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## **Breastfeeding initiation and duration in France: The importance of intergenerational and previous maternal breastfeeding experiences - results from the nationwide ELFE study**

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1 **Breastfeeding initiation and duration in France: the importance of intergenerational**  
2 **and previous maternal breastfeeding experiences — results from the nationwide ELFE**  
3 **study**

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40 **Ethical approval**

41 The ELFE study received approvals from the Advisory Committee for the Processing of  
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46

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62

63

64

65 **Abstract:**

66 **Objective**

67 To assess the role of the mother's mother and mothers' previous personal experiences with  
68 breastfeeding and childcare in breastfeeding practices.

69 **Design and setting**

70 The analysis included 13,774 mother–infant dyads from the French national birth cohort  
71 ELFE. Feeding practices were assessed by face-to-face interview in maternity wards in 2011,  
72 by phone interviews at months 2 and 12 post-partum and by Internet/paper questionnaires  
73 monthly from months 3 to 10. Sociodemographic, maternal and newborn-related factors were  
74 collected in the maternity unit and by postnatal phone interview at month 2. Multivariable  
75 logistic and linear regression was used to assess the association of mother's mother and  
76 mothers' previous personal experiences with breastfeeding initiation and duration.

77 **Findings**

78 Previous breastfeeding experience (i.e., whether mothers had breastfed their previous  
79 children) was positively associated with both breastfeeding initiation and duration. Mothers  
80 who had been breastfed themselves as infants were more likely to initiate and continue  
81 breastfeeding than non-breastfed mothers. Conversely, non-breastfed mothers who had  
82 received care advice from their own mother were less likely to start and maintain  
83 breastfeeding. The effect of having been breastfed in infancy was especially important for  
84 primiparous mothers and to a lesser extent, multiparous mothers with no previous  
85 breastfeeding experience. Also, formal experience in childcare, in a professional context, was  
86 associated with breastfeeding initiation but not duration.

87 **Key conclusions and implications for practice**

88 Mother's mother and mother's previous breastfeeding experience have a strong influence on  
89 breastfeeding practices. Breastfeeding interventions should be tailored to the mother's level of  
90 experience and should provide extra support for multiparous mothers with no previous  
91 breastfeeding experience.

92 ***Keywords***

93 Breastfeeding, birth cohort, longitudinal, intergenerational transmission

94

95

96 **Background**

97

98 Given the health benefits of human milk for infants, the World Health Organization (WHO)  
99 recommends exclusive breastfeeding for the first 6 months, with continued breastfeeding  
100 along with appropriate complementary feeding for up to age 2 years or beyond (World Health  
101 Organization, 2003). Breastfeeding practices vary substantially across industrialized countries  
102 (Ibanez et al., 2012). Although cross-country comparisons of breastfeeding rates are  
103 complicated by lack of comparable data, France appears to lag behind many other high-  
104 income countries in terms of breastfeeding initiation, exclusivity and duration (Ibanez et al.,  
105 2012; Victora et al., 2016). The rate of any breastfeeding initiation has improved in France in  
106 the last 2 decades, but the temporal trend in duration and exclusivity is less certain because of  
107 a scarcity of representative data. According to the French Perinatal Surveys, the rate of any  
108 breastfeeding initiation increased from 52.5% in 1998 to 62.6% in 2003 and 68.7% in 2010  
109 but decreased slightly to 66.7% in 2016 (Blondel et al., 2017; Blondel and Kermarrec, 2011;  
110 Bonet et al., 2008).

111 Until recently, studies estimating the duration of breastfeeding in France and its associated  
112 factors were based on sub-national data (Bonet et al., 2013; Branger et al., 1998, 2012;  
113 Labarère et al., 2001; Lelong et al., 2000; Siret et al., 2008). The French Longitudinal Study  
114 of Children (Etude Longitudinale Française depuis l'Enfance; ELFE), launched in 2011, was  
115 the first longitudinal study allowing to produce national statistics on breastfeeding duration  
116 and to explore family characteristics related to breastfeeding practices from a large  
117 population-based sample (Vandentorren et al., 2009). Another study, the French Study on  
118 Infant Food and Nutritional status (EPIFANE) conducted in 2012, was specifically designed  
119 to assess infant feeding practices with a prospective and nationwide design (Salanave et al.,  
120 2012, 2014). Both studies indicated that breastfeeding initiation was about 72%, but the

121 breastfeeding rate decreased rapidly, with less than 25% of infants still breastfed at 6 months  
122 (Kersuzan et al., 2014; Salanave et al., 2014, 2012; Wagner et al., 2015).

123 Decisions for breastfeeding initiation and duration result from multifactorial determinants  
124 (Rollins et al., 2016) such as the socioeconomic factors age, being married, education level,  
125 income, and delayed return to work (Bonet et al., 2013; Branger et al., 2012; Chuang et al.,  
126 2010; Kersuzan et al., 2014; Mandal et al., 2010; Noble and ALSPAC Study Team, 2001;  
127 Siret et al., 2008; Wagner et al., 2015). Ethnic minority groups are frequently reported as  
128 being more likely to initiate and continue breastfeeding (Chen et al., 2013; Ladewig et al.,  
129 2014). In France, with the lack of a nationally representative and large sample dataset, little is  
130 known about the breastfeeding pattern among migrant mothers.

131 A potential reason for low breastfeeding rates in France could be that the French government  
132 has invested less effort to support breastfeeding than most other European countries (Bagci  
133 Bosi et al., 2016). Increasing evidence suggests that breastfeeding support and interventions  
134 improve the rates of initiation, exclusivity and duration of breastfeeding (Hawkins et al.,  
135 2013; Munn et al., 2016). No country has fully met the recommended breastfeeding standards  
136 (UNICEF and WHO, 2017); most of the WHO European Region Member States have  
137 developed strategies and policies to encourage breastfeeding during the 1990s. However, only  
138 at the beginning of the 2000s did the French government proactively promote breastfeeding  
139 (Cattaneo et al., 2010) by including the objective of increasing breastfeeding rates in the  
140 National Nutrition and Health Program.

141 **Some French studies** suggest that women have inadequate access to professional  
142 breastfeeding resources (Vilain et al., 2013; Walburg et al., 2010). However, a recent review  
143 identified the mother's mother as one of the people with the greatest influence on  
144 breastfeeding decisions (Negin et al., 2016). Studies exploring a potential intergenerational  
145 transmission of breastfeeding remain scarce (Negin et al., 2016) and are non-existent in

146 France. Within such a sociocultural context, that is, France, in which the use of substitutes for  
147 maternal breastfeeding is common and has a long history (Rollet, 2005), prior maternal  
148 experiences with breastfeeding through the mother's mother experience (i.e., having been  
149 breastfed) or previous maternal breastfeeding experience (i.e., having breastfed previous  
150 children) might influence further breastfeeding practices.

151 International research has reported increased rates of breastfeeding initiation among infants  
152 whose mothers were themselves breastfed but have found discrepant evidence with respect to  
153 breastfeeding duration (Duclos et al., 2002; Meyerink and Marquis, 2002; Susin et al., 2005).  
154 Some studies have shown a longer duration of breastfeeding among mothers who were  
155 breastfed as children, whereas others observed no difference between infants whose mothers  
156 were breast- or formula-fed (Riva et al., 1999).

157 To the best of our knowledge, no studies have investigated whether the association between  
158 having been breastfed in infancy and previous breastfeeding experience was modified by the  
159 provision of mother's mother advice on child care. Also, mothers' experience with children  
160 other than their own (current professional work with infants, babysitting or caring when  
161 younger) may influence infant feeding decisions, but data are scarce on this aspect.

162 Taking into account the lack of study in this area, notably in France, and the public health  
163 importance of identifying potential factors associated with breastfeeding practices, we  
164 investigated the simultaneous effects of mother's mother practices and advice, mother's  
165 previous breastfeeding experiences and previous child care experiences on the initiation and  
166 duration of breastfeeding.

167

168 **Methods**

169 *Setting*

170 The current analysis was based on data from the ELFE study, a multidisciplinary, nationally  
171 representative birth cohort that included more than 18,000 children born in a random sample  
172 of 349 maternity units in France in 2011 (Vandentorren et al., 2009). From April 2011, all  
173 infants born at the sampled locations during 25 selected recruitment days spread across the  
174 four seasons could be included with their parents' consent. Inclusion criteria were birth after  
175 33 weeks' gestation and mother's age 18 years or older and not planning to move outside of  
176 Metropolitan France in the next 3 years. Foreign families could also participate in the study as  
177 long as mothers were able to read French, Arabic, Turkish or English. Among the 349  
178 selected maternity units, 320 agreed to participate and 51% of families approached in  
179 maternity units consented to their child's inclusion. Data were collected in standardized  
180 interviews conducted by trained interviewers and via self-completed questionnaires.

181 Participating mothers had to sign a consent form for themselves and for their child. Fathers  
182 signed the consent form for the child's participation when present on inclusion days;  
183 otherwise, they were informed about their right to oppose.

184 The ELFE study was approved by the Advisory Committee for Treatment of Health Research  
185 Information (Comité Consultatif sur le Traitement des Informations pour la Recherche en  
186 Santé), the National Data Protection Authority (Commission Nationale Informatique et  
187 Libertés), and the National Statistics Council.

188 *Data collection*

189 Mothers were first interviewed face-to-face in the maternity units a few days after delivery to  
190 collect standard sociodemographic data and medical information about the pregnancy and the  
191 newborn. Data were also retrieved from maternal and pediatric medical records at delivery. At  
192 2 and 12 months postpartum, telephone interviews with mothers and fathers were conducted  
193 and included questions on 1) demographic and socioeconomic variables such as country of  
194 birth, education level, employment, household monthly income, and household composition;  
195 2) health variables related to both children and parents; 3) current feeding practices; 4)  
196 mothers' prior experience with breastfeeding and care of children other than their own; and 5)  
197 whether the mother had been breastfed herself and received advice on how to care for infants  
198 from her mother. In addition, from 3 to 10 months after delivery, families were asked to  
199 complete a monthly Internet/paper questionnaire on their infant's diet (feeding method,  
200 introduction of food and beverages).

201 *Breastfeeding*

202 Two breastfeeding definitions were used in the present study: any breastfeeding and  
203 predominant breastfeeding. Any breastfeeding was defined as the infant receiving breastmilk.  
204 Predominant breastfeeding was defined as the only milk given to the infant being human milk  
205 (no animal milk or infant formula).

206 During each follow-up, the infant feeding method was recorded: solely breast milk, solely  
207 infant formula, both breast and formula milk (including plant-based infant formula), animal  
208 milk or plant-based beverage. If the mother had stopped breastfeeding, the exact age of the  
209 child when breastfeeding ended was recorded, along with the child's age when formula milk  
210 was introduced. Longitudinal follow-up of infants allowed to ensure that the feeding methods

211 reported each month were compatible (i.e., the mother could not breastfeed at month X+1 if  
212 she had not breastfed at all during month X). The duration of any and predominant  
213 breastfeeding was calculated. If the information needed to calculate the duration was only  
214 partially available for one infant, we imputed the median duration of breastfeeding estimated  
215 amongst infants with the same dietary profile (e.g., still breastfed at month X but receiving  
216 only formula milk at month Y) to this infant. If no information was available concerning  
217 breastfeeding, no imputation was performed.

### 218 *Infant and maternal characteristics*

219 Because sociodemographic data were more comprehensively collected during the 2-month  
220 interview than during the maternity interview and because these characteristics only  
221 marginally evolved during these 2 months, we used data collected at 2 months in our  
222 analyses. Sociodemographic characteristics collected during the maternity stay were used  
223 only in the case of missing values at 2 months.

224 The main variables of interest (i.e., mother's mother breastfeeding experience and advice, and  
225 mother's previous experience with breastfeeding or infant care) were defined as follows:

- 226 • Mother was breastfed herself (yes/no) and mother received infant care advice from her  
227 own mother (yes/no), both variables combined in a four-category variable  
228 (breastfed/advice, breastfed/no advice, not breastfed/advice, not breastfed/no advice);
- 229 • Parity and previous breastfeeding experience among multiparous mothers were  
230 combined in a four-category variable (primiparous; breastfed all of her previous  
231 children; breastfed some but not all of her previous children; breastfed none of her  
232 previous children);

- 233 • Mother's previous experience caring for children other than her own [at least in her  
234 professional activity; at least babysitting; only in informal babysitting arrangements  
235 from time to time (siblings, others); only in frequent informal babysitting  
236 arrangements (siblings, others); never];
- 237 • Birth place (France; another country).

238 Confounding variables for the main analyses were variables previously shown to be  
239 associated with breastfeeding practices (Kersuzan et al., 2014; Victora et al., 2016; Wagner et  
240 al., 2015): marital status (married or civil union/cohabiting/single); number of children under  
241 5 years in the house (none/one or more); work status in early pregnancy (no professional  
242 activity/full-time/part-time); return to work at 2 months (yes/no); maternal age at first delivery  
243 (<25, 25–29, 30–34, ≥35 years old); family income per consumption unit (unknown; < €600,  
244 €600–1099, €1100–1799, €1800–2999, ≥ €3000/month); maternal education level (≤ 9, 11,  
245 12, ≥ 14 years); socioprofessional category (self-employed; managers and professionals;  
246 technicians and associate professionals; services, sales and clerical support workers; craft  
247 workers, machine operators and elementary occupations; unemployed/student); maternal body  
248 mass index (BMI) before pregnancy (<18.5, 18.5–24.9, 25.0–29.9, ≥ 30.0 kg/m<sup>2</sup>); maternal  
249 smoking during pregnancy (yes/no); and attendance at birth preparation sessions (none/at  
250 least one course). Birth characteristics collected in medical records were preterm birth,  
251 caesarean delivery, sex and twin birth.

## 252 *Sample selection*

253 For the 18,329 infants recruited, 52 parents withdrew consent within the first year. Infants for  
254 whom eligibility criteria could not be verified because of missing data were also excluded  
255 (n=422). Therefore, 17,855 infants were eligible. To avoid family clusters related to the

256 inclusion of twins, we randomly selected one twin from each twin pair (n=277 exclusions).  
257 We excluded infants without data on breastfeeding initiation (n=73) from the analysis. Hence,  
258 breastfeeding initiation rates were described for 17,505 infants and breastfeeding duration was  
259 calculated for breastfed infants (n=12,662 for any breastfeeding and n=11,551 for  
260 predominant breastfeeding).

261 On multivariable analyses, we excluded infants for whom the interview was not completed at  
262 month 2 (n=2202) or was completed in part (n=1529), so 13,774 infants remained for the  
263 analysis of breastfeeding initiation. Because breastfeeding duration was analyzed for only  
264 breastfed infants, 10,182 infants were considered for the analysis of any breastfeeding  
265 duration and 9,446 the analysis of predominant breastfeeding duration (see Figure 1).

#### 266 *Statistical analyses*

267 We used the chi-square test to compare characteristics of mothers who initiated and did not  
268 initiate breastfeeding, logistic regression models for breastfeeding initiation, and linear  
269 regression models for breastfeeding duration (with number of months of breastfeeding as the  
270 explained variable). The multivariable regression models were adjusted for all covariates  
271 described in the Methods section as well as maternity unit level (level 1, 2 or 3), size (number  
272 of deliveries per year), and legal status (public, for-profit private, non-profit private); region  
273 of residence; and season of recruitment. Analyses were conducted separately for any  
274 breastfeeding and predominant breastfeeding.

275 We also included an interaction term in logistic regression models that crossed mother's  
276 mother breastfeeding experiences with mothers' own experience to investigate whether the  
277 effect of family influence (mothers having been breastfed themselves or received advice from  
278 their own mother) on breastfeeding practices was modified by mothers' own experience

279 (having breastfed previous children). When the interaction term was statistically significant,  
280 models were also stratified by mother's own experience.  $P < 0.05$  was considered statistically  
281 significant, and the analyses involved using SAS v9.3 (SAS Inst., Cary, NC).

## 282 **Results**

283 The characteristics of the study population are in **Table 1**.

284 After adjustment for confounding variables, mother's mother and mother's previous  
285 experience regarding breastfeeding or childcare were associated with both breastfeeding  
286 initiation and duration (**Table 2**). As compared with mothers who were not breastfed in  
287 infancy and did not receive advice on childcare from their own mother, those who were  
288 breastfed as infants were more likely to initiate and continue breastfeeding, whether or not the  
289 mother received advice from her own mother. However, non-breastfed mothers who received  
290 advice from their own mothers were less likely to initiate and continue breastfeeding. As  
291 compared with primiparous mothers, multiparous mothers who breastfed all their previous  
292 children were more likely to initiate and maintain breastfeeding for their current infant. In  
293 contrast, as expected, multiparous mothers who had no previous breastfeeding experience  
294 were less likely to initiate and maintain breastfeeding than were primiparous mothers. A  
295 significant interaction was found between having been breastfed and mother's previous  
296 breastfeeding experience for breastfeeding initiation (all  $p_{\text{interaction}} < 0.0001$ ) but not  
297 breastfeeding duration ( $p_{\text{interaction}} = 0.53$  for any breastfeeding and  $p_{\text{interaction}} = 0.68$  for  
298 predominant breastfeeding). Stratified analysis by mother's previous breastfeeding experience  
299 (Figure 2) showed that the effect of having been breastfed as an infant was especially  
300 important for primiparous mothers and to a lesser extent multiparous mothers who did not  
301 breastfeed any of their children.

302 Regarding previous child care experience, mothers who had professional experience with  
303 children or to a lesser extent babysitting experience were more likely to initiate breastfeeding  
304 than those with no previous child care experience. However, no association was found  
305 between mothers' experience caring for children other than their offspring and breastfeeding  
306 duration.

307 Finally, foreign-born mothers had a higher breastfeeding initiation rate and longer  
308 breastfeeding duration than native French mothers, but this effect was observed for only any  
309 breastfeeding: mother's country of birth had no effect on predominant breastfeeding.

## 310 **Discussion**

311 In the ELFE cohort, initiation and duration of breastfeeding were positively related to mothers  
312 having been breastfed themselves and breastfeeding all previous children. In line with our  
313 speculations, in the French context, with a long history of resistance to breastfeeding and with  
314 state efforts to promote breastfeeding low as compared with other countries in the European  
315 region, the effect of mother's mother and mother's previous breastfeeding experience were  
316 strong predictors of breastfeeding practices.

317 The "Theory of Planned Behavior" posits that prior experience with a particular behavior  
318 directly influences perceived behavioral control (Ajzen and Madden, 1986; Bai et al., 2015;  
319 Nagy et al., 2001). Thus, mothers who had previously breastfed would be more likely to do so  
320 again as compared with mothers who had formula-fed their infant. The results of the current  
321 study support the scarce studies showing personal breastfeeding experience significantly  
322 related to mothers' current feeding choice. Primiparous mothers who, by definition, had no  
323 previous personal experience with an infant-feeding method, were less likely to initiate and  
324 continue breastfeeding than were multiparous mothers who breastfed all of their preceding  
325 children; however, the former were more likely to breastfeed than were multiparous mothers  
326 who had breastfed none of their previous children. Multiparous mothers who breastfed only  
327 some of their preceding children were less likely to initiate breastfeeding than were  
328 primiparous mothers, but both continued to breastfeed at about the same rate. These findings  
329 show the importance of the initial decision at the first birth, because once it has been made, it  
330 is likely to be reproduced at subsequent births.

331 Our results highlight that having been breastfed was positively related to both initiation and  
332 duration of breastfeeding. Several studies reported that previous infant-feeding experiences  
333 were more predictive of feeding decisions for the current infant than were social influences

334 (Kloeblen-Tarver and al., 2002), although some studies found an association between parity  
335 and breastfeeding practices (Colombo et al., 2018) and others did not (Guo et al., 2013). In  
336 our study, being a breastfed mother was more strongly related to breastfeeding behavior  
337 among mothers who lacked experience (i.e., primiparous mothers) than multiparous mothers  
338 who could rely on their own experience and presumably personal beliefs.

339 A mother can consciously or unconsciously influence her daughter's infant feeding decisions  
340 in a number of ways (Ekstrom et al., 2003). Our analyses showed that the mother's mother  
341 specific advice on care for a newborn influences a mother's decision to initiate and continue  
342 breastfeeding, although this effect was observed for only mothers who had not been breastfed  
343 themselves. Mothers who had been formula-fed themselves and received advice from their  
344 own mothers had the lowest rates of breastfeeding initiation and duration. A recent review  
345 highlighted that the mother's mother or father can influence breastfeeding duration (Negin et  
346 al., 2016). Thus, intergenerational transmission of infant feeding in the past could be  
347 reinforced for women relying on their own mothers' advice for childcare after delivery.

348 Results from an intervention study, designed to encourage mother's mother education in the  
349 field of breastfeeding showed that the attitude of the mother's mother toward breastfeeding is  
350 mainly influenced by her experience with breastfeeding, regardless of whether she received  
351 the intervention. If a mother's mother has not breastfed, she may offer advice that reflects her  
352 experience with bottle-feeding, which undermines the present recommendations for the  
353 breastfeeding of infants. Consistent with our results, some studies (Kohlhuber et al., 2008;  
354 Scott et al., 2001) noted a positive association of perceived preference or support of the  
355 mother's mother for breastfeeding with breastfeeding initiation. Similarly, many  
356 grandmothers appeared to advocate feeding with supplementary bottles in addition to  
357 breastfeeding (Susin et al., 2005), which predicted breastfeeding cessation before 3 months  
358 postpartum.

359 These findings suggest that health promotion messages focusing on breastfeeding would be  
360 more efficient by accounting for these personal and intergenerational experiences than more  
361 prescriptive ones, because a previous negative experience of the mother, or even the mother's  
362 mother, would counteract the prescriptive messages. In particular, for women who decided  
363 not to breastfeed their previous children, the reason for this choice must be understood to  
364 adapt the message. Moreover, special support must be developed to help mothers with no  
365 family support on breastfeeding to initiate and maintain breastfeeding.

366 A mothers' previous experience of childcare was also related to breastfeeding, although this  
367 effect was observed for only breastfeeding initiation. Mothers who had babysitting experience  
368 or cared for children in their professional activity initiated breastfeeding more often than did  
369 those without such experience. This finding supports results from one study demonstrating a  
370 strong effect of professional work with infants on breastfeeding initiation (Gojard, 2000).  
371 Mothers who had professional experience with children may have received child care training  
372 and thus may have been more exposed to dominant early childhood discourse that encouraged  
373 breastfeeding.

374 Being born in another country — where breastfeeding may be common as compared with  
375 France — was found associated with breastfeeding but only with non-predominant  
376 breastfeeding. This finding was previously noted (Bonet et al., 2008, 2013; Chen et al., 2013;  
377 Ladewig et al., 2014) and may be due to cultural values and beliefs favoring partial  
378 breastfeeding rather than exclusive breastfeeding, such as the negative effect of colostrum for  
379 the infant (McLachlan and Forster, 2006). More generally, the influence of geographical  
380 origin on breastfeeding and the type of breastfeeding chosen (any or predominant) is probably  
381 linked to the fact that norms and practices from the country of origin are maintained after  
382 immigration (Schmied et al., 2012). Similar differences in breastfeeding duration between

383 native and foreign mothers were found in the United States (Sparks, 2011), Spain (Oves  
384 Suárez et al., 2014), Ireland (Ladewig et al., 2014), and Sweden (Wallby and Hjern, 2009).  
385 Another reason could be the “Healthy Migrant Effect,” suggesting that foreign mothers want  
386 to have the best infant feeding education in their new environment (Chen et al., 2013); for  
387 example, an international study showed that a Chinese mother who had immigrated to  
388 Australia initiated breastfeeding more often and breastfed longer than a Chinese mother living  
389 in China.

390 We acknowledge the inability to study exclusive breastfeeding in that the ELFE study data do  
391 not allow for using a definition consistent with the WHO because the use of water, water-  
392 based drinks and fruit juice in the 0- to 2-month period were not collected. However, the  
393 ELFE study has several notable strengths for the analysis of breastfeeding practices in France.  
394 First, it was the first prospective cohort survey conducted in France that allowed for the  
395 analysis of any or predominant breastfeeding practices with a broad representative sample of  
396 births, ensuring good statistical power. Second, because data from the ELFE study had been  
397 collected in maternity units and monthly from 2 to 12 months, the period of recall was short  
398 for breastfeeding duration, which may have limited recall bias. Third, the collection of  
399 detailed socioeconomic and family data allowed for taking into account many potential  
400 confounding variables usually associated with breastfeeding initiation or duration, such as  
401 birth characteristics, smoking status, education, and socioprofessional category (Bonet et al.,  
402 2013; Brand et al., 2011; Taylor et al., 2006).

403 In conclusion, our results from a large nationally representative cohort highlight the  
404 importance of mother’s mother and personal breastfeeding experiences for breastfeeding  
405 practices. Even if the mothers decide to breastfeed or not breastfeed their infant, they are  
406 influenced by sociocultural factors and those related to societal norms and public policy. The

407 weak historical policy support for breastfeeding in a context of a common and long-  
408 established practice for mothers to not breastfeeding could explain in part the lower  
409 breastfeeding rates in France than in most other high-income countries. However, health  
410 promotion messages focusing on breastfeeding should not be prescriptive and should not  
411 ignore the wider social, economic and environmental factors that shape mothers’  
412 breastfeeding choices. Recent approaches to infant feeding support a shift away from  
413 breastfeeding promotion and toward providing practical and ongoing “mother-centered”  
414 feeding support. Our results underline that these supports should be targeted at mothers with  
415 no experience, either direct or indirect, with breastfeeding in order to increase their  
416 breastfeeding knowledge and practical breastfeeding expertise. This support could also  
417 involve the mother’s mother, especially when the mother was not breastfed, to improve her  
418 attitudes toward breastfeeding.

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566

567 Table 1. Characteristics of the study population

	Total (n=13774)	Any breastfeeding initiation		
		No (n=3592)	Yes (n=10182)	
<b>Maternal characteristics</b>				
Maternal age at first delivery, years				<0.0001
<25	24.2 (3326)	31.9 (1147)	21.4 (2179)	
25-29	43.4 (5983)	42.1 (1514)	43.9 (4469)	
30-34	25.0 (3442)	20.0 (720)	26.7 (2722)	
≥35	7.4 (1023)	5.9 (211)	8.0 (812)	
Maternal BMI before pregnancy, kg/m <sup>2</sup>				<0.0001
<18.5	7.6 (1053)	8.3 (297)	7.4 (756)	
18.5-24.9	65.7 (9055)	60.1 (2159)	67.7 (6896)	
25.0-29.9	17.1 (2356)	19.0 (682)	16.4 (1674)	
≥30.0	9.5 (1310)	12.6 (454)	8.4 (856)	
Marital status				<0.0001
Single	4.3 (597)	4.8 (172)	4.2 (425)	
Cohabiting	34.5 (4751)	40.5 (1454)	32.4 (3297)	
Married/civil union	61.2 (8426)	54.7 (1966)	63.4 (6460)	
Maternal education level, years				<0.0001
≤ 9	3.1 (424)	4.2 (151)	2.7 (273)	
11	12.6 (1734)	19.6 (705)	10.1 (1029)	
12	19.5 (2686)	23.4 (841)	18.1 (1845)	
≥ 14	64.8 (8930)	52.8 (1895)	69.1 (7035)	
Time worked during pregnancy				0.07
No professional activity	25.2 (3472)	26.6 (954)	24.7 (2518)	
Part-time	15.9 (2184)	15.2 (545)	16.1 (1639)	
Full-time	58.9 (8118)	58.3 (2093)	59.2 (6025)	
Return to work at 2 months				0.0002
No	93.6 (12893)	92.3 (3316)	94.1 (9577)	
Yes	6.4 (881)	7.7 (276)	5.9 (605)	
<b>Family and maternal experience</b>				
Mother's own breastfeeding status and advice from her mother				<0.0001
Breastfed/advice	23.5 (3232)	14.2 (511)	26.7 (2721)	
Breastfed/no advice	26.3 (3621)	15.2 (546)	30.2 (3075)	
Not breastfed/advice	20.7 (2847)	32.1 (1152)	16.6 (1695)	
Not breastfed/no advice	29.6 (4074)	38.5 (1383)	26.4 (2691)	
Breastfeeding previous children				<0.0001
Primiparous mother	45.2 (6223)	42.6 (1530)	46.1 (4693)	
None for previous children	15.0 (2067)	41.9 (1506)	5.5 (561)	
Not for all previous children	2.9 (404)	4.8 (173)	2.3 (231)	
All previous children	36.9 (5080)	10.7 (383)	46.1 (4697)	
Maternal previous experience in child's care				<0.0001
None	27.2 (3745)	26.5 (951)	27.4 (2794)	

Some (siblings, other)	23.8 (3276)	27.0 (971)	22.6 (2305)	
Often (siblings, other)	11.8 (1622)	14.4 (517)	10.9 (1105)	
At least babysitting	24.1 (3317)	22.4 (804)	24.7 (2513)	
At least via professional activity	13.2 (1814)	9.7 (349)	14.4 (1465)	
Maternal country of birth				<0.0001
France	89.7 (12348)	95.9 (3445)	87.4 (8903)	
Another country	10.4 (1426)	4.1 (147)	12.6 (1279)	

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568 Data are % (n); differences by breastfeeding initiation were tested by chi-square.

569 BMI, body mass index

570 Table 2. Association between family and maternal experience and breastfeeding initiation or duration in the ELFE study.

	Breastfeeding initiation				Breastfeeding duration (months)			
	Any (n=13774)		Predominant (n=13774)		Any (n=10182)		Predominant (n=9446)	
	OR (95% CI)	p-value	OR (95% CI)	p-value	$\beta$ (95% CI)	p-value	$\beta$ (95% CI)	p-value
<b>Family and maternal experience</b>								
Mother's own breastfeeding status and advice from her mother		<0.0001		<0.0001		<0.0001		<0.0001
Breastfed/advice	1.9 (1.7 ; 2.2)		1.7 (1.5 ; 1.9)		0.4 (0.2 ; 0.6)		0.1 (-0.1 ; 0.3)	
Breastfed/no advice	2.0 (1.7 ; 2.3)		1.7 (1.5 ; 2.0)		0.5 (0.3 ; 0.7)		0.4 (0.2 ; 0.6)	
Not breastfed/advice	0.8 (0.7 ; 0.9)		0.8 (0.7 ; 0.9)		-0.4 (-0.7 ; -0.2)		-0.4 (-0.6 ; -0.2)	
Not breastfed/no advice	1 (Ref)		1 (Ref)		0 (Ref)		0 (Ref)	
Breastfeeding previous children		<0.0001		<0.0001		<0.0001		<0.0001
Primiparous mother	1 (Ref)		1 (Ref)		0 (Ref)		0 (Ref)	
None for previous children	0.2 (0.2 ; 0.2)		0.2 (0.2 ; 0.2)		-0.7 (-1.1 ; -0.3)		-0.3 (-0.7 ; 0.0)	
Not for all previous children	0.7 (0.5 ; 0.8)		0.7 (0.5 ; 0.8)		0.4 (-0.1 ; 0.9)		0.2 (-0.2 ; 0.7)	
All previous children	5.0 (4.2 ; 6.0)		3.8 (3.2 ; 4.5)		1.5 (1.3 ; 1.8)		1.0 (0.8 ; 1.3)	
Previous experience in childcare		<0.0001		<0.0001		0.002		0.02
None	1 (Ref)		1 (Ref)		0 (Ref)		0 (Ref)	
Some (siblings, other children)	1.0 (0.9 ; 1.1)		1.0 (0.9 ; 1.1)		-0.3 (-0.5 ; -0.1)		-0.2 (-0.4 ; 0.0)	
Often (siblings, other children)	1.1 (0.9 ; 1.3)		1.0 (0.9 ; 1.2)		-0.1 (-0.4 ; 0.2)		-0.1 (-0.4 ; 0.1)	
At least babysitting	1.2 (1.1 ; 1.4)		1.2 (1.0 ; 1.3)		-0.1 (-0.3 ; 0.1)		0.0 (-0.2 ; 0.1)	
At least via professional activity	1.6 (1.3 ; 1.9)		1.4 (1.2 ; 1.6)		0.2 (0 ; 0.5)		0.2 (0.0 ; 0.4)	
Maternal country of birth		<0.0001		0.2		<0.0001		0.002
France	1 (Ref)		1 (Ref)		0 (Ref)		0 (Ref)	
Another country	2.1 (1.7 ; 2.6)		1.1 (1.0 ; 1.3)		1.2 (1 ; 1.5)		0.3 (0.1 ; 0.6)	

OR, odds ratio; 95% CI, 95% confidence interval

Multivariable logistic and linear regression, adjusted for maternal age at first delivery (<25, 25-29, 30-34,  $\geq$ 35 years), marital status (married or

civil union/cohabiting/single), number of children under 5 years of age in the house (none/one or more), time worked during pregnancy (no professional activity/full-time/ part-time), return to work at 2 months (yes/no), infant's sex (boy/girl), twin birth (yes/no), pre-term birth (yes/no), attendance at birth preparation courses (none/at least one course), mode of delivery (cesarian/vaginal), socioprofessional category (self-employed; managers and professionals; technicians and associate professionals; services, sales and clerical support; craft workers, machine operators and elementary occupations; unemployed/student), maternal education level ( $\leq 9, 11, 12, \geq 14$  years), maternal BMI before pregnancy ( $< 18.5, 18.5-24.9, 25.0-29.9, \geq 30.0$  kg/m<sup>2</sup>), family income (unknown;  $< \text{€}600, \text{€}600-1099, \text{€}1100-1799, \text{€}1800-2999, \geq \text{€}3000$ /month), maternal smoking during pregnancy (yes/no), maternity unit category (level 1, 2 or 3), maternity unit size (145-699, 700-1009, 1010-1418, 1422-2187, 2197-5215 deliveries/year), maternity unit legal status (public, for-profit private, non-profit private), wave of recruitment (1, 2, 3 or 4), region of residence.

**Figure 1. Flow-chart of selection of analysis population**

571

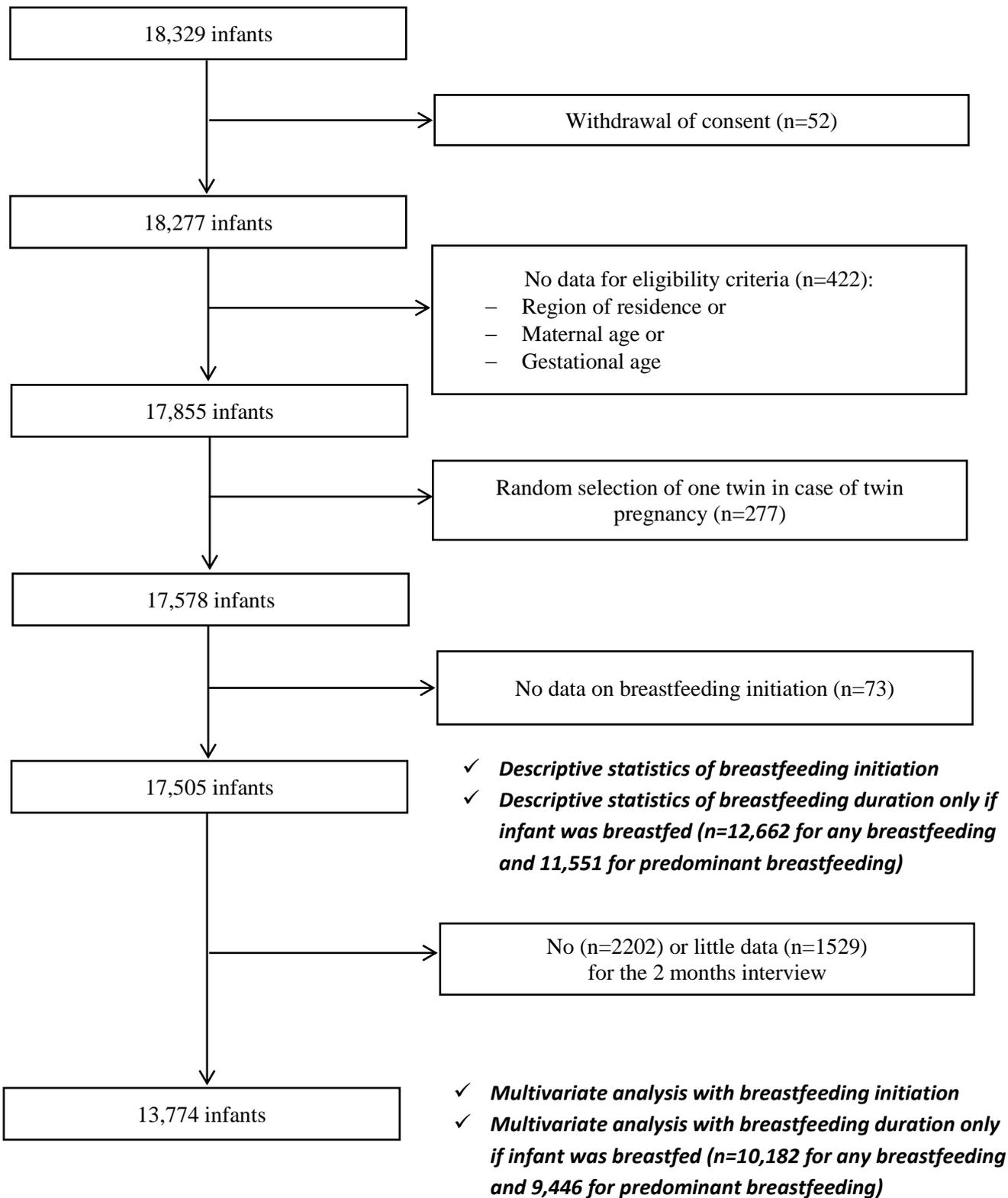
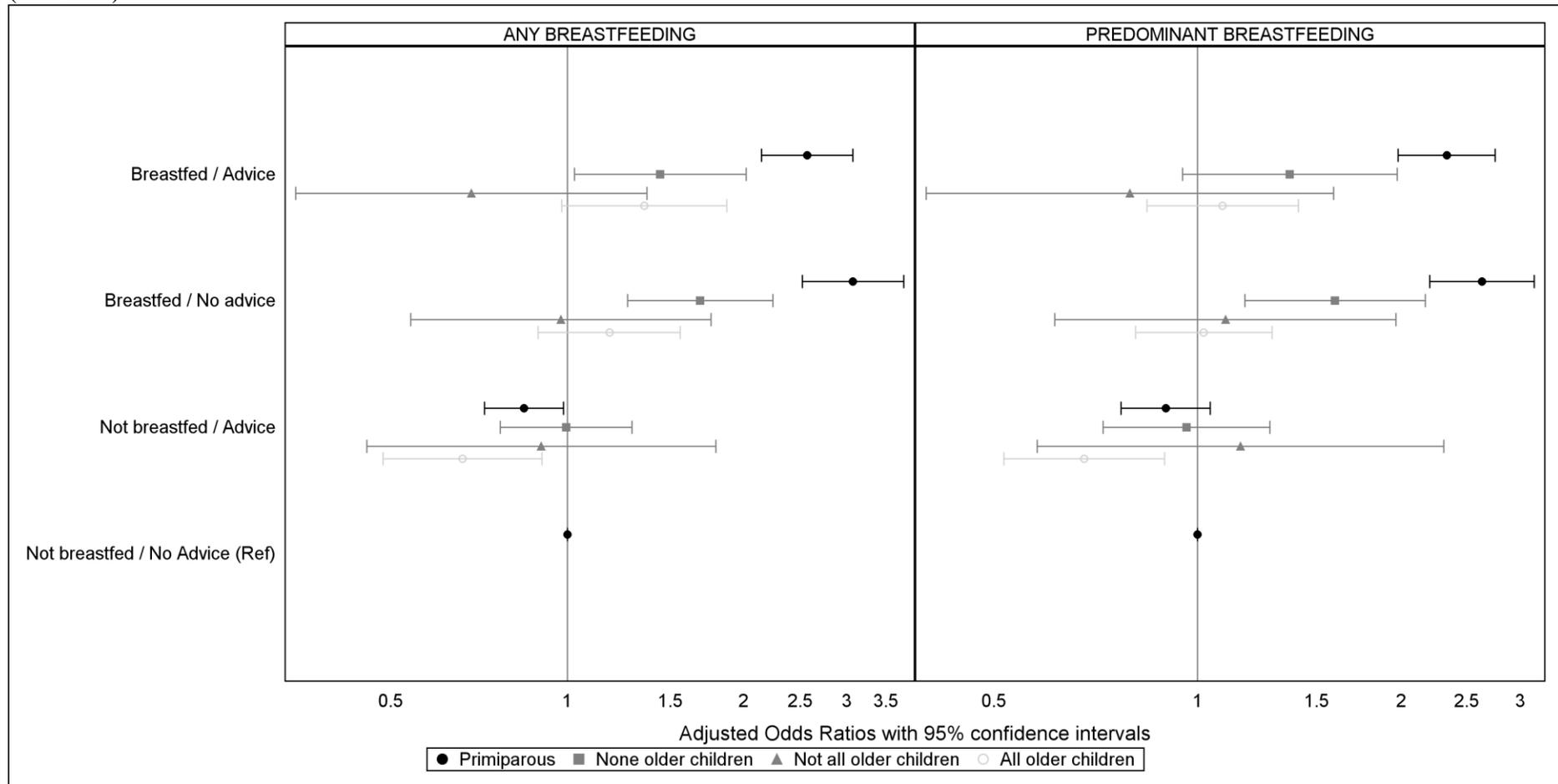


Figure 2. Association between family breastfeeding experience and breastfeeding initiation by maternal previous breastfeeding experience (n=13774)



Multivariable logistic and linear regression, adjusted for previous experience in child care, maternal country of birth, maternal age at first delivery, marital status, number of children under 5 years of age in the house, time worked during pregnancy, return to work at 2 months, infant's sex, twin birth, pre-term birth, attendance of birth preparation courses, mode of delivery, socioprofessional category, maternal education level, maternal BMI before pregnancy, family income, maternity unit category (level 1, 2 or 3), maternity unit size (145-699, 700-1009, 1010-1418,

1422-2187, 2197-5215 deliveries/year), maternity unit legal status (public, for-profit private, non-profit private), wave of recruitment (1, 2, 3 or 4), region of residence.