Instability in Migrant Parent Absences and Educational Outcomes of Left-behind Children

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Abstract:

My study examines the relationship between circular migration and educational outcomes of left-behind children. I utilize data from the South African Agincourt Health and Demographic Surveillance System, a longitudinal population register that includes annual measurement of the number of months (out of a calendar year) migrants live apart from their children. I construct trajectories of parental migration and use sequence analysis to categorize parents by the number of migration events and the durations of absence each year. Findings suggest capturing the family instability that stems from recurrent in- and out- migrations and changing durations of absence year after year is an important feature of migration patterns. I demonstrate that young children who experience greater instability are less likely to enroll in first grade by age 7. This is in line with theoretical expectations that chronic disruption and the attendant environment of uncertainty translates into worse outcomes for young children.

Introduction

While migration represents a key livelihood strategy for many households, migration also remains a salient cause of family separation. Due to significant financial, legal, or even logistical barriers, it is common for children to be left-behind in the origin household while one or both parents migrate to areas of better economic opportunity. Migration is estimated to be the primary cause of parental absence across the developing world (Lu and Treiman 2011), and studies show such absences can adversely impact the well-being of left-behind dependents (Nobles 2013; Nguyen 2016; Robles et al. 2011). My study advances extant literature by measuring children's exposure to *repeated* parental absence in the context of circular or temporary migration in a low-income setting.

For many households in resource-constrained communities, circular (or temporary) labor migration is an institutionalized household strategy that is a fact of family life. In the internal migration literature, back-and-forth migrations between an origin village and urban work destination emerged as a significant theme in the 1970s (Skeldon 1977; Goldstein 1987). Particularly in southern Africa, this circulatory movement remains highly prevalent (Collinson et al. 2006) and circular migration systems are found across numerous sub-Saharan regions today (Beguy et al. 2010). Circular migration systems between countries, such as the major migration corridors between the U.S. and Mexico or between North Africa and Europe have also been well-documented as there is strong interest in designing temporary worker programs to benefit both origin and destination countries (Skeldon 2012; MPI 2008; Toma and Castagnone 2002).

However, to date, little research has explicitly addressed how circular migration constitutes a unique form of recurrent disruption in family life. Existing studies tend to rely on measures of migrant status at one point in time and, furthermore, do not take into account the duration of a migrant parent's absence. Thus, most studies have been unable to account for migration histories that may contain multiple out- and return- movements as well as varying durations of absence over the course of a child's life. It is critical to measure this distinctive feature of circular migration because more precise measurement of migration over time better captures children's experiences of parental absence and family disruption. I argue adopting a longitudinal

perspective that treats migration as a social process unfolding over time will contribute to improved understanding of the social costs of migration.

The dearth of research on this subject can be partially attributed to the difficulty in tracking highly mobile individuals with conventional surveys. My study overcomes this limitation by using data from the South African Agincourt Health and Demographic Surveillance System, a longitudinal population register that includes annual measurement of the number of months (out of a calendar year) individuals reside away from the origin household. This allows me to construct migration trajectories defined by the number of months absent in each calendar year over a 10-year period. I make use of sequence analysis to classify these trajectories and define a typology of migration which, effectively, also represents a typology of parental absence. The main goal in this study is to examine the impact different migration (and therefore absence) trajectories have on educational outcomes for young children and adolescents. As educational achievement can have long-term consequences for socioeconomic mobility, schooling outcomes for children left-behind by migrant parents is an important domain to assess the impacts of migration.

Background

1. Parental migration and child outcomes

With the broad empirical basis for treating migration as a household survival strategy, much research has focused on the effects of migration on left-behind family members. There is particular interest in understanding how children separated from migrant parents fare because young dependents may be especially sensitive to changes in family life. On the one hand, migrant parents are able to participate in labor markets inaccessible in the origin community and may have the opportunity to send remittances to alleviate household spending constraints and invest in human capital (Lu and Treiman 2011; Azam and Gubert 2006). On the other hand, the absence of a parent migrant can also exert a toll on child well-being in a myriad of ways. The social costs borne by children separated from migrant parents can be manifest in behavioral problems (Heymann et al. 2009); poor health outcomes (Nguyen 2016); and difficulties in transitioning to adulthood (Goldberg 2013; Marteleto 2016). Past studies in this vein have also

documented how parent-child relationships can suffer as children become detached or resentful of their parents lack of engagement leading to a loss of intimacy (Piotrowski and Paat 2012).

Prolonged parental absence has also been attributed to negative educational outcomes. Numerous studies indicate absence caused by migration is associated with decreased educational attainment with fewer total years of completed schooling (McKenzie and Rapport 2006; Creighton et al. 2009; Halpern-Manners 2011); decreased study hours (Antman 2011); lower educational aspirations (Nobles 2011); and lower test scores (Zhang et al. 2014). Several pathways have been put forth in the literature. First, the physical separation means migrant parents are less able supervise or be involved with their children's school-related activities. Second, for some resource-constrained households, children may have to take up additional household duties because of the loss of labor from the migrant parent and potentially disrupt their studies (McKenzie and Rapport 2006; Antman 2011). Third, the stress of separation can lead to emotional difficulties such as anxiety or depression that interfere with school performance (Dreby 2007; Smith et al. 2004; Suarez-Orozco et al. 2002).

Importantly, migration has also been positively associated with pace of schooling (Kuhn 2006) and educational completion (Lu and Treiman 2011; Townsend et al. 2002; Scott et al. 2013) in diverse settings. Such positive effects are largely attributed to improved household finances that migrant remittances can bring to a family. However, the evidence base for how remittances can completely offset the negative impacts remain limited (Nobles 2013). Remittances may not be guaranteed (Goldring 2004) and assistance from kinship networks and financial transfers may not be able to entirely compensate for parental absence (Nguyen 2016; Dreby 2010). Educational achievement is a critical determinant for labor market outcomes and can play a substantial role in facilitating upward social mobility for the household's next generation (Kandel and Kao 2001). Given the scope of the number of children with families touched by migration, assessing how children's educational prospects are shaped by parental migration patterns continues to be an important research area.

2. Family Instability

My study contributes to the understanding of children's well-being by examining the relationship between children's educational outcomes and parents' circular migration patterns. While the existing scholarship overwhelmingly relies upon migration status measured at a single point in time, I argue it is useful to take a longitudinal perspective to consider the repeated nature of parent-child separations. I draw upon the rich body of family instability literature that emphasizes the changes in family structure itself as a negative process that can accumulate over childhood.

A major theme in the family instability literature is the family stress model (or alternatively, the instability hypothesis) that posits changes in family composition can induce stress which, in turn, lead to disparities in child outcomes (Lee and McLanahan 2015). A fundamental feature of family life is the "redundancy of interactions and ritualized practices of everyday life" (Falicov 2007, P. 159) that establish collective habits, preferences, and rituals among family members. These play a large role in developing intimate emotional ties among family members (Falicov 2007). When a new family configuration is introduced, routines and familiar roles are disturbed and allocation of resources may change (Coleman, Ganogan and Fine 2000). The disrupting change then can cause stress due to attendant changes in routines and roles that both the child and parent are accustomed to, and may be linked to decreased parenting quality and parental resources, and emotional anxiety (Coleman, Ganogan and Fine 2000; George 1993).

Crucially, studies find children tend to adapt to household changes, such as a new marriage that brings a step-parent into co-residence (Marteleto et al. 2016). Over time, the stress can subside as the family unit adjusts to the new household configuration. As a new set of routines and familiar roles are established, children can become accustomed to the new 'normal', and parenting may improve and behavioral problems diminish. However, some families experience long-running spells of uncertainty with persistent changes and thus may not be able to return to a state of normal routines and stability (Brody et al. 1988; Teachman 2003). Living in a perpetually chaotic and unpredictable environment may undermine parents' capacity to care for their children and the insecurity may exacerbate children's stress (Waters & Cummings 2000, Marteleto 2016).

This body of research is predominantly based on western society contexts, where rising non-marital fertility and co-habitation has spurred concern about partnership instability. A primary insight from this literature is that it is necessary to take a trajectory perspective of childhood and capture how children may potentially experience multiple instances of family structure change over the course of growing up. As the likelihood of transitions, such as partnership dissolutions (or the formation of new unions), are highly linked to socioeconomic characteristics, children exposed to one transition are likely to experience another transition. Critically, it is these changes in family living in and of themselves that cause stress for all family members. If we understand stress from each family change event to accumulate, it is necessary then to take a longitudinal perspective and take into account the changes in parent-child co-residence throughout developmentally-important years in childhood.

Although migration is recognized as a leading source of parental absence throughout the developing world (Lu and Treiman 2011), this longitudinal perspective is seldom applied. This represents a significant gap in the literature and is surprising given how prevalent circular movement is in contemporary migration processes. I argue the oscillatory movement of migration lends itself to thinking about children's experience of parental migration as repetitive parental absence. I treat the repeated out- and in- migrations as repeated separations and reunifications between parent and child that alter the home environment. The resultant instability in parental absence/presence represents an important mechanism through which migration can affect children. This is a distinctive feature of circular migration and constitutes a unique form of recurrent family disruption that accumulates over time.

3. Circular Migration

Although research has been hampered by lack of data to allow for the detailed measurement of migration (and therefore parental absence) careers through time, early studies on circular migration conceptualize migration as a longitudinal complexity (Young 1973; Standing 1982). Taylor (1986) proposes characterizing circular migration as an unfolding process as depicted in figure 1, where time is represented on the x-axis and an individual's migration trajectory can be described by documenting how much time the individual co-resides at home with their family and how much time they spend away. Using data from a health and demographic surveillance

system in a migrant-sending community, I can construct migration trajectories in this fashion and measure the exposure to parental absence over time.

The context and treatment of this data means the "instability" experienced by children derives from the recurrent out- and return- movement from parents as well as changes in durations of absence from year to year. That is, a parent may be absent for 6 months one year, but only absent for 3 months the following year. This is different from the definition of instability based on partnership dissolutions but more akin to the type of family instability and parental absence experienced by children of military families or incarcerated parents (Wadsworth et al. 2016). Such experiences show that repetitive coming and going can interrupt norms and that the reunification of family members can be equally as disruptive as separations (Marteleto et al. 2016). While the consequences of separation may be more intuitive, reunions may not be stress-free either because dependents can become resentful of the parent for leaving (Smith, Lalaonde, Johnson 2004) or may not want to switch back from the interim caregiver (Marteleto et al. 2016). The unpredictability in durations of separation also constitutes an important dimension of insecurity in children's lives.

This study advances the literature on consequences of migration by considering the recurrent experience of parental absence for children in migrant-sending households. I am guided by two specific aims. First, I describe the heterogeneity in parental absence experienced over the course of childhood. Second, I examine whether different parental absence trajectories impact children's educational attainment.

Data & Methods

Data from the Agincourt Health and Demographic Surveillance Site (HDSS), located in northeast South Africa, provides a useful context for this study. The Agincourt HDSS is a research platform that monitors health and socio-demographic characteristics for a district-sized population of just over 11,000 individuals within a 400^2 kilometer area (Kahn et al. 2012, Collinson et al. 2007). The HDSS was established with a baseline census in 1992 and prospectively collects data on key demographic events—births, deaths, and migration—every year. This rural area is part of a former homeland where black South Africans were forcibly

resettled between 1920 and 1970 under Apartheid (Madhavan et al. 2008). As is typical for much of the rural interior in South Africa, local unemployment rates remain high at 25% for men and 48% for women (Blalock 2014). Thus, circular migration tends to be undertaken for employment reasons and affects the majority of households. Much of this labor migration is to the industrial centers around Gauteng Province, which is approximately a 7-hour bus journey from Agincourt. The study sample therefore contains a migration system where geographic distance does not prevent migrating members to return home on a regular basis.

Long running efforts for infrastructural improvements in this remote area have contributed to social progress but development is still slow. Many villages still lack piped water and school facilities are of poor quality with many lacking libraries or laboratories (Kahn et al. 2012). With low wages—for instance, salaries for domestic workers can be as low as 250 Rand a month—monthly private school fees ranging from 300-500 Rand can be prohibitively expensive (Townsend and Madhavan et al. 2002). For many households, even managing the nominal school fees for public education can be a challenge.

The major benefit of leveraging data from the Agincourt HDSS is the annual documentation of each individual's residence status. Crucially, the HDSS distinguishes between permanent and temporary migrants, so temporary migrants retain membership with their origin household and are included in the annual residence status questionnaire while permanent migrants are removed from household rosters. For every calendar year, the HDSS records how many months each household member resided in the origin household within the surveillance area (and conversely, how many months they were away). With this level of granularity, in every year, I define four possible states of absences: 1: 0 months absent; 2: 1-6 months absent; 3: 7-10 months absent; and 4: 11-12 months absent. These four categories will be roughly treated as 1: no absence; 2: half a year absent; 3: three-quarters of a year absent; and 4: a full year absent. I create a migration trajectory for every individual by stringing together the state of absence over several years (see figure 2). Due to the nature of the data collection, these data are limited in the sense that I can only report the total number of months absent out of a 12-month period[1]. I am therefore unable to distinguish between an individual away for one consecutive 6-month trip

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[1]As data collection generally occurs in November of each year, these roughly corresponds to a calendar year.

versus an individual who took two separate 3-month trips. However, I argue these data provide an intuitive measurement of time that strikes the right balance between providing more detailed measurement compared to conventional migration data sources but also being aggregated to a unit of time that facilitates categorizing migrants for analyses. As my focus is on the periods of parent-child separation, location and distance of migration is not considered here. Each migration trajectory represents an experience of parental absence from the point of view of left-behind children and provides a novel source for capturing how children experience disruptions to family life.

Using available data from 1999 to 2016, I separate the data on children into two samples in order to consider experiences of parental absence during two different time periods in childhood. The first sample covers early childhood, and I measure parents' migration trajectories starting from the year of a child's birth to age 7[2]. The second sample spans 10 years and captures parents' migration histories from age 5 to age 14 (which I will consider the beginning of adolescence). Using sequence analysis, I identify a typology of migration trajectories and examine how these are related to the initiation of education at age 7 and number of years of schooling completed at age 15. This is explained in more detail in the methods section below. The final sample sizes, with mother and father absences treated separately, are reported in table 1 below. Each sample contains children who reside within the Agincourt HDSS and can be linked to a parent that belongs to the same household and has complete migration information over the pertinent age range of the child.

Table 1. Sample Sizes

	Early Childhood	Adolescence
Fathers	1,254	1,991
Mothers	1,223	3,204
Total	2,477	5,195

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[2] For the oldest cohort, early childhood (birth to age 7) is observed from 1999-2006, while for the youngest it is observed from 2009-2016.

Measures

Dependent variable

I treat the educational outcomes for the two samples differently. In the South African education system, children are expected to enroll in grade 1 by age 6, but I choose a more conservative measure of enrollment by age 7 as delayed schooling is common among black South Africans (Lu and Treiman 2011). The educational outcome variable for the young sample of children is therefore a binary outcome (1/0) indicating whether or not the focal child has enrolled in first grade. For the older sample of children, the outcome used is years of completed education by age 15. This variable is treated as a continuous variable. Based on expected progression through the school system, those at age 15 should be enrolled in grade 9.

Independent Variables

The primary independent variable of interest is the trajectory type of the parent. Sequence analysis provides one approach that allows me to synthesize migration trajectories and produce analytically useful classifications. First, between each pair of migration sequences I calculate a measure of similarity based on transition rates—defined as the probability of one state transitioning to another state (MacIndoe and Abbott 2004). Second, I apply Ward's hierarchical clustering algorithm to this similarity measure and define an "optimal" number of distinct clusters of migration trajectories. This is optimal in the sense that the algorithm seeks to "maximize within-cluster homogeneity and between-cluster heterogeneity" (Lu et al. 2017: 102). Finally, the migration trajectory type is treated as a categorical variable that serve as the independent variable in my analyses. A key strength of this technique is its capacity for aggregating individuals into groups. Thus, it provides a way to categorize parents' migration trajectories that simultaneously accounts for the number of out- and return- movements and the duration of separation in each year.

Control Variables

My analyses control for a series of socio-demographic characteristics. Individual-level measures include sex of child, parent's educational attainment, parent's age at birth of child, and whether

the parent belongs to a Mozambican refugee family[3]. I also use a household asset index to capture each household's overall level of socioeconomic status[4]. Finally, I include measures of household structure known to impact migration decisions. I control for total household size, the number of young siblings (under age 15) of the focal child, and also the number of available adult substitute caretakers.

Modeling Approach

With children as the unit of analysis, I examine the relationship between parent's migration trajectory and a child's educational outcome separately for mothers and fathers. I run separate analyses based on the gender of the parent because prior research has documented differences in child well-being outcomes depending on whether the parental caregiving is provided by a mother or a father (Lloyd and Blanc 1996). This results in four total models: two logistic regression models for the sample of early childhood and two least-squares models for the sample of adolescents.

The first set of analyses provide a baseline understanding of the relationship. However, migration is widely understood to be a selective process, and it is therefore likely there are unobserved factors that simultaneously impinge upon a family's migration decisions and children's schooling outcomes (Halpern Manners 2011). This raises the concern of biased estimates when treating migration as a random process. Furthermore, my analytical treatment of migration histories poses the additional challenge of taking into account time-varying socioeconomic characteristics that affect migration decisions in a given year but also educational attainment of the child. For example, parental migration status (absences) in time 1 may lead to increase in family income at time 2, which in turn, may impact migrant absences in time 3.

To evaluate the sensitivity of the baseline results to these concerns, I employ inverse probability treatment weighting. With this technique, I am able to balance children's experience of the four categories of parental absence at each year on prior exposure to parental absence,

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[3] Given the proximity of the HDSS to the Mozambican border, a significant proportion of the local population identifies as Mozambican immigrants. They tend to be poorer with more limited access to social services than native South Africans (Townsend and Madhavan et al. 2002).
[4] The household asset index is computed by summing across indicators representing the ownership of 16 different assets

time-constant covariates, and time-varying covariates (Robins 1999; Robins, Hernan and Brumback 2000). This entails calculating a propensity score—that is, the conditional probability of exposure to a category of parental absence at each time point—and then applying the inverse of these propensity scores as weights. Effectively, this weighting approach creates conditions in which exposure to duration of parental absence at any age is independent of the observed characteristics in prior time points. The weights thus make the probability of falling into each of the four absence categories (no absence, half a year, 3/4 of a year, and a full year) equal at each age.

Formally, the stabilized IPT weights (*sw*) are given by

$$sw_i = \prod_{K=1}^{K} \frac{\Pr(A_{ik}|\bar{A}_{ik-1}, X_{i0})}{\Pr(A_{ik}|\bar{A}_{ik-1}, X_{i0}, \bar{X}_{ik})}$$

where Π is the product operator up to age k, and A_{ik} represents parent's absence status at child's age k. The denominator represents the probability that individual i experienced a migrant parent's absence at age k, conditional on prior migration absence ($\bar{A}_{ik-1}$), time-constant covariate measures (denoted by the vector X_{i0}) , and covariate history (time-varying covariates up to age k are represented with overbars: $\bar{X}_{ik} = \{X_{i0}, X_{i1}, . . ., X_{ik}\}$). The numerator is the probability that individual i experienced a migrant parent's absence conditioning on prior migration absence and baseline covariates. Defining the numerator in this way, rather than 1, increases efficiency (Hernán, Brumback, and Robins 2000). The weights are estimated with multinomial logistic regression models, where parent's migration absence at age k is determined by parent's migration measured at age *k-1*, time-constant covariates, and time-varying covariates measured at age k. I thus fit weighted logistic models for the early-childhood sample and weighted least-squares models for the adolescence sample.

Results

Sample Description

Table 2 provides descriptive statistics of each analytic sample. For time-varying covariates I report values at the trajectory end point (age 7 for young children and age 15 for adolescents). I focus on the early childhood sample first. Roughly 90 percent of children begin

school on time by age 7 and the sample contains roughly equal numbers of boys and girls. For both mothers and fathers, average years of education attained is a little over 7 years, though we see a difference in parent's age at child's birth. On average, mothers are 23.9 years of age, while fathers are 29 years of age. For the majority of children, both parents are considered members of the same household with 84% of the father sample have the mother tied to the same household and similarly 86% of the mother sample have the father tied to the same household. Household sizes are quite large with over 8 people and the majority of children have more than 2 siblings and more than 2 available substitute caretakers.

Characteristics of the adolescence sample are quite similar. Average years of education completed by age 14 is 6.7 years, which is similar to the final educational attainment achieved by their mothers and fathers. This reflects the generational improvement in educational attainment, as these children will complete more years of schooling than their parents if they continue on with their education. A notable characteristic of the adolescence sample is the sizable number of mothers that are single parents. With only 54% of adolescents from the mother-sample tied to dual-parent household, 45% of these children grow up without a father present.

Trajectory Characteristics

To account for migration as a dynamic process that unfolds over time, I use sequence analysis to create analytically distinct trajectory types that simultaneously accounts for durations of absence and instability. I select four distinct cluster types which represent the possible combinations of high-to-low instability and long-to-short total duration of absence. The four trajectory types are:

 Type1: short absence; low instability (non-migrant)

 Type 2: long absence; low instability

 Type 3: short absence; high instability

 Type 4: long absence; high instability.

This pattern can be more clearly seen in the sequence index plots provided in figure 3. The distribution of trajectory types for all samples are reported in table 2 and reflect the gendered nature of migration behavior. The long-entrenched pattern of labor migration is experienced by

children beginning in early childhood, and for this sample, we observe about only a quarter of fathers characterized as non-migrants. The majority of fathers fall in trajectory type 2 where they experience long but predictable durations of separation from home. Seventeen percent fall under trajectory 3 with short absences but high instability, whereas the smallest proportion, 7%, exhibit migration patterns with long absences and high instability. Conversely, the vast majority of mothers, 78 percent, are non-migrants. While 6% of mothers are type 2 migrants, 12% are type 3, and 4% type 4. The distribution for mothers and fathers is very similar for the sample of adolescents.

Parental absence and on-time school initiation

The outcome of interest for the early childhood sample is whether or not the child began first grade by age 7. Results are presented in table 3. As these models are run separately by fathers and mothers, in each model I include a dummy variable indicating whether the other parent was also a member of the same household. I observe interesting findings by gender. For the fathers' model, children in households where the mother is also a member are more likely to begin first grade by age 7. In contrast, the reverse is not true for the mothers' model. Having a father belong to the same household is not significantly associated with on-time initiation of schooling. However, the effect of migration patterns appears to be consistent by parent's gender. Regardless of the gender of the parent, children experiencing long and unstable durations of parental absence (type 4) are less likely to be in first grade by age 7. Children with fathers who follow such a trajectory are 12 percentage points less likely to initiate first grade by age 7 compared to children with non-migrant fathers. No effect is observed when comparing other categories of migrant fathers. Similarly, a child experiencing long and unstable durations of a migrant mother's absence is 10 percentage points less likely to have an on-time start to formal schooling.

Parental absence and years of schooling

Table 4 presents the results for the sample of adolescents. This pattern does not appear to hold for the educational outcomes of adolescents. The nuanced distinction between durations of absence and instability in migration trajectories has no impact on the years of education completed by age 15. This is true for both mothers and fathers. However, I do see the relationship between the set of control variables and years of schooling are mostly in line with

expectation. We see that female adolescents exhibit a higher number of years of schooling, and better socio-economic conditions in the household (measured by the household asset index as well as the parent's educational attainment) is associated with adolescents completing more education. In terms of household structure, the total size of the family is negatively correlated with education, but interestingly, this measure and the number of young siblings and available caretakers are not significant factors.

Sensitivity Analyses

I employ Inverse Probability Treatment Weighting to assess the robustness of the presented results. Appendix table A presents sensitivity checks to confirm the constructed weights are functioning as expected. First, if the models that create the weights are specified correctly, the distribution of weights should be centered around 1, be symmetric, and have a small variance (Hernán, Brumbak, and Robins 2000). The weights for all analytic samples have means close to 1, exhibit small variances, and are just slightly right-skewed. Additionally, I check whether the propensity score weights are properly balancing individuals across the four trajectory types based on the time-varying characteristics. Table B presents results confirming that at each time point, the time-varying coefficients are jointly significant in predicting migrant trajectory type in the unweighted models, but they are jointly insignificant in the weighted models. This assures that with the weights applied, we expect little difference in the time-varying covariates across the four parental migration trajectories.

The weighted models showing the impact of parental absence on education are reported in appendix table C and D. The results from these analyses do not differ significantly from the baseline estimates. For parsimony, I do not recap all the weighted results here. One inconsistency is observed in the mothers' model for the adolescence sample. The weighted results suggest trajectory 4 leads to greater educational completion. However, as the bivariate relationship does not uncover an association between parental absence and years of schooling by age 14, I prioritize the interpretation of null findings from the baseline estimates.

Discussion and Conclusion

Quantifying exposure to parental absence from migrants who repeatedly leave and return remains an underexplored topic. My study aims to address this gap and is theoretically motivated by the broad literature on family instability. I have presented one approach that allows me to construct succinct migration histories and systemize the highly variable migration trajectories. This approach corresponds much more closely to the conceptual view of migration as a dynamic social process that exposes children to repeated parental separation over the course of childhood.

I find there is substantial heterogeneity in how children experience parental absence in migrant-sending communities. Previous studies that rely upon dichotomous indicators of migration status without taking into account durations of absence may be missing important nuances to parent-child separations. This may be especially important during early childhood. I find children of migrant mothers and/or fathers who are absent for long but also unpredictable periods of time are much less likely to initiate schooling on time by age 7. This is in line with theoretical expectations that chronic disruption and the attendant environment of uncertainty translates into worse outcomes for children. Interestingly, I do not find a similar effect for adolescents. It is possible this reflects the importance of early childhood as a time period where parental involvement is especially critical.

This study does contain several limitations that should be noted. First, the data do not contain information about remittances or other positive benefits that migration can confer to the original household. My study has focused on presenting a more detailed measurement of parental absence, and helpfully, the use of education as the outcome is likely to be an indicator that reflects the positive benefits of remittances (Kuhn 2006). However, having information about financial and social remittances that migrants bring to origin households would improve the analyses by controlling for a potentially positive consequence of migration. Additionally, given the complex nature of migration, the present study cannot rule out all forms of omitted variable bias. The results suggest the group of parents who fall into the category of highly volatile migration trajectories are small in number but potentially are selected based upon some unobserved characteristic. The use of weighting accounts for some of that selectivity, but the weights are based upon a limited number of observed characteristics. Future work that can more

readily tease out whether the results are a remnant of some other factor driving instability would make a good contribution to the literature.

Nonetheless, informed by a strong theoretical framework and improved data measurement, the sum of the evidence presented in this study illustrates how children growing up in migrant-sending regions may be negatively impacted by parental absence. Given the critical role education plays in upward social mobility and the prevalence of migration, understanding how these negative effects hinder educational achievement remains a salient concern. While there are many features of these data that are particular to the Agincourt study population and it is difficult to generalize, these findings have relevance for understanding contemporary migration processes worldwide. Circular and temporary forms of mobility are well-documented in major internal and international migration corridors (though, in general, we lack detailed data collection). To the extent instability in migration trajectories are linked to economic or employment instability, understanding which migrants' trajectories unfold in an unstable manner will help identify the families that have the fewest resources to buffer against the negative effects of parental absence.

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Tables and Figures
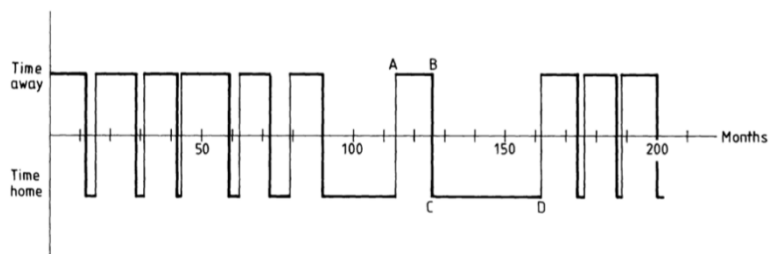
Figure 1 Life-line: Molepolole mineworker

Figure 1. Individual life-line of a migrant which is disaggregated sequentially into discrete periods of time either away or at home. The portion ABCD represents one cycle where A-B is the portion away and C-D is the portion at home (from Taylor 1986, P: 204).
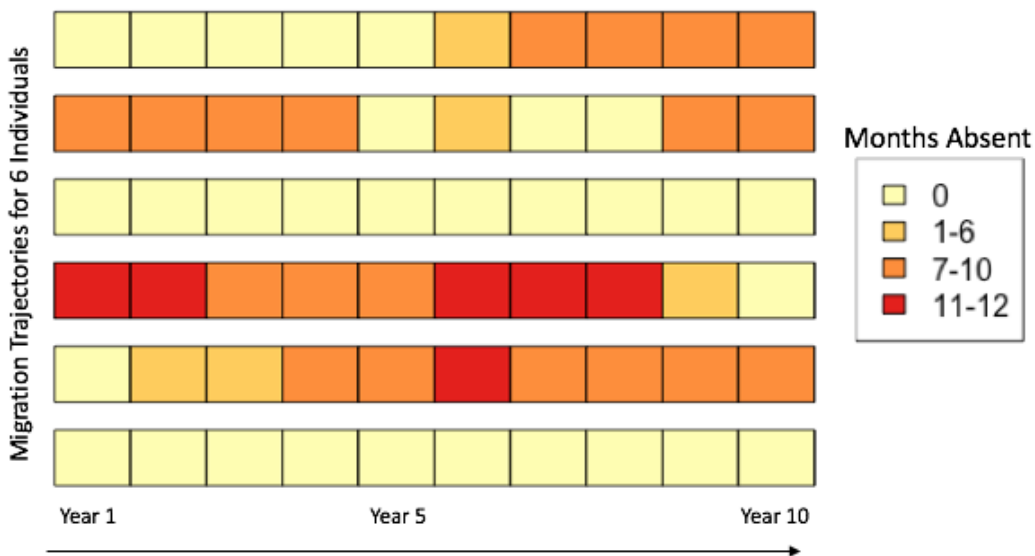
Figure 2. Example migration trajectories from 6 individuals randomly chosen from my data. Trajectories depict the number of months absent in each calendar year over 10 consecutive years.
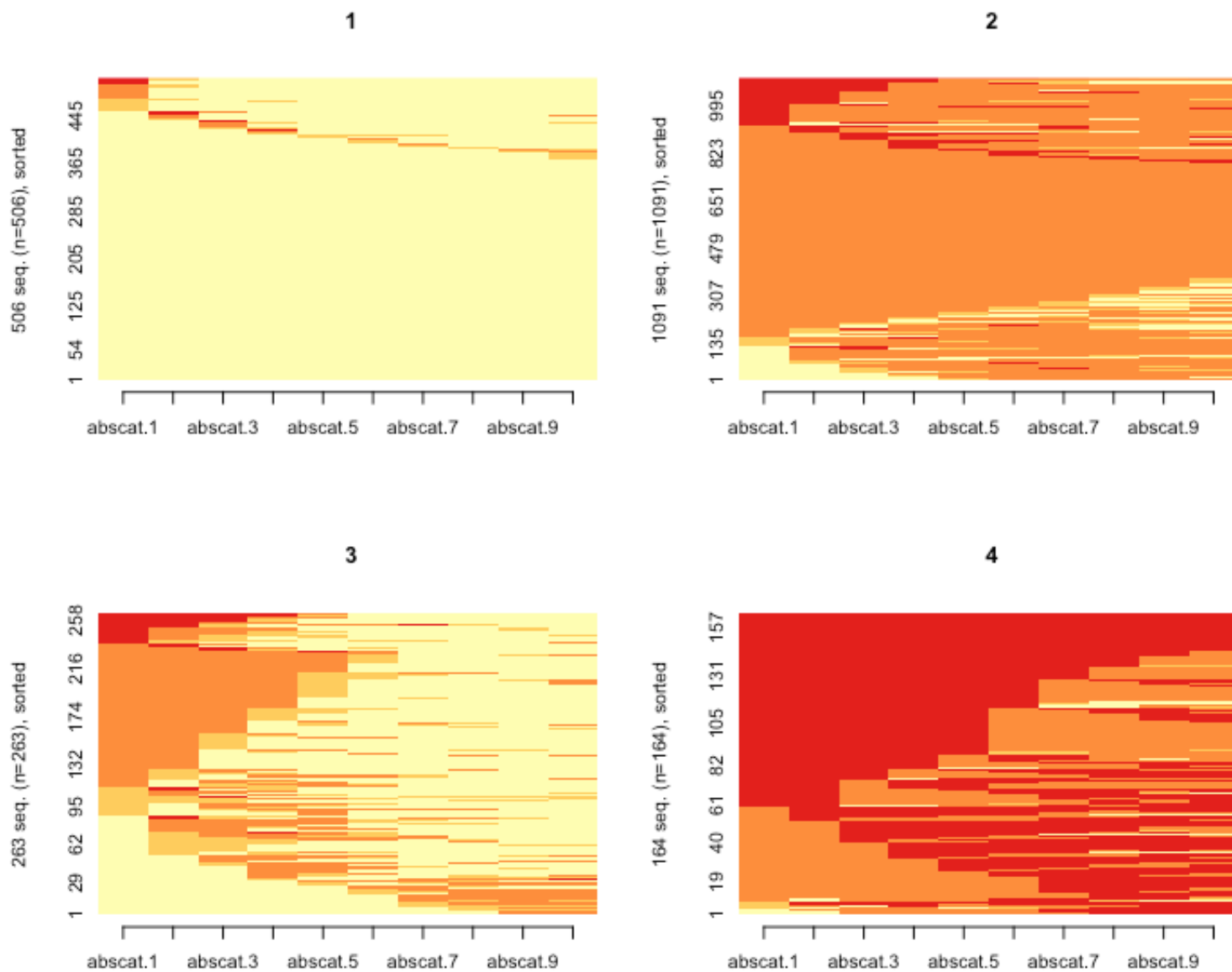
Figure 3. Sequence index plot of migration trajectory type for fathers of the adolescent sample. Index plots for the other samples look very similar.

      Type 1: short absence; low instability (non-migrant)
      Type 2: long absence; low instability
      Type 3: short absence; high instability
      Type 4: long absence; high instability.

Table 2. Descriptive Statistics of Variables Used in Analysis

| | Panel A: Early Childhood Sample | | | | Panel B: Adolescence | | | |
| | Fathers | | Mothers | | Fathers | | Mothers | |
	mean	sd	mean	sd	mean	sd	mean	sd
Dependent Variable								
Ontime enrollment (%)	0.89		0.91					
Years of education					6.76	1.33	6.74	1.28
Independent Variables								
Dad Trajectory Type								
1 (non-migrant)	0.26				0.25			
2 (long absence; low instability)	0.51				0.54			
3 (short absence; high instability)	0.17				0.13			
4 (long absence; high instability)	0.07				0.08			
Mom Trajectory Type								
1			0.78				0.73	
2			0.06				0.09	
3			0.12				0.15	
4			0.04				0.03	
Female (%)	0.51		0.53		0.49		0.5	
Age	29.12	8.79	23.9	6.7	31.75	8.62	24.24	7.67
Education	7.89	4.82	7.65	4.55	6.06	5.09	7.22	4.81
Refugee (%)	0.45		0.4		0.45		0.38	
Other parent is hh member (%)	0.84		0.86		0.87		0.54	
Household size	8.67	4.25	8.43	4.35	8.94	4.29	9.01	4.37
Asset index	8.31	1.96	8.27	1.88	8.62	1.87	8.41	1.83
Younger siblings (%)								
0	0.2		0.16		0.30		0.35	
1	0.37		0.38		0.33		0.34	
2+	0.43		0.46		0.37		0.31	
Number substitute caretakers (%)								
0	0.31		0.01		0.26		0.19	
1	0.27		0.35		0.28		0.28	
2+	0.42		0.64		0.46		0.53	
N	1,254		1,223		1,991		3,204	

Source: Agincourt HDSS

Table 3. Results from Logistic Regression Predicting On-time Enrollment at Age 7 (Unweighted)

	Fathers		Mothers	
	Odds Ratio	C.I.	Odds Ratio	C.I.
Dad 1(ref)				
Dad 2	0.96	[0.60,1.53]		
Dad 3	1.26	[0.68,2.35]		
Dad 4	0.36 **	[0.19,0.70]		
Mom 1(ref)				
Mom 2			1.07	[0.44,2.62]
Mom 3			0.51 *	[0.30,0.87]
Mom 4			0.31 **	[0.14,0.69]
Female	1.27	[0.88,1.84]	1.2	[0.80,1.80]
Age	1.02	[1.00,1.05]	1.03 *	[1.00,1.07]
Education	1.03	[0.98,1.09]	1.06 *	[1.01,1.12]
Refugee	1.33	[0.85,2.08]	1.29	[0.78,2.11]
Other parent	1.76 *	[1.11,2.81]	0.66	[0.32,1.35]
HH size	0.99	[0.93,1.04]	1.01	[0.95,1.06]
Asset index	1.02	[0.93,1.13]	0.99	[0.89,1.11]
0 siblings	0.59 *	[0.35,1.00]	0.71	[0.38,1.30]
1 sibling	0.73	[0.46,1.14]	0.8	[0.50,1.26]
2+ siblings (ref)				
0 caretakers	0.8	[0.46,1.39]		
1 caretakers	1.04	[0.63,1.72]	0.97	[0.58,1.61]
2+ caretakers (ref)				
N	1,254		1,208	
AIC	843.3		726.4	
BIC	920.3		797.7	
Log-Likelihood	-407		-349	
Degrees of Freedom	14		13	

Table 4. Results from OLS Regression Estimating Years of Education by Age 15

	Father			Mother		
	β		SE	β		SE
Dad 1(ref)						
Dad 2	0.17	*	0.07			
Dad 3	0.08		0.1			
Dad 4	0.22		0.12			
Mom1(ref)						
Mom 2				0.05		0.08
Mom 3				0.05		0.07
Mom 4				0.22		0.12
Female	0.55	***	0.06	0.6	***	0.04
Age	0.01		0	0		0
Education	0.05	***	0.01	0.07	***	0.01
Refugee	0.29	***	0.07	0.33	***	0.06
Other parent	0.05		0.09	0.11	*	0.05
HH size	-0.01		0.01	-0.01		0.01
Asset index	0.07	***	0.02	0.04	**	0.01
0 siblings	0.03		0.08	0.1		0.06
1 sibling	0.01		0.07	0.07		0.06
2+ siblings (ref)						
0 caretaker	0.03		0.08	-0.1		0.07
1 caretaker	0.03		0.07	-0.02		0.06
2+ caretakers (ref)						
Constant	5.19	***	0.25	5.41	***	0.17
N	1991			3204		
R^2	0.083			0.107		
Degrees of Freedom	14			14		

Appendix

Appendix Table A. Distribution of Weights

	Mean	SD	Percentile				
			1st	25th	Median	75th	99th
Dad: age 15 sample	0.96	0.45	0.29	0.81	0.96	1.13	2.77
Mom: age 15 sample	1.02	0.57	0.27	0.76	0.92	1.14	3.17
Dad: age 7 sample	1.02	0.59	0.19	0.77	0.92	1.14	2.75
Mom: age 7 sample	1.01	0.62	0.12	0.74	0.93	1.14	2.76

Appendix Table B. Balance Check for time-varying Covariates

	Weights	Time1		Time2		Time3		Time4		Time5		Time6		Time7		Time8		Time9		Time10	
		No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Dad Age 15	F	46.8	9.8	27.1	10.9	32.4	5.3	32.4	4.9	32.0	5.2	37.6	3.7	18.5	6.6	31.1	28.5	33.5	40.0	32.3	30.1
	p-value	0.0	0.9	0.1	0.9	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.4	1.0	0.0	0.1	0.0	0.0	0.0	0.0
Mom Age 15	F	136.5	7.9	65.3	16.8	76.0	14.2	60.3	11.6	36.2	15.2	49.1	8.6	57.0	7.1	31.4	24.6	44.5	24.8	27.6	18.3
	p-value	0.0	1.0	0.0	0.5	0.0	0.7	0.0	0.9	0.0	0.6	0.0	1.0	0.0	1.0	0.0	0.1	0.0	0.1	0.1	0.4
Dad Age 7	F	44.4	5.6	22.7	10.8	25.5	3.1	30.6	8.1	45.5	3.4	20.5	3.6	19.2	5.5						
	p-value	0.0	1.0	0.2	0.9	0.1	1.0	0.0	1.0	0.0	1.0	0.3	1.0	0.4	1.0						
Mom Age 7	F																				
	p-value																				

Appendix Table C. Results from Logistic Regression Predicting On time enrolment (Weighted)

	Fathers			Mothers		
	odds ratio		CI	odds ratio		CI
dad 1 (ref)						
dad 2	1.98		[0.66,1.77]			
dad 3	1.33		[0.68,2.59]			
dad 4	0.31	**	[0.15,0.65]			
mom 1 (ref)						
mom 2				1.09		[0.31,3.78]
mom 3				0.64		[0.33,1.22]
mom 4				0.21	***	[0.09,0.51]
N	1,254			1,208		

Notes: models include time-constant covariates

Appendix Table D. Results from OLS Regression Predicting Years of Education by Age 15 (Weighted)

	Fathers			Mothers		
	β		SE	β		SE
Dad1(ref)						
Dad2	0.15		0.08			
Dad3	0.02		0.11			
Dad4	0.12		0.15			
Mom1(ref)						
Mom2				0		0.14
Mom3				0.1		0.07
Mom4				0.5	*	0.22
N	1991			3204		
R^2	0.07			0.1		
Degrees of Freedom	14			14		

Note: models include time-constant covariates