

Sex Differentials in Toilet Training: A Comparative Study of France and of the UK

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As gender inequalities are increasingly subject of debate, both at a national and at an international level, documenting how they are constructed from an early age is essential. Childhood is a key moment for the internalization of gender norms, as a set of values, representations and practices that structure our relationship with masculinity and femininity (West et Zimmerman 1987). These norms then determine how we differentiate and discriminate on the basis of gender. In very early childhood parents distinguish between boys and girls, assigning to them characteristics socially associated with their gender (Kane 2006; Rubin, Provenzano et Zella 1974). Infants are exposed to gender norms that are passed down through continuous socialization (Darmon 2012) in various aspects of day-to-day life. Although parenting norms and practices are evolving, in particular with respect to gender equality, research has shown that we still see differences in the way boys and girls are brought up (Dafflon Nouvelle (ed.) 2006; Rodgers et Thébaud 2010; Sohn 2015), across different domains of everyday life: toys (Zegai 2010), body appearance and physical attitudes (Court 2010; Martin 1998), sport practice (Mennesson 2011), representation of social order (Lignier et Pagis 2017), infant literature (Brugeilles, Cromer et Cromer 2002), cultural practices (Octobre 2010), etc.

In this communication, we're particularly interested in early socialization in terms of hygiene and toilet training depending on children's sex. We hypothesize that in the long term different hygiene behaviors will have an effect on health trajectories. In France for instance, women have a longer life span than men. They also declare more health problems than men. These health and mortality gaps are constructed throughout life. We want to understand whether norms and practices related to hygiene and body care take root in early childhood, as they can favorably or adversely impact health.

We hypothesize that gender socialization starts in the first months and years of the child's life. We study whether gender norms are constructed through practices, demands and models revolving around the child's body, with possible social variations. In this communication we focus on toilet training before the age of 5. All parents are confronted with toilet training, which makes it an interesting practice to study. Toilet training usually takes place when the child is between two and three years old, but the norms related to toilet training and how it is managed may vary, depending on children's sex, on the cultural and social context of parents, or on family structure. Toilet training is of two concerns for families: on the one hand, they have to meet the sanitary and social standards in terms of hygiene imposed by institutions—children need to be able to control their bladder and bowel before they start school (Diasio et Pawlowska 2017). On the second hand, toilet training is part of teaching the child to control their body, thereby helping them gain their autonomy.

Some research has found that girls are more advanced in the toilet training process (Schum et al. 2001), while other research hasn't found any differences between boys and girls (Murillo B. Netto et al. 2020). However, these results are based on small samples, with parents self-selecting into them. Few nationally representative datasets provide information on parental practices related to toilet training. Longitudinal studies that allow us to follow the whole toilet training process are even rarer. In this paper, we make use of two longitudinal studies that do have information on the matter and that took place at a similar period: Etude Longitudinale depuis l'Enfance (Elfe) for France, and from the Millennium Cohort Study (MCS) for the United Kingdom. We propose a comparative study for these two countries.

Two questions structure our communication:

- Are there differences between boys and girls in the toilet training process? Do they start and achieve cleanliness at different ages?
- To what extent are sex differentials related to the child's socialization context? We look at three dimensions of this context:
 - a) the socioeconomic background (level of education, employment, income) and the cultural background (migration, ethnicity);
 - b) family composition (family size, sex composition of siblings, family structure—two biological parents, single parents, new partners);
 - c) child care arrangements: France and the UK have different institutional settings in terms of childcare, of school starting age and of public health policies. We pay close attention to these contexts as they might bear different toilet training related incentives for parents. This is why we're interested in studying these two specific countries: they allow us to investigate the effects of institutional settings. Also, as mentioned earlier, there are few datasets as rich as these are.

Data and analytical strategy

To answer these questions, we harmonize data from the French cohort study Elfe and from the British Millennium Cohort Study (MCS). These two rich longitudinal datasets provide information for around 18,000 families in which a child was born in France in 2011 for Elfe, and for a comparable number of families across the UK in 2000-02 in the case of MCS. They contain information on children's development, including toilet training acquisition, on parenting practices, as well as on the environment children grow up in. They have both been following children at very close intervals since, and particularly around, birth, and will be following them until they reach adulthood. Although the sample was drawn at random, they did oversample for children from minorities and disadvantaged backgrounds. Weights are then applied to get representative datasets at the national levels.

We use the first four waves from Elfe and the first three waves from MCS. We have toilet training variables from the parents' questionnaire at three points in time for the French data: when the child is one, two and three and a half. At one and two, parents are asked whether they ever get their child to use their potty. At two, they are asked whether their child wears diapers during the day and whether they do during the night. Finally, at three and a half, they are asked whether their child fully controls both their bladder and their bowel, during both night and day. For the British data, we have variables at two points in time: at three and at five. At three, parents are asked whether their child is dry during the day and whether they are clean during the day. At five, they are asked how often their child wets their nappy during the day, and how often they do so at night. We operationalize all of these as dummy variables, mostly contrasting the majority case with the rest. For example, we turn the variable 'how often their child wets their nappy during the day' into a dummy variable 'never wets during the day' as opposed to 'ever wets during the day'.

For both countries, we construct a comparable set of covariates for child characteristics, parent characteristics, family characteristics and the institutional context. These include variables for child's age in months at interview, child's general health and which type of medical attention they've received, sibship composition, parents' year of birth, education, work status, and migration history, mothers' part-time work, whether parents are living together, household income, childcare

arrangements, and when the child started school. Most are taken at baseline: when the child is one for the French cohort, and when they are three for the British cohort.

We have not yet implemented all of our analyses at this early stage of our paper. Therefore, here is what we aim to do, with expected results. To correct for missingness in both datasets, we will use multiple imputation for the regression models, as well as weights for the descriptive statistics.

Our main analysis looks at differences in toilet training with respect to child's sex. We will first run descriptive statistics to estimate cleanliness rates during the day and during the night, by sex, at different stages of childhood. We might not be able to detect differences for certain variables for which there's too little variation. For example, most 2-year-olds (over 95%) in France wear nappies at night. We will then run univariate regression models to test for differences. We expect to see differences in both countries, with girls being taught toilet training and completing it earlier than boys, as is found in previous research.

We will then regress toilet training variables on child's sex, age in months, and the interaction of the two, to see how children's toilet training evolves with time, depending on their sex. We will then implement step-by-step models, introducing parents' education first to check whether sex differentials are more important for certain levels of education. We would expect to find bigger differences in toilet training between boys and girls when parents have less education, because those are the social groups for which parenting practices are the most different for boys and girls.

We will also use univariate models to investigate differences related to parents' education and to children's age in months. We expect children whose parents have higher diplomas to learn toilet training later. Indeed, research has shown that more educated parents are more concerned with respecting the child's rhythm for their development, not wanting to rush into toilet training too prematurely. Conversely, parents from more popular backgrounds might follow a more hygienist approach (Diasio et Pawlowska 2017). And we expect to see more advanced toilet training for older children, as they will be more biologically developed.

We will then add number and sex composition of siblings, as parents might face different constraints in terms of resources and as children might learn faster when there are other children around to imitate. That's also a reason for which we regress toilet training on childcare arrangements, expecting earlier toilet training in collective childcare as opposed to individual childcare, e.g. nursery versus grandparents. On the other hand, in the case of collective childcare, we might expect an effect in the opposite direction. Children in collective childcare might learn toilet training later as staff might use nappies more frequently and for longer, and advise parents not to precipitate the learning process to allow the child to reach an appropriate age before starting toilet training. We expect collective childcare staff to follow the parents' lead on toilet training rather than initiating it themselves.

We will control for work status, part-time work, parental leave, and time spent with the child to check whether more time spent with parents leads boys or girls to toilet train earlier. We will also control for migration history, parents living together or not, and income.

As we do not have directly comparable toilet training variables across both countries, both in terms of when the questions were asked, and what was asked, it will be difficult for us to directly compare results across both countries. However, comparing sex differentials and how these evolve over time will give us some indications on the effect of the institutional context. For example, are there gaps before starting school that disappear once school has started? In particular, we might expect to still see gaps at three years old in the UK, where school starts around four years old, while the gap may have been reduced in France by that age, as school starts around three.

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