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▶ To cite this version:

Lidia Panico, Marieke Heers, Ariane Pailhé. Being born to a single mother in France: trajectories of father's involvement over the first year of life. Longitudinal and Life Course Studies, 2020, 11 (1), pp.123-149. 10.1332/175795919X15720984151059. hal-02465094

HAL Id: hal-02465094 https://hal.science/hal-02465094

Submitted on 18 Feb 2020 $\,$

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Ariane Pailhé (Institut National d'Etudes Démographiques, INED), Lidia Panico* (INED), Marieke Heers (FORS, c/o University of Lausanne)

*Corresponding authors, Lidia.panico@ined.fr

Keywords: Non-residential Fatherhood; Father's Involvement; Contact with children; France

This is a post-peer-review, pre-copyedit version of an article published in Longitudinal and Life Course Studies, Volume 11, Number 1, January 2020, pp. 123-149. The final authenticated version is available at: <u>https://doi.org/10.1332/175795919X15720984151059</u>

Abstract:

This paper characterises families where the father is not living (or not living permanently) with the child from around birth, and identifies the drivers of the evolution of the father contact over the first year of life across different types of household. We use a recent, nationally representative cohort of children born in France in 2011, Elfe (the Etude Longitudinale Française depuis l'Enfance), and latent clustering techniques to identify different groups of households characterised by non-residential fatherhood. We show that non-residential fatherhood from around birth is not a marginal phenomenon in France, and it corresponds to a heterogeneity of situations, describing both advantaged and low involvement groups, as well less disadvantaged but involved groups. Over the first year of life, most non-resident fathers managed to keep in contact with their child, including relatively disadvantaged groups such as migrant and young parents. Two groups of households characterised by low father involvement shortly after birth lost contact; on the other hand, among a group of very involved non-resident fathers who were in a relationship with the mother, we observed high levels of contact and indeed co-residence by 1 year of age. A number of channels emerged to explain the correlations between our latent groups and father contact at 1 year: notably, father engagement around birth, especially whether the father formally recognized the child. Trajectories of father-child involvement and of parental relationships are therefore at least as important as socio-economic conditions to understand future father contact.

Key messages:

Around 7% of children born in France in 2011 did not live with both their natural parents around birth.

Children not living with their father around birth correspond to a heterogeneity of situations.

Over the first year of life, most non-resident fathers kept in contact with their child.

Father engagement around birth was an important predictor of contact one year later.

Introduction

The de-standardization of family life across Western countries has given rise to a variety of non-traditional family structures and trajectories (Brückner & Mayer, 2005; Buchmann & Kriesi, 2011). As a result, more children now live in a single parent household, usually with their mother (Sobotka & Toulemon, 2008). Most of the literature and public policy treats single parenthood as a consequence of a separation or divorce taking place after the child's birth, however there has been less interest in parents who are not living together from the birth of the child (Kiernan, 2006).

Single parenthood and non-residential fatherhood have received a significant interest among policy makers and researchers as it appears to be linked to poorer outcomes for mothers and children (Amato & Keith, 1991; Amato, 2001, 2005; Lacey, Bartley, Pikhart, Stafford, Cable, & Coleman, 2012; Tanskanen & Erola, 2017). Much of this effect appears to be due to the strong correlation between single parenthood and more disadvantaged socioeconomic conditions, but also with availability of parental and wider social network resources (Amato & Maynard, 2007; Brown, 2010; McLanahan & Sandefur, 1994; Poole, Speight, O'Brien, Connolly, & Aldrich, 2016). While this literature focuses on the characteristics and behaviours of the single parent (usually the mother) co-residing with the child, a growing literature describes non-residential fathers as important actors of future child well-being, highlighting the importance of their involvement (Lamb, 2004; Tamis-LeMonda & Cabrera, 2002). But separated fathers can lose touch with their children once they no longer co-reside (Régnier-Loilier, 2013), and there are socio-economic disparities in who loses touch, with more advantaged households better able to maintain contact (Fagan, Palkovitz, & Farrie, 2009).

Intrinsic in this literature is an assumption that single parenthood always equates with disadvantage. This assumption may be driven by the British and US experience, where single parenthood is associated with high levels of social and economic disadvantage (Panico, Bartley, Kelly, McMunn, & Sacker, 2010; McLanahan & Carlson, 2004). We know less about the interplay between socio-economic conditions, non-residential fatherhood, and father contact in contexts where such disadvantage might be less marked, such as France.

Furthermore, while single parent households are over-represented among the most disadvantaged households, including in France (Bourreau-Dubois & Jeandidier, 2005), looking at averages allows potentially hiding a heterogeneity of situations, and pushing forward a uniform stereotype of single parent families.

Studies on non-residential fathers focus on children who have experienced parental separation, and have therefore lived with both their parents at some point in their lives; few studies focus on non-resident father involvement from birth, or how this involvement evolves over early life. The characteristics of the single mother (Costemalle, 2017), the nature and degree of non-resident father involvement, as well as the predictors of this involvement, may differ if the child has never lived with their father and/or he was not involved around birth (Kiernan, 2006). Furthermore, early childhood is an interesting period to study, both because it is a key period for child development, and because parenting styles and childrearing practices are put into place.

In this paper, we describe non-residential fatherhood shortly after birth by asking the following questions: what types of households with non-residential fathers exist shortly after birth? How does their involvement evolve over the first year of life? What drives the evolution of father contact, and does it differ across different types of household? We focus on a national context where baseline socio-economic stratification is less marked, through a recent, nationally representative cohort study of children born in France in 2011. We apply latent clustering techniques to identify different groups of households characterized by non-residential fatherhood from birth, allowing us to not impose an a priori classification. We then use prospective longitudinal data to explore whether this classification predicts the evolution of contact with the non-resident father one year after birth, and the underlying mechanisms of this association.

Literature review

The determinants of father contact and involvement

A large literature on parenting activities has shown that the time that parents devote to children is important for their development, health and their safety (Crockenberg & Leerkes, 2000). Fathers and their involvement in children's lives are therefore important in this respect (Hofferth, 2006; Hofferth & Anderson; 2003; Marsiglio, Amato, Day, & Lamb, 2000; Aldous & Mulligan; 2002; McMunn et al., 2015). At the same time, large socio-demographic trends, such as the increase in non-marital childbearing and separations, has questioned the importance of father involvement when they do not live with their children (Amato, 2001; Amato & Anthony, 2014). Furthermore, the rise to so-called "new fathers" has introduced new social norms whereas fathers are expected to be both the financial providers while being more equal partners in parenting (McGill, 2014). However, in France, the double-role of "new fathers" appears to still not be a significant phenomenon (Devreux, 2007; Champagne, Pailhé, & Solaz, 2015): traditional, gendered conceptions of different childcare tasks still play an important role, despite increasing equality in the workplace.

Understanding the determinants of father involvement is therefore important. The available literature suggests that fathers who co-reside with their children and fathers who are older are more involved with their children (Castillo, Welch & Sarver, 2011; McWayne, Downer, Campos, & Harris, 2013), while fathers' working hours and income are not strongly related to father involvement (McGill, 2014; McWayne et al., 2013). His educational levels however do correlate with fathers' taking part in parenting activities, particularly activities that are important for child development (Gracia, 2014), as does his employment status, with employed father more likely to be involved (McMunn, Martin, Kelly, Sacker, 2017). Furthermore, determinants of father involvement appear to not only be associated with fathers' characteristics, but also how these characteristics interact with the couple and family contexts. For example, father-child attachment was more closely linked to couple and family contextual variables, while mother-child attachment was more closely linked to mother involvement (Coyl-Shepherd & Newland, 2013). This is also true in France, where father involvement has been linked to the household's and couple's characteristics, as well as their gender values and mother's working hours (Brugeilles & Sebille, 2013). There is less literature focusing on father-child contact in very early childhood, with the only work done on the effects of paternity leave and father involvement, reporting mostly positive

associations (Huerta et al., 2013; Seward, Yeatts, Zottarelli, & Fletcher, 2006; Bünning, 2015; Haas & Hwang, 2008; Hosking, Whitehouse, & Baxter, 2010).

A smaller body of work focuses on non-resident fathers. Stable non-residency of fathers appears to be associated with small negative risks for child behaviour and cognitive development (Fagan, Lee, Palkovitz, & Cabrera, 2011). However, the level of father involvement can mitigate these negative effects (Lamb, 2004; Tamis-LeMonda & Cabrera, 2002; Flouri & Malmberg, 2012), depending on the role of context and how "involvement" is defined and measured. In fact, there are not always clear or concordant definitions between different studies of what father "contact" and "involvement" are; nor what "quality" involvement is. Nevertheless, taken together, studies suggest that non-resident father involvement, and its evolution over the lifecourse, may be an important factor to take into account when considering children not living with their father. Trajectories of father involvement appear to be established early on, with little change between earlier and later levels (Fagan et al., 2009; Flouri & Malmberg, 2012). Trajectories of father involvement only appear to change if there is a change in their individual or household characteristics, such as employment, social support or poor health, or in the relationship characteristics between the parents, before and after separation (Fagan et al., 2009).

The French context

Similarly to other countries, France has seen an increase in the diversity of family forms and life course patterns in the last decades. This has been especially marked by an increase in cohabitation, unmarried pregnancies, divorce and separations (Bonnet, Solaz, & Algava, 2010), and an increasingly delayed entry into parenthood (Toulemon, Pailhé, & Rossier, 2008). Unlike other European countries, these changes have had little effect on completed fertility: France has one of Europe's highest fertility rates. This relatively high level of fertility is related to the strong two-child family norm (Régnier-Loilier, 2007) and to a generous and diversified family policy (Luci-Greulich & Thévenon, 2013; Toulemon et al., 2008). Another specificity of the French context is that the socio-economic stratification of fertility behaviours is less important than in Anglophone countries (Rendall, Ekert-Jaffé, Joshi, Lynch, & Mougin, 2009).

While non-traditional family forms have emerged (for example, about 4% of all couples are classed as "Living Apart Together", Régnier-Loilier, 2016), the proportion of children not living with both biological parents is relatively lower than in other Western countries but not trivial: in 2011, 18% of children did not live with both parents (Lapinte, 2013). For these children, residence with the mother is the most common arrangement: at 10 years of age, 18% of children live with their mother only, against only 4% living only with the father in 2005 (Breton & Prioux, 2009). In spite of the introduction of laws formalizing shared custody arrangements in 2002, shared custody remains relatively rare: for example, a year after divorce, only 15 % of children are in shared custody arrangement and mainly children aged 3 years and over (Bonnet, Garbinti, & Solaz, 2015).

In case of separation or divorce, French laws dictate that the parent who does not have custody can exercise their parental authority jointly with their ex-partner and has a right of access to his or her children. In return, they must contribute by paying child maintenance to the person who has been granted custody. These rights and obligations depend on parents having formally recognised their child¹. In 2006, only 7% of non-marital births were only recognised by the mother at birth; this figure was driven by lower occupational classes and has been decreasing over time (Germé & Richet-Mastain, 2006).

Hypotheses

In this paper, we focus on fathers who are not co-resident with their child at birth. We highlight the diversity of configurations within this group, describe trajectories of fatherchild contact, and analyse the drivers of the evolution of father contact over the first year of life. In this context of low socio-economic stratification of fertility behaviours, we seek to determine the relative contribution of socio-economic conditions versus early father involvement, especially though his formal recognition of their child.

¹ Paternal affiliation is automatically established if the parents are married at birth. If they are not, the father must formally recognize the child to establish his paternity. Recognition can be declared before birth, at the birth registration, or afterwards through an act with a civil registry official. A father who does not recognize his child before their first birthday cannot claim parental authority unless the mother agrees to register his paternity afterwards, or by court order. If the father refuses to recognize the child, the mother can take legal action to establish his paternity.

Our analyses are guided by three research hypotheses. First, the heterogeneity of households without a permanent father will be large in a setting like France, in terms of the socio-economic and demographic characteristics of parents. Second, given this expected heterogeneity in household characteristics, we also expect that the levels of father involvement and contact around birth will vary significantly. Given the literature, we anticipate that contact will be more frequent for groups characterized by higher average levels of social and financial resources. We further hypothesize that socio-economic conditions are not the main driver of the evolution of father contact over the first year of life. We expect parental relationship characteristics and father involvement shortly after birth will predict their later involvement.

Data, study population and methodology

The ELFE data

The *Etude Longitudinale Française depuis l'Enfance* (Elfe) is France's first large generalist birth cohort study (Charles, Leridon, Dargent, Geay, & the Elfe team, 2011), using a multidisciplinary approach to explore the relationship between environmental exposures and the socio-economic context on child health and development. It follows over 18,000 children born in 2011, and is representative of all children born in France (excluding Overseas Territories). Elfe takes a multidisciplinary approach to explore different aspects of children's lives (environmental exposures, family life, living conditions) to assess their influence on the children's development and health. The study includes repeated questionnaires with the parents, the collection of biological samples, and linkage to other data sources at different points in the child's life, including in the hospital a few days after birth, at two months of age, around their first birthday, etc. Children were recruited in a random sample of 349 hospitals with a maternity ward from a total of 544 registered in France. A first short inclusion survey was carried out face-to-face with the mother in the hospital shortly after birth. Mothers were invited to participate if she had delivered a baby in

a selected hospital during four inclusion periods (25 days in total: 4 days in April, 6 in June/July, 7 in September/October, 8 in November/December); she was over the age of 18; and could sign a consent form available in 5 languages. Babies born at 33 weeks' gestation or earlier were invited in a parallel cohort study. The initial sample consists of 18,329 newborns. The first main interview was carried out by telephone two months later: 15,536 mothers and 12,504 fathers (resident or not) responded to an in-depth interview, collecting in-depth data on socio-economic status, family living arrangements, nutrition, and the environment children grow up in. This wave of data collection therefore represents our baseline. A new wave of interviews was carried out around the child's first birthday, with both parents (n = 13,141 mothers and 11,294 fathers) interviewed, and includes a similar, indepth questionnaire to the previous wave. We focus on the 2 months and 1 year surveys, supplemented by some questions from the birth questionnaire.

Analytical sample

We focus on children present at the 2-wave survey and not (always or permanently) living with both their biological parents at that time. Observations (n=15) were removed from the analysis sample if at the two-month interview the child was not living with the mother; the child or one of the twins was (still) in hospital; the child was placed; the mother did not know who the father was; the father had died. Observations with missing data on our key Latent Class Analysis (LCA) variables (see below) were also not retained (n=20). We keep one line per household; in case of twins (n=8; or less than 1% of our sample), we randomly select one child for the analyses and we assume that father contact will be the same for both twins.

After these exclusions, 934 households with a non-resident father were included at the 2month wave. 30% of this sample is no longer present in the 1-year survey. Mothers who are younger, have lower educational attainment, have lower incomes and more in receipt of benefits, are out of labour force, or have a low occupational class are less likely to be observed in the next wave. They are also slightly less likely to have been married at 2 months (see Annex 1). These characteristics are similar to those reported for the survey as a whole: in the total Elfe sample, households who were lost to follow up were more likely to include younger mothers, parents with a lower occupational status and those who were not

in the labour force, single parents, and parents from a migrant background (Thierry, Pilorin, & Lanoë, 2018). This gives an analytical sample of 690 households at the 1-year wave; 8% (n=56) of which are dropped in the regression models because of missing data on the covariates.

Measures

We consider that the child lives with both parents when the mother has declared that she is in a relationship with the father and that they cohabit full-time at the 2-month interview. Parents are classed as being in a non-cohabiting relationship when the mother has declared that she is in a relationship with the father but that he resides elsewhere or cohabits with her part-time (for example, only at weekends and holidays, or a few months in the year or more rarely). Parents are considered not together when the mother has declared that she is not in a relationship with the father.

Our key outcome is the father-child contact at two months and 1 year. To do so, we measure the frequency of the contact between the father and the child, categorized as: sees the child weekly or more, sees the child less often, never sees the child.²

We use a panel of socio-demographic measures that describe maternal and household characteristics. These covariates are organised in three sets: those used in the Latent Class analyses; variables from 2-month wave used in descriptive analyses; and variables from both 2 months and 1 year used for regression analyses. These different analytical steps are further described in the section below. We focus on mother and household-level variables and not father characteristics because of the high proportion of missingness for these variables: 68% of our sample of fathers did not respond to the survey. While the mother does complete some of this information, the level of missing cases is still very high (e.g. 53% missingness for educational attainment; 23% for occupational status; and 30% for occupational class). We therefore chose not to include father information, which would have drastically reduced our sample.

² Weekly contact: we include here LAT fathers who live with their child: mostly weekend and holidays; mostly during the week; some months of the year. Less than weekly: we include here LAT fathers for whom the mother did not report how often they lived with them.

We use several socio-demographic measures, including the international standard classification of education (ISCED) for describing mothers' educational levels, divided into three categories (primary school qualifications, lower secondary school qualifications, upper secondary qualifications and over) and her occupational class (defined as high – highly skilled occupations; medium – skilled occupations; and low – low-skilled and unskilled clerical and manual workers) and status (employed, unemployed, and other statuses before the beginning of her maternity leave, if she took one). We also consider the immigrant background of the mother, distinguishing whether she is of migrant origin (defined as being born abroad with a foreign nationality), descendant of migrants (defined as being born in France to migrant parents), and "natives" (which includes all those born in France to nonimmigrant parents, but also those born abroad with a French nationality). We construct a measure of equivalised annual household income based on the OECD equivalisation scale and categorized in tertiales, as well as an indicator of welfare receipt based on the reported receipt of three benefits: unemployment benefit, housing benefit, and the active solidarity revenue (allocated to individuals whose regular income is too low to cover a basic cost of living). Other markers of economic status include housing tenure, difficulty making ends meet, whether grandparents share the same household; all as reported by the mother. We also observe whether the household moved home between the two waves. We use a further set of variables describing the parents' relationship history, based on whether the mother declared having ever been in a relationship with the biological father, and whether they had ever lived together; and whether the mother wanted (another) child before the pregnancy. Furthermore, we make use variables describing the father's involvement at birth: an indicator for whether the father has formally recognized the child, and a measure of whether he was present at the birth. Here, to account for the fact that when the birth is a Caesarean, the father may be asked to wait outside the delivery room, we add a category for fathers who were not present and the birth was a Caesarean.

Methodology

To classify households without a priori assumptions, we use Latent Class Analyses (LCA) to decrease subjectivity in choosing groups. LCA is a clustering method that uses a probabilistic

model to describe the distribution of data, which can be used to identify subsets underlying the observed heterogeneity in a population (Collins & Lanza, 2010). To classify the 934 families without full-time resident fathers at the 2-month interview, we use a number of variables from the birth and 2-month interviews: residency of the biological father at 2 months (whether the father lives part-time in the household); demographic characteristics of the mother, including her age at birth of the child, whether the child is her first child, her migration status; socio-economic characteristics of the mother: her educational qualifications, her employment status, her occupational class; father involvement at birth, including his physical presence at the birth and whether he recognized the child. The LCA is carried out with the Stata-LCA plugin (LCA Stata Plugin, 2014; Lanza, Dziak, Huang, Wagner, & Collins, 2015).³ Sample weights are applied in the LCA.

In a final step, we carry out regression models to estimate whether the derived LCA groups predict father-child contact at 1 year of age, and explore which factors determine father contact one year after birth. To do so, we run two separate sets of logit models: a first set predicts weekly contact at 1 year; a second set predicts no father-child contact at 1 year. Alternative models were tested using multinomial logistic regression, simultaneously predicting father-child contact at 1 year classed as weekly contact, less regular contact, and no contact. The logit models are presented for ease of interpretation. Sets of covariates are added step by step in order to analyse how the specific effect of each set of covariates is related to the variables of interest. The sets of covariates are grouped in a temporal manner as follows. Model 1 includes only the LCA clusters; Model 2 adds characteristics from birth (sex of the child, whether the pregnancy was wanted); Model 3 adds characteristics relating to the parents' relationship (whether the parents ever lived together, whether the parents have ever been in a relationship) and to the father-child contact (weekly, less often, never) as measured at the 2 months interview; Model 4 enters variables capturing the socioeconomic and housing status of the household (social welfare dependency, home ownership, whether any grandparent lives in the child's household, whether the household moved home between 2 months and 1 year) as measured at one year; in Model 5, we also

³ The LCA Stata Plugin uses baseline-category multinomial logistic regression to predict latent class membership.

add a dummy capturing whether the mother is in a relationship with the biological father at one year.

Sample weights are used throughout the analyses and take account of the sampling framework, non-response at inclusion, and non-response through the 3 waves of data collection used here (Juillard, Thierry, Razafindratsima, Bringe, & Lanoë, 2015).

Results

Descriptive analyses

Family situation of children shortly after birth

In the Elfe study, the large majority of the children (91.5%) live with both parents at two months⁴ (Table 1). About 8% live only with their mother. At this young age, very few children live only with the father (1 child in our sample). Overall, at two months, the family environment of children that live only with their mother is very diverse. About one fourth of these parents are in a relationship but do not cohabit permanently. These parents are referred to as 'living apart together' (LAT) and 2% of all families with a two-month old child fall into this category. Half of these parents do not cohabit due to professional reasons, one fourth as they want to remain independent. About 6% of the children have parents who are not in a relationship 2 months after birth. Amongst the households, where the child's father was classed as non-resident, only 2% of the mothers are in a relationship with a different partner, who could be referred to as the 'social' father present in the household.

--- Table 1 about here --

⁴ The comparison between the 2-month survey with the more limited interview conducted at birth shows little change. About a quarter of parents not co-residing with a partner at birth were now doing so. Inversely, about 1.4% of parents co-residing at birth were no longer living together at 2-months. The birth of the child triggered the formalization of some unions: 4% of couples who were neither married nor in a civil partnership at birth had formalized their union by the child's 2 months, and 3% of those in a civil partnership were married two months later.

Involvement of the father around birth

In about 38% of cases, non-resident fathers were present at their child's birth, and 61% had legally recognized their child by 2 months. Being present at the birth or inclusion of the father's name on the birth certificate suggests some degree of involvement and is policy-relevant: recognizing a child obliges fathers to attend to their children's material needs and raise them. Non-resident fathers who were present at birth were more likely to recognize their child (91% of them recognized the child) than those who were not present at the birth (47%). Their presence may be due to the fact that these births are rarely the result of a transient relationship. It is very rare (only 0.1%) that mothers declared not to know or have no contact with the father. Most non-cohabiting parents (three-quarters) were in a relationship for at least six months before birth and nearly one-third lived together for at least six months.

Main results

Latent Class groupings

The LCA analyses allow classifying the 934 households without full-time resident fathers at the 2-month interview. The best solution describes five groups⁵ which are reported in Table 2, along with the conditional probabilities of the variables used in the LCA analyses.

These analyses show that non-residential fatherhood is a heterogeneous phenomenon (see table 2). The first 3 groups are of relatively similar sizes and make up three quarters of our sample, they are marked by different types of socio-economic disadvantages. The first group (25% of the sample) is mainly characterized by young maternal ages: 71% are under 25 years. Within this age group, 54% is aged between 22 and 25 years, and 46% are aged between 18 and 22. We will therefore refer to as the "Young parents" group.⁶ Unsurprisingly given their young ages, in more than two out of three cases the cohort child is

⁵ We have tested model specifications with 1 to 10 classes. To determine the optimal number of classes we consider the Bayesian Information Criterion (BIC), which is lowest for the optimal number of classes. This suggests that a five-class model describes our data best, as the BIC is lowest for this specification, taking a value of 1675.54.

⁶ Annex 1 shows that the Young parents group also comprises the youngest fathers.

the mother's first child. This group is disadvantaged in terms of socio-economic characteristics, including low educational level and the highest proportion of nonemployment (31% are unemployed and 53% are out of the labour force) across the groups. In this group, only 5% (n=11) of mothers are students, suggesting a large proportion of "NEETS" mothers. However, this group presents high levels of father involvement around birth: 91% recognized the child, and 60% were present at birth. The second group (24% of the sample) is characterized by a high proportion of migrant mothers. We refer to it as the "Migrant mothers" group. This group has a high proportion of lower educated, out of the labour force mothers; mothers tend to be older than in other groups, and the cohort child is not usually their first child (86% already had a child). 98% of fathers have recognized the child, and 44% were present at birth. Finally, the third largest group (23% of the sample) is particularly marked by their disadvantaged status (particularly for maternal education 81% of mothers did not achieve any end-of-secondary schooling qualifications), and with low levels of father involvement (only 2% of fathers had recognized the child, and 5% were present at his or her birth). On the contrary, the demographic profile of this group is heterogeneous: the maternal age distribution is relatively even, and as is their pregnancy history (half of these mothers already had had a child before the cohort child). We name this group "Lower Educated Solo mothers".

--- table 2 about here ---

The next two groups make up about a third of the sample, and stand out for their relatively advantaged socio-economic profiles. The largest of these two groups' (19% of the sample) main characteristic is that 82% of fathers live at least part of the time with the child. We label this group "Living Apart Together (LAT)". This group is the most advantaged in terms of socio-economic indicators, and virtually all fathers recognize their child and were present at birth (99 and 82% respectively). Around half of these mothers already have another child. Finally, the smallest group (9% of the sample) is made up of relatively well educated, employed mothers, who are having their first child; father involvement around birth is very low: 17% recognized the child and 12% were present at birth. We name this group "Higher Educated Solo mothers". This group resembles the LAT-group in terms of demographic

characteristics (such as maternal age and migrant status) and socio-economic conditions (although they appear to be slightly less well-off than the LAT group).

The socio-economic profiles of the different groups highlighted above are reflected in other variables available in the survey which were not used in the LCA analyses, such as receiving welfare benefits, reporting having difficulty making ends meet, being home owner, or household income (see Annex 2). Other insights from these additional variables provide a more detailed picture of these groups. For instance, about a third of the Young parents group lived with their own parent at 2-months post-birth, suggesting that this group is at an entry into adulthood lifestage or are struggling to get past this stage. We do not know if they return to the parental home because of financial constraints or because they require parental support to combine their studies with child-rearing. In any case, this living arrangement may partly explain why they do not co-reside with the father, even though his level of involvement around birth is very high.

The majority of mothers (83%) declared wanting a(nother) child before this pregnancy; this proportion is similar across the groups if slightly lower for the Migrant and Lower Educated Solo mothers. Even if this is a retrospective question, posed after the birth of the child and is therefore not ideal to establish fertility intention, the homogeneity across groups is striking. Similarly, the idea that these births are not unwanted pregnancies is confirmed by the fact that two thirds of these parents had been in a relationship for at least 6 months. About a quarter of Higher and Lower Educated Solo mothers had lived for at least 6 months with the father, suggesting a separation had occurred, although we do not know if this separation is due to the pregnancy. The vast majority (83%) of the LAT group had been in a relationship for at least 6 months, and 41% of these mothers had formalised a union, either through marriage or a civil union.

The vast majority (83%) of non-resident fathers was in contact with their child two months after birth, and most of this contact was frequent but with some differences across the groups described above (see Table 3): while in total 66% non-resident fathers see their child at least weekly, this proportion is lower for Higher Educated Solo mothers (34%). Only 15% of mothers declare that the child never saw their non-resident father, this is highest for the

Lower Educated (33%) and the Higher Educated (51%) Solo mothers but virtually never the case for the LAT or Young parents groups (2%).

--- table 3 about here---

Evolutions in father involvement between 2 months and 1 year

As described in the data section, about a third of our sample is no longer present in 1-year wave. This attrition is not surprising as these households are likely to be mobile (for instance, 30% of the retained sample changed address between 2 months and 1 year), as well as disadvantaged on several socio-economic markers (see Annex 1). In fact, of our five LCA groups, the three more disadvantaged groups have the highest rates of attrition (between 36 to 28%) compared to the two more advantaged groups (10-18%).

Of the 690 remaining households, at one year after birth, our latent class groups describe significant variation in father contact (see table 4). A third of LAT and Young parents fathers had now moved in with the child; for the other groups this proportion was 15% for the Migrant mothers, 8% for the Higher Educated Solo mothers and only 3% for the Lower Educated Solo mothers. For about 38% of our sample, the father saw the child at least weekly and 15% saw the child but less often. This varied markedly by group: we note for example that while few Migrant mothers now co-resided with the father, over 50% of fathers saw the child at least weekly. On the other hand, regular contact was very low for the Lower Educated Solo mothers, with only 18% of these fathers seeing the child at least weekly. In a third of our sample, at 1 year fathers never saw the child. This proportion is driven by the two Solo mothers groups, where respectively 68% and 54% of fathers never saw their child.

While the figures above relate to living and contact arrangements, a significant proportion of fathers was (still) in a relationship with the mother (table 4): this was particularly the case for the LAT group (80% of parents were in a relationship) and the Young parents and Migrant groups (39% and 37% respectively). However, the proportion of fathers in a relationship with the mother was low in the Higher Educated Solo mothers group (19%) and almost null for the Lower Educated Solo mothers group (5%).

While fathers can recognise their child later, there is very little change in the proportion of children who have been recognised by their father between 2 months and 1 year. This may be because for some groups (namely the LAT, Young parents, and Migrant mothers), the proportion of children recognised by their father at 2 months is already very high (above 90%) and therefore all fathers who would recognise their child in these groups have already done so by 2 months. For the Lower and the Higher Educated Solo mothers, the proportions are very low at 2 months and do not change at 1 year. Given the low level of father contact or involvement described for these groups at birth, 2 months and 1 year, it is perhaps unsurprising that fathers are not engaging in this process later on.

--- table 4 about here ---

What predicts father contact after 1 year?

In a final step of analyses, we explore whether the LCA groups, built using variables relating to the time around birth and up to 2 months of age, predict father contact 1 year post-birth, and if so, through which variables. We first look at results of a logit model predicting no father contact at 1 year of age (table 5). Once everything is controlled for (Model 5), there is no significant difference in the probability of no contact for Migrant mothers and Young parents compared to the LAT group. Higher and Lower Educated Solo mothers have a higher probability of no contact than the LAT group, even after characteristics relating to the relationship history of the parents, contact at 2 months, the socio-economic and housing status at 1 year, and the relationship status of the parents at 1 year are accounted for.

If we look at the intermediate models, we note that the initial increased risk of no father contact for the Migrant and Lower Educated Solo mothers groups (Model 1) is slightly decreased when the relationship history and the father contact at 2 months are included (Model 3, in particular, not knowing the father and not having contact at 2 months strongly predict no father-child contact at 1 year) and slightly decreased again when the housing status at 1 year is included, suggesting housing constraints. However, the largest change in the estimates, and the loss of statistical significance, for these groups is observed when the relationship status at 1 year (whether the parents are in a relationship) is included in Model

5. While for the two Solo mothers groups estimates remain significant in Model 5, we also observe a strong decrease in the odds when relationship status at 1 year is included, suggesting that this is a key mechanism to explain the low levels of no contact in the LAT group. We observe effects associated to the baseline characteristics selected: the sex of the child or whether the mother wanted a(nother) child before this pregnancy.

Therefore, these results suggest that it is not just disadvantaged groups that lose contact over time, and, vice versa, relatively advantaged groups can also be at risk of losing contact between fathers and non-resident children: the two groups at higher risk of no father contact at 1 year include both a relatively advantaged group (the Higher Educated Solo mother) and a disadvantaged group (the Lower Educated Solo group). What characterizes these otherwise very different groups is the low father involvement at birth, with very low proportions of fathers recognizing the child and an even lower presence at birth.

---table 5 about here---

The second set of logit models looks at the opposite potential outcome: regular father contact (at least weekly) at 1 year of age, using the same set of covariates (Table 6). Once everything is controlled for (Model 5), compared to the LAT group there is no significant difference in the probability of weekly contact except for the Lower Educated Solo mother groups who have a lower probability of regular contact. A key difference with the previous outcome (no contact) is therefore that the Higher Educated Solo mothers group does not appear to be disadvantaged in terms of maintaining regular father-child contact compared to the LAT group, once all covariates are included. The intermediate models show similar patterns as described above, including a very strong link with the relationship status of the parents at one year, and an effect of father-child contact at 2 months (but not of relationship history). A grandparent in the household predicted a lower chance of regular father contact.

---table 6 about here---

The picture that emerges therefore shows that while socio-economic disadvantage may play some role in predicting father-child contact in early childhood, the relationship history between the parents and the trajectories of father involvement and contact appear to play an equally important role. Father involvement from birth (for example, through legally recognizing the child or being present at the birth) is an important factor in understanding later father-child contact, and those early inequalities in father involvement appear to re-inforce over time. The LCA classes, capturing the early interplay of socio-economic and relational characteristics, are therefore particularly interesting when thinking about future trajectories of father-child involvement and contact.

Discussion and conclusion

Until recently, non-resident fathers have been largely ignored in the statistical portraits of families. Using a recent, nationally representative sample, we show that non-residential fatherhood from around birth is not a marginal phenomenon in France: over 8% of children do not live permanently with both their parents shortly after birth. For the vast majority, these children are not the result of a transient relationship, and, over the first year of life, most non-resident fathers managed to keep in contact with their child. Furthermore, "not living" with their father actually describes very different situations: some fathers live part of the time with the child; some are not co-residing at birth but move in the following weeks; while others never co-reside with their child. A heterogeneity in socio-economic status and father contact is also evident: out of five groups emerging from the data, two groups have a relatively advantaged status, and only two groups show low levels of father engagement around birth.

Socio-economic disadvantage and low father engagement did not always overlap, and father involvement around birth was more important that socio-economic status in predicting later contact, including paternal *cohabitation* one year later. Whether the father had formally recognized the child seemed to particularly matter for later contact. In France, when parents are not married, recognition is not automatic and requires the father to engage in a (simple) administrative procedure. Father recognition may therefore signal a wish to be involved in their children's lives, but also brings fathers a set of rights and duties, compelling them into some level of contact.

Our analyses draw out a number of particularly interesting situations. First, the Living Apart Together and Migrant groups especially demonstrated high levels of contact throughout the study period. This highlights different approaches to family arrangements: for example, given their marital status, parity, and evolving residence status, we can speculate that the Living Apart Together group and Migrant parent group are not separated parents but are putting in place non-traditional living arrangements. We probably include in this sample a number of transnational or geographically separated families, which are not able to live together (all of the time) but are still highly present. Second, our groups represent mothers at different lifestages: notably, we find an important variation in maternal age and parity across groups. As suggested by the Diverging Destinies framework (McLanahan, 2004), this is important because mothers at different lifestages might have different pathways into single parenthood, different levels of social and financial resources to draw on, and different choices and constraints. For example, we isolate a group of mothers who are more educated and are relatively older at birth, who could be coming to end of their fecund period and therefore are making a choice to be a single parent. These different lifestage profiles suggest different meanings of pregnancy for different groups of single mothers.

Some limitations have to be considered when interpreting these results. First, like any longitudinal study, attrition between data waves is present in Elfe, and that attrition is more likely to attain households that are more mobile and more disadvantaged. We therefore probably underestimate the loss of contact between non-resident fathers and their child, as loss of contact was linked to disadvantaged conditions, especially within the more disadvantaged groups where attrition was higher. Second, for fathers who have never corresided with the child, very little information on their individual characteristics (such as their education, occupational status, family arrangements) was available. Notably, we would have liked to include information on the father's possible relocation, repartnering and whether they have other children. There is also no information of the relationship quality between the parents, both before and after separation. These factors have been shown to be important for father contact. For example, in the UK, fathers' repartnering and having new children was found to relate to less contact (McMunn et al., 2017). Finally, while the literature shows that parental involvement matters for child development, studies also show that it is high-quality, developmentally-appropriate interactions that matter the most

(Gracia, 2014). In our data, we cannot observe the quality of the contact, the activities carried out during the contact, nor the duration of contact. This is mostly because surveys of children tend to focus on activities within the household, and it is difficult to collect data on what children do outside the home. The Elfe survey did try to better describe non-resident fathers and their involvement; however, the proportion of missing data was too significant to use.

Concluding, these results suggest that trajectories of father-child involvement, including both contact and other markers of involvement, such as formal recognition, and of parental relationships are at least as important as socio-economic conditions to understand future father involvement. Our results challenge the assumptions often found in the academic literature and public discourse which often assume that the disadvantage profiles of these households will be the only key explanation for subsequent child well-being. We therefore suggest that non-resident fathers may matter more for child well-being than we currently acknowledge, and that fully exploring the diversity of non-residential fatherhood configurations is critical for deepening of children's development. **Funding**: This work was partly funded by funding from the Agence Nationale de la Recherche (Veniromond, ANR-10-BLAN-1821) and the IReSP (SINCEIfe, AAP-2015-10).

Data availability statement: The authors take responsibility for the integrity of the data and the accuracy of the analysis. The data can be requested throught the Pandora platform (https://pandora.vjf.inserm.fr/public/), after an 18-month exclusivity period following each release of new data. Data access policy, study protocols, questionnaires and the data catalogue can be accessed on line (https://www.elfe-france.fr/en/).

Conflict of interest statement: The Authors declare that there is no conflict of interest.

Acknowledgements: We would like to thank Trude Lappegård and Laurent Toulemon for their helpful comments and Barbara Castillo Rico for expert research assistance; as well as the Elfe families for their time and collaboration over the years. We would also like to thank the Elfe study team for their methodological support. The Elfe survey is a joint project between the National Institute for Demographic Studies (Ined) and the National Institute of Health and Medical Research (Inserm), in partnership with the French Blood Establishment (EFS), the Institut de veille sanitaire (InVS), the Institut national de la statistique et des études économiques (Insee), the Direction générale de la santé (DGS, part of the Ministry of Health and Social Affairs), the Direction générale de la prévention des risques (DGPR, Ministry for the Environment), and the Direction de la recherche, des études, de l'évaluation et des statistiques (Drees, Ministry of Health and Social Affairs), the Département des études, de la prospective et des statistiques (DEPS, Ministry of Culture), and the Caisse nationale des allocations familiales (CNAF), with the support of the Ministry of Higher Education and of Research and the Comité de concertation pour les données en sciences humaines et sociales (CCDSHS). Through the RECONAI platform, it benefits from a government subvention managed by the National Research Agency under the programme "Investissements d'avenir" (ANR-11-EQPX-0038).

Tables

-- see separate document--

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Appendices

Annex 1: Characteristics of household at birth and 2 months, by inclusion in 1-year wave

	Included	Not included
Characteristics at birth		
Father's age at birth		
Under 25	13%	17%
25-34	34%	33%
Older than 34	27%	23%
Unknown	26%	27%
Child is boy	51%	51%
Mother is student	2%	2%
Characteristics at 2 months		
Mother's matrimonial status		
Married couple	10%	5%***
Civil partnership	4%	0%***
Free couple	14%	14%
Lone mother	71%	80%***
No information	1%	1%
Partnership history		
Lived together and were in relationship	14%	23%***
Never lived together & were in relationship	61%	41%***
Neither in relationship nor lived together	23%	34%***
Mother not sure who is father	1%	0%
No information	0%	1%
Mother wanted a child		
No	16%	18%
Yes	84%	81%
No information	0%	1%*
Any grandparent in the household		
Yes	14%	18%
Social welfare dependency		
Yes	63%	80%***
Difficulty making ends meet		
Yes	20%	23%
Housing ownership status		
Owned	21%	14%**
Rented	37%	41%
Publicly subsidised	32%	37%
Family member	5%	2%*
Other	5%	6%
Tertiales of revenue		
First	28%	39%***
Second	31%	32%
Third	36%	18%***
Unknown	6%	11%**
LCA variables		
Maternal age		

Under 25	24%	37%***
25 to 34	49%	43%
Older than 34	76%	20%**
Maternal education	2070	2070
Drimon (lower cocondon)	420/	C40/***
Primary/lower secondary	42%	61%***
Upper secondary	22%	21%
Higher	36%	18%***
Maternal occupational status		
Employed	50%	34%***
Unemployed	20%	23%
Out of labour force	29%	43%***
Maternal immiarant status		
Migrant	19%	23%
Descendent	14%	12%
Native	67%	65%
Maternal occupational class	0770	0370
, Low	68%	8 5%***
Medium	20%	11%***
High	12%	4%***
Rank of child		
First	51%	50%
Second or more	49%	50%
Residential status father		
Non-residential	66%	78%***
LAT	34%	22%***
Father recognized the child		
No	31%	35%
Yes	69%	65%
Father present at birth	400/	440/*
Yes	48%	41%**
NU Other (incl. Costroom, no information)	30% 17%	43%
Latent class membershin	1770	13%
Young parents	22%	33%***
Migrant mothers	24%	25%
Lower Educated Solo Mothers	21%	29%***
LAT	23%	8%***
Higher Educated Solo Mothers	10%	5%**
Total N Total = 934	690	244

Difference between 2-month and 1-year sample is statistically significant * p<0.1; ** p<0.05; *** p<0.01

Source: Elfe

			Lower		Higher		
	Young	Migrant	Educated		Educated	Total	
	parents	mothers	Solo	LAI	Solo	TOTAL	
			mothers		mothers		
Characteristics at birth							
Father's age at birth							
Under 25	40%	5%	8%	3%	4%	14%	
25-34	44%	34%	16%	49%	18%	34%	
Older than 34	19%	45%	11%	45%	21%	26%	
Unknown	7%	15%	65%	3%	58%	26%	
Child is boy	46%	52%	51%	54%	52%	51%	
Characteristics at 2 months							
Mother's matrimonial status							
Married couple	5%	8%	0%	29%	0%	9%	
Civil partnership	0%	1%	0%	12%	1%	3%	
Free couple	15%	19%	3%	26%	5%	14%	
Lone mother	79%	71%	97%	30%	94%	73%	
No information	0%	0%	0%	2%	0%	0%	
Partnership history							
Lived together at least 6 months	11%	17%	30%	4%	22%	16%	
Did not live together but had been in rel.	55%	52%	44%	83%	44%	56%	
Neither in relationship nor lived together	34%	29%	24%	13%	28%	26%	
Mother does not know the father	0%	0%	2%	0%	6%	1%	
No information	1%	1%	0%	0%	0%	1%	
Mother wanted a child							
No	11%	26%	21%	7%	16%	17%	
Yes	88%	73%	79%	93%	84%	83%	
No information	0%	1%	0%	1%	0%	1%	
Any arandparent in the household							
No	70%	95%	82%	94%	89%	85%	
Yes	30%	5%	18%	6%	11%	15%	
Social welfare dependency				• • •			
Yes	82%	77%	86%	25%	44%	68%	
Difficulty making ends meet							
Yes	18%	33%	23%	10%	13%	21%	
Housina ownership status							
Owned	13%	10%	8%	43%	33%	19%	
Rented	44%	34%	39%	34%	36%	38%	
Publicly subsidised	33%	44%	43%	14%	24%	34%	
Family member	4%	6%	4%	4%	6%	5%	
Other	6%	6%	6%	6%	1%	5%	
Tertiales of revenue	0,0	0,0	0,0	070	1,0	2,0	
First	33%	44%	42%	2%	13%	31%	
Second	31%	35%	39%	19%	24%	31%	
Third	21%	15%	12%	76%	59%	31%	

Annex 2: Characteristics⁷ of household at birth and 2 months, by LCA group

⁷ The variables presented in this table are those not included in the LCA (the LCA variables are described in the main text, Table 2).

Unknown	14%	6%	7%	3%	5%	7%
Total	233	227	214	175	85	934
Characteristics at 1 year						
Mother's occupational status						
Employed	18%	43%	44%	87%	71%	43%
Unemployed	30%	14%	29%	7%	15%	21%
Student, apprentice, intern	16%	5%	3%	3%	10%	8%
Out of labour force, other situation	36%	39%	24%	3%	5%	28%
Social welfare dependency						
Yes	86%	74%	88%	28%	55%	75%
Household moved since 2 months						
Yes	39%	29%	29%	28%	24%	32%
House owner						
Yes	12%	15%	8%	46%	39%	22%
Any grandparent in the household						
Yes	15%	2%	7%	3%	6%	7%
Total	153	166	143	156	72	690

Source: Elfe