

Point of reference: A multi-sited exploration of African migration and fertility in France

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Forthcoming at *International Migration Review*

Abstract: A considerable literature explores whether the fertility of migrants from high-fertility contexts converges with that of women in lower-fertility destinations. Nonetheless, much of this research compares the reproductive outcomes of migrants to those of native-born women in destination countries. Drawing on research emphasizing the importance of transnational perspectives, we standardize and integrate data collected in France (the destination) and data collected in six high-fertility African countries (the senders). We show that African migrants in our sample have higher children ever born (CEB) than native French women but lower CEB than women in corresponding origin countries. These findings suggest that socialization into pronatalist norms is an incomplete explanation for migrant fertility in the first generation, an insight that would be overlooked by analyzing destination settings only. Next, we conduct multivariate analyses that weight migrants' background characteristics to resemble women in both origin and destination countries. Findings indicate that observed differences between African migrants in France and women in African origin countries help explain differences in CEB between the two groups, which supports selection. We also demonstrate that African migrants in France have delayed transitions into first, second, and third births and lower completed fertility compared to women in origin countries, thus disputing the disruption hypothesis. Finally, we show that observed differences between African migrants in France and native French women explain differences in CEB between the two groups, which supports adaptation. These multifaceted findings on selection, disruption, and adaptation would be obscured by analyzing destination settings only, thus validating the importance of a multi-sited approach to migrant fertility.

Keywords: Migration, fertility, family, France, Africa

Acknowledgements: This paper is supported with a grant from the National Science Foundation sponsor# SES 1918274. We are grateful to Michel Guillot, Michael White, Erica Soler, Jere Behrman, Maggie Frye, Jenny Trinitapoli, Sarah Hayford, Christie Sennott, and Doron Shiffer-Sebba for helpful feedback. We are grateful to the Centre Maurice Halbwachs for granting access to the data [Trajectoires et origines (TEO)— version complete—2008: (2008, fichier électronique), INED et INSEE (producteur), Centre Maurice Halbwachs (CMH, diffuseur)].

Introduction

Migration scholars have long been interested in the association between migration and fertility—two key components of social and demographic change (Andersson 2004; Hertz 1985; Kulu et al. 2019). This topic has generated particular attention when migrants from low-income, high-fertility countries move to high-income, low-fertility countries (Hertz 1985; Kulu 2005; Milewski 2007, 2010). Some scholars have argued that higher migrant fertility could help address the low fertility that has characterized many high-income countries in recent decades (Billari and Dalla-Zuanna 2013; Wilson et al. 2013), while others have asserted that destination countries' ethnic and racial ancestry is radically altered by incoming migrants (Coleman 2006). These academic debates have been echoed in the policy arena of high-income countries, where migrant fertility is often politicized (Basu 1997; Huang 2008). Underlying these discussions are assumptions about whether migrants converge with the fertility norms of destination settings. In other words, do migrants from high-fertility settings adjust their fertility to more closely resemble women in lower-fertility destinations, or do they continue to have fertility more similar to women in origin settings?

Understanding whether migration is associated with changes in fertility requires a multi-sited approach that includes data on individuals in both sending *and* receiving countries. While scholars have emphasized the importance of transnational data and multi-sited perspectives in studying international migration (Beauchemin 2014), to date, most knowledge about migrant fertility is based on analyses where researchers compare migrants to women in the destination country (for a review see, Kulu et al. 2019). With a few important exceptions (e.g., Impicciatore, Gabrielli, and Paterno 2020; Lübke 2014; Singley and Landale 1998), micro-level empirical explorations of migrant fertility that include information on *both* origin and destination contexts

have been limited. As a result, understandings of the association between migration and fertility may be shaped, if not determined, by the choice of reference group and whether migrants are compared to women in origin or in destination contexts.

In this article, we standardize and integrate nationally representative micro-data from two different sources: the *Trajectories et Origines* (TeO) survey collected in France (the destination country in our study) and the *Demographic and Health Surveys* (DHS) collected in six high-fertility West and Central sub-Saharan African countries (the senders). African migrants in France provide a compelling case to explore the fertility patterns of African migrants because West and Central African countries have among the highest fertility in the world whereas France has much lower fertility that is close to replacement levels (World Bank 2017). In contrast, many other major contemporary migratory paths, such as Latin America to the United States or Eastern and Southern Europe to Northern Europe, involve migrants from origin countries where fertility is either at or below replacement (United Nations 2019).

As a starting point for our analysis, we focus on four dominant explanations for migrant women's fertility patterns: (1) socialization, which emphasizes deeply engrained norms about family learned pre-migration (e.g., desire for large family sizes); (2) selection, which highlights the non-randomness of those who migrate (e.g., those who migrate may be more educated and desire smaller families than those who do not migrate); (3) disruption, which focuses on migration-related interruptions of family formation processes (e.g., spousal separation, psychosocial stress); and (4) adaptation, which emphasizes assimilation to family norms in the destination context (e.g., adopting the desired family sizes of the destination setting).

Drawing on our sample of migrants to France from six high fertility African countries and corresponding women in origin countries, we start by showing descriptively that African

migrants in our sample have higher children ever born (CEB) than native French women but lower CEB than women in corresponding origin countries. These descriptive findings support the perspective that socialization into pronatalist norms is an incomplete explanation for migrant fertility in the first generation, an insight that would be overlooked by analyzing destination settings only. We go on to test alternate explanations for migrant women's fertility using a series of multivariate analyses with entropy balancing that weight migrants' background characteristics to resemble women in origin and destination countries on mean, variance, and skew. First, we show that observed differences between African migrants in France and women in African origin countries help explain differences in CEB between the two groups, which supports selection. Next, we demonstrate that African migrants in France have delayed transitions into first, second, and third births and lower completed fertility compared to women in origin countries, thus disputing the disruption hypothesis which predicts delays in first births only. Finally, we show that observed differences between African migrants in France and non-migrant French women explain differences in CEB between the two groups, which supports the adaptation perspective. These multifaceted findings on selection, disruption, and adaptation would be obscured by analyzing destination settings only, thus validating the importance of a multi-sited approach to migrant fertility.

International Migration from Higher to Lower Fertility Settings: The Need for a Multi-Sited Perspective

The fact that, in the first generation, migrant women's fertility is often higher than native-born women in destination settings has lent support to the *socialization hypothesis* (Andersson 2004; Coleman and Dubuc 2010; Dubuc 2012; Héran and Pison 2007; Milewski 2007, 2010),

which is the idea that socialization prior to migration is essential to shaping values, preferences, and beliefs about reproduction (Barber 2001; Carter 2000; Milewski 2010). According to this perspective, because adult migrants have already been influenced by their origin countries' (usually higher fertility) norms, migrants from high-fertility contexts may not adjust their fertility behaviors upon migration. At the same time, transnational linkages via friends and family, migrant communities, return visits, or media in home countries allow migrant women to maintain active contact with the norms in destination countries that may also reinforce preferences for high fertility (Levitt and Glick Shiller 2019; Portes, Guarnizo, and Landolt 1999; Vertovec 2004).

The *selection perspective* emphasizes that the decision to migrate is not random and that those who select into migration may be systematically different from those who remain in origin countries (Hervitz 1985; Kulu 2005). Debates about whether comparably more or less advantaged populations migrate has generated scholarship on whether migrants are positively or negatively selected on education, age, and health/nutritional measures (Crimmins et al. 2005; Feliciano 2005; Ichou 2014; Rangel-Gonzalez 2018; Rendall and Parker 2014; Spörlein and Kristen 2019). In addition to these observed factors, migrants may also be selected on unobserved characteristics. For example, gender ideology could influence who selects into migration, with more egalitarian-oriented individuals more likely to select into labor migration (He and Gerber 2020; Hofmann 2014). Taken together, selection on observed and unobserved factors could mean that migrants have different fertility behaviors than do women in origin countries, irrespective of whether migrants ever left their origin country (Hervitz 1985; Lindstrom and Giorguli Saucedo 2002; Milewski 2007).

While the socialization and selection hypotheses predict limited changes in fertility upon

migration, the disruption and adaptation hypotheses suggest that migration alters fertility outcomes (see Kulu et al. 2019 for a review). The *disruption perspective* emphasizes that there are often disruptions of reproductive and family formation processes in the post-migration period, due to spousal separation and/or psycho-social stress that could depress fertility (Kulu 2005). Many scholars find that such disruption is temporary and offset in later periods with accelerated childbearing once migrants become settled in their new communities (Carter 2000; Choi 2014; Lübke 2014). Indeed, there may be an “interrelation of events” in the post-migratory period whereby several family formation processes, such as spousal reunification, spousal formation, and childbearing, are initiated concurrently within a short time frame (Milewski 2007, 2010).

The *adaptation perspective*, however, suggests that migrants adopt customs, norms, and values of their new home societies (Alba & Nee, 1997). From this perspective, migrants from high-fertility settings adopt destination contexts’ lower fertility behaviors, due to changes in their norms and preferences, opportunity costs of childbearing, and/or the prevalence of child mortality. Support for the adaptation perspective comes from studies showing that migrant women’s fertility behavior increasingly resembles that of women in destination countries the longer migrant women are in the destination context (Ford 1990) and from studies showing that second-generation migrants’ fertility often more closely resembles that of native-born populations in destination countries (Kulu et al. 2017; Milewski 2010; Pailhé 2017; Parrado and Morgan 2008). Some scholars have noted exceptions to these trends, however, such as second-generation Turkish women in Sweden and second-generation Pakistani and Bangladeshi women in the United Kingdom (Andersson 2004; Kulu et al. 2017). Nonetheless, other scholarship has shown that the fertility of second-generation Pakistani and Bangladeshi women in the UK is

lower than that of first-generation Pakistani and Bangladeshi migrants of similar cohorts (Dubuc 2012), suggesting a “second generation effect” of acclimation to the destination context’s fertility norms and behaviors that is partially (though not fully) explained by increased educational attainment (Dubuc 2017).

Though migration scholars emphasize the importance of taking multi-sited perspectives to fully understand migration as a social process (Feliciano 2005; Jiménez and Fitzgerald 2007; Massey 1987), the vast majority of studies assessing the four migrant-fertility hypotheses described above have compared migrants to native-born women in destination contexts (see Kulu et al. 2019 for a review). A more complete understanding of migrant fertility processes, however, requires comparing migrants to individuals in their origin countries. For example, migrants might have higher fertility than women in destination contexts (which supports socialization) but lower fertility than women in origin contexts (which could reflect adaptation, selection, and/or disruption).

The deficit of multi-sited scholarship on migration and fertility reflects the fact that most datasets include information on only origin *or* destination contexts (see Beauchemin et al. 2014 for a discussion). A few exceptional multi-sited datasets—notably, the Mexican and Latin American Migration Projects (MMP and LAMP), Migrations Between Africa and Europe Project (MAFE), and 2000 Families Study (“Migration Histories of Turks in Europe”)—include information on women in both sending and receiving countries and have been used to explore family formation (Baykara-Krumme and Milewski 2017; Lindstrom and Giorguli Saucedo 2002, 2007; Wolf and Mulder 2019). In the absence of such multi-sited data, some scholars have compared the aggregate fertility of migrants and women in origin and destination contexts (Choi 2014; Dubuc 2012, 2016; Frank and Heuveline 2005; Toulemon 2004), although these macro-

level estimates do not address how migrants might be different from non-migrants on observed characteristics. Additionally, a handful of studies combine micro-data from origin and destination contexts to explore fertility outcomes among international migrants from Ukraine, Albania, and Morocco in Italy (Impicciatore et al. 2020) and migrants from Poland in the UK (Lübke 2014). Our analyses build on this multi-sited work by combining micro-data from origin and destination contexts and, for the first time, adopting a weighting strategy to compare migrants abroad to women in corresponding origin countries. Contextually, our work differs from the aforementioned multi-sited studies because we focus on migration from low-income sending contexts characterized by fertility levels that are well above replacement, while research by Impicciatore et al. and Lübke focuses on migration from middle-income sending contexts in Eastern Europe and North Africa, where fertility is at or below replacement (United Nations 2019).

Study Context

At the end of the French colonial period in sub-Saharan Africa (SSA) in the early 1960s, the number of sub-Saharan Africans in France was quite low, at around 20,000 (Lessault and Beauchemin 2009). Over the second half of the twentieth century, however, this figure increased an estimated 27-fold such that by the mid-2000s, there were over 570,000 migrants from SSA in France (ibid). In the period of study (2003-2009), an estimated 20-25% of migrants with resident permits in France were from SSA (d'Albis and Boubtane 2015). While earlier waves of sub-Saharan migrants were predominantly male labor migrants from former French colonies in SSA, from the 1970s onward, the demographic profiles of migrants from SSA began to include large numbers of women, owing to a rise in migration for family reunification purposes (Laurence and

Vaisse 2006). In recent decades, there has also been an increase in African women who have migrated to France for work, education, or other purposes unrelated to reunification (Beauchemin, Borrel, and Régnard 2013). Since the 1980s, there has been an additional rise in sub-Saharan migrants claiming political asylum, including those fleeing conflict in Francophone Central Africa (Alba and Foner 2015).

The fertility patterns of sub-Saharan migrants in France are particularly interesting, given the distinct fertility contexts that characterize SSA and France. The sub-Saharan region has the highest fertility in the world, largely because of low socioeconomic development, pronatalist family norms, and weak family planning policies (Bongaarts and Casterline 2013; Mbacké 2017). Fertility in France is considerably lower. For example, the Total Fertility Rates (TFRs) in the West and Central African sending countries studied here were above 5 during the period of study, compared to 2 for France over the same period (Table A1 in the Online Appendix). Nonetheless, fertility in France is high compared to much of Europe (INSEE 2020), which is partially attributed to France's generous family policies that aim to reconcile work and family conflict via family benefit allowances, subsidized early childcare from infancy, and generous parental leave policies (CAF 2020; Pailhé 2008; Pailhé, Rossier, and Toulemon 2008). Migrants from SSA to France, thus, transition from a fertility regime characterized by high fertility and limited family policy to one characterized by lower fertility and a pronatalist family policy available to legal residents.¹

Consistent with these different fertility regimes, scholars have used TeO data to show that first-generation sub-Saharan African migrants to France have higher fertility and higher desired

¹ TeO asks about whether respondents are French citizens and about residence permits for foreigners naturalized after age 16. About a third of our sample are naturalized French citizens; about a quarter of our sample refused to answer questions about residence permits, which could reflect undocumented legal status.

family sizes than non-migrant French women (Afulani and Asunka 2017). Nonetheless, Afulani and Asunka (2017) document an intergenerational fertility decline among migrants from SSA and show that measures of adaptation, such as having a partner born in France, being a French citizen, or continuing education in France, are associated with lower desired and/or realized fertility among first- and second-generation migrants. This evidence, which supports some extent of adaptation, is also consistent with Toulemon's (2004) finding that African migrants' aggregated TFRs in France are between those of their origin country and that of women born in metropolitan France.²

The extent to which African migrants in France adapt to French fertility norms may also depend on the extent to which they are more broadly incorporated into important institutions including the labor market, the educational system, and social welfare services. Processes of residential, social, and economic incorporation can be lengthy for African migrants. For example, a 2012 life-history event survey of 513 sub-Saharan Africans living in France indicated that migrants from SSA took an average of 6 to 7 years to settle in France when settlement is defined as obtaining a personal dwelling, legal permit, and paid work (Gosselin et al. 2018). In addition, African migrants in France have worse labor market and educational outcomes than those born in France and are more likely to be residentially segregated in poorer neighborhoods (Ichou et al. 2017; Ichou and Hamilton 2013; Meurs, Pailhé, and Simon 2006; Quillian and Lagrange 2016). Migrants from SSA are also more likely to report race-based discrimination than other migrant groups in France (Silberman, Alba, and Fournier 2007). Such discrimination often corresponds with greater residential or labor market segregation (Acolin, Bostic, and

² In this study, immigrants—defined as those born abroad who are not French by birth but who have been settled in France for at least a year—are compared to women born in France and “other” women (e.g. born French abroad or born in the French Overseas Departments and Territories). Calculation of TFR in this study includes consideration of age of entry into France and duration of stay (for further details see Toulemon 2004).

Painter 2016; Silberman et al. 2007; Valfort 2020), leading to less interaction with the host society.

Research Hypotheses

The starting point for our analyses is that a multi-sited perspective provides important insights into the relationship between migration and fertility and into underlying processes of socialization, selection, disruption, and adaption. To that end, we outline a series of research hypotheses to explore these processes among our sample of migrants from six African countries in France. In doing so, we acknowledge that there is likely no one explanation for migrant fertility and that multiple processes may be operating simultaneously.

H1. Socialization is an incomplete explanation for the fertility of African migrants in our sample. If socialization is an incomplete explanation, the fertility of African migrants in our sample should be lower than that of African women in corresponding origin countries, even if it is higher than that of native French women.

H2. Selection accounts for fertility differences between African migrants in our sample and African women in corresponding origin countries. If selection is occurring, there should be observable differences in the background characteristics of African migrants in our sample and African women in corresponding origin countries, and these differences should explain observed fertility differences between the two groups.

H3. Disruption accounts for fertility differences between African migrants in our sample and African women in corresponding origin countries. If disruptive processes are present, African women in our sample who migrate without children should experience a delayed transition into first birth compared to African women in origin countries. This delay could be due

to spousal separation or psycho-social stress as women adjust to a new setting. However, extant research suggests migration-related disruption is temporary and offset once migrants become settled in their new communities (Carter 2000; Choi 2014; Lübke 2014). Thus, migrants who experience a disruption-related transition into first births should not differ in their transition into second/third births or their completed fertility compared to women in origin countries.

H4. Adaptation accounts for fertility differences between African migrants in our sample and African women in corresponding origin countries. If adaptation occurs, there should be no significant differences in fertility between African migrants in our sample and native French women, once we account for observed background differences.

Analytical Strategy

Data and Sample

Our analytic sample consists of a combination of TeO and DHS respondents.³ The TeO is a nationally representative, cross-sectional survey of approximately 22,000 women and men ages 18-60 in metropolitan France, with an oversample of migrants managed by the National Institute for Statistics and Economic Studies (INSEE) and the French Institute for Demographic Studies (INED) (Simon, Beauchemin, and Hamel 2018). The DHS are nationally representative, cross-sectional, standardized surveys collected among women aged 15-49 in dozens of countries in SSA by host-county governments with technical assistance from ICF International and funding from USAID. We construct our analytical sample by taking into account which migrant groups are well represented in the TeO and have corresponding DHS data available in a similar timeframe to when TeO was collected (in 2008/2009). Our final sample includes respondents

³ Publicly available versions of both datasets are available for download after a short application process. The DHS can be accessed at: <https://dhsprogram.com/>, and TeO can be accessed at: <http://quetelet.progedo.fr/>

from four countries in West Africa (Cameroon; Ivory Coast; Mali; and Senegal) and two countries in Central Africa (Congo Brazzaville; Congo DRC). As Table A1 in the Online Appendix shows, all countries included are characterized by considerably higher fertility and lower Gross Domestic Product (GDP) than in France. We pool across the six sending countries because nationality-specific subsamples are small and because supplementary analyses suggest that country-specific findings are generally similar.

We create standardized variables that are consistent across the TeO and DHS and then append these data sources to create a harmonized dataset that includes three types of respondents: (1) migrants in France of reproductive age (18-49) originating from the six African origin countries; (2) women of reproductive age (18-49) living in the six African origin countries; and (3) French women of reproductive age (18-49) with no family history of migration in the last two generations (for simplicity, we refer to this group as “native” French women). We utilize listwise deletion to define our analytical sample, thereby ensuring that we have full information on respondents’ pre-migration background characteristics. For detailed information about variable standardization see Table A2 in the Online Appendix.

Because we cannot assess the association between migration and fertility timing among those who initiated childbearing prior to migration, we focus our primary analyses on migrant women from the six African countries who were childless upon arrival in France. Migrant women from the six African countries who arrived in France under the age of 15 (the “1.5 generation”) are also excluded because socialization patterns among women who arrive as children are quite different from those who arrive at older ages (Milewski 2007, 2010; Wolf 2016). Our small sample of first-generation migrants in France from six African countries noted in Table 1 is fairly consistent with small migrant samples in the existing literature on migrant

fertility (Wolf and Mulder 2019). Since the samples of women in corresponding African origin countries are much larger (Table A1 in the Online Appendix), we take a seeded random draw of 350 women from each origin country (in supplementary analyses in Figure A1 in the Online Appendix, we replicate our analyses with seeded random samples of different sizes).

[Table 1 about here]

Measures

Outcomes

Fertility is measured with several variables that capture different dimensions of fertility quantum (e.g. the quantity of children) and tempo (e.g. the timing of childbearing). First, we use a continuous measure of children ever born (CEB), which is created out of a question available in both the TeO and DHS about total children ever born (including any deceased children). CEB will be right censored if women have not yet completed childbearing; thus, we also create several variables that provide information about the timing of first birth (starting risk at age 10, measured in person-months), the timing of second birth (starting risk at first birth, measured in person-months), and the timing of third birth (starting risk at second birth, measured in person-months). In both the DHS and TeO, these measures are constructed using information about the month and year of each birth (in TeO, month of birth is not available for children no longer in the household, so we use the mid-point in the year).

Migration status

Our analysis defines respondents as (1) migrants in France from six sub-Saharan African countries; (2) women in corresponding sub-Saharan African origin countries; and (3) native French women with no family history of migration in the last two generations.

Pre-migration background characteristics

Our multi-sited analysis controls for the following background characteristics that might impact the likelihoods of both migration and fertility.

Education: Education is an important predictor of migration and an important determinant of socioeconomic status and fertility (Feliciano 2005; Rendall and Parker 2014; Spörlein and Kristen 2019), and evidence suggests that migrants from West Africa to France are often positively selected on education (Ichou 2014). We measure education with a series of indicator variables including primary schooling or less; secondary schooling; and tertiary schooling. In the DHS sample, we use information about highest schooling level completed because the majority of women in the origin countries will have finished their education by age 15 (UNESCO 2020), which is the age at which risk of migration starts in our sample. Among migrants in the TeO data, we use education level prior to arrival in France because women's schooling attainment could be impacted by migration. If so, including their total education in the model would conflate migration's effects on education with its effects on fertility (Elwert and Winship 2014).

Siblings: Since research suggests that norms about childbearing and desired family size are shaped by experiences and socialization in childhood and since number of siblings may proxy for norms valuing large family sizes learned in childhood (Milewski 2011; Milewski and Hamel 2010), we control for number of siblings. We construct indicator measures of number of

siblings, using information in the DHS and TeO about the number of siblings from the same biological mother, including siblings who are no longer living: 0-2 siblings; 3-4 siblings; and 5+ siblings. We prefer categorical measure to a continuous measure of the number of siblings, due to differences in top coding between the DHS and TEO for this variable.

Birth order: We include an indicator for whether the respondent was the firstborn child, using DHS information about the number of preceding births before the respondent and TeO information about the number of older siblings. Birth order might be an important determinant of young women's educational and marriage opportunities (Pesando and Abufhele 2019), which may, in turn, influence migration.

Religion: Considering that during the time period of the study in 2008/2009 research suggested that Muslim women had higher birthrates than women of other religious backgrounds in Europe (Westoff and Frejka 2007), we control for religion, with indicators for Muslim, Christian, and other religion. The other religion category includes animist, traditional religions, and no religion.

Birth Cohort: All models include indicators for birth cohort to account for age-related fertility differentials.

Methods

To explore *H1 (socialization is an incomplete explanation for the fertility of African migrants in our sample)*, we generate descriptive estimates that show how the cohort-adjusted association between migration and CEB differs depending on whether first-generation African migrants in France in our sample are compared to African women in corresponding origin countries or to native French women. There will be support for this hypothesis if migrant fertility

is lower than that of African women in origin countries, even if it is higher than that of native French women.

We investigate *H2 (selection accounts for fertility differences between African migrants in our sample and African women in corresponding origin countries)* by descriptively exploring how African migrants' observable characteristics compare to those of African women in origin countries and by looking at whether the association between migration and fertility changed upon accounting for these observed characteristics using entropy balancing techniques. There will be support for selection if there are observable differences in the pre-migration background characteristics of African migrants in our sample and African women in origin countries and if these differences in background explain observed fertility differences between the two groups.

To conduct the entropy balancing, we generate a set of weights that make the background characteristics of African women in origin countries match the pre-migration background characteristics of African migrant women in our sample on mean, variance, and skew (Hainmueller and Xu 2013; King and Nielsen 2019; Zhao and Percival 2017). Using these weights, we conduct multivariate analyses of the association between migration and fertility, comparing African migrants in our sample with African women in origin countries. These models include pre-migration background characteristics that likely predict selection into migration but do not include post-migration factors, such as current employment, which could have been impacted by migration (Elwert and Winship 2014). To account for our count outcome, we use poisson regression with the results presented as average marginal effects. It is important to note that these multivariate analyses account for selection on *observed* characteristics only and that there are likely *unobserved* characteristics, such as gender ideology, personal preferences, and cognitive ability, that we are unable to capture in our analyses but that may also shape

women's migration and fertility trajectories. We discuss the implications of this possibility in greater detail below.

To better understand if there is support for *H3 (disruption accounts for fertility differences between African migrants in our sample and African women in corresponding origin countries)*, we run a series of cox-proportional hazard models of transitions into first, second, and third births, comparing African migrants in our sample to African women in origin countries. We also conduct multivariate analyses of the association between migration and CEB, limiting our focus to women who are at the end of their reproductive careers (i.e., ages 40-49). There will be support for disruption if African migrants in our sample experienced a delayed transition into first birth, compared to African women in origin countries, but did not differ in their transition into second/third births or completed fertility.

To unpack *H4 (adaptation accounts for fertility differences between African migrants in our sample and African women in corresponding origin countries)*, we conduct a multivariate analysis where we weight native French women to resemble African migrants in our sample on observed characteristics, using the entropy balancing strategy described above. If adaptation is prevalent, once we account for observed background differences between African migrants in our sample and native French women, there should be no significant differences in fertility.

Results

H1. Socialization is an incomplete explanation for the fertility of African migrants in our sample

We explore H1 by producing descriptive estimates of the cohort-adjusted association between migration and fertility for women in destination countries—the standard comparison in

the literature (e.g., see Kulu et al. 2019 for a review) —versus in origin countries. As can be seen in Figure 1 (purple column), the predicted count of CEB among migrants from six African countries to France (1.85) was significantly higher than that of native French women (1.32). These substantive findings hold when the sample is limited to women at the end of their reproductive careers (orange column). Among women ages 40-49, African migrants in our sample are predicted to have 2.52 CEB compared to 1.98 CEB among native French women.

Figure 1 also shows that findings look considerably different when African migrants in our sample are compared to women in the six African sending countries. In this case, the predicted count of CEB among African migrants in our sample (1.85) is significantly lower than that of women in the origin countries (3.35). Differences between African migrants in our sample and African women in origin countries are even more pronounced when the sample is limited to women at the end of their reproductive careers. Among women ages 40-49, African migrants in our sample are predicted to have 2.52 CEB compared to 6.27 CEB among women in the corresponding African origin countries.

[Figure 1 about here]

Taken together, these descriptive findings lend support to H1. On one hand, the higher fertility of African migrants in our sample compared to that of native French women might reflect socialization and pro-natalist preferences learned in childhood. At the same time, the socialization hypothesis cannot account for the fact that migrants' CEB were considerably lower than that of women in the six African origin countries. The observed fertility differences between African migrants in our sample and African women in origin countries could be an artefact of

selection if women who selected into migration were pre-disposed to lower fertility compared to those who did not migrate. Alternatively, fertility differences between African migrants in our sample and African women in origin countries could reflect post-migration experiences, such as disruption of family formation or adaptation to new family norms in destination, that lead to changes in fertility. In what follows, we conduct several multivariate analyses that shed insight into these different processes.

H2. Selection accounts for fertility differences between African migrants in our sample and corresponding African women in origin countries.

Table 1 presents information on how African migrants in our sample differed from women in origin and destination countries on key background characteristics. While African migrants in our sample had significantly less education and came from larger families than did native French women, the opposite was true when African migrants in our sample were compared to women in the six African sending countries.

Since observed differences between African migrants in our sample and women in origin countries may be predictive of the likelihood of both migration and fertility, we explore what happens when we account for these differences in observed background characteristics in multivariate models. To do so, we implement entropy balancing to weight the background characteristics of women in African origin countries to match the background characteristics of migrants to France from six African countries on mean, variance, and skew. Before weighting, there were considerable differences in the observed background characteristics of African migrants in our sample and African women in corresponding origin countries (Table 1);

however, after weighting, African migrants in our sample and African women in origin countries were almost identical on these observed characteristics (Table A3 in the Online Appendix).

Table 2 compares cohort-adjusted estimates of associations between migration and CEB without controls for background characteristics (model 1) to estimates that use entropy weights to make women in African origin countries resemble African migrants in France in our sample on observed background characteristics (model 2). Adjusting for observed background characteristics reduced the CEB coefficient by 41% (from -2.96 to -1.75). These results are robust to using seeded random samples of DHS data of alternative sizes (Figure A1 in the Online Appendix).

[Table 2 about here]

Taken together, these findings indicate that selection on observed characteristics plays an important role in explaining the differences in fertility outcomes between African migrants to France in our sample and women in corresponding African origin settings. Nonetheless, migration to France is associated with 1.75 fewer CEB ($p < 0.001$) when African migrants in our sample are compared to African women in origin countries, even after accounting for these observed differences. The sizable association between migration and CEB that remains net of observed characteristics could reflect selection on unobserved factors that are not accounted for in the model that might influence both migration and fertility trajectories. At the same time, post-migration processes related to disruption or adaptation could also help explain the difference in CEB between African migrants in our sample and women in corresponding African origin countries, as we explore below.

H3. Disruption accounts for fertility differences between African migrants in our sample and African women in corresponding origin countries.

To better understand if the observed fertility differences between African migrants in our sample and women in corresponding African origin settings reflect temporary migration-related disruption in family life, we turn to hazard models that allow us to unpack fertility timing. Table 3 shows that African migrants in our sample were associated with significantly later transitions into first births than women in origin countries, net of observed characteristics. African migrants in our sample were childless upon migration; thus, if the results for first births were driven by a temporary migration-related disruption, we would expect that the transitions into second and third births would not be similarly impacted or that there might even be acceleration into subsequent births to catch up for delays to first births. To the contrary, however, we find that African migrants in our sample had significantly later transitions into second and third births compared to women in African origin countries, net of observed characteristics. Furthermore, Table 2 shows that migration to France is associated with an average of 3 fewer children ever born ($p < 0.001$), net of observed characteristics, when African migrants in our sample are compared to women in origin and limited to women at the end of childbearing (ages 40-49). Taken together, this set of findings suggests that temporary disruptions to family formation processes are unlikely to explain differences in CEB between African migrants in our sample and African women in origin contexts in Figure 1.

[Table 3 about here]

H4. Adaptation accounts for fertility differences between African migrants in our sample and African women in corresponding countries of origin.

As Table 2 shows, about 43% of the difference in completed CEB (i.e., CEB among women over the age of 40) between migrants to France from six African countries and African women in corresponding origin countries is accounted for by observed background characteristics. The remaining difference could be due to selection on unobserved characteristics or to adaptation to French fertility patterns. To further explore these issues, we conduct a multivariate analysis where we weight native French women to resemble migrants in France from six African countries on observed characteristics, using entropy balancing. If differences in fertility between African migrants in our sample and native French women reflect differences in observed background characteristics such as education, as opposed to differences in unobserved pronatalist norms, then accounting for these background characteristics should explain differences in CEB between the two groups. On the other hand, if unobserved norms and preferences account for fertility differences between French natives and African migrants in our sample, then accounting for observed background characteristics should do little to explain observed differences in CEB between the two groups.

Before weighting, there were considerable differences in the observed background characteristics of African migrants in our sample and native French women in education, age, religion and other important background dimensions (Table 1); however, after weighting, African migrants in our sample and native French women were almost identical on these observed characteristics (Table A3 in the Online Appendix). Table 4 shows that prior to adjusting for background characteristics, African migrants in our sample had an average CEB that was .43 higher than that of native French women ($p < 0.001$). However, after accounting for

observed background differences between native French women and African migrants in the sample, there is no longer a statistically significant difference between the two groups. This null finding suggests that compositional differences in observed background characteristics, rather than unobserved preferences, helps account for observed fertility differences between French women and African migrants in our sample and is generally consistent with the adaptation framework.

Sensitivity Analyses

Since child mortality is high in many origin countries under study here (UNICEF 2021), we re-ran all analyses, using continuous measure of children living (CL) (Table A4 in the Online Appendix). We do the same with ideal family size (IFS), an important measure of women's preferences for childbearing (Behrman 2015). Results from these supplementary analyses are substantively similar to those presented in Tables 2 and 4. The one difference, is that African migrants in our sample had a .95 higher IFS compared to native French women, net of observed characteristics. However, differences in the construction of the IFS measure between the two surveys (Table A2 in the Online Appendix) lead us to interpret this result with some caution.

While our main analyses focused on migrants from six African countries who were childless upon arrival to France, we replicated our analyses on migrants from the same six African countries who initiated childbearing prior to arrival in France and migrants from the same six African countries in the 1.5 generation. As Table A5 Panel A in the Online Appendix shows, net of observed characteristics, migration to France was not associated with significantly different transitions into first births when African migrants who initiated childbearing prior to migration were compared to woman in corresponding African origin countries. To the contrary,

migration to France was associated with significantly later transitions into second and third births and significantly lower CEB when African migrants who initiated childbearing prior to migration were compared to woman in corresponding African origin countries

Table A5 Panel B in the Online Appendix shows that African migrants to France in the 1.5 generation were also associated with significantly slower transitions into first, second, and third births and significantly lower CEB, compared to women in corresponding African origin countries. Taken together, these findings are generally supportive of the adaptation perspective that migrants (even those who initiated childbearing prior to migration) adopt the destination's lower fertility norms and behaviors, though, as is the case in our main analyses, we cannot account for selection on unobserved characteristics.

Discussion

Building on scholarship that emphasizes the importance of taking a multi-sited perspective when exploring migrant fertility (Dubuc 2012; Impicciatore et al. 2020; Lübke 2014; Toulemon 2004), we combined micro-data from six high-fertility African countries with micro-data on migrants in France from six high-fertility African countries. Our findings suggest that socialization provides an incomplete explanation for migrant fertility among first-generation African migrants in our sample. Although African migrants in our sample had significantly higher CEB than French natives (which supported socialization), they also had considerably lower CEB than women in the six African origin countries (which did not support socialization). These micro-level results complement prior research that used aggregated data to show that migrants who moved from higher to lower fertility settings had fertility levels between those in the origin and destination countries (Dubuc 2012, 2016; Toulemon 2004).

At the same time, our analyses extend prior work on migration and fertility by bringing new insights into whether fertility differences between migrants and women in origin countries could be attributed to processes of selection, disruption, and/or adaptation. Our multivariate analyses suggest that selection on observed characteristics played an important role in explaining the differences in fertility outcomes between African migrants in our sample and women in African origin settings. Nonetheless, migration was associated with 1.75 fewer CEB when migrants from six African countries were compared to women in corresponding origin countries, even after accounting for these observed differences, which could reflect disruption, adaptation, or unobserved selectivity. Analyses of birth timing suggest that it was unlikely that migration-related disruption of family formation processes could explain fertility differences between migrants and women in origin, since migration to France was associated with delayed transitions into first, second, and third births and lower CEB among women over the age of 40. These delays in birth timing were supportive of adaptation, as were analyses showing a null relationship between migration and CEB, net of observed characteristics, when African migrants in our sample were compared to native French women.

The main limitation of our analysis was that we were only able to control for selection on observed characteristics and, relatedly, variables that appeared in both the TeO and DHS. As a result, we could not wholly account for unobserved characteristics, such as pre-migration IFS or gender norms, that might affect both migration and fertility. It is also possible that fertility differences between African migrants in our sample and women in origin countries were due to selection on unobserved factors, which would be difficult to formally test in the absence of an experimental study design (which is particularly challenging for complex social issues like international migration). While unobserved selectivity into migration meant that we could not

fully demarcate selection from adaptation, it could very well be that multiple processes cooccurred and that both adaptation and selection processes helped account for fertility differences between African migrants in our sample and African women in origin countries.

Our analyses contributes to a growing literature combining data from origin and destination contexts to conduct multi-sited explorations of migration and fertility (Choi 2014; Dubuc 2016; Impicciatore et al. 2020; Lübke 2014; Singley and Landale 1998; Toulemon 2004). When contextualizing our results, however, it is important to take into account the unique fertility regimes in both sending and receiving contexts we studied. Unlike the existing micro-level multi-sited scholarship (Impicciatore et al. 2020; Lübke 2014), we focused on women in origin countries with some of the highest fertility in the world. The fact that we observed evidence suggestive of some extent of adaptation even in the first generation was particularly striking, given the literature suggesting that socialization predominates among women from high-fertility settings in the first generation (see Kulu et al. 2019 for a review). At the same time, the receiving context, France, has a generous family policy that is pronatalist and accessible to legal migrants (CAF 2020; Pailhé 2008; Pailhé et al. 2008). It is plausible that our estimated differences may have been more dramatic if we had examined a destination context with low or lowest-low fertility (i.e., below 1.5) and/or a less generous family policy that did not incentivize childbearing. Taken together, our findings point to a need for more work that uses multi-sited perspectives to explore these issues across diverse sending and receiving populations, as well as for increased use of weighting, matching, or other methods that start to address migrant selectivity.

Our multi-sited perspective on migration and fertility is important for scholars and policymakers alike, as both groups tend to focus on the migrant-destination fertility comparison

(for a review see, Kulu et al. 2019). This one-sided perspective can have real-world policy consequences, particularly in contexts where migration is a sensitive political issue. For example, in the past, the pregnancy rate of migrants compared to native-born French women has been proposed as a measure to assess the extent of migrant integration into French society (Favell 1998). This article indicates the problems with comparing migrants only to women in destination contexts in assessing the extent of integration or adaptation. Further, our findings highlight the need to continue expanding current paradigms used to describe the relationship between migration and fertility and to develop new data sources that enable scholars to more comprehensively understand how migration shapes women's reproductive trajectories relative to those in both origin and destination.

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