also falls under the concept of assimilation, if we do not focus on the strength of prior beliefs and the time for convergence of migrant fertility to that of non-

immigrant, but consider that it also posits that migrants eventually become like the host population (but this will only start with the second generation). Birth place (or generational status) which is commonly used to examine socialization is also a common measure of assimilation. The general migrant incorporation studies have tended to exam more measures of assimilation than the migrant fertility studies. I draw on some of these measures to more fully examine adaptation and socialization. In this paper, I use the term 'assimilation' to refer to assimilation as used in the general migrant incorporation literature; and to both adaptation and socialization theories together.[1]

Complicating the assimilation theories is *transnationalism*, defined as the "process by which immigrants forge and sustain simultaneous multi-stranded social relations that link together their societies of origin and settlement"(Schiller, Basch, and Blanc 1995:48); or the maintenance of occupations or activities that require regular contact over time across national borders (Portes, Guarnizo, and Landolt 1999). Although some propose transnationalism as a new and emerging phenomenon in migration studies (Guarnizo, Portes, and Haller 2003; Schiller et al. 1995), others suggest that connectivity between source and destination is an inherent aspect of the migration phenomenon (Waldinger and Fitzgerald 2004). It is also debated as to whether transnationalism prevents immigrants from assimilating or it actually is part of the assimilation process (Kivisto 2001). Despite the conceptual disagreements, there is evidence that immigrants do in fact engage in cross border activities with varying degrees, influenced by contextual factors

[1] The socialization theory has also been referred to by some as assimilation theory; while others use assimilation refer to both socialization and adaptation (Lindstrom and Saucedo 2002; Stephen and Bean 1992). I use the later because assimilation and adaptation are more similar (essentially the same) than assimilation and socialization. However, the variable commonly used to evaluate the effect of socialization (birthplace or generational status), is also a measure of assimilation. Thus assimilation as used in the general migrant incorporation encompasses both adaptation and socialization theories.

in both sending and host countries. These activities include communication with friends and relatives in countries of origin, sending remittances to country of origin for various purposes, frequent travels to home countries, participation in hometown association, maintenance of businesses in countries of origin and participation in politics of the home country (Beauchemin, Lagrange, and Safi 2011; Guarnizo et al. 2003; Waldinger, Soehl, and Lim 2012). Waldinger and Fitzgerald (2004) therefore propose that assimilation and transnational ties be seen as social processes that are "inextricably intertwined" with the immigrant experience rather than as two competing theories.

Few studies have examined transnationalism and migrant fertility, with suggestions that sustained contact with home country may be associated with high fertility (Schoenmaeckers et al. 1999). Others suggest ties to origin place may facilitate transmission of values and practices related to low fertility to non-immigrants in the place of origin (Fargues 2011). The uncertainty around the relationship between transnationalism and assimilation necessarily requires that it is examined in the context of both the socialization and adaptation theories of migrant fertility. This study extends the migrant fertility literature by examining the effects of various measures of assimilation and transnationalism on the fertility and fertility ideals of SSAMs in France through the lens of the migrant fertility theories.

Research questions and hypotheses

Four questions are addressed in this paper: (Q1) Do SSAMs differ from non-immigrants (Native French) and non-SSAMs (migrants from other parts of the world) in France with regards to fertility and fertility ideals? (Q2) How does the fertility and fertility ideals of SSAMs in France compare to that in SSA? (Q3) How is assimilation and transnationalism related to the fertility and fertility ideals of SSAMs in France? (Q4) Which theories of migrant fertility

(socialization, adaptation or disruption) best explain the fertility and fertility ideals of SSAMs in France? The analysis is in two stages:

To answer Q1, I use the full sample to compare the different migrant groups. The data for this analysis cannot fully address Q2, as it does not include information for non-migrants in SSA. However, this comparison is needed to more adequately examine the migrant fertility theories. I therefore draw on estimates from other publications to answer this question. For Q 2, I use estimates obtained from other publications. Drawing on existing fertility estimates for SSA (TFR of 5.1 - the highest in the world) and that for France (TFR of 2.0 - among the lowest in the world), with that for most other parts of the world roughly falling between these two extremes (PRB 2012); it is expected that SSAMs will have higher fertility and fertility ideals compared to non-immigrants and other migrants in France; but which will be lower than that in SSA. For Q3, I use only the subset of SSAMs with the measures of assimilation and transnationalism as the main predictors. The expectation here is that, the fertility and fertility ideals of SSAMs will decrease with assimilation; and increase with transnationalism (assuming that transnationalism reduces assimilation and assimilation leads to lower fertility). Findings from Q1 to Q3 are integrated to answer Q4 which examines the three competing hypotheses (described above and summarized in table 1).

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TABLE 1 ABOUT HERE
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METHODS

Data and sample

The data for this analysis come from the TEO ("Trajectoire et Origines") survey conducted in France between September 2008 and February 2009. [2] The TEO is based on a nationally representative sample of 22,000 individuals aged 18 to 60 (18 to 50 for children of immigrants) living in all regions of metropolitan France. Because a major aim of the survey was to fill the gap in data availability on immigrants of first and second generations in France, it provides a unique opportunity for the study of different groups of migrants in France. The sampling frame for the TEO survey was the 2007 census. However because information on the place and citizenship of birth of parents is not available in the French Census, immigrants' children were randomly selected from a specially designed sampling frame based on a matching operation between data from the census, the Echantillon Démographique Permanent and the civil registration system. Details of this can be found elsewhere.[3] Interviews with children of immigrants were limited to those aged 18 to 50 due to selection constraints, at the time of the survey. Non-immigrants and larger immigrant groups in France like those from Maghreb and Europe were randomly selected. However more recent immigrant groups like immigrants and their children from Turkey, South-East Asia and sub-Saharan Africa were over-sampled to provide sufficient sample sizes for analyses. Sub-Saharan African countries represented in this dataset are mainly those that were former French colonies: Benin, Burkina Faso, Cameroon,

[2] The TEO survey was conducted jointly by INED and INSEE. Details on the survey can be found at http://teo_english.site.ined.fr/ (in English); and even more details at http://teo.site.ined.fr/fr/ (in French).

[3] Details on the sampling methodology at: http://www.ined.fr/fichier/t_telechargement/26218/telechargement_fichier_en_teo.note.eng.pdf , in the codebook for the dataset and in (Beauchemin, Lagrange, and Safi 2011).

Central African Republic, the Comoros, Republic of Congo, Côte d'Ivoire, Djibouti, Gabon, the Republic of Guinea, Madagascar, Mali, Mauritania, Niger, Senegal and Gambia, Chad and Togo. This limits generalizations to migrants from all of SSA as migrants from other parts of SSA are underrepresented in the sample.

Face to face interviews were conducted in French, (with interpreters for those who had difficulties with communicating in French) using standardized questionnaires. The TEO questionnaire covers a wide range of topics, providing a variety of indicators for this analysis. The response rate for the survey was 61% (70% for people who had not moved and about 50% for 25% of the sample who had changed address between the census and survey and could not be located). Even though 22, 200 individuals were interviewed, the total number of cases available in the dataset is 21,761 due to loss of cases from missing data during initial data processing. The overall analytic sample for this study is 20,953 observations with complete data on the key dependent and independent variables. This is due to 91 missing cases on migration status due to missing data on birthplace of parents, 381 on education and 342 on religion. The analytic samples for each outcome and sub-group analysis are noted in each table of results.

Variables

The Dependent variables are *cumulative fertility* operationalized as number of children ever born, (from the question, 'How many children do you have in total, including children who no longer live with you or who are adopted or deceased?); and *fertility ideals* operationalized as perceived ideal number of children in a family – in general and for people like self (from the question, 'In your opinion, what is the ideal number of children in a family? And when you think in particular of people from the same background as you and with the same income, what is the ideal number of children in a family?') A limitation of the fertility measure is that for persons

who had all their children before migrating, we are unable to determine the true effect of migration on their childbearing practices. However given that most people migrate in their reproductive years and the mean age at migration in this sample is about 20 years (and less than 10% migrated after age 30), this should not significantly affect the results. Studies in France also suggests most migrants start childbearing after arrival in France (Héran and Pison 2007). The other limitation is that it does not differentiate between completed and uncompleted fertility. Since the interview does not ask for reproductive intentions, we cannot determine if a respondent still plans to have more children. One way of addressing this is controlling for current age as number of children typically increases with age; and age at migration, which has been used in other studies (Andersson 2004; Carter 2000). Use of number of children ever born as a measure of cumulative fertility is however typical (Chattopadhyay, White, and Debpuur 2006; Toulemon 2004; White et al. 2005). 'Fertility ideals' has its own limitations including being a less stable measure: what people report as their ideal family may change under different circumstances. However examining fertility and fertility ideals together helps illuminate the findings and increases our ability to evaluate the migrant fertility theories.

Independent variables: The key independent variable for the first part of the analysis is *migration status*, obtained from a recode of the questions on the birthplace of the respondent and his parents, categorized as: 'non-immigrant' (both his parents are French by birth (irrespective of where they were born)); 'second generation non-SSAM' (if born in France, at least one parent is foreign born, but no parent born in SSA); 'first generation non-SSAM' (if foreign born but not born in SSA); 'second generation SSAM' (if born in France and at least one parent was born in SSA); and 'first generation SSAM' (if born in SSA).

For the second part of the analysis, the ***independent* variables** are *Transnationalism and* measures of *Assimilation* drawn from the general migrant incorporation literature – *Generational status (*combines *birth place and Age at migration), Length of stay,* C*urrent nationality, Age at naturalization, French language proficiency, Birthplace of spouse, Language used with partner, Place of residence of partner, and place of schooling*. For the purpose of examining the migrant fertility theories, I group generational status with *childhood language*, and where respondent first went to school as measures of early socialization; and the rest of the variables as measures of adaptation (except *Place of residence of partner* which is examined as a measure of disruption). This categorization is not rigid, and is mainly for the purpose of specifying the models to examine the migrant fertility theories. The effect of the variable in the context of the other findings is what is important. For example, place where respondent first went to school is grouped under measures of early socialization, but schooling at any level in France is examined as a measure of adaptation as going to school after migration could facilitate adaptation. In addition, *Length of stay* is examined both as a measure of adaptation and disruption depending on the direction of the association.

Age at migration is from a question on when respondent first arrived in France; and *Length of stay in France* obtained by subtracting respondents' current age from his age at arrival in France. To prevent collinearity with length of stay in the regression, Age at migration is combined with migration status to create a new variable *generational status*, that groups SSAMs as second generation SSAMs (born in France but at least one parent born in SSA), 1.5 generation SSAM (born in SSA but migrated to France before age 13), and first generation SSAM (born in SSA and migrated to France at age 13 or older). The cut off at 13 years has been used in other studies as most socialization is thought to have occurred by adolescence (Portes and Rumbaut

2006). Studies in France have also observed difference in the fertility of migrants who migrated before and after age 13 (Toulemon 2004). *Childhood language* is from a question on language spoken to by parents during childhood, recoded into a binary variable –French (includes French or several languages including French) and foreign language (includes foreign language or several languages all different from French). *Place of education* is from a question on where respondent went to school, recoded into two binary variables – whether respondent first went to school in a foreign country or not and whether respondent has attended school at any level in France or not; *Current Nationality* captures whether respondent is a French citizen or not; and *Age at naturalization* is when one became a French citizen.

Four questions on how well respondent can understand, read, write, and speak French (coded as 3 'very well' 2 'well' 1 'not very well' and 0 'not at all') are summed to construct a *French Language proficiency scale* ranging from '0'- not proficient in any domain to '12'- very proficient in all domains. For the regression they are standardized and averaged, and then converted to a zero to one metric (0, as the minimum score and 1 as the maximum score) to ensure variables with greater variance are not weighed more heavily than the others. Factor analysis showed these variables load onto a single factor with a Cronbach's alpha of 0.92. *Birthplace of spouse* is based on a question on where current spouse was born, coded into born in France or not; and born in SSA or not (and no spouse in both cases). Place of residence of partner is examined in two forms: whether respondent lives in the same household with current partner or not; and whether partner lives in France or not. *Language used with partner* is the primary language used with partner recoded into – speaks French with partner or not.

Nine questions on relationships with the origin country (listed in Table 2) are combined to create a transnationalism scale ranging from 0 (do not engage in any transnational practices) to

9 (engage in all 9 practices). Prior to creating the scale, the variables are that were not binary were recoded into binary responses with '0' as the negative and '1' as the positive response to create the same metric for all the items for the scale. For the regression the variables are standardized and averaged for the scale which is then converted to a zero to one metric. All nine variables load onto a single factor with a Cronbach's alpha of 0.60. The set of questions have also been found to represent a single dimension of transnationalism by other researchers (Beauchemin et al. 2011). Some of the questions in this module were asked to only migrants and their children, while others were asked to all interviewees. Questions asked to non-immigrants refer to the connections to any place outside metropolitan France, but those for migrants and their children refer specifically to their place of origin. In this analysis I consider transnationalism for only migrants.

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TABLE 2 ABOUT HERE
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Control variables: Based on the literature on the various factors that influence fertility, the following variables are controlled for in the analysis: age (at last birthday), sex (male or female), marital status (recoded as ever married, never married), education (highest education attained recoded into a higher secondary certificate or equivalent or not), employment (currently working or not; and ever worked or not), income (monthly household income from all sources), religion and importance of religion in one's life. Religion is recoded into whether respondent identifies as an atheist, Christian (grouping Catholic, Protestant, Spiritualist, Charismatic/ Pentecostal, other Christian together), Muslim (grouping orthodox and other Muslim groups together) and other (includes, Jews, Buddhists, other religions). Importance of religion in one's

life is based on the question –'What importance does religion have in your life, recoded into a binary variable – 'moderately or not important' and 'important or very important.'

Analytic Approach

STATA version 12 was used for all the analysis. I first run and examined the descriptive and bivariate statistics for all the variables to identify relevant associations between them. Poisson regression was used for the multivariate analysis as the dependent variables are all count variables. The general equation for both the Poisson regression is Log (Y) = $a+\sum biXi$, where the incidence (fertility or ideal fertility) rate is given by Y = exp ($a+\sum Xi$). Selection of the final models was based on the guiding theory, Wald-tests and Bayesian Information Criterion (BIC). Post-estimation tests were done to assess model fit and all models were examined for multicollinearity. Models were built sequentially starting with measures of early socialization and adding on measures of adaptation (and disruption) and finally transnationalism, but only the final models are presented as most of the coefficients did not change very much with the addition of more variables. Only variables found to improve the models were included in the final models.[4] No over dispersion was detected and a check with negative binomial gave very similar results. Robust standard errors are presented for all the regressions.

[4] Preliminary analysis and diagnostics identified the relationship between age and number of children to be curvilinear, so a squared term for age is included in the regressions. Income and employment status are not included in the final models because they did not improve the model. Because income is missing on about a third of the observations, multiple imputations was done to check if this might improve its effect, but the results did not differ significantly hence it was excluded from the final models. For the regression with the subset of only SSAMs, religion, age at naturalization, place of residence of partner, place of early education, a variable for at least one parent born in France and both parents born in SSA, a squared term for length of stay, and an interaction term for generational status and transnationalism were included in the initial models but these did not improve the models and so are not included in the final models presented. As seen in the pseudo-R-squared values, the models for the regression on fertility are specified better than those on fertility ideals.

RESULTS

Descriptive and bivariate statistics

Table 3 shows the distribution of the dependent variables by migration status. It shows that first generation migrants have the most children – an average of two children per respondent for both first generation SSAMs and non-SSAMs compared to 1.3 for non-immigrants and less than one child per respondent for second generation migrants. More than half of first generation migrants have no children. While less than two percent of non-immigrants and second generation have more than five children, it is nine percent of first generation SSAMs, and six percent for first generation non-SSAMs. In general, the reported ideal number of children in a family is more than three for SSAMs, compared to less than three for the other groups. There was a significant positive correlation between number of children and perceived ideal number of children. These findings were all statistically significant.

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Table 4 shows the distribution of the control variables by migration status. First generation migrants tend to be older (average age of 37 years for first generation SSAMs) and married, while second generation migrants are generally younger (average age of 25 years for second generation SSAMs) and less likely to be married. These may account for the low fertility of second generation migrants. Females make up a little over half of the sample for all groups. Non-immigrants have the highest average monthly household income and first generation SSAMs have the least. SSAMs however have the highest proportion with more than a high school certificate. Religion does not vary much between the groups, though more SSAMs report that religion plays an important role in their lives compared to the other groups.

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TABLE 4 ABOUT HERE
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From table 5, we see that the average age at migration for first generation SSAMs is 22 years, with an average length of stay of 15 years, and average age of naturalization of about 30 years. Only about 13% of first generation SSAMs migrated before age 13years. Almost all non-immigrants and second generation migrants report the primary language spoken to them by their parents during childhood as French, compared to only 25% and 57% respectively for first generation non-SSAMs and first generation SSAMs. Most people in the sample are proficient in French. Also close to all non-immigrants and second generation migrants have had some schooling in France, compared to less than half of first generation migrants. Transnationalism is low for all groups though higher for first generation migrants – an average score of a little over three (out of nine) for first generation migrants and a little over two for second generation migrants. Among those who have a partner, only about a third of first generation migrants have partners who were born in France, compared to more than ninety percent of non-immigrants. About two thirds of first generation SSAMs and a third of second generation SSAMs have partners who were born in SSA. Almost all respondents with partners live with them in France and in the same households. Also, most non-immigrants and second generation migrants primarily communicate in French with their partners, compared to 53% and 69% for first generation non-SSAMs and SSAMs respectively.

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TABLE 5 ABOUT HERE
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Multivariate analysis

Full sample: Table 6 shows the results from the regressions for the full sample with number of children and perceived ideal number of children as the dependent variables. The

second column of table 6 shows that as hypothesized, first generation SSAMs have the highest fertility net of age, gender, marital status, sex, education, place of education and religion – on average 33 % more children than non-immigrants. Second generation non-SSAMs have 3% fewer children than non-immigrants, but there is no significant difference in the fertility levels of first generation non-SSAMs and second generation SSAMs compared to non-immigrants. The predicted probabilities based on this regression are shown in Figure 1. It shows that holding all other predictors at their means the predicted number of children is less than one for all groups, except for first generation SSAMs which is about 1.2. In more substantive terms, the predicted number of children for a 40 year old female who is married, has more than a high school education, has some schooling in France, and is a Christian is 2.0, 1.9, 2.1, 1.9, 2.7 respectively for non-immigrants, second generation non-SSAMs, first generation non-SSAMs, second generation SSAMs and first generation SSAMs.

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TABLE 6 ABOUT HERE
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From column 3 and 4 of table 6, we see that net of other factors, all immigrant groups have a significantly higher preference for more children compared to non-immigrants; with SSAMs reporting the largest ideal family size. The ideal number of children in general is about 30% more for SSAMs (IR of 1.28 for second generation and 1.30 for first generation) than non-immigrants, while that for non-SSAMs is just about 5% more (IR of 1.05 for second generation and 1.07 for first generation). Net of other factors, People with a higher secondary school certificate or more and those with some schooling in France on average have fewer children and report a lower ideal number of children. The predicted ideal numbers of children holding the other predictors at their means are shown in Figure 2 and Figure 3. These show a predicted ideal number of children in general at about 3.3 for first and second generation SSAMs compared to

less than 2.8 for the other groups. The predicted personal ideal number of children is lower than the ideal number of children in general for all groups, but SSAMs still have the highest, with a predicted 2.8 children for first and second generation SSAMs compared to less than 2.4 or less for the other groups.

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FIGURES 1, 2 AND 3 ABOUT HERE
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Within group analysis for SSA migrants*:* Table 7 displays the results for the sub-group analysis with only SSAMs for all the measures of fertility behavior. All models control for age, gender, marital status, education, and importance of religion. In the initial model for the regression on number of children: net of the control variables 1.5 and first generation SSAMs had on average 36% and 45% more children respectively than second generation SSAMs. Column 2 of table 7 shows that the addition of the adaptation variables increases the incidence rate for the 1.5 generation to 1.46, while that for the first generation remains at 1.45. Columns 3 and 4 show that net of other factors, there is no significant difference between second and 1.5 generation SSAMs in their fertility ideals. Surprisingly, first generation SSAMs report a slightly lower ideal family size (IR=0.89). This was the major difference observed with the addition of the adaptation variable as there was no significant difference in fertility ideals by generation status without the adaptation variables. Net of other factors, foreign childhood language has a small but significant positive association with fertility and ideal family size in general (IR =1.14 and 1.05 respectively). Length of stay also has a marginal but significant and positive association with fertility – one percent more children for each year of stay in France; but is not associated with fertility ideals net of other factors. All else constant, French nationality, French proficiency, having a partner born in France, and higher education are all associated with lower fertility and general fertility ideals. For example, compared to the least proficient in French, the most

proficient have 28% fewer children and report 32% fewer children as their personal ideal number of children. When having a partner born in France is substituted with having a partner born in SSA, the relationship is reversed, with having a partner born in SSA being associated with more children (not shown in table). Speaking French with partner is associated with a lower ideal family size but not with actual fertility.

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TABLE 7 ABOUT HERE
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Interestingly, net of other factors transnationalism is associated with a higher ideal family size (24% more in general and 52% more for persons like self; for those engaged in the most transnational activities, compared to those engaged in the least activities), but it is not significantly associated with actual number of children. Also, importance of religion one's life is associated with higher ideal family size but not actual fertility, while higher education is associated with lower fertility and ideal family size in general.

Since most of the variance in the assimilation variables is among the first generation, and also considering that the effect of these variables may be different for first and second generation migrants, the models were examined separately for first and second generation SSAMs. These are shown in table 8. Age at migration and length of stay were examined here for only the first generation, with length of stay as a categorical variable. French proficiency was also dropped out of the model for second generation because of collinearity. The results for first generation SSAMs show similar relationships as in the combined model except that childhood language is not significant for any of the outcomes here. There is also no difference in both fertility and fertility ideals for 1.5 and first generation SSAMs; and for those who had been in France for 3 to 5 years and 6 to 9 years compared to those who had been there for less than 3 years. Those who had been in France for more than 10 years however had significantly more children (IR = 1.41

and 1.42 respectively for 10-14years and 15 or more years). Length of stay has no effect on ideal number of children net of other factors. Having had some schooling in France, being proficient in French, having a partner born in France, and speaking French with partner were associated with fewer children and ideal number of children for first generation SSAMs. Among the second generation, the only significant assimilation variable for fertility was foreign childhood language (IR =2.01). For fertility ideals of the second generation, the significant predictors were: having a partner born in France which was negatively associated with fertility ideals; and transnationalism and importance of religion which were both associated with higher fertility ideals. Having had some school in France was unexpectedly associated with higher fertility ideals, but considering the very little variance for place of school for the second generation, this is probably of no consequence.

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TABLE 8 ABOUT HERE
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DISCUSSION

The average fertility level obtained in this analysis is two children per respondent for first generation SSAMs (2.1 for only females) and 1.3 for non-immigrants (1.4 for only females), which compares favorably with census based estimates of TFR– 2.9 children per woman for SSAMs in France, and 1.7 for non-immigrants (Genereux 2007; Héran and Pison 2007). This is a crude comparison as TFR is not obtained in the same way as the average number of children obtained here. However, whether we use the findings from this analysis or the census based estimates of TFR, it is clear that the fertility of SSAMs in France is much lower than the TFR of 5.2 children per woman in SSA, (especially considering that this sample includes respondents from Niger which has an estimated TFR of 7.0) (PRB 2011). The levels are much closer to that of non-immigrants in France than to that of SSA. The question then is what accounts for the

lower fertility rates of SSAMs when compared to their countries of origin, but the higher rates when compared to their countries of destination? How is this explained by the prevailing theories of migrant fertility?

Socialization: First, the finding that migration and generational status (basically where one is born) has an independent association with fertility suggests that early socialization may have some influence on fertility – a potential support for the aspect of the socialization theory which states that people's values and beliefs concerning reproduction are formed at an early age. The association with childhood language and fertility may be an indication of the effect of the early socialization, especially considering that it is significant for only the second generation in the separate models. One interpretation of this may be that second generation SSAMs whose parents spoke to them in a foreign language (which is assumed to be that of the origin place), had greater exposure to origin norms; while for first generation migrants other factors such as the fact of living in the origin place were more important for socialization than the language their parents spoke to them in. This also points to the differing modes of socialization for first and second generation migrants. The results however, also show convergence towards fertility levels of the destination population occurring even among first generation SSAMs; with that of second generation already similar to non-immigrants in France; suggesting that values and beliefs concerning reproduction are not as fixed as the theory suggests. In addition, the effect of early socialization on fertility is said to operate through a preference for large families, as seen by the higher preference for children by SSAMs. However, we see no consistent difference in fertility ideals of first, 1.5, and second generation SSAMS, with first generation migrants surprisingly reporting a lower ideal family in general in the combined model. The association between

childhood language and fertility ideals is also not significant in the separate models – weakening support for socialization.

Adaptation: On the other hand, most of the adaptation measures are associated with a lower fertility and ideal family size – a hint that adaptation may have bigger role. Adaptation also seems to be a more potent explanation for the lower fertility of first generation SSAMs compared to that in SSA (though higher than non-immigrants in France); the similar fertility levels for second generation and non-immigrants; but higher fertility ideals for both first and second generation SSAMs compared to non-immigrants. This is consistent with the assumption of adaptation that, fertility changes before ideals. While migrants may still have a preference for large families due to their early socialization, they are forced to adapt to the circumstances in their host country leading to lower fertility. In addition, we see some evidence of changes in fertility ideals even among the first generation when we compare the mean ideal number of children of about three for the SSAMs in this sample to that for SSA which ranges from about four to nine (PRB, 2011). It is unclear why first generation migrants who migrated from age 13 have lower fertility ideals than the second generation. But, that this only became significant with the addition of the adaptation variables seems to suggest other factors may be more important than early childhood factors. In addition, we see no difference in both fertility and fertility ideals for first generation SSAMs based on age at migration. The findings that those who have acquired French citizenship, have a native born partner, are more proficient in French, speak French with their partner, have had some schooling in France, and or have higher than a higher secondary school certificate are more likely to have fewer children and prefer a small family, particularly lends support to the second condition of the adaptation theory as these are all conditions that will increase socialization to the host country cultural norms and values. These factors also appear to

be more important for the fertility of first generation than second generation; which is reasonable considering that re-socialization is more important among the first generation.

Disruption: A finding that does not adequately support the adaptation hypotheses is the effect of length of stay. With the adaptation hypotheses we will expect fertility to decrease with length of stay in the host country as migrants come into greater contact with the host country. We however find in this analysis a persistent positive correlation between length of stay and fertility, albeit small, suggesting some role of disruption. The positive association between length of stay and fertility net of other variables may imply that migrants decrease their fertility due to the disruption of moving, but when they are comfortably settled with fewer or no disruptions, they increase their fertility to meet their fertility goals. The analysis also find that the reported ideal number of children does not change with length of stay, suggesting fertility preference per se may not change with time, but time allows migrants to actualize their fertility intentions. Considering that timing of births is not evaluated in this study, one could argue that the effect of length of stay is related to age, as length of stay tends to increase with age. But the finding was consistent with different model specifications including when the sample was limited to only the first generation. In this model (not shown in table) the curvilinear term was significant – consistent with other studies in France, which find that migrants have very low fertility on arrival, which rises sharply after migration and then levels off (Héran and Pison 2007). Examining length of stay as categorical variable also suggests some disruption effect except that the time period which within which fertility increases (from 10 years), is longer than expected which might suggest a longer period of disruption. The process of migration is itself a source of disruption, but disruption is often attributed to separation of couples during migration, or a desire to delay childbearing until after migration (Chattopadhyay et al. 2006; Goldstein and Goldstein

1981). In this sample, current separation does not appear to be an issue as almost all partners of respondents were also living in France and in the same households; and place of residence of partner did not improve the model. Unfortunately we are unable to examine for prior period(s) of separation and timing of births in relation to time of migration.

The relationship between length of stay and fertility in the literature has generally been inconsistent. While many find a decline in fertility with longer stay in the host country, some have also observed a temporary decline in fertility shortly after migration with subsequent increase in fertility (Brockerhoff and Yang 1994; Goldstein and Goldstein 1981; Kahn 1994). Others find that the effect of disruption to be strong only in higher order births (Chattopadhyay et al. 2006). The findings from this study are similar to the findings from Sweden where they found rapid adaptation among all groups of migrants, but increased levels of higher order childbearing with increased stay in Sweden for SSA women (Andersson 2004). Studies in the US have also found support for disruption (and socialization) among Mexican women (Stephen and Bean 1992).

The inconsistency in the findings involving length of stay and the other measures of adaptation suggest that increasing length of stay in the host country is not necessarily an indication of a person's level of socialization or adaptation into the host society. The factors that directly influence how a person is socialized into the host society – going to school in the host country, especially to a higher level, having a partner who is a native of the host country and being able to effectively communicate in the dominant language of the host country, hence a greater ability to have more interactions with other people in the host country (besides those from your own country) were the ones associated with decreased fertility in this study, not the

length of time spent in the destination country. This also raises questions on the use of length of stay as a measure of assimilation.

Assimilation (general migrant incorporation): Almost all the measures of assimilation show a negative association with fertility and fertility ideals, except length of stay. Findings relating assimilation with fertility have also been inconsistent, though many find that fertility decreases with more assimilation. The inconsistency in the findings relating assimilation and fertility behavior may however be due to how we define and measure assimilation. In this analysis I considered various measures of assimilation commonly used in the literature. But the findings here suggest that these do not necessarily measure the same concept. While individuals who have stayed longer in the destination country or who have acquired citizenship in the host country (and these two are related since one will have to stay in the host country for a certain length of time before they can acquire citizenship) may be more likely to behave in a similar fashion as natives of a host country, this is not necessarily so. Thus using only length of stay as a measure of assimilation into the host country may be misleading. Schooling in the host country, proficiency in the dominant language of the host country, having a native born partner, and primary language used with partner appeared to be more accurate measures of assimilation in this analysis. These were associated with fewer children and ideal number of children for first generation SSAMs, lending support to assimilation theory. The results suggest our conclusions regarding the relationship between fertility and assimilation depend on the particular measure of assimilation used; indicating the need to clearly define these. The significant negative association between French proficiency and fertility is interesting considering that most of the sample comes from Francophone countries, but this is consistent with studies of Mexicans in the US where English proficiency (and higher education) were negatively associated with fertility.

Transnationalism: The effect of transnationalism is a further complication. Beauchemin et al (2011) note that in France integration and transnationalism are seen as contradictory, with many agreeing that to be accepted in France one should keep quiet about his/her origin. The bivariate analysis for this study showed a positive association between transnationalism and age at migration and foreign childhood language, but a negative association with length of stay, French nationality, and French proficiency, having schooled in France and speaking French with partner. These findings may be interpreted to mean transnationalism decreases with assimilation. Beauchemin et al who examined this in more detail with multivariate analysis in their study of transnationalism and integration in France (also using the TEO data) however found that transnationalism did not decrease with age and length of stay among first generation migrants, although it decreased as well as changed in nature among the second generation migrants. They also found that transnationalism increased with socioeconomic status, leading them to conclude that transnationalism is not a source or result of failure to integrate in France, but "a set of resources embedded in the structural conditions of the individual's migration history" (p.21). They did not examine fertility, but the finding here of no association between transnationalism and fertility net of other factors may also imply that transnationalism does not necessarily decrease assimilation or adaptation. This however does not support suggestions that connections to home country may lead to higher fertility (Schoenmaeckers et al. 1999). On the other hand, the positive association with a larger ideal family size suggests that stronger ties to home country helps to maintain the influence of earlier socialization on fertility ideals, and perhaps delays or decreases the degree of re-socialization to host society norms; but other constraints of the host society may prevent actualization of these ideals. This is still consistent with the adaptation theory.

Limitations and Conclusion

One important factor that is not examined in this paper is ***selection*** – that immigrants already possess various characteristics that make them prone to display fertility levels similar to the host country. Testing this hypotheses will require being able to compare characteristics of migrants with individuals from both the country of origin and destination, which is not possible with this dataset. The bivariate analysis however showed a large proportion of the first generation SSAMs have a higher secondary school certificate or higher. This might be an indication of selection on more highly educated persons; or on people who have a propensity for low fertility, though we are unable to draw any conclusions on the effect of migrant selectivity based on this analysis. That we find some difference in the fertility of migrants and non-immigrants suggests that selection alone cannot explain the findings, but we cannot rule out selection as a determinant. Surveys that collect data on migrants at the destination place, and of non-migrants in the origin place will be useful for parsing out the effects of selection.

A major limitation of this study is the use cross-sectional data which limits causal inference. Second, I did not examine timing of births, thus there is the possibility that some of the fertility may have occurred pre-migration. Studies in France and elsewhere have however found that migrants usually have very low pre-migration fertility, and most childbearing start after migration (Fargues 2011; Héran and Pison 2007). Third, these findings are specific to SSAMs living in metropolitan France and may not be generalizable to other SSAMs. The sample also over represents SSAMs from former French colonies which decreases its generalizability to all SSAMs. In addition, though the sample was intended to be representative of Metropolitan France, this may not have been achieved because of the relatively low response rate (61%), and loss of cases from missing data. This notwithstanding, the sample of SSAMs in this survey is

larger than available in most other datasets which provides sufficient power for the analysis. The large number of relevant variables in the dataset is added an advantage of the dataset. The sample of SSAMs is not homogenous, especially since there is some variation in fertility rates in countries within SSA; however the sample size limits examination by country. In addition, the category of 'non-SSAMs' is a very heterogeneous group, and so comparing SSAMs to this may not be very prudent. This was however not very problematic as SSA and France lie at two extremes in the fertility distribution which puts most other groups somewhere between them. In addition, this group is not a major focus of the analysis. The heterogeneity of the sample is reduced by focusing on only SSAMs in the second part of the analysis. Finally, this analysis may be considered by some as a crude analysis of fertility; because unlike many fertility studies that use age specific rates of married women (for appropriate reasons); this analysis includes married and unmarried men and women (controlling for sex, marital status and age). But, this is also a strength of the study as men have an important influence in fertility decisions of couples, especially of people from SSA; and childbearing is no longer limited to marriage in these times. These notwithstanding, the findings are consistent with other migrant fertility studies as described.

This paper extends the migrant fertility literature by studying international migrants from SSA, a group that has received relatively little attention. Unlike other studies of migrant fertility, this analysis draws on the general migrant incorporation to examine several potential measures of socialization and adaptation. As seen in the results, the conclusion one comes to potentially depends on the measures one includes, and so the use of very few measures may account for the differing support for different mechanisms in different studies. In addition, I examine both fertility and fertility ideals which improves the evaluation of the migrant fertility theories. The

findings suggest that the various mechanisms of migrant fertility are not mutually exclusive. While it may be true that origin fertility preferences have an impact, it is implausible to think that destination norms and values have no effect. In some sense, disruption may be the most parsimonious, as it de-emphasizes values, beliefs and preferences and underlines instead the actual behavior in response to the migration process.

The results show some evidence of an early socialization effect, but overall the support for adaptation and to some extent disruption is stronger. This suggests that though some people's values and beliefs concerning reproduction may be formed at an early age, re-socialization can occur, and this may be a function of both the strength of prior beliefs as well as the opportunities for re-socialization. Those who have greater opportunity for socialization to the host society's norms are more likely to adopt fertility ideals and practices similar to that of non-immigrants. However, even those who do not have the opportunity for greater socialization and integration in the host country may be forced to lower their fertility because of the realities of the migration process and settlement into the host society – even if their fertility ideals do not change.

This study also provides preliminary evidence that transnationalism may be more important for maintaining origin fertility ideals than actual fertility. To my knowledge, this is the first study that has examined the effect of transnationalism on fertility and fertility ideals. Hopefully this paper will stimulate more research on the topic. Potential areas of future research include examining how different types of transnational ties may be related to fertility and fertility ideals in different populations. Overall, this paper suggests the need for a more integrated framework for examining migrant fertility that considers early and ongoing socialization, adaptation, and disruption, not as competing hypotheses, but as mutually reinforcing mechanisms; which draws on the general migrant incorporation literature to more adequately

evaluate socialization and adaptation; and which consider not only fertility but also fertility ideals.

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Table 1: Competing hypotheses for Sub-Saharan African migrant fertility

Socialization	Adaptation	Disruption
The fertility and fertility ideals of first generation SSAMs should be much higher than that of non-immigrants and closer to that in SSA	The fertility (and not necessarily fertility ideals) of SSAMs should be closer to that of non-immigrants than to that in SSA.	Fertility but not ideals should increase with length of stay in France
The fertility and fertility ideals of second generation SSAMs should be converging towards that of non-immigrants (though not yet converged)	The fertility and fertility ideals of second generation SSAMs should be converging or should have converged to that of non-immigrants	Fertility (but not ideals) should decrease with measures of disruption
Fertility and fertility ideals should be positively associated with other measures of early socialization	Fertility and Fertility ideals should be negatively associated with measures of adaptation	
Fertility and fertility ideals should be negatively associated with measures of assimilation		

Table 2: Indicators of transnationalism, Trajectoire et Origines, 2009

Economic

1. Economic investment outside metropolitan France: "Are you the owner or have you personally invested in a store or business in a DOM, TOM or country other than France"

2. Ownership of property or land outside metropolitan France: "Do you own land, a house or an apartment, including one under construction, in a DOM, TOM or country other than France?"

3. Provision of regular financial aid to a household outside metropolitan France: "During the past 12 months, have you provided regular financial aid to persons outside your household?
   Was all or part of this aid sent to a DOM, a TOM or another country outside of France?

4. Financial contribution to a group project in the region of origin: "Have you ever given money to build a school, healthcare center or religious center or for other collective projects in your country, DOM or TOM of origin/your parents' country, DOM or TOM of origin?"

Political

5. Interest in politics in the region of origin: "Are you interested in national politics in your country/politics in your DOM or TOM of origin or that of your parents?"

6. Membership of an association of people from the region of origin: "Of the associations you belong to, do any of them comprise almost exclusively members who are from the same country, DOM or TOM as you or your parents?"

Social

7. Personal contacts outside metropolitan France: "Do you maintain contact by letter, telephone or Internet with your family or friends living in a country outside France, a DOM or a TOM?"

8. Stays in the region of origin: For migrants: "Since you have begun living in metropolitan France, have you returned to your country, DOM or TOM of origin?" for descendants of migrants: "Have you ever been to your parents' country, DOM or TOM of origin?"

9. Consumption of media from the region of origin: "Do you read newspapers, listen to the radio, watch television or visit websites from your country, DOM or TOM of origin or your parents' country, DOM or TOM of origin?"

Note: These questions were asked of all immigrants, but only selected questions were asked to non-immigrants. For immigrants questions referred specifically to country of origin.
DOM (département d'Outre-Mer) and TOM (territoire d'outre-mer) refer to French overseas departments and territories respectively.

Source: adapted from Beauchemin et al. 2011

Table 3: Mean and Percentage distribution of measures of Fertility behavior by migration status Trajectoire et Origines, 2009 (N=20,953)

		Migrant				
		Non-SSA Migrant		SSA Migrant		
	Non-immigrant	2nd generation	1st generation	2nd generation	1st generation	Total
No. of children						
Mean	1.3	0.9	2.0	0.4	2.0	1.4
SE	1.29	1.17	1.58	0.94	1.82	1.47
Percent with						
no children	38	54	21	76	25	39
1 or 2 children	45	36	45	20	42	40
3 or 4 children	16	10	28	3	24	18
≥5 children	1.5	0.7	6	0.3	9	3
Total	100%	100%	100%	100%	100%	100%
N	4,284	7,634	6,985	865	1,185	20,953[a]
Ideal No. of children						
In general						
Mean	2.5	2.6	2.8	3.3	3.4	2.7
SE	0.94	1.25	1.64	1.35	1.33	1.37
For people like self						
Mean	2.3	2.3	2.5	2.8	2.9	2.4
SE	1.28	1.26	1.34	1.46	2.14	1.37
N	3,923	6,996	6,322	753	1,038	19,032[b]

Note: F ratio from ANOVA and Chi^2 are significant at $p<0.001$ for all the variables. SSA refers to sub-Saharan Africa. No. of children refers to number of children ever born; Ideal No. of children is the reported ideal number of children in a family.

[a] This is the total with valid cases on all the relevant variables (migration status, age, sex, marital status, education and religion) and the main outcome - number of children ever born. 91 are missing on migration status due to missing data on birthplace of parents. 381 are missing on education and 342 on religion. Observations missing here make up 3.71% of the sample. [b] This is the total with valid cases on all the relevant variables as in a, plus on Ideal number of children which is missing on 19693 obs. –1,367 from ideal number of children in general and 1693 from for people like self.

Table 4: Mean and Percentage distribution of demographic and socioeconomic variables by migration status, Trajectoire et Origines, 2009 (N=20,953)

		Migrant				
		Non-SSA migrant		SSA migrant		
	Non-immigrant	2nd generation	1st generation	2nd generation	1st generation	Total
	(4,284)	(7,634)	(6,985)	(865)	(1,185)	(20,953[a])
Age						
Mean	37.1	31.0	41.8	25.0	37.3	35.9
SE	11.75	9.37	10.67	6.73	10.24	11.46
Sex						
% female	53	52	52	52	53	52
Marital status [a]						
% ever married	49	39	79	15	61	55
Education						
% with ≥ HS cert.	51	55	46	59	56	51
Employment						
% currently working	76	69	68	52	68	69
% ever worked	93	87	92	72	90	89
Income in Euros [c]						
Mean	2,806	2,700	2,628	2,495	2,240	2,662
SE	1,753.6	1,861.5	2,347.7	1,582.1	2,245.8	2,042.9
Religion						
% Christian	39	40	39	42	37	39
% Muslim	28	27	26	24	29	27
% Atheist	29	30	30	29	29	29
% Other religion	5	4	5	5	4	5
Total	100%	100%	100%	100%	100%	100%
Importance of religion						
% important [d]	35	53	62	74	78	56

Note: F ratio from ANOVA and Chi^2 are significant at $p<0.001$ for all the variables except for gender which is $p=0.52$ and religion, $p= 0.133$.

[a] Ever married (includes widowed and divorced which make up 7% of this group); compares with single

[c, d] All values are based on the analytic sample of 20953 except for income which is based on a sample of 14,924 (distributed as 3095, 5234, 5195, 511, 889 for the different groups in the order presented in the heading) and importance of religion in one's life which is based on 14,535cases(distributed as 2508, 4850, 5507, 653 and 1017 in the same order) Missing values on income are 6,237=28% and that on importance of religion in one's life is 6,522 = 29.97%. Because these are missing on a very large number of cases, and are not used in all the regression analysis, they are not considered in obtaining statistics for the analytic sample.

Table 5: Mean and Percentage distribution of assimilation and transnational variables by migration status, Trajectoire et Origines, 2009

		Migrant				
		Non-SSA migrant		SSA migrant		
	Non-immigrant	2nd generation	1st generation	2nd generation	1st generation	total
Age at migration						
Mean			19.6		22.3	19.8
SE			11.30		9.33	11.16
N			6,978		1,182	8,160
Length of stay [a]						
Mean			22.2		14.9	21.2
SE			13.37		10.07	13.20
N			6,978		1,182	8,160
Childhood language						
% French.	97	88	25	89	57	67
N	4,284	7,634	6,985	865	1,185	20,953
Place of education [b]						
% Some in France	99	99	43	98	48	78
% first sch. in France	98	98	19	93	9	66
N	4,284	7,634	6,985	865	1,185	20,953
Current nationality						
% French	100	99	46	100	45	46
N	4,284	7,634	6,985	865	1,185	20,953
Age at naturalization						
Mean			28.6		29.5	25.1
SE			11.01		10.46	11.71
N			3042		476	3,518
French Proficiency score [c]						
Mean	12	12	9.7	12	10.4	11.1
SE	0.08	0	3.11	0	2.74	2.23
N	4,277	7,634	6,747	865	1,082	20,605
Transnational score [d]						
Mean		2.1	3.2	2.6	3.7	4.5
SE		1.36	1.40	1.6	1.71	2.07
N		7762	7307	887	1353	18678
Partner variables [e]						
% Born in France	94	80	36	61	35	61
% Born in Africa	1	1	1	33	60	5
% Living in France	100	100	99	99	99	99
% Living is same House	97	95	98	92	96	96
% Speak French	100	93	53	86	69	76
N	2,687	3,997	5,439	237	752	13,112

Note: Empty spaces imply questions on that variable not asked or not used for that group. [a] Obtained by subtracting age at arrival from current age. [b] Refers to some schooling at any level in France; first place respondent went to school. [c] Obtained by summing responses to four questions on how well respondent can speak, read, write and understand French with answers from 0 (not at all to 3 (very well). Ranges from 0 to 12. [d] Obtained by summing response to 9 questions on transnational engagement. Ranges from 0 to 11. [e] Partner statistics are obtained for only those with partners.

Table 6: Incidence Rates from Poisson Regression of migration status and Sociodemographic variables on measures of fertility behavior for full sample, Trajectoire et Origines, 2009

	No. of	Ideal No. of children	
Dependent variable	children	In general	Personal
Migration status [b]			
Non-immigrant (ref.)			
Non SSA migrant			
2nd generation	0.97*	1.05***	1.03*
	(0.016)	(0.0089)	(0.012)
1st generation	1.03	1.07***	1.05***
	(0.017)	(0.011)	(0.014)
SSA migrant			
2nd generation	0.97	1.28***	1.23***
	(0.058)	(0.021)	(0.026)
1st generation	1.33***	1.30***	1.26***
	(0.036)	(0.019)	(0.033)
Sociodemographic variables			
Age	1.27***	0.98***	0.98***
	(0.0061)	(0.0022)	(0.0025)
Age squared	1.00***	1.00***	1.00***
	(0.000057)	(0.000030)	(0.000033)
Female [c]	1.09***	1.00	0.98*
	(0.012)	(0.0071)	(0.0081)
Ever married [d]	2.27***	1.06***	1.11***
	(0.049)	(0.0090)	(0.012)
≥ High School cert.[e]	0.79***	0.96***	1.00
	(0.0090)	(0.0071)	(0.0084)
Some Schooling in France [f]	0.86***	0.92***	0.95***
	(0.013)	(0.010)	(0.013)
Religion [g]			
Muslim	0.97*	1.00	1.00
	(0.013)	(0.0087)	(0.011)
Atheist	0.99	1.01	0.99
	(0.013)	(0.0090)	(0.010)
Other religion	1.06*	0.99	0.99
	(0.028)	(0.013)	(0.015)
Constant	0.0044***	3.90***	3.40***
	(0.00042)	(0.17)	(0.16)
Pseudo R-squared	0.2526***	0.0076***	0.0056***
N	20,953	19,692	19,390

Numbers in parentheses are robust standard errors. * p < .05; ** p < .01; *** p < .001 (two-tailed tests)
[a] Based on different sample sizes. The reference groups are [b] non-immigrants, [c] male, [d] never married [e] less than a higher secondary certificate, [f] never schooled at any level in France and [g] Christian.

Table 7: Incidence Rates from Poisson regression of measures of Assimilation & Transnationalism on fertility behavior of Sub-Sahara African migrants, Trajectoire et Origines, 2009

	Number of	Ideal No. of children	
Dependent variable	children	In general	Personal
Measures of early socialization			
Generational status [a]			
Second generation(ref)			
1.5 generation	1.46***	0.96	0.92
	(0.15)	(0.039)	(0.054)
First generation	1.45**	0.89*	0.93
	(0.19)	(0.049)	(0.093)
Foreign Childhood lang.	1.14**	1.05*	1.04
	(0.058)	(0.026)	(0.043)
Measures of adaptation			
Length of stay in France	1.01*	1.00	1.00
	(0.0046)	(0.0024)	(0.0040)
Some Schooling in France	0.89	0.96	1.01
	(0.064)	(0.029)	(0.064)
French nationality	0.89*	0.92*	1.03
	(0.045)	(0.029)	(0.062)
Proficiency in French	0.72*	0.80*	0.68**
	(0.11)	(0.084)	(0.089)
Spouse born in France [b]	0.73***	0.90***	0.94
	(0.041)	(0.023)	(0.050)
Speak French with partner [c]	1.01	0.90**	0.87**
	(0.060)	(0.032)	(0.038)
Transnationalism	0.96	1.24**	1.52***
	(0.13)	(0.091)	(0.15)
Sociodemographic variables [d]			
≥ High School degree	0.85***	0.93**	0.94
	(0.045)	(0.021)	(0.028)
Religion important in life	1.07	1.13***	1.16***
	(0.060)	(0.024)	(0.040)
Constant	0.012***	6.64***	5.27***
	(0.0047)	(1.031)	(1.72)
Pseudo R-squared	0.348***	0.018***	0.019***
N	1623	1499	1447

Note: Numbers in parentheses are robust standard errors. * p < .05; ** p < .01; *** p < .001 (two-tailed tests). [a]1.5 generation here refers to first generation SSA migrants who migrated before age 13 and first generation refers to those who migrated from age 13. [b, c] include a missing category to capture those with no current partner they are not all excluded from the regression. [d] The model also controls for age, age-square, marital status and sex.

Table 8: Incidence Rates from Poisson regression of measures of Assimilation & Transnationalism on fertility behavior of First and Second generation Sub-Sahara African migrants, Trajectoire et Origines, 2009

Dependent variable	Number of children		Ideal No. of children			
			In general		Personal	
Generational status	1st [a]	2nd	1st [a]	2nd	1st [a]	2nd
Measures of early socialization						
Age at migration [b]						
Less than 13yrs -1.5 gen(ref)	-		-		-	
13+ yrs (first generation)	1.02		0.97		1.07	
	(0.10)		(0.045)		(0.092)	
Foreign Childhood lang.	1.06	2.01***	1.03	1.08	1.02	1.06
	(0.053)	(0.29)	(0.029)	(0.051)	(0.049)	(0.072)
Measures of adaptation						
length of stay in France [c]						
less than 3yrs (ref)	-		-		-	
3 to 5 yrs.	1.19		1.02		0.93	
	(0.20)		(0.063)		(0.097)	
6 to 9 yrs.	1.20		1.01		0.90	
	(0.19)		(0.061)		(0.092)	
10 to 14 yrs.	1.41*		1.13		1.21	
	(0.24)		(0.083)		(0.16)	
15 or more yrs.	1.42*		1.13		1.11	
	(0.24)		(0.078)		(0.12)	
Some Schooling in France	0.86*	0.99	0.94*	1.23*	0.98	1.17
	(0.056)	(0.21)	(0.031)	(0.11)	(0.066)	(0.13)
French nationality	0.93	0.28	0.90**	1.07	0.96	1.82
	(0.048)	(0.20)	(0.031)	(0.037)	(0.053)	(1.29)
Proficiency in French	0.66**		0.78*		0.66**	
	(0.097)		(0.085)		(0.091)	
Spouse born in France [d]	0.71***	0.91	0.92**	0.89**	1.02	0.85**
	(0.044)	(0.13)	(0.030)	(0.041)	(0.082)	(0.048)
Speak French with partner [e]	1.00	0.91	0.91*	0.87	0.85***	0.96
	(0.059)	(0.15)	(0.035)	(0.073)	(0.041)	(0.10)
Transnationalism	1.03	1.26	1.13	1.59***	1.40**	1.81***
	(0.15)	(0.45)	(0.11)	(0.18)	(0.18)	(0.25)
Sociodemographic variables [f]						
≥ High School degree	0.88*	0.64***	0.95	0.93*	0.98	0.94
	(0.051)	(0.078)	(0.030)	(0.031)	(0.041)	(0.041)
Religion important in life	1.04	1.10	1.08**	1.18***	1.13*	1.22***
	(0.062)	(0.14)	(0.030)	(0.037)	(0.059)	(0.053)
Constant	0.098***	0.0016***	6.17***	3.53***	3.94**	1.94
	(0.043)	(0.0020)	(1.22)	(1.04)	(1.91)	(1.52)
Pseudo R-squared	0.203	0.450	0.020	0.022	0.026	0.025
N	956	667	888	611	854	593

Note: Numbers in parentheses are robust standard errors. * p < .05; ** p < .01; *** p < .001 (two-tailed tests). [a] This refers to all first generation including the 1.5 generation. [b] [c] These are examined for only first generation migrants. [d, e] include a missing category to capture those with no current partner they are not all excluded from the regression. [f] The model also controls for age, age-square, marital status and sex.

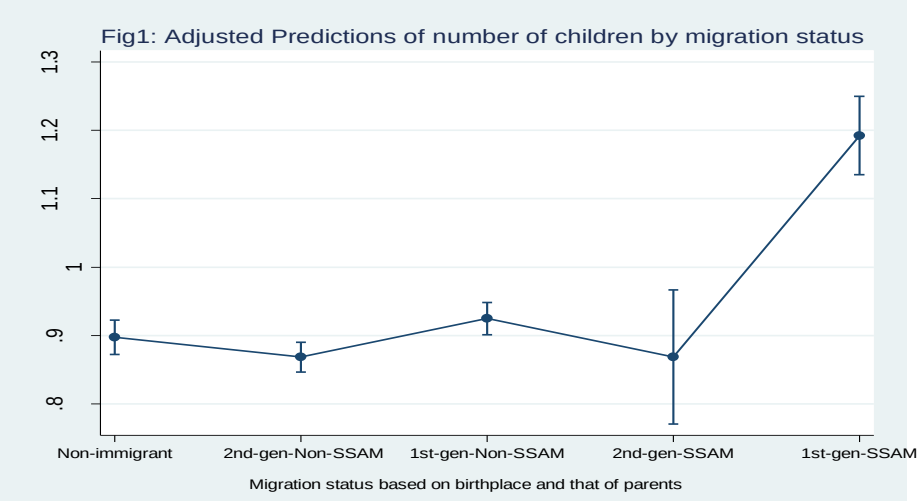
Fig1: Adjusted Predictions of number of children by migration status
.8
.9
1
1.1
1.2
1.3
Non-immigrant
2nd-gen-Non-SSAM
1st-gen-Non-SSAM
2nd-gen-SSAM
1st-gen-SSAM
Migration status based on birthplace and that of parents

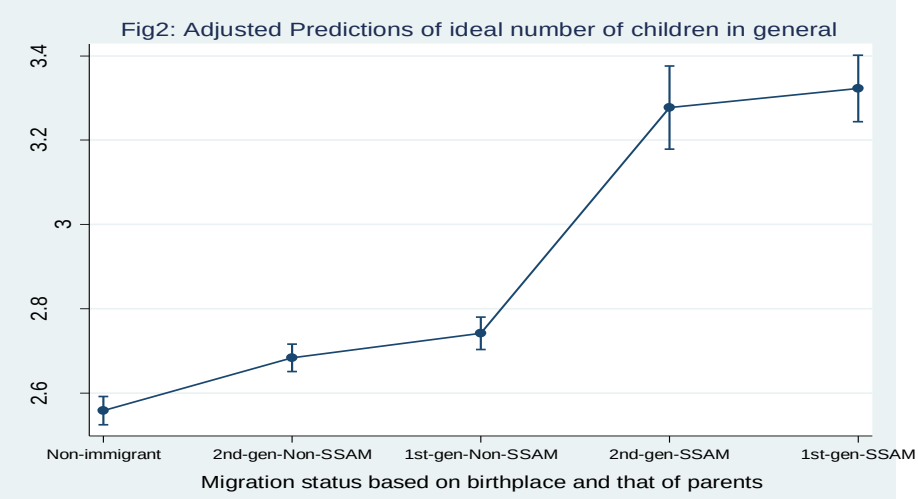
Fig2: Adjusted Predictions of ideal number of children in general
2.6
2.8
3
3.2
3.4
Non-immigrant
2nd-gen-Non-SSAM
1st-gen-Non-SSAM
2nd-gen-SSAM
1st-gen-SSAM
Migration status based on birthplace and that of parents

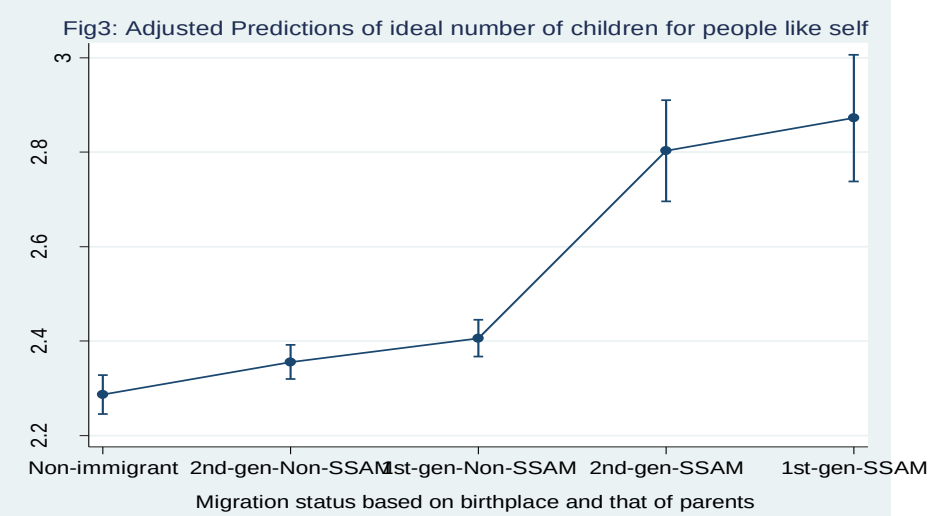
Fig3: Adjusted Predictions of ideal number of children for people like self
2.2
2.4
2.6
2.8
3
Non-immigrant
2nd-gen-Non-SSAM
1st-gen-Non-SSAM
2nd-gen-SSAM
1st-gen-SSAM
Migration status based on birthplace and that of parents