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Socialization, Adaptation, Transnationalism and the Reproductive Behavior of Sub-Saharan African Migrants in France

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Abstract:

Background: Migrants from Sub-Saharan Africa (SSA) move from a region with high fertility to

regions with low fertility. Yet very few studies have examined the reproductive behavior of international migrants from SSA. *Objective:* This study examines the roles of origin and destination socialization on the fertility and fertility ideals of SSA migrants in France. The study draws on measures of assimilation to systematically examine the effects of socialization and adaptation as well as transnationalism for the effects of sustained origin ties. *Methods*: Data are from the TEO ("Trajectoires et Origines") survey conducted in France (2008/2009). Logistic regression is used to examine current fertility (the odds of having a birth in the preceding five years), and Poisson regression is used to examine cumulative fertility (children ever born) and fertility ideals (reported ideal number of children in a family). *Results:* Controlling for sociodemographic factors, first-generation SSA migrants have higher fertility than second-generation SSA migrants and non-immigrants. But first and second-generation SSA migrants have higher fertility ideals than non-immigrants. Among SSA migrants, first and second-generation migrants do not differ in fertility and fertility ideals when adaptation is accounted for. Most measures of adaptation are negatively associated with actual fertility and fertility ideals. Transnationalism is associated with higher fertility ideals but less so with actual fertility. *Conclusion:* The study finds some evidence for origin socialization, but the findings are more strongly supportive of adaptation to the host society. Origin socialization appears to have a

stronger influence on fertility ideals than actual fertility.

Keywords: Sub-Saharan Africa; migrants; socialization; adaptation; assimilation; transnationalism; fertility

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INTRODUCTION

Understanding migrant fertility is important because of its implications for socio-economic and political outcomes such as population growth and structure, job access, and the distribution of public goods. Despite the growing number of international migrants from sub-Saharan Africa (SSA), very few studies have examined their reproductive behavior. The few studies on international migrants from SSA (SSA migrants) are mostly based on census data, which lack adequate information to examine the underlying mechanisms (Genereux, 2007). Socialization and adaptation are two of the mechanisms proposed to understand migrants' fertility (Kulu, 2005). Like assimilation, socialization and adaptation describe processes whereby migrants eventually become like non-immigrants in the destination place. But while the assimilation literature has been challenged by notions of transnationalism, few studies have empirically examined how sustained connections to place of origin impact the fertility of migrants (Bledsoe, Houle, & Sow, 2007). In addition, most studies on migrant fertility evaluate a limited set of measures of socialization and adaptation, commonly nativity (or generational status) and length of stay. Furthermore, while both socialization and adaptation suggest changes in the fertility ideals of migrants, studies evaluating these theories tend to examine only actual fertility as the outcome.

This study examines the effects of socialization, adaptation, and transnationalism on the fertility behavior of SSA migrants in France. We extend the migrant fertility literature in several

areas: first, this is one of the first studies to empirically examine how sustained ties to the origin —transnationalism—affect the fertility behavior of migrants. Second, we focus on an understudied population—international migrants from SSA. Third, unlike many migrant fertility studies, we examine both actual fertility and fertility ideals as outcomes, to more adequately examine the role of values and beliefs in relation to fertility. In addition, we draw on measures used frequently in the general migrant incorporation literature to better understand the role of adaptation and socialization. We use a unique dataset from the trajectories and origins (TEO) survey in France that contains several of the variables of interest and also allows for between-group comparison of SSA migrants with non-immigrants and other migrant groups in France; and within-group comparison in the sub-set of SSA migrants. Studying the fertility behavior of SSA migrants in France is especially useful because of the wide gap in fertility between the two regions. It also has deep political implications, as the fertility of African migrants is often an axis of political contention in France (Genereux, 2007).

Context: Migration and fertility in France and sub-Saharan Africa

About 11.8 million people living in France (19 percent of the total population) are immigrants—approximately 5.3 million first-generation immigrants (foreign-born) and 6.5 million second-generation immigrants (have at least one foreign-born parent). Of these, about 5 million are from Africa, with about 1 million from SSA (Borrel & Lhommeau, 2010; Insee, 2011). This number of SSA migrants, which is based on census data, is however believed to be an underestimate of the actual number of SSA migrants in France because of a large number of undocumented immigrants (Bass, 2014).[1] Migration from SSA to France is a recent phenomenon, increasing significantly in the last 20 years (Bass, 2014; Genereux, 2007). About 50 percent of SSA migrants in metropolitan France arrived after 1995 (Beauchemin, Hamel, &

Simon, 2010). Increasing migration together with rising unemployment in France have strained relations between native French and immigrants (Genereux, 2007). This together with changes in immigration and integration laws have led to significant problems of integration and social unrest in France, especially for migrants from Africa—reflected in the 2005 rioting of African immigrant youth in Paris (Genereux, 2007).

Migrants in France, especially from non-European Union countries, generally have higher fertility than non-immigrants. But their contribution to the total fertility of France is said to be less than 0.1 child per women (Hamel & Pailhé, 2012; Héran & Pison, 2007). Migrants from SSA, especially from Sahelian Africa, however have the highest fertility—an average of 4 children at age 45, compared to an average of 2.7 for all migrants and 1.9 for non-migrants in metropolitan France (Hamel & Pailhé, 2012). Because both migration and fertility directly impact population growth and the distribution of public resources, the intersection of migration and fertility for Africans in France—portrayed in the French media "as having endless numbers of children and bleeding the social system"—is increasingly a critical political issue (Genereux, 2007).

Compared to a Total Fertility Rate (TFR) below replacement level in developed countries —1.6 in Europe and 1.9 in North America—Africa has a TFR of 4.7; and SSA has the highest rate in the world at 5.1 children per woman. There is however wide variation in TFR between SSA countries, ranging from a low of 2.4 in South Africa to a high of 7.6 in Niger (the highest in any country globally). The lowest TFR in Africa is thus higher than in France. The gap in fertility between the origin and destination place of SSA migrants in France is even wider when one considers that SSA migrants in France are mostly from the high fertility countries like Senegal, Cote d'Ivoire, Cameroun, Congo, Mali, Guinea, Niger, and Chad—with TFRs ranging

from 5.0 to 7.6 (PRB 2013).

Some of the factors underlying the variation in fertility in Africa include economic empowerment, declining mortality, 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 various social policies (Brockerhoff, 1995, 1998; Genereux, 2007). Most studies on SSA migrants' fertility have focused on rural-urban migration within countries. These studies generally find that fertility is lower among urban women; attributable to later age at first union and higher rates of contraceptive use, which are influenced by greater access to family planning services, among other things (Brockerhoff, 1995, 1998; Genereux, 2007). The few studies on SSA migrants' fertility in the international context generally show that SSA migrants have higher fertility than non-immigrants in the destination place (Bledsoe et al., 2007; Genereux, 2007; Toulemon, 2004).

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 (Lindstrom & Saucedo, 2002; Ng & Nault, 1997; Penn & Lambert, 2002; Schoenmaeckers, Lodewijckx, & Gadeyne, 1999). Another potential determinant of migrants' likelihood to integrate in the host society and adopt its fertility practices is their ability to do so. This in turn depends on factors such as their linguistic skills, the amount of contact with local institutions, the extent to which immigration policies encourage integration, and whether they

intend to stay or eventually return to their country of origin (Bledsoe et al., 2007; Georgiadis, 2008; Lindstrom & Saucedo, 2002; Sargent & Cordell, 2003).

For non-white immigrants who experience significant racial discrimination, other researchers suggest that restricted labor market opportunities may reduce the opportunity cost of child bearing—i.e., a negligible labor market penalty associated with child bearing may reduce the incentive to restrict fertility (Parrado & Morgan, 2008). 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). In the next section, we describe the conceptual framework for this analysis, which integrates the migrant fertility theories with the assimilation and transnational theories.

Theories of Migrant Fertility, Assimilation, and Transnationalism

There are a number of competing propositions on the mechanisms underlying migrant fertility behavior. These have been described in detail elsewhere (Genereux, 2007; Georgiadis, 2008; Kulu, 2005; Milewski, 2009, 2010). The common ones are socialization and adaptation.

Socialization implies that people's values and beliefs concerning reproduction are formed at an early age and become deeply ingrained. Thus when people migrate to a new 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. 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 places. Thus, first-generation migrants are expected to exhibit similar fertility rates as those in their place of origin, with convergence towards fertility levels of the destination occurring only in later generations.

Adaptation in contrast implies that fertility ideals and behavior of immigrants do not remain constant from place of origin to destination—the peculiar circumstances of the destination place forces migrants to adjust their views and practices. Adaptation 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. Adaptation is thus a multistage process. It implies that re-socialization of individuals is possible even among first-generation migrants, and the fertility behavior of 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 & 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. Socialization suggests that convergence starts only with the second-generation, while adaptation suggests it can occur in the first-generation (Stephen & Bean, 1992). Also implicit in socialization is that fertility ideals need to change before actual fertility changes, while adaptation implies that actual fertility can change without a change in ideals. Debates about the theories of migrant fertility are mixed. There is no consensus in the literature as to which one best captures the general fertility experiences of migrants (Kulu, 2005).

Socialization and adaptation describe processes similar to ***assimilation theories*** as used in the general migrant incorporation literature. Classic assimilation theories posit that migrants eventually become like the host society through the adaptation of the customs and values of that society (Alba & Nee, 2003). Immigrants residing the longest in the host society and members of

later generations are therefore expected to be more similar to the majority group than those who have spent less time in the host society (Brown & Bean, 2006). When the outcome of interest is fertility, this basically translates to adaptation—and also socialization if we ignore the number of generations it takes for convergence to fertility levels of the host place.

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" (N. G. Schiller, Basch, & Blanc, 1995, p. 48); or the maintenance of occupations or activities that require regular contact over time across national borders (A. Portes, Guarnizo, & Landolt, 1999). Although some researchers view transnationalism as a new and emerging phenomenon in migration studies (Guarnizo, Portes, & Haller, 2003; N. G. Schiller et al., 1995), others suggest that connectivity between source and destination is an inherent aspect of migration (R. D. Waldinger & Fitzgerald, 2004). It is also still unclear whether transnationalism undermines assimilation or it is actually part of the assimilation process (Kivisto, 2001). Despite the conceptual disagreements, immigrants do in fact engage in cross border activities with varying degrees—largely influenced by contextual factors 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 associations, maintenance of businesses in countries of origin, and active participation in the politics of home countries (Beauchemin, Lagrange, & Safi, 2011; Guarnizo et al., 2003; R. D. Waldinger, Soehl, & Lim, 2011). Waldinger and Fitzgerald (2004) therefore propose that assimilation and transnational ties should be seen as social processes that are "inextricably intertwined" with the immigrant experience rather than as two competing theories. The uncertainty around the relationship between transnationalism and assimilation necessarily requires that it be considered in the context of both

socialization and adaptation.

The few studies that have evaluated transnationalism and migrant fertility suggest that sustained contact with home country may be associated with high fertility (Bledsoe et al., 2007; Schoenmaeckers et al., 1999). Others suggest that 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 association between transnationalism and fertility ideals of SSA migrants may be relatively straight forward: Since fertility plays a role in the construction of identities of both males and females in much of Africa (Georgiadis, 2008), those with greater transnational ties may continue to hold on to higher fertility ideals. The effect of transnationalism on actual fertility is however more difficult to predict. Reproduction is said to be a "product of negotiated conduct" influenced by one's own power and knowledge as well as that of significant others. While people may be able to manage their own reproductive lives, they can only do so "within the limits set by socio-structural, political, cultural, and economic conditions" (Georgiadis, 2008, p. 6). Thus actual fertility may be influenced more by these factors, which relate more closely to integration in the host country, than by transnational influences.

Furthermore, different types of transnational ties: economic, political, or sociocultural ties (A. Portes et al., 1999) may affect fertility behavior differently. For instance, political and sociocultural ties may imply greater influence of destination norms on fertility ideals. How this in turn affects actual fertility may however depend on the capacity to actualize the fertility ideals. Because of the potentially complex interaction of different kinds of ties, the intensity of transnational ties may be more important for fertility than the type of ties. In this paper, we therefore focus on the intensity of transnational ties.

Socialization, adaptation, and transnationalism as integrated modes of socialization

Socialization, adaptation, and transnationalism capture where, when, and how immigrants are socialized. Socialization emphasizes pre-migration socialization that occurs early in life;

adaptation emphasizes post-migration socialization, which occurs mostly in adulthood. Adaptation and socialization, like assimilation theories, however, assume origin socialization ends once migrants arrive in the destination place, which is often not the case. Transnationalism highlights that migration is not a unidirectional process whereby migrants completely cut links with their place of origin. Modern day international migrants and their children are said to be suspended between two countries (Alejandro Portes & Rumbaut, 2006): while no longer in the society of origin, they are still of it (R. Waldinger, 2015). Thus transnationalism captures how values and beliefs of the origin place continue to influence migrants in the destination place, which allows us to consider the simultaneous socialization of migrants in both places (Nina Glick Schiller, Basch, & Blanc-Szanton, 1992).

This study extends the migrant fertility literature by examining the effects of various measures of assimilation—divided into measures of early socialization and adaptation—and transnationalism on the fertility and fertility ideals of SSA migrants in France. We use the term '*assimilation*' to refer to assimilation as used in the general migrant incorporation literature and to both adaptation and socialization theories together.[2] In addition, we use *'measures of early socialization'* to refer to the variables that are used to examine the socialization mechanism (since it posits beliefs formed early in life), to distinguish them from the measures of adaptation and transnationalism, which capture *later socialization*. We also use *origin socialization* to refer to socialization and transnationalism together, *ongoing origin socialization* to refer to transnationalism, and *destination socialization* to refer to adaptation.

Research questions and hypotheses

We ask four questions in this paper: First, do the fertility and fertility ideals SSA migrants in France differ from that of non-immigrants and other migrants in France? Second, how do the fertility and fertility ideals of SSA migrants in France compare to that in SSA? We

use the full sample to compare the fertility behavior of the different migrant groups. The dataset for this analysis cannot address the second question directly as it does not include information for non-migrants in SSA. However, this comparison is needed to more adequately understand the socialization and adaptation concepts. We therefore draw on existing estimates to answer the second question. Based on existing fertility estimates for SSA (TFR of 5.1) and that for France (TFR of 2.0), with rates in most other regions of the world falling roughly between these two extremes (PRB, 2013); we expect SSA migrants to have higher fertility compared to non-immigrants and other migrants in France; but lower fertility than that in SSA. We include non-SSA migrants in the analysis to provide this global context.

Third, what are the relationships between measures of early socialization, adaptation, and transnationalism and the fertility and fertility ideals of SSA migrants in France? We use only the subset of SSA migrants for this analysis. The expectation is that factors that capture strong early or ongoing origin socialization will be associated with higher fertility and fertility ideals of SSA migrants, and those that capture stronger integration into the host country will be associated with lower fertility and fertility ideals. However, the effects on fertility and fertility ideals may be different, hence the importance of examining both fertility and fertility ideals as separate outcomes.

Fourth, which mechanisms – origin socialization or adaptation to the host country – best explain the fertility behavior of SSA migrants in France? We combine the findings for the first three questions to answer this question. If the socialization argument is true, then actual fertility and fertility ideals of first-generation SSA migrants should be higher than that of non-immigrants (and closer to that in SSA); and the fertility and fertility ideals of second-generation SSA migrants should converge towards that of non-immigrants. But if adaptation is the predominant mechanism, then fertility (but not necessarily fertility ideals) of SSA migrants should be closer to

that of non-immigrants in France than to that in SSA. In addition, a predominant positive effect of the early origin socialization measures on fertility and/or fertility ideals will support socialization, while a predominant negative effect of the factors that facilitate integration into the host country on fertility and/or fertility ideals will support adaptation.

METHODS

Data and sample

The data for this analysis are from the TEO ("Trajectoires et Origines") survey conducted in France between September 2008 and February 2009.[3] The TEO is a nationally representative survey 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 first- and second-generation immigrants in France, it provides a unique opportunity to study the behavior 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, immigrant 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 the survey are published elsewhere.[4]

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 francophone countries: Benin, Burkina

Faso, Cameroon, Central African Republic, the Comoros, Republic of Congo, Côte d'Ivoire, Djibouti, Gabon, the Republic of Guinea, Madagascar, Mali, Mauritania, Niger, Senegal, 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 difficulty 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 people 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 full analytic sample (i.e., the number of observations remaining after excluding missing observations on key variables) for this study is 20,953 observations.[5] The analytic samples are different for each outcome and sub-group analysis and we discuss these under the analytic approach and present the numbers in the results tables.

Measurement

Dependent variables

The Dependent variables are cumulative fertility, current fertility, general fertility ideals, and personal fertility ideals. *Cumulative fertility* is 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?). *Current fertility* is operationalized as whether or not the respondent had a birth in the five years preceding the survey (i.e., from 2003 to 2008) using the birthdates of all children of the respondent. *General fertility ideals* is operationalized as perceived ideal number of children in a family (from the question: 'In your opinion, what is the ideal number of children in a family?). *Personal fertility ideals* is perceived ideal number of children in a family for people like the respondent (from the question: "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?). Children ever born was subtracted from personal fertility ideals and recoded into a binary variable referred to as the *ideal/fertility difference* (coded 0–lower or same fertility ideals as actual fertility; and 1–higher fertility ideals than actual fertility).

Key independent variables

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

and first-generation SSA migrant (born in SSA).

For the second part of the analysis, the key independent variables are measures of *assimilation*, grouped under measures of early socialization and adaptation, and *transnationalism*. The measures of *early socialization* are generational status, age at migration, childhood language, and where respondent first went to school. The measures of *adaptation* are length of stay, current nationality, age at naturalization, French language proficiency, birthplace of spouse, language used with partner, place of residence of partner, and place of schooling. *Age at migration is* from a question on how old the respondent was when he/she first arrived in France. We compute *Length of stay in France* by subtracting respondents' current age from age at arrival in France. For SSA migrants, we combine age at migration with migration status to create a new variable *generational status*, that groups SSA migrants into second-generation SSA migrant (born in France but at least one parent born in SSA), 1.5-generation SSA migrant (born in SSA but migrated to France before age 13), and first-generation SSA migrant (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 believed to occur around adolescence (Alejandro Portes & Rumbaut, 2006). Studies in France have also observed differences 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 (spoke French or several languages including French) and foreign language (foreign language or several languages excluding French). *Place of education* is from a question on where respondent went to school, recoded into two binary variables—first went to school in France or not; and 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 for those who have naturalized. *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 ways: 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.

Four questions on how well the 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 analysis, we standardize and average this score, and then convert to a zero to one metric (0 as the minimum score and 1 as the maximum score) to ensure domains with greater variance are not weighed more heavily than others. Factor analysis showed these variables load onto a single factor with a Cronbach's alpha of 0.92. It is important to note that most of the respondents come from French speaking countries, so the role of French proficiency as an assimilation variable may be different from that in other studies. This is so because proficiency in French may not correlate with level of assimilation since many SSA migrants in France will have been proficient in French at the time of migration. However, in many African countries the official language, which is taught in schools, is usually not the language spoken at home. Thus, even among migrants from French speaking African countries, some may not be proficient in French; and the level of French proficiency may influence how quickly one assimilates.

Nine questions on relationships with the origin country are combined to create a *transnationalism scale* ranging from 0 (do not engage in any transnational practices) to 9 (engage

in all 9 practices). The questions capture economic, political, and social ties (e.g., investment in home country, interest in home country politics, consumption of media from home country, etc. – full list in appendix 1). All the questions in this module were asked to migrants and their children, but non-immigrants were also asked selected questions (shown in appendix 1). The questions refer specifically to connections to the place of origin for migrants and their children, but refer to connections to any place outside metropolitan France for non-immigrants. Because of the non-specificity of the transnational questions for non-immigrants, transnationalism is only examined in the subgroup analysis for SSA migrants.

Prior to creating the scale, the variables that were not binary were recoded into binary variables with '0' as the negative and '1' as the positive response to create the same metric for all the items for the scale. The individual variables are correlated and load onto a single factor in principal component analysis, with a Cronbach's alpha of 0.60; they have also been found to represent a single dimension of transnationalism by other researchers (Beauchemin et al., 2011). Thus, similar to Beauchemin et al. 2011, we use one scale based on all the types of transnational activities to capture the intensity of the transnational engagements. The scale is converted to a zero to one metric for the regression analysis.

Control variables

We control for the following variables, which have been shown to be important predictors of fertility: age (at last birthday), gender, 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 (atheist, Christian, Muslim, and other), religiosity (importance of religion in one's life), and country of origin.

Analytic Approach

First, we examine the basic descriptive and bivariate associations for the full sample to identify the relevant relationships. To account for the duration of exposure to risk of pregnancy and the age difference in the risk of pregnancy (Preston, Heuveline, & Guillot, 2001), we restricted all the analysis on the fertility measures to persons who have been in France for at least 2 years (before 2007) and by different age groups: For the first part of the analysis based on the full sample (i.e. includes all migrants and non-immigrants), we restrict the sample for cumulative fertility to people older than 40 years, to capture those who are likely to have completed childbearing, and that for current fertility to those 25 to 55 years old, to give everyone a reasonable exposure period to the risk of pregnancy. For the analysis involving only SSA migrants, we restrict the sample for cumulative fertility to those older than 35 years and that for current fertility to those 20 to 55 years (using the restrictions for the full sample substantially reduces the sample size for this analysis). The samples for fertility ideals are not restricted to any age groups. The regression analyses are also stratified by gender.

We use Poisson regression analysis for cumulative fertility and fertility ideals, as these are count variables. For the measure of current fertility, we use binary logistic models to examine the odds of having a birth (at least one birth) in the five years preceding the survey. We run three sets of multivariate models: First, we examine how each group of migrants compare to non-immigrants for all the outcomes using the full sample. Then, we analyze the effects of the assimilation and transnationalism variables on all the outcomes for all SSA migrants and for only first-generation SSA migrants. We control for socio-demographic factors in all models. Only variables that improve the models are reported in the regression tables.[6] We selected the final models using Wald tests and Bayesian Information Criterion (BIC) results, conducted post-

estimation tests to assess model fit, and examined all models for multicollinearity. No over dispersion was detected for the Poisson models and a check with negative binomial gave very similar results. We report robust standard errors for all estimates.

RESULTS

===Table 1===

Descriptive and bivariate statistics

The first part of table 1 shows the distribution of the dependent variables by migration status. It shows that among persons older than 40 years, first-generation SSA migrants have the most children—an average of 3 children per person for first-generation SSA migrants and 2.5 for second-generation SSA migrants, compared to 2 for non-immigrants. First and second-generation non-SSA migrants have 2.5 and 1.8 children per person respectively. It is important to note that very few (N=23) second-generation SSA migrants are older than 40 years, thus findings from the cumulative fertility measure should be interpreted with caution. Among people aged 25 to 55 years, SSA migrants also have higher current fertility than non-immigrants and non-SSA migrants. About 43% and 35% respectively of first and second-generation SSA migrants had a birth in the preceding five years, compared to 23% of non-immigrants and about 30% of non-SSA migrants.

SSA migrants also have higher fertility ideals than all groups. The reported ideal number of children in a family is about 3 or more for SSA migrants, and less than three for the other groups. Among people older than 40 years, second-generation non-SSA migrants have the highest disparity in fertility and ideals, and first-generation non-SSA migrants have the lowest. The proportion of people older than 40 years with higher personal fertility ideals than actual number of children is similar for non-immigrants and first-generation SSA migrants (38% and

37% respectively), and slightly lower for second-generation SSA migrants (35%). There is a positive correlation between number of children and perceived ideal number of children. The differences by migration status are all statistically significant ($p<0.001$).

The second part of table 1 shows the distribution of the socio-demographic variables by migration status for the full analytic sample. As expected, first-generation migrants in the sample are older and more likely to be married, while second-generation migrants are generally younger and unmarried. First-generation non-SSA migrants are the oldest group (average age of about 42 years) and have the largest proportion of married people (79%); followed by first-generation SSA migrants and non-immigrants with average age of about 37 years, and 61% and 49% respectively being married. Second-generation SSA migrants are the youngest (average age of 25 years) and have the smallest proportion of married people (15%). Because of the young age of second-generation migrants, it is likely that many may not have yet started childbearing, which makes it difficult to assess their fertility. Interpretations of the results for this group should therefore be seen as tentative. 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 SSA migrants have the lowest. SSA migrants however are slightly more educated, with 56% and 59% of first and second-generation SSA migrants respectively having completed high school compared to 51% of non-immigrants. Religion does not vary significantly between the groups, though SSA migrants are more likely to report that religion plays an important role in their lives than the other groups.

===Table 2===

Table 2 presents the distribution of the assimilation variable. The average age at migration for first-generation SSA migrants is 22 years, with an average length of stay of 15

years. Only about 13% of first-generation SSA migrants migrated before age 13 and about 23% had been in France for less than five years (mostly 2 to 5 years; only 2 people had been in France for less than 2 years). About nine in ten second-generation migrants report French as the primary language spoken to them by their parents during childhood compared to only 25% and 57% respectively of first-generation non-SSA migrants and first-generation SSA migrants. Also, nearly all non-immigrants and second-generation migrants have had some schooling in France, compared to less than half of first-generation migrants. A little less than half of first-generation migrants have obtained French citizenship, at an average age of about 29 years. Most people in the sample are proficient in French, though slightly lower for first-generation migrants.

Transnationalism is low for all groups, but 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, about a third of first-generation SSA migrants and two thirds of second-generation SSA migrants have partners who were born in France, compared to over ninety percent of non-immigrants. Almost all respondents with partners live with their partners in France and in the same household. All non-immigrants and about nine in ten second-generation migrants primarily communicate in French with their partners, compared to 53% and 69% for first-generation non-SSA migrants and SSA migrants respectively.

Regression results

===Table 3===

Full sample:

Table 3 shows the results for the full sample (with restrictions for each outcome described under the analytic approach) for the regressions of current fertility, cumulative fertility,

and general and personal ideal number of children, on migration status and socio-demographic variables, stratified by gender.

As expected, first-generation SSA migrants have the highest fertility. Female first-generation SSA migrants aged 25 to 55 years have 77% higher odds (and males over two times higher odds) of having a birth in the preceding 5 years, compared to similarly aged non-immigrants. For cumulative fertility, female first-generation SSA migrants older than 40 years have, on average, 28% more children (and 40% more for males) than similarly aged non-immigrants. But there is no significant difference between second-generation SSA migrants and non-immigrants for both current and cumulative fertility. When other factors are accounted for, first and second-generation non-SSA migrants have similar fertility as non-immigrants, except that males have slightly higher cumulative fertility than non-immigrants (OR=1.06).

For fertility ideals, we find that both male and female first and second-generation SSA migrants have significantly higher preference for more children than non-immigrants. Compared to non-immigrants, the ideal number of children is about 20% or more for first- and second-generation SSA migrants. Non-SSA migrants also have higher fertility ideals than non-immigrants though the magnitude of the difference is lower than that for SSA migrants.

The results for the other predictors show that net of other factors, people with high school education or more have lower cumulative fertility than those with less than high school education. Higher education is only marginally associated with higher personal fertility ideals for females but not for males. Also, both males and females with some schooling in France, on average, have lower current and cumulative fertility and they report lower ideal number of children.

The model for fertility ideals controls for number of children to account for people

reporting ideals based on their current fertility. This shows a small positive association between fertility and ideals. Fertility ideals are not controlled for in the models for fertility, as these are potential intervening factors for fertility (as posited by the theories), hence their inclusion may mask the association between migration status and the fertility measures. Regressing the ideal/fertility difference variable on the same set of variables showed no significant association between it and migration status (table not shown).

***Within group analysis for SSA migrants**:*

===Table 4===

Table 4 presents the results for the analysis with only SSA migrants for all the measures of fertility behavior, stratified by gender. In all models, we control for age (and age-squared in only the model on current fertility), marital status, education, and importance of religion. In addition, the models include the measures of early socialization and adaptation that have some variability for both first and second-generation SSA migrants, and transnationalism. The results show that after accounting for socio-demographic factors, other socialization measures, adaptation, and transnationalism, 1.5-generation SSA migrants do not differ significantly from second-generation SSA migrants on all the outcomes. First-generation SSA migrants also do not differ from second-generation migrants for all the outcomes except among females where the first-generation SSA migrants, surprisingly, have a small but significantly lower general fertility ideals than the second-generation (IR=0.92).

It is important to note that in the unadjusted regression, the difference between 1.5-generation SSA and second-generation SSA migrants is still not significant for all the outcomes, but (true) first-generation SSA migrants have significantly higher current and cumulative fertility than the second-generation SSA migrants. The difference between first and second generation

however becomes insignificant when we include the measures of adaptation in the model. Also first-generation SSA migrants do not differ from second-generation SSA migrants in fertility ideals in the unadjusted models—the lower fertility ideals of female first-generation SSA migrants only become significant when the adaptation variables are added to the model. Net of other factors, foreign childhood language has significant positive association with current fertility for both females and males (IR =1.68 and 1.64 respectively). The associations between childhood language and the other outcomes are also positive, though not statistically significant.

Among the adaptation measures, some schooling in France is associated with lower current fertility among males (IR=0.46). Having a partner born in France is also associated with lower current and cumulative fertility for females and with lower cumulative and general fertility ideals for males. Female and male SSA migrants with a partner born in France have 35% and 20% fewer children respectively than those whose partners were born outside of France. Female SSA migrants with a partner born in France also have 63% lower odds of having a birth in the preceding 5 years compared to those with a partner not born in France. Speaking French with one's partner is associated with lower general fertility ideals (IR=0.89) for females and with lower cumulative fertility (IR=0.77) and general and personal fertility ideals (IR=0.89 and 0.80 respectively) for males. It is worth noting that most of the adaptation variables that are not statistically significant are negatively associated with the outcomes.

Interestingly, transnationalism is associated with a higher general and personal fertility ideals for females and higher personal fertility ideals for males. Both males and females engaged in the most number of transnational activities report about 50% more ideal number of children in a family for persons like themselves compared to those engaged in the least number of activities. Transnationalism is however not significantly associated with current and cumulative fertility for

both males and females.

To examine if these associations are different for first and second-generation SSA migrants, we run separate models for each group (results not shown – available upon request). The results are similar to those for the full sample, though some of the associations with the adaptation variables are stronger among first-generation migrants. The major difference however is that childhood language is not significantly associated with any of the outcomes for first-generation SSA migrants. But among second-generation SSA migrants, there is a significant positive association between having French as a childhood language and current fertility among females (IRR= 4.98, $p<0.01$) and males (IRR=5.28, $p<0.01$); and with general fertility ideals (IRR=1.18, $p<0.05$) among males. The sample size for cumulative fertility for the second-generation is too small to make any inferences based on it.

===Table 5===

To examine the effects of socialization and adaptation variables that were only available or only varied among first-generation migrants, we run another set of models for all the outcomes using only the sample of first-generation SSA migrants. These models include, in addition to all the predictors in the prior models, age at migration, length of stay in France, French nationality, and French language proficiency. The regression results for males and females are very similar. However, some associations are not statistically significant in the stratified models, though significant when combined. This is probably due to the very small sample size for the fertility analysis when the subset of first-generation SSA migrants is stratified by gender. We therefore present the results of the un-stratified analysis and control for gender. The results presented in Table 5 show that gender is not statistically significant. Among first-generation SSA migrants, there are no significant differences in fertility and fertility ideals by

age of migration, childhood language, and length of stay in France net of other factors. Length of stay is still not significant when included as a continuous variable. Some schooling in France is associated with lower current fertility and French nationality is associated with lower fertility ideals. Proficiency in French is associated with lower current fertility and personal fertility ideals. For example, compared to the least proficient in French, the most proficient have 82% lower odds of having a birth in the preceding five years, and report 27% fewer *ideal* number of children. As in the models with all SSA migrants, having a partner born in France is associated with lower current and cumulative fertility, and speaking French with one's partner is also associated with lower fertility ideals. Most of the statically insignificant associations for the adaptation variables are also negative as in the prior models.

Again, net of other factors, transnationalism is associated with a higher personal ideal family size – 38% more children for persons like self among those engaged in the most number of transnational activities, compared to those engaged in the least number of activities. However, transnationalism is not significantly associated with any of the fertility measures, though the associations are positive. When we regress the *ideal/fertility difference* on the same set of predictors as in table 5 (results not shown–available on request), only having a partner born in France is statistically significant: compared to those whose partners were born elsewhere, those with a partner born in France have higher odds of having higher fertility ideals than their cumulative fertility (OR= 2.53, $p<0.01$).

Supplementary analysis

To evaluate whether different types of ties may have different effects, we also examine the effects of three binary transnational variables—whether respondents engaged in at least one of the activities under the economic, political, and social domains—on the fertility and fertility

ideals of SSA Migrants. The results are largely consistent with those from the generic transnational scale—the effects are more significant for fertility ideals than actual fertility. Economic ties are only significantly associated with higher fertility ideals (general and personal) for females; and political ties are significantly associated with higher general fertility ideals for both males and females. The exception is social ties, which is only significantly associated with higher cumulative fertility for females.

DISCUSSION

The results presented above show, as expected, that first-generation SSA migrants in France have higher fertility than non-SSA migrants and non-immigrants. However, second-generation SSA migrants exhibit similar fertility to non-immigrants. Also, both first and second-generation SSA migrants have higher fertility ideals than non-SSA migrants and non-immigrants. The fertility and fertility ideals of SSA migrants in France is however lower than that in SSA—TFR of 2.9 for SSA migrants in France (Genereux, 2007; Héran & Pison, 2007), compared to the TFR of 5.2 in SSA (PRB, 2013); and mean ideal number of children of about three for SSA migrants in this sample, compared to about 4 to 9 for most countries in SSA (PRB, 2013). What accounts for the lower fertility rates of SSA migrants when compared to their countries of origin, but the higher rates when compared to the destination country? The analyses suggest that both socialization and adaptation account for some of this variation, but adaptation in the destination country overrides early socialization in the origin country. Ongoing socialization (transnationalism) has more significant effects on fertility ideals than actual fertility.

Socialization and adaptation

First, the findings that migration and generational status predicts fertility and fertility

ideals suggest that early reproductive values and beliefs are important. The higher fertility and fertility ideals of first-generation SSA migrants compared to non-migrants is consistent with socialization. However, the fertility of first-generation SSA migrants in France is closer to that of non-immigrants in France than to that in SSA, which implies a convergence towards the fertility levels of the destination population, even among the first-generation. Thus while early childhood experiences may influence values and beliefs concerning reproduction, the effects are not as strong as the socialization theory would suggest.

Second, the positive association between foreign childhood language and current fertility also suggests a role of early socialization. But that this effect is only significant for second-generation SSA migrants points to different modes of socialization for different generations: second-generation SSA migrants whose parents spoke to them in a foreign language (which is assumed to be that of the origin place) may have greater exposure to origin norms than those whose parents spoke French to them. For first-generation migrants, however, other factors, such as the fact of living in the origin place, may be more important for socialization than the childhood language. Also, with socialization, we would expect that those who migrated after age 13 would have had greater exposure to origin norms and so would exhibit higher fertility and ideals. This seems to be true when we do not account for adaptation in the analysis. However, as shown in the results, age at migration is not significantly associated with both fertility and fertility ideals when adaptation is accounted for.

Third, the findings that migrants who have experienced conditions that facilitate socialization to the destination country norms and values—acquired French citizenship, have a partner born in France, are more proficient in French, speak French with their partner, have had some schooling in France—are more likely to have lower fertility and/or prefer a small family

point to the role of adaptation. In addition, we see no significant difference in fertility and fertility ideals by generation status or age at migration when the adaptation variables are added to the model. This suggests that the factors related to integration into the host society may be more important than early childhood factors on migrant's fertility and fertility ideals.

Fourth, we find some evidence for both stages of adaptation. The higher fertility ideals of SSA migrants than their actual fertility suggests that while some migrants may still have a preference for large families due to their early socialization, they are forced to adapt to the circumstances in the host country, which leads to lower fertility—the first stage of adaptation. Also, the finding that first-generation SSA migrants whose spouses were born in France have higher ideals than their actual number of children (than those whose spouses were not born in France) suggest that the actual fertility of migrants with native born spouses may be influenced to a larger extent by the fertility preference of their partners. On the other hand, the lower fertility ideals of SSA migrants in France compared to that in SSA; the similar fertility and fertility ideals of first- and second- generation SSA migrants; and the similar proportion of first-generation SSA migrants and non-migrants with higher personal fertility ideals than their actual number of children suggest that some convergence in fertility ideals to that of the destination place is occurring. This implies that some of the change in fertility of SSA migrants may due to a change in childbearing values—the second stage of adaptation.

A finding that does not adequately support adaptation (and general assimilation theory) is the effect of length of stay. With the adaptation theory, we will expect fertility and potentially fertility ideals to decrease with length of stay in the host country net of other factors. We however find no significant association between length of stay and both fertility and fertility ideals when we account for other factors. This probably suggests that time spent in the

destination place by itself may not be enough to change people's fertility behavior if it is not associated with other opportunities for socialization into the host country norms and values. These findings suggest that our conclusions regarding the relationship between fertility and assimilation depends on the particular measure of assimilation. Separating out the assimilation variables into measures of early socialization and adaptation or later socialization, as in this study, is a useful approach.

Transnationalism

The effect of transnationalism is a complication to the unidirectional assimilation theories. Beauchemin et al (2011) note that in France integration and transnationalism are seen as contradictory, with many agreeing that one should keep quiet about his/her origin to be accepted in France. They however conclude in their study of transnationalism and integration in France (also using the TEO data) 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). While prior studies have not quantitatively examined the effect of transnationalism on fertility, some suggest that connections to home country may lead to higher fertility (Bledsoe et al., 2007; Schoenmaeckers et al., 1999). This hypothesis is only partly supported in our analysis, as the association between transnationalism and fertility is only significant for current fertility for male first-generation SSA migrants. However, the non-significant associations between transnationalism and the fertility measures are positive. Thus transnationalism may have a positive effect on fertility, but the evidence here does not adequately support it. But transnationalism is significantly associated with fertility ideals in most of the models, suggesting a bigger effect of transnationalism on ideals than actual fertility. The positive association with a larger ideal family size suggests that stronger ties to home country

may help to maintain the influence of earlier socialization on fertility ideals, and perhaps delay or decrease the degree of re-socialization to host society fertility norms. But constraints in the host society may prevent the actualization of these ideals.

Limitations

The study uses cross-sectional data, which limits causal inference. We are also unable to test other migrant fertility theories like disruption—the idea that migration may interrupt family formation processes such as marriage and childbearing, leading to low levels of fertility following migration, although fertility ideals may remain high (Genereux, 2007; Georgiadis, 2008; Kulu, 2005; Milewski, 2009, 2010). Such analysis would require longitudinal data. We are also unable to examine the role of differential selection into migration, which requires being able to compare characteristics of migrants with individuals from the origin place.

For cumulative fertility, we are unable to determine the true effect of migration on the childbearing practices of people who had all their children before migrating. 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 and elsewhere have also found that migrants usually have very low pre-migration fertility, and most childbearing start after migration (Fargues, 2011; Héran & Pison, 2007). 'Children ever born' does not also differentiate between completed and uncompleted fertility. However, by restricting the sample to people older than 40 years (who more likely to have had all their children) and controlling for age and age at migration helps to address this limitation (Andersson, 2004; Carter, 2000). Use of number of children ever born as a measure of cumulative fertility is however typical (Chattopadhyay, White, & Debpuur, 2006; Frank & Heuveline, 2005; Toulemon, 2004; White, Tagoe, Stiff, Adazu, & Smith, 2005). Moreover, the measure of current fertility provides a sensitivity test to this measure as it is restricted to recent

births and includes only migrants who have been in the country long enough to be exposed to the risk of a birth. These findings are specific to SSA migrants living in metropolitan France and over represents SSA migrants from French speaking countries, hence may not be generalizable to other migrants from SSA or elsewhere.

Conclusion

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 study draws on the migrant incorporation literature to examine several potential measures of socialization and adaptation as well as transnationalism to evaluate the role of early and ongoing socialization from both place of origin and destination. In addition, we examine fertility and fertility ideals as separate outcomes. The results suggest that though migrants' 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 limit their fertility because of the realities of settlement into the host society—even if their fertility ideals do not change.

This study also provides evidence that transnationalism has some effect on migrant fertility and fertility ideals, but may be more important for maintaining origin fertility ideals than actual fertility. To our knowledge, this is the first study that has quantitatively examined the effect of transnationalism on fertility and fertility ideals. Hopefully this paper will stimulate more research on the topic. Potential areas for future research include examining how different types of transnational ties may be related to fertility and fertility ideals in different populations. Overall, the results suggest both early and ongoing origin socialization have a stronger influence

on fertility ideals than actual fertility, which is affected much more by circumstances in the destination place. This study suggests the need for a more integrated framework for examining migrant fertility that considers origin and destination socialization as well as early and ongoing socialization, not as competing mechanisms, but as mutually reinforcing mechanisms.

Endnotes

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Table 1: Mean and Percentage distributions of sociodemographic and outcome measures by migration status, TEO (2009)

	Non-	Non-SSA Migrant		SSA Migrant		
Variables	immigrant	2nd Gen.	1st Gen.	2nd Gen.	1st Gen	Total
Outcome measures [a]						
Children ever born [b]						
Mean	2.0	1.8	2.5	2.5	3.0	2.3
SD	1.24	1.19	1.60	2.47	2.01	1.52
N	1,717	1,394	3,863	23	415	7,412
Birth in preceding 5yrs[c]						
%	22.7	30.0	28.0	35.5	43.2	28.7
N	3,179	5,198	5,751	369	989	15,486
Ideal No. of children [d]						
In general						
Mean	2.5	2.6	2.8	3.3	3.4	2.7
SD	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
SD	1.28	1.26	1.34	1.46	2.14	1.37
N	3,923	6,996	6,322	753	1,038	19,032
Fertility ideals>fertility [e]						
%	38.2	39.8	32.1	35.3	37.0	35.3
N	1,598	1,310	3,561	17	362	6,848
Sociodemographic variables for full analytic sample [f]						
Age						
Mean	37.1	31	41.8	25	37.3	35.9
SD	11.75	9.37	10.67	6.73	10.24	11.46
Sex						
% female	53	52	52	52	53	52
Marital status [g]						
% 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 [h]						
Mean	2,806	2,700	2,628	2,495	2,240	2,662
SD	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
Importance of religion						
% important [h]	35	53	62	74	78	56
N	4,284	7,634	6,985	865	1,185	20,953

Notes: Differences significant at p<0.001 for all the variables except for gender (p=0.52) and religion (p= 0.133). SSA = sub-Saharan Africa. Gen = generation. [a] The Ns are different because of different restrictions on the sample but all are based on the full analytic sample. [b] Sample is for adults >40yrs &

>2 years in France. [c] Sample is for persons 25 to 55yrs with more than >2 years in France. [d] This is the analytic sample with total with valid cases on ideal number of children (missing 1,367 from ideal number of children in general and 1693 from for people like self). [e] Sample is for adults >40yrs with complete information on number of children and personal fertility ideals. [f] The full analytic sample is total with valid cases on all the relevant predictors (missing = 3.71% of the sample). [g] Ever married (includes widowed and divorced which make up 7% of this group); compares with single. [h] All values are based on the full 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 is =6,237=28% and that on importance of religion in one's life is =6,522 = 29.97% (mostly for non-immigrants and non-SSA migrants). 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 2: Mean and Percentage distribution of assimilation and transnational variables by migration status, TEO (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
SD			11.30		9.33	11.16
N			6,978		1,182	8,160
Length of stay [a]						
Mean			22.2		14.9	21.2
SD			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	78
N	4,284	7,634	6,985	865	1,185	20,953
Age at naturalization						
Mean			28.6		29.5	25.1
SD			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
SD	0.08	0	3.11	0	2.74	2.23
N	4,277	7,634	6,747	865	1,185	20,708
Transnational score [d]						
Mean		2.1	3.2	2.6	3.7	2.7
SD		1.36	1.40	1.6	1.71	1.53
N		7762	7307	887	1353	17,309
Partner variables [e]						
% Born in France	94	80	36	61	35	61
% Born in Africa	1.2	0.7	0.8	33	60	4.8
% Speak French	100	93	53	86	69	76
% Living in France	100	100	99	99	99	99
% Living is same House	97	95	98	92	96	96
N	2,687	3,997	5,439	237	752	13,120

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

Table 3: Regression of migration and generational status, and sociodemographic variables on fertility and fertility ideals for full sample, TEO (2009)

	Females				Males			
	Fertility		Ideal No. of children		Fertility		Ideal No. of children	
	Current	Cumulative	General	Personal	Current	Cumulative	General	Personal
Dependent variable	*Logit:OR(SE)*	*Poisson: IR (SE)*			*Logit:OR(SE)*	*Poisson: IR (SE)*		
Migration status								
Non-immigrant (ref.)								
Non SSA migrant								
2nd generation	1.04	0.96	1.04***	1.05**	1.05	0.98	1.05***	1.00
	(0.082)	(0.026)	(0.011)	(0.017)	(0.085)	(0.033)	(0.014)	(0.016)
1st generation	1.01	1.03	1.04***	1.04*	1.11	1.06*	1.09***	1.06**
	(0.097)	(0.029)	(0.013)	(0.017)	(0.10)	(0.032)	(0.017)	(0.022)
SSA migrant								
2nd generation	1.13	1.20	1.28***	1.27***	1.41	1.53	1.31***	1.20***
	(0.19)	(0.18)	(0.026)	(0.035)	(0.26)	(0.42)	(0.035)	(0.040)
1st generation	1.77***	1.28***	1.20***	1.19***	2.05***	1.40***	1.27***	1.20***
	(0.24)	(0.066)	(0.023)	(0.047)	(0.28)	(0.072)	(0.025)	(0.043)
Sociodemographic vars.								

Age	2.61***	1.00	0.99***	1.00***	1.91***	1.01***	0.99***	0.99***
	(0.16)	(0.0019)	(0.00057)	(0.00069)	(0.095)	(0.0019)	(0.00070)	(0.00087)
Ever married [a]	2.65***	1.88***	0.94***	1.00	3.69***	2.08***	0.96**	1.00
	(0.18)	(0.080)	(0.011)	(0.015)	(0.26)	(0.11)	(0.013)	(0.016)
≥ High School cert. [b]	1.06	0.80***	0.99	1.03*	1.00	0.92***	0.99	1.01
	(0.062)	(0.016)	(0.011)	(0.013)	(0.059)	(0.020)	(0.011)	(0.012)
Some School in France [d]	0.68***	0.85***	0.93***	0.96*	0.64***	0.84***	0.95**	0.98
	(0.061)	(0.023)	(0.014)	(0.017)	(0.055)	(0.022)	(0.015)	(0.018)
Children ever born			1.10***	1.09***			1.10***	1.08***
			(0.0059)	(0.0056)			(0.0053)	(0.0062)
Constant	0.00000033***	1.46***	3.03***	2.38***	0.000014***	0.82	3.18***	2.64***
	(0.00000034)	(0.16)	(0.089)	(0.081)	(0.000013)	(0.086)	(0.091)	(0.086)
N[e]	8252	3866	10426	10274	7234	3546	9266	9116
Pseudo R-squared	0.243	0.048	0.017	0.012	0.166	0.060	0.017	0.011

Numbers in parentheses are robust standard errors. * p < .05; ** p < .01; *** p < .001 (two-tailed tests). The reference groups are [a] never married [b] less than a higher secondary certificate, and [c] never schooled at any level in France. The model also control for religion. In addition current fertility models have a squared term for age, which is significant. [e] Based on different sample restrictions described in text.

Table 4: Regression of measures of assimilation & transnationalism on fertility and fertility ideals for Sub-Saharan African migrants, TEO (2009)

	Females				Males			
	Fertility		Ideal No. of children		Fertility		Ideal No. of children	
	Current	Cumulative	General	Personal	Current	Cumulative	General	Personal
Dependent variable	*Logit:OR(SE)*	*Poisson: IR (SE)*			*Logit:OR(SE)*	*Poisson: IR (SE)*		
Measures of early socialization								
Generational status								
Second-generation (ref)								
1.5-generation [a]	1.27	1.00	0.99	0.88	1.35	1.29	0.91	0.96
	(0.42)	(0.19)	(0.045)	(0.059)	(0.62)	(0.23)	(0.066)	(0.077)
First-generation [b]	1.57	1.18	0.92*	0.95	0.94	0.93	0.92	0.89
	(0.45)	(0.16)	(0.033)	(0.091)	(0.29)	(0.21)	(0.041)	(0.069)
Foreign Childhood lang. [c]	1.68*	1.06	1.03	0.99	1.64*	1.07	1.07	1.09
	(0.38)	(0.077)	(0.030)	(0.042)	(0.41)	(0.11)	(0.043)	(0.068)
Measures of adaptation								
Some school in France [d]	0.71	1.00	0.98	1.05	0.46**	0.93	0.97	0.98

	(0.21)	(0.088)	(0.035)	(0.12)	(0.12)	(0.10)	(0.040)	(0.065)
Spouse born in France [e]	0.37***	0.65***	0.95	1.00	0.95	0.80*	0.93*	0.97
	(0.099)	(0.062)	(0.032)	(0.080)	(0.24)	(0.074)	(0.035)	(0.062)
Speak French with partner [f]	1.57	1.07	0.89**	0.93	0.94	0.77**	0.89*	0.80**
	(0.49)	(0.094)	(0.039)	(0.047)	(0.31)	(0.074)	(0.051)	(0.058)
Transnationalism	0.76	1.30	1.47***	1.54***	3.58	1.16	1.03	1.46**
	(0.51)	(0.27)	(0.14)	(0.18)	(2.41)	(0.26)	(0.10)	(0.21)
Sociodemographic variables								
≥ High School cert. [g]	0.85	0.82**	0.96	0.97	0.73	0.89	0.94	0.94
	(0.18)	(0.059)	(0.025)	(0.037)	(0.18)	(0.094)	(0.032)	(0.041)
Religion important [h]	0.95	1.22	1.07**	1.16**	0.86	0.97	1.18***	1.16***
	(0.21)	(0.12)	(0.028)	(0.056)	(0.21)	(0.082)	(0.036)	(0.050)
Constant	0.0000056***	0.61	3.57***	3.01***	0.000014***	0.68	4.19***	2.62***
	(0.000011)	(0.17)	(0.24)	(0.49)	(0.000031)	(0.21)	(0.38)	(0.59)

Pseudo R-squared	0.287	0.080	0.029	0.026	0.316	0.128	0.027	0.032
N	787	309	853	819	622	241	646	628

Numbers in parentheses are robust standard errors. * p < .05; ** p < .01; *** p < .001 (two-tailed tests) [a] refers to those who migrated before age 13 and at [b] at 13plus yrs The reference groups are [c] French, [e] partner not born in France, [f] Speak other language, [d g h] as in table 3. The models also controls for age and marital status and age-sq. for current fertility. Also includes indicator variables for single for the spouse measures and children ever born for fertility ideals

Table 5: Regression of measures of assimilation & transnationalism on fertility and fertility ideals for first-generation Sub-Sahara African migrants, TEO (2009)

	Fertility		Ideal No. of children	
	Current	Cumulative	In general	Personal
Dependent variable	*Logit: OR(SE)*		*Poisson: IR (SE)*	
Measures of early socialization				
Migrated at < 13yrs [a]	1.04	0.98	1.05	0.95
	(0.33)	(0.13)	(0.045)	(0.080)
Foreign Childhood lang. [b]	1.28	1.02	1.02	1.00
	(0.22)	(0.060)	(0.027)	(0.048)
Measures of adaptation				
Length of stay in France [c]				
6 to 9 yrs. (ref=<5yrs)	0.83	1.00	0.99	0.95
	(0.20)	(0.12)	(0.036)	(0.055)
10 to 14yrs.	0.86	1.14	1.08	1.23
	(0.28)	(0.15)	(0.055)	(0.14)
15plus yrs.	1.16	1.13	1.07	1.13
	(0.34)	(0.13)	(0.049)	(0.085)
Some school in France [d]	0.54**	1.00	0.95	0.99
	(0.12)	(0.073)	(0.029)	(0.066)
French nationality [e]	0.82	0.92	0.92**	0.98
	(0.15)	(0.053)	(0.030)	(0.052)
Proficiency in French	0.18**	0.72	0.87	0.73*
	(0.11)	(0.13)	(0.084)	(0.093)
Spouse born in France [f]	0.66*	0.71***	0.97	1.07
	(0.13)	(0.053)	(0.029)	(0.086)
Speak French with partner [g]	1.15	0.93	0.92*	0.86***
	(0.29)	(0.064)	(0.033)	(0.040)
Transnationalism	1.65	1.23	1.12	1.38**
	(0.92)	(0.20)	(0.096)	(0.16)
Sociodemographic variables				
≥ High School cert. [h]	1.16	0.87*	0.99	1.01
	(0.22)	(0.059)	(0.028)	(0.040)
Religion important in life [i]	0.93	1.06	1.07**	1.12*
	(0.18)	(0.075)	(0.028)	(0.058)
Female [j]	0.82	1.08	0.97	0.93
	(0.14)	(0.063)	(0.027)	(0.043)
Constant	0.0030**	2.18	5.20***	3.44**
	(0.0056)	(2.88)	(0.93)	(1.48)

Pseudo R-squared	0.224	0.087	0.035	0.036
N	893	495	888	854

Numbers in parentheses are robust standard errors. * p < .05; ** p < .01; *** p < .001 (two-tailed tests). The reference groups are [a] migration at 13plus yrs., [b] French, [c] <5yrs c male, [d] never schooled in France married [e] Not French national, [f] partner not born in France, [g] Speak other language [h] less than a higher secondary certificate, [i] religion not important, [j] male. The model also control for age and marital status and age-squared for current fertility. Also includes indicator variables for single for the spouse measures and children ever born for the fertility ideals.

Appendix 1: Indicators of transnationalism, Trajectoire et Origines, 2009

Question	Respondents
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"	All interviewers
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?"	All interviewers
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?	All interviewers
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?"	First and second-generation migrants
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?"	First and second-generation migrants
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?"	First and second-generation migrants
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?"	All interviewers
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?"	First and second-generation migrants
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?"	First and second-generation migrants
Note: These questions were asked of all immigrants, but only selected questions (noted above) 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*	

[1] Over 56,000 undocumented SSA migrants are estimated to be in France (Lessault & Beauchemin, 2009)

[2] The socialization theory has been referred to by some as assimilation theory; others refer to the adaptation theory as assimilation theory, while others use assimilation refer to both socialization and adaptation (Stephen & Bean, 1992; Milewski, 2009; Lindstrom & Saucedo, 2002). We 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.

[3] 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).

[4] 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).

[5] 91 missing cases on migration status (from missing data on birthplace of parents), 381 on education, and 342 on religion

[6] Preliminary analysis and diagnostics identified the relationship between age and number of children to be curvilinear for the measure of current fertility, so a squared term for age is included in the regressions for that. 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, dummy variables for country of birth, 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 better well specified than those on fertility ideals.