

A METHODOLOGICAL GUIDE TO

**ANALYZE
PARENTAL
PRACTICES
OF CHILDREN
[AGED 0 TO 6]**

WEST AND CENTRAL AFRICA



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Table of contents

I. INTRODUCTION	4
I.1 REASONS FOR PROMOTING PUBLIC INTERVENTIONS IN FAVOUR OF YOUNG CHILDREN	4
I.2 EARLY CHILDHOOD IN SUB-SAHARAN AFRICA	7
I.3 DEFINING A REGIONAL EARLY CHILDHOOD PROGRAMME	8
I.4 INTRODUCTION TO THE STUDY ON PARENTAL PRACTICES	8
II CONSTRUCTING METHODOLOGICAL TOOLS	10
II.1 CONSTRUCTING THE QUESTIONNAIRE	11
II.1.1 Contents of the basic questionnaire	12
II.1.1.1 Individual characteristics of mothers and their children	12
II.1.1.2 General and specific maternal practices	13
II.1.2 Contextualising the questionnaire	13
II.1.3 Finalising the questionnaire	15
II.2 CONSTRUCTION OF THE SURVEY AND THE SAMPLE	15
II.2.1 Sampling and size of the sample	15
II.2.2 Cost of the survey	17
II.3 DRAFTING THE INTERVIEWER'S GUIDE	18
III DATA PROCESSING AND ANALYSIS	20
III.1 PREPARATORY WORK PRIOR TO ANALYSES	21
III.1.1 Merging the «Mother» and «Child» files	21
III.1.2 Checking data consistency	22
III.1.3 Constructing variables related to individual characteristics	22
III.2 DATA ANALYSIS PLAN	23
III.3 DESCRIPTION OF SPECIFIC PRACTICES	25
III.4 CONSTRUCTING AND ANALYSING THEMATIC SCORES	31
III.4.1 Constructing the thematic scores	31
III.4.2 Analysing the thematic indicators	36
III.4.2.1 Similarities among family practices in thematic areas	36
III.4.2.2 The social dimension of family practices in thematic areas	37

III.5	COMPUTING AND ANALYSING CROSSCUTTING SCORES	40
III.5.1	Computing the crosscutting scores	41
III.5.1.1	Similarities in educational approaches	44
III.5.1.2	The social dimension of family educational approaches	45
III.6	LINKS BETWEEN PRACTICES IN THEMATIC AREAS AND EDUCATIONAL BEHAVIOUR	47
IV. TOWARDS DEFINING REFERENCE MARKERS FOR THE PARENTAL EDUCATION PROGRAMME		50
ANNEXES		54
ANNEXE 1 : BASIC QUESTIONNAIRE ON PARENTAL PRACTICES		55
ANNEXE 2 : INTERVIEWER'S GUIDE TO THE BASIC QUESTIONNAIRE		73
ANNEXE 3 : CONSTRUCTING VARIABLES RELATED TO INDIVIDUAL CHARACTERISTICS		83
ANNEXE 4 : COMPUTING THE HOUSEHOLD LIVING CONDITIONS VARIABLE WITH SPSS		88
ANNEXE 5 : PROCESSING MISSING DATA IN COMPUTING SCORES		90
BIBLIOGRAPHICAL REFERENCES		93

I.

INTRODUCTION



Since April 2000, the international community has been pursuing the six goals of the Education for All (EFA) movement, within the framework of the Dakar Forum. One of these goals is that of expanding and improving comprehensive early childhood protection and education especially for the most vulnerable and underprivileged children, by 2015. The move towards developing activities specifically targeted at young children (birth to six or eight years) is based on research in biology, psychology, educational sciences and economics, etc. that have shown that providing appropriate care for young children produces subsequent significant impacts in their lives, both for their development and in primary school and beyond, through improved preparedness for school, better academic retention, enhanced levels of acquisition, higher work yield in adult life, etc. These impacts also accrue to society as a whole in the form of enhanced work productivity, reduced high risk behaviour and delinquency, etc.

I.1 REASONS FOR PROMOTING PUBLIC INTERVENTIONS IN FAVOUR OF YOUNG CHILDREN

Early childhood is indeed a crucial stage for children's physical, cognitive, social and emotional development as a large part of brain growth occurs before the age of three, and the social and cognitive structures established during childhood will have very significant effects throughout the life of the individual. Research in developmental neurobiology has shown that in addition to genes, experiences in the first years of life influence the various stages of development. Such research has also underscored the harmful and even irreversible effects that delayed development at this stage can have on long term physical and mental health, as well as behaviour and learning ability (Shonkoff, 2010). These delays are more likely to be found in underprivileged environments, but current research shows that it is also possible to find similar significant delays in more socially well-off environments (Mingat and Seurat, 2011a, 2011b; Seurat, 2013a, 2013b). In order to promote harmonious development, successful education and later, social success, children, especially those in the underprivileged categories, must be provided with the right care and supervision in early childhood.

Early childhood development can be divided into two periods, each with its own specific needs and methods of intervention:

- (i) The first period covers the first years of life (more or less from 0 to 3 years), during which the child is mainly brought up within the family in the broadest sense, and acquires the first skills, in particular motor, emotional, language and relationship skills. While certain social services (immunisation, nutrition, etc.) do exist specifically for this age group, close observation has shown that the child's development is principally promoted through day-to-day interactions. Through such interactions, educational practices and approaches, as well as parenting skills are brought into play to enable the family make choices and take decisions in the best interest of the child. It has thus been observed from studies carried out in Madagascar, Mauritania, Sierra Leone and Sao Tome and Principe (STP) that, to varying degrees and on aspects that may differ, certain family practices are favourable to child development, while others are less favourable and are sometimes even clearly identified as harmful¹. Another observation is that while the basic needs of children are relatively universal, family practices are very much influenced by local culture. They may differ quite clearly between countries, but also within the same country, among different groups of the population. Overall, it becomes clear that parental education, in whatever form of application may subsequently be determined, can be a particularly valuable approach within the variety of cultural contexts.
- (ii) The second period relates to the (one, two or three) years before the child begins attending primary school. As the child grows, their needs become more diversified, in particular with regard to socialisation, as well as executive functions and cognitive development. These aspects are even more important as the child will soon be starting primary school and needs to be properly prepared for that event. As much as the family setting was important in the first years of life, for this age group the reference organisational framework is being part of a structured group with other children. The most common such structures are nursery schools or kindergartens, as they are called in different places (although the names may refer to different modes of functioning), but there are also various community structures. Indeed, these activities are related to both early childhood strategies and primary education. It is clear that while considerable progress has been made over the past decade with regard to coverage in primary education, this progress has mainly been in the area of access, while considerable problems regarding retention and quality remain unresolved in many countries. And yet, as demonstrated in various studies, pre-schooling, which helps to prepare children better for the start of primary education, also has significant impact on both retention at primary level and on repeating and success at school (Mingat, 2006).

¹ It has been observed, for example that in certain population groups, over 40% of mothers believe that when a child has diarrhoea they must not be given anything to drink, that there is no point in speaking to children when they are not yet able to answer and that a majority of mothers believe that their own behaviour has no incidence on the development or the health of their children.

I.2 EARLY CHILDHOOD IN SUB-SAHARAN AFRICA

While there is convergent research underlining the significant advantages of activities targeted at young children, in addition to heightened awareness on this point today, very little has been done over the past fifteen years in most Sub-Saharan African countries. On one hand, most existing parental education activities have a very limited scope and are generally initiated by one non-governmental organisation (NGO) or another. On the other, pre-school activities are often only available to a small proportion of the age group concerned, mainly in urban areas and require a significant financial effort on the part of families. They are organised by private establishments, of course, but also often in public establishments. Overall, it is quite obvious that what exists is generally quite contrary to the objectives of the EFA Forum, since the most vulnerable children are found mostly, though not only, in rural areas and also are not very likely to be able to contribute significantly to financing such services, due to their living environment.

There are no doubt various reasons for the current state of paucity of such services in countries in the region: i) the first of these is that high priority was given to the quantitative expansion of primary cycle coverage (often with highly satisfactory, albeit incomplete, results) and this priority mobilised most of the resources available and the energy of stakeholders; ii) the second is that decision-makers in the Early Childhood sub-sector were generally unable to establish credible programmes to scale up these activities and to organise them into a structured national programme attached to a broader programme, in particular within the framework of education sector programmes. These shortcomings relate to the credibility of the plan itself (ability to define potential coverage levels at what date, what service production options, unit costs and budget), as well as the capacity to integrate its financing in a unit that could effectively afford to cover these costs. Of course, these do not constitute the only prerequisite for early childhood activities to be developed successfully, but they are obviously a necessary condition without which nothing can be done.

Finally, experience has shown that we must be careful in using terms such as parental education, community systems and even pre-school education, because these common, generic terms cover content and practices that may differ from one country to the other and from one operator to the other. What is important is not the word used to designate the activity, but rather the actual content and practical modes of functioning. We also observe that the costs and results obtained for these different activities may vary greatly, without the most expensive solutions (which are more difficult to extend) necessarily being the most effective. It is therefore necessary to assess cost-effectiveness and the capacity to scale up and to this end, the national environment is one dimension that needs to be taken into consideration.

I.3 DEFINING A REGIONAL EARLY CHILDHOOD PROGRAMME

Within this context, the UNICEF regional office for West and Central Africa (WCARO) is currently building a regional early childhood development programme. The aim of the programme is to facilitate the design and implementation of national early childhood programmes in each country, with the support of UNICEF country offices. The regional programme is based mainly on three components: (i) a model technical and financial framework for the early childhood sub-sector, (ii) a survey on parental practices and (iii) an assessment of the skills of children as they enter the primary cycle. These three studies seek a two-fold goal:

- first of all, to improve knowledge about the national early childhood environment and more specifically i) the way in which the early childhood sub-sector is currently structured, ii) parental practices currently applied by families in the country and iii) the degree of skills acquisition required for children to enter the first year of primary school.
- then the operational perspective, to i) define a national early childhood development policy describing the level of future coverage to be obtained, at what date, service production options, unit costs and the attendant budget; ii) provide empirical reference markers to be used in defining the content of a parental education programme, and finally, iii) include reference material in order to redefine and improve the content of preschool education activities in the different systems and also of primary education, in order to smooth the process of school entry, for as long as a proportion of the population of children in the country continues to be deprived of the advantage of preschool.

A prototype or a methodological guide will be drafted to cover each of these components, thus making it possible for the studies to be disseminated and ensuring better ownership so that the design and implementation of the three components of the regional programme become a truly collective undertaking. This document is the specific methodological guide for the study on parental practices regarding children under the age of six years.

I.4 INTRODUCTION TO THE STUDY ON PARENTAL PRACTICES

The content of the parental education programme can only be defined with reference to effective prevalent practices in a given country, without losing sight of the fact that there may also be significant variations among population groups within the same country. The programme obviously seeks to determine the most appropriate balance between the national dimension, which must be in line with existing cultural practices, and the universal dimension, because regardless of where they live, each child has fundamental rights and is entitled to the most harmonious development possible. In order to do this, however, it is absolutely necessary to have factual knowledge of the diversity and different aspects of spontaneous parental practices in nutrition, hygiene, protection, health, language, socialisation, etc., as well as those induced

by existing services (immunisation, nutrition, etc.), in a given country. These will serve as the basis for identifying areas where changes in behaviour could possibly be envisaged, which would serve as a reference for parental education. There is however very little national data describing family practices. Although the most recent versions of MICS surveys do include some questions on parents' behaviour regarding child development (first in an optional module in MICS3, then included in the "Child" questionnaire in MICS4 and MICS5), the information gathered is too succinct to fully describe the diversity of parental practices and thus be used to design the content of a parental education programme. It is therefore necessary to carry out a specific household survey aimed at generating baseline knowledge. As has been pointed out above, the study thus pursues a dual objective: i) to gather knowledge about family practices regarding young children, since information available in this area so far is rather sketchy, and ii) an operational objective, to provide the substance for defining the content of parental education activities within the framework of the national Early Childhood Development programme.

The objective of the methodological guide is to provide the necessary baseline references for building, analysing and interpreting data from a specific household survey on parental practices regarding children under the age of six years. Four major steps have been identified for carrying out this study (Figure 1 below).

Figure 1: Description of the different stages in carrying out the study



The second stage, that is, administering the survey and collecting and entering data, is generally carried out by each country's national statistics institute. It is difficult to indicate the duration because this will depend on the availability of the team at the institute at the time of the survey, the number of staff mobilised, etc. For the same reason, the rest of this document does not touch on this stage. On the other hand, the three other stages are under the responsibility of the consultant and the national team. We shall therefore examine them in succession.

11.

CONSTRUCTING METHODOLOGICAL TOOLS



As indicated above, any parental education programme in a country must be based on knowledge about prevailing parental practices. There is however very little national data describing such practices. There is therefore a need to construct a specific household survey in which only mothers with at least one child aged between 6 and 72 months or persons in charge of children of that age group (aunts, adoptive mothers, etc.) are interviewed². The first step in the process therefore consists of defining the methodological tools to be used in the survey: (i) the questionnaire (what questions to be put to the mothers?), (ii) the sample (which mothers are going to be interviewed and how many of them?), and (iii) the interviewer’s guide (how are they going to be interviewed?).

II.1 CONSTRUCTING THE QUESTIONNAIRE

PERSONS INVOLVED

consultant + a national team comprising those involved in early childhood activities in the country (ministry, NGOs, academics, partners)

ORGANISATIONAL METHOD

3 to 4 days workshop – presentation of the survey, working group sessions on each of the sections of the questionnaire, report back after each session to take account of the comments of the national team.

Based on studies carried out in various African countries (Madagascar, Mauritania, Sao Tome and Principe, Sierra Leone, Cape Verde and Guinea Bissau), we already have a basic questionnaire (cf. Annexe 1). This questionnaire covers maternal practices in different aspects of child development that can be considered to be universal. Indeed, regardless of where they live, each child has fundamental rights and is entitled to the most harmonious development possible. For example, a child must be given the most appropriate diet for their development, wherever they are. Based on this, the basic questionnaire must subsequently be modified to cover the national or local dimensions of parental practices, that is, it must be linked to existing cultural practices. This can only be done through consultation with a national team comprising people in charge of early childhood in the country from ministries, but also from NGOs, academia and technical and financial partners. To this end, the existing questionnaire is only a reference, which may be modified to take account of the specificities of the country, as well as suggestions and comments from the national team.

² For practical reasons we shall refer to the “mother” as we go along, rather than “the person in charge of the child”, but we must bear in mind that in some cases, the person to be interviewed for children in the sample may not necessarily be the mother.

II.1.1. CONTENTS OF THE BASIC QUESTIONNAIRE

The basic questionnaire nevertheless has a set structure comprising three sections:

- A section on the characteristics of households, mothers and children
- A section on maternal practices in general
- A section on maternal practices with regard to each of their children

II.1.1.1. Individual characteristics of mothers and their children

Parental practices could be influenced in part by factors related to the characteristics of the child and the mother and generally also by the family and their living environment, but only in part because it is also assumed that family practices and behaviour vis-à-vis children can also be the result of i) constraints, implicit cultural and social references that are somehow imposed on families or ii) "choices" that may themselves be conscious or unconscious. For example, family economic conditions could imply certain constraints regarding the time available to parents, which could also have repercussions on the time devoted to children. Similarly, the level of poverty of the family could have consequences on children's diet (for example, the family might be too poor to buy meat regularly).

On the other hand, there are no doubt some forms of behaviour that may vary significantly from one family to the other but which do not really depend on external conditions. Looking at the same examples, families could devote a lot of time to activities with their children or not give them meat, regardless of whether they are poor or rich. One important dimension for the analysis is thus to identify these characteristics and include them in the questionnaire. Some of them are used as control variables and are thus identified through standard selection. These include:

- Where characteristics related to the family living environment are concerned: the region or province where the family resides, the area (urban or rural) and the living standard of the household. The National Institute of Statistics generally has a series of questions that make it possible to assess this living standard. These questions cover both the housing conditions of the household (number of rooms in the residence, types of walls, type of flooring, type of fuel used for cooking, etc.) and their possessions: car, bike, television, mobile telephone, livestock, etc. A factor analysis method is then used to take account of all these variables and establish a scale ranging from what would be the poorest household to the richest household within the population involved in the survey. Later on we shall be looking at the modalities used in computing this variable.
- Where maternal characteristics are concerned: marital status, family structure, ethnic group, their religion, mother tongue, educational experience and the number of children they have had and who are living with them.
- Where characteristics of the children are concerned: age, sex or their ranking among their siblings.

These characteristics are generally identified by the National Institute of Statistics; they may be presented briefly to the national team, but they are not expected to be modified. That being said, in certain countries it might be interesting to consider other characteristics for all categories (child, mother, household or environment). These must be discussed with the national team.

II.1.1.2 General and specific maternal practices

Maternal practices are covered in two sections of the questionnaire: (i) the first relates to their **general perceptions** in five areas: "Family constraints and use of time", "General development", "Gender in child-parent relations", "Emotional development", "Health and perceptions of danger", while (ii) the second relates to **specific maternal practices concerning each of their children** in eight areas: "Food", "Rest and sleep", "Hygiene", "Prevention and care", "Protection and supervision", "Language", "Cognitive development" and "Social development". In the first section, the interviewer fills out one questionnaire per mother, while in the second section, one questionnaire is used per mother for each of her children included in the sample.

II.1.2 CONTEXTUALISING THE QUESTIONNAIRE

In order to capture specific parental practices in a given national context, the following areas of the basic questionnaire may be modified: (i) areas of practice, (ii) questions and (iii) proposed responses. Also, depending on the particular issues in the country where the study is taking place, one or several modules, corresponding to one or several thematic areas could be added to the questionnaire. This was the case in Mauritania for example, where the national team involved in constructing the questionnaire suggested the addition of a series of questions on maternal practices regarding the spiritual development of their children. Similarly, since it is possible to add questions, in Mauritania, Sierra Leone and Guinea Bissau, questions on child-minding were added to the questionnaire in the section on "Family constraints and time use". On the other hand, while the question of excision was relevant for Mauritania and Guinea Bissau, it was of no interest in Sao Tome and Principe. As a result that module was not included in the questionnaire.

Box 1: Example of a supplementary module on entrusting children in care in Mauritania

1. Do you think of the practice of entrusting children in care has:

- Rather positive aspects
- Rather negative aspects
- I don't know

2. Have you ever entrusted your children to someone?

- Yes
- No

3. If yes, how many children did you entrust to someone?

- a. Child 1 :
- b. Child 2 :
- c. ...

4. If yes, what is the sex of the child you entrusted to someone?

- a. Child 1 :
- b. Child 2 :
- c. ...

5. If yes, what was the age of the child at the time?

- a. Child 1 :
- b. Child 2 :
- c. ...

6. If yes, who did you entrust your child to?

- a. Child 1 :
- b. Child 2 :
- c. ...
- A family member
- To another family
- To a marabout
- Other

7. What was the reason for entrusting your child to someone?

- a. Child 1 :

b. Child 2 :

- c. ...
- School, to learn a profession
- Religious education
- Economic reasons, poverty
- Death of a parent
- To strengthen family ties
- Other

8. Has someone entrusted a child to your care?

- Yes
- No

9. If yes, what is the sex of the child or children entrusted to you?

- a. Child 1 :
- b. Child 2 :
- c. ...

10. If yes, what is the age of the child or children entrusted to you?

- a. Child 1 :
- b. Child 2 :
- c. ...

11. Do you intend to entrust one or several of your children to someone?

- Yes
- No

12. If yes, to whom?

- A family member
- To another family
- To a marabout
- Other

13. Do you intend to take a child or several children in care?

- Yes
- No

A common temptation when the questionnaire is being finalised is to add a great number of questions and possible answers. This is not a problem if it is done reasonably, that is, by adding questions that contribute some value-added to knowledge about parental practices in the country and which are expressed in such a way that they can be processed. However, the suggested questions are often open-ended questions that would require lengthy answers that are difficult to summarise and analyse. It is thus preferable to avoid adding this type of question. Generally speaking, it is important to remember that the more questions you have, the more time it will take to analyse the responses, and the more the survey will cost.

II.1.3 FINALISING THE QUESTIONNAIRE

The three sections that we have just described represent the conceptual architecture of the questionnaire. In practical terms, once the questionnaire has been modified, it is generally submitted as three files to the National Institute of Statistics: (i) a “Households” file covering questions related to the identity and characteristics of the household, (ii) a “Mother” file with questions related to the identity and characteristics of the mother, as well as those related to her practices and perceptions in general (section 2), and (iii) a “Child” file, comprising questions related to the characteristics of one or two of her children on one hand, and the mother’s practices regarding each of the children selected in the sample (section 3).

As a reminder, only mothers or persons in charge of children will be interviewed. The denomination of the files may appear inaccurate but it actually reflects the different levels of questions that mothers have to answer.

II.2 CONSTRUCTION OF THE SURVEY AND THE SAMPLE

PERSONS INVOLVED

UNICEF (or the institution in charge of funding the survey) + consultant + those in charge of the survey within the National Institute of Statistics.

ORGANISATIONAL METHOD

Meetings

The survey on parental practices is carried out by the National Institute of Statistics (NIS). This is because this institution generally has a lot of experience in carrying out household surveys, unlike staff of social sector ministries or ministry of education staff who are more used to carrying out school evaluations. Nevertheless, since the NIS does not specifically work on Education and Early Childhood, the recommendation is that those in charge of carrying out the survey should be involved in constructing the questionnaire. It is also essential to meet the NIS to describe the content of the survey, if the technicians have not met at the seminar construction workshop, and also to agree on sampling, the methods for administering the survey (described in the section below on the interviewer’s guide), as well the expected cost of carrying out the survey according to the chosen methods.

II.2.1 SAMPLING AND SIZE OF THE SAMPLE

The NIS has experience in carrying out many household surveys, in particular Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS). It therefore possesses all the techniques and information required to construct a sample that is representative of the national population. In this survey on parental practices, it should normally be responsible for sampling that is, actually constructing the sample. While the survey seeks to cover the whole of

the national territory, the actual field work must be based on the selection of a limited number of survey areas by identifying a number of clusters that nevertheless reflect both regional diversity in the broadest sense (region and district) and the diversity of living environments (urban and rural). A certain number of households with at least one child under the age of 6 at the time of the survey shall then be randomly selected from each identified cluster. Within each country, the choice of clusters and the random selection of households is left up to the appreciation of the NIS.

The survey must be carried out with the person in charge of a child aged under 72 months. This is generally the mother, but in certain cases, in the absence of the mother, it might be another person (aunt, adoptive mother). Indeed, there may be various possible cases, depending on the number of children under 72 months whose mothers (or tutor) have day-to-day responsibility in the household:

- If they do not have a child in this age group, the interviewer must go to the home of the next selected household.
- If they have only one child aged under 72 months, this child will be selected for the sample.
- If they have two children aged under 72 months, only one child will be selected.
- If they have several children aged under 72 months, only two children will be selected. The choice of the children will depend on their age: One must be under 36 months and the other, above 36 months.

Box 2: Sampling and specific cases

According to the situation of the country some other parameters than the number of children in the household may have to be taken into account in constructing the sample. In Guinea Bissau for example, 49% of women live in polygamous households (Ministry of Economics of the Republic of Guinea Bissau, 2006).

Since the survey sample must be representative of the national context, this must be taken into account. For this specific case, we decided to select a maximum of two mothers in polygamous households. The mothers were selected on the basis of two criteria: first the age of their children, then by order of marriage. Thus, the two first wives and mothers with at least one child aged between 6 and 72 months are selected for the sample.

In the end, the sample must include x number of children aged between 6 and 72 months, in y households. The values of x and y are not directly conditioned by the size of the national population. For reasons of analysis, it would be preferable to have at least 1 000 to 1 500 children, but this figure could be reduced if the country itself is small, and may often need to be increased for a large country with highly diversified local situations. Table 1 below presents the sample sizes for the surveys already carried out in five countries.

Table 1: Sample size in different countries

	Mauritania	Sierra Leone	STP	Cape Verde	Guinea Bissau
Date of the survey	2011	2013	2013	2014	2014
National population (2012, thousands)	3,796	5,979	188	494	1,664
Sample size					
Number of mothers/households	1,104	1,995	660	1,752	800 *
Number of children	1,612	2,729	927	2,229	1,400 *

* In Guinea Bissau, the questionnaire has been constructed, but the survey has not yet been carried out: these figures are thus provisional.

Since the interviewer must fill out **one questionnaire per mother** for the first two sections of the questionnaire (characteristics and general perceptions of mothers), and **one questionnaire per child** selected in the household (one or two) for the third section (specific maternal practices), the number of children is quite logically higher than the number of mothers.

II.2.2 COST OF THE SURVEY

The NIS will determine the cost of the survey, based on the length of the questionnaire, the sample size, the degree of accessibility of households, etc. These factors also determine the number of interviewers and supervisors to be recruited, trained and paid during the survey and subsequently for capturing the data. Table 2 below provides some insight about costs, based on the costs of the surveys carried out in Sierra Leone and Cape Verde.

Table 2: Cost of implementing the survey in two countries

	Sierra Leone	Cape Verde
Date of the survey	2013	2014
National population (2012, thousands)	5,979	494
Sample size		
Number of mothers/households	1,995	1,752
Number of children	2,729	2,229
Cost of workshops (dollars)		
Cost of the survey	91,539	77,257
Cost of workshops (dollars)	1,138	-
Total cost (excl. consultant, dollars)	92,677	-

II.3 DRAFTING THE INTERVIEWER'S GUIDE

UNICEF and/or staff from the ministries involved in the survey (Education, Social Affairs, Family, and Childhood) may nevertheless make a contribution. This was the case in Sao Tome and Principe for example, where the person responsible for the survey within UNICEF and a team from the Ministry of Education participated in training the interviewers and supervised them during the field activities phase. The quality of training provided to interviewers determines to a large extent the quality of data gathered in the survey. It is therefore important to draw up a "guide for interviewers", namely, a document that contains both general instructions (e.g. it is indicated that the interviewer must interview mothers in their native language and reformulate the question if necessary) and more specific instructions related to each question (Annexe 2).

This guide provides a number of indications as to the way in which interviewers must interview the mothers. Generally speaking, the interviewer must put the question to the mother without offering the answers, allow the mother to answer, and once she has given her answer, fill out the questionnaire, selecting one or several of the options available. It is possible to tick the answer «Other» if the mother's response does not correspond to any of the suggested options. There are a small number of questions for which the interviewer must suggest a number of proposals and allow her to choose which ones best correspond to her behaviour. The guide also provides clarifications and examples to assist the interviewer in understanding and administering the questions.

Box 2: Example of how to deal with a question in the interviewer's guide

We shall use an example to illustrate the type of instructions contained in the interviewer's guide. Mothers are asked about the way they perceive the father's involvement in the daily life of his child. The question put is as follows: "Is the father of the child involved in the following activities regarding his child?"

- Feeding
- Dressing
- Learning daily tasks
- Learning in preparation for school (counting, learning colours, words, etc.)
- Play
- Relationship communication and language
- Discovering the outside world
- Discipline
- Care
- Hygiene
- Protection/safety"

The interviewer's guide provides specific instructions and illustrations:

The interviewer puts the question for each of the activity areas: For example, "is the father of the child effectively involved in activities related to feeding his child?", followed by "is the father of the child effectively involved in activities related to dressing his child?", etc. The mother must give an answer for each area. The interviewer then ticks one of the following three answers: "Spontaneous yes" if the mother responds immediately, without any hesitation that the father is involved, «Yes, after some thought», if the mother hesitates to say that the father is involved, and «No» when the mother considers that the father is not involved.



The activity areas are as follows:

- **Feeding:** father prepares meals for the child, is present at the meal, helps them in eating, teaches them to hold a spoon, cleans them up, etc.
- **Dressing:** father prepares the child's clothes, helps them dress, teaches them to dress by themselves, etc.
- **Learning daily tasks:** father teaches the child to walk, to go to the toilet, brush their teeth, put toys away, tie their shoelaces, etc.
- **Learning in preparation for school:** father teaches the child things that will be useful at school such as counting, knowing colours, words, how to hold a pen, drawing, etc.
- **Play:** father plays with the child, teaches them the rules of certain games, etc.
- **Relationship communication and language:** father speaks to the child, teaches them words, corrects them when they use the wrong word, tells them stories, etc.
- **Discovering the outside world:** father takes the child out, explains things about daily life, etc.
- **Discipline:** father teaches the child rules and ensures that the child obeys them, etc.
- **Care:** father takes child to the health centre, has them immunised, takes care of them when they are ill, etc.
- **Hygiene:** father bathes the child, makes them wash their hands, makes them clean their teeth, etc.
- **Protection/safety:** father supervises the child, teaches them to protect themselves from danger, etc.

The interviewer's guide serves as a basis for training interviewers, but also for their work in the field. It is important for them to have a framework document that they can refer to if they have any questions while they are administering the questionnaire. The guide is handed over to the NIS at the same time as the files including the questionnaire.

Once the methodological tools have been set up, the NIS proceeds to pre-test the survey. This step is essential for the field work phase because it provides an opportunity to identify any difficulties that might arise in the actual implementation of the survey and correct any shortcomings that might emerge in formulating the questions, in the instructions to interviewers, etc. The NIS then begins to carry out the survey throughout the country, followed by data capture in files for purposes of analysis.



DATA PROCESSING AND ANALYSIS



III.1 PREPARATORY WORK PRIOR TO ANALYSES

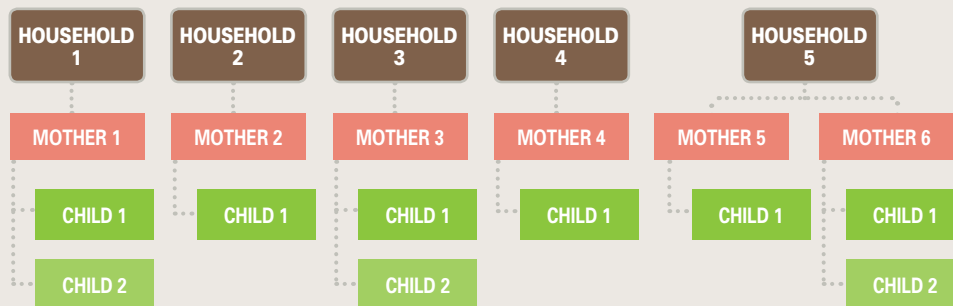
Before proceeding to analyse the survey data, the files have to be organised and the data has to be “cleaned up”. This exercise consists of (i) merging the files, (ii) checking the consistency of data and limiting the number of atypical or missing data, and finally (iii) creating the basic variables required for analysing parental practices.

III.1.1 MERGING THE «MOTHER” AND “CHILD” FILES

The NIS generally groups the survey data in two files: (i) a “Mother” file that includes the characteristics of households, as well as the mothers’ characteristics and their answers regarding their practices and general perceptions, and (ii) a “Child” file containing children’s characteristics and the responses of their mothers concerning their specific practices with regard to each child. These two files correspond to two different levels of analysis and therefore do not have the same number of observations. In the first file, each mother answered a single questionnaire, while in the second one, each mother responded for each of her children aged between 6 and 72 months, for a maximum of two children per mother. There are therefore more observations in the «Child» file than in the «Mother» file. Let us take an example with a sample of five households to illustrate this situation (Figure 2 below).

We note that the first four households are monogamous and so there is only one mother, whereas the fifth household is polygamous, with two mothers. We also note that three mothers have only one child aged between 6 and 72 months (mothers 2, 4 and 5), while three other mothers have two children in the same age group (mothers 1, 3 and 6). The sample therefore includes five households, with six mothers and ten children; the “Mother” file therefore includes six observations, while the “Child” file includes ten observations.

Figure 2: Illustration of the different levels of analysis in the *Mother* and *Child* files



Since the analyses being carried out relate to the child level, the two files have to be merged, while ensuring that each child is matched with their mother's characteristics and answers. To come back to the previous example, the merged file should thus include ten observations, with the variables concerning mothers with several children carried over for each of their children. The files can then be merged in a standard manner in SPSS, with the Merge files command, while Adding variables and using the variable or identification key linking each mother to her children.

III.1.2 CHECKING DATA CONSISTENCY

Once the files have been merged into an overall file, aberrant or missing data (or at least their incidence) must be minimised. While this work cannot be effected on all the answers given by mothers (impossible to invent an answer, for example on their practices related to hygiene), it can be done for certain aspects. For example, the sex variable could acquire atypical values (e.g., a value 8, which neither corresponds to 0: boy, nor to 1: girl) or it might not be indicated for all children (because the question was not put or because the answer was not recorded). It may however be possible to recover a part of the atypical or missing data for this variable from the child's first name. The process of checking data consistency does take a lot of time, but it makes it possible to avoid having to eliminate observations where one or several answers regarding major variables (like sex, in our example) may be missing.

III.1.3 CONSTRUCTING VARIABLES RELATED TO INDIVIDUAL CHARACTERISTICS

One final stage before beginning the analyses consists of constructing variables that identify the characteristics of the child, the mother, the family and the environment. These need to be taken into account to analyse the variability of parental practices and determine if, and to what extent, they affect the behaviour of mothers vis-à-vis their children. While these variables can sometimes be used directly to contribute to describe parental practices with specific criteria, they do often need to be recoded in order to be included in a certain number of analyses (see Annexe 3). As we shall subsequently see, these characteristics are introduced into different models of regression (linear or logistic), in order to assess the net impact that they may have on the practices adopted by mothers. Using some of these independent variables in the modelling might thus require that they be put in a form that is appropriate for carrying out the statistical analysis (recoding, grouping modalities, etc.).

While all the variables related to characteristics are covered by direct questions in the survey, those that describe the living conditions of the families still need to be created. One can expect that the family's level of income is likely to have a significant impact on parental practices related to child development and it is therefore important to include this variable in the analyses. It is however difficult to gather reliable data about household income or expenditure on consumption. One way of getting around this difficulty is by gathering a certain amount of information about the assets and living conditions of families. As already stated above, the National Institute of Statistics generally has a series of questions covering both the living conditions of households (number of rooms in the residence, type of walls, type of fuel used for cooking, etc.) and their assets: car, bicycle, television, mobile phone, livestock, etc. These different, individual aspects of the living conditions and assets together define a setting that may be more or less favourable to the child's development, in terms of the environment in which the child grows. They may of course reflect the specific tastes of the household (one may simply not like the television, or the other is not particularly sensitive to the quality of toilets) but, taken together, these elements demonstrate the level of the family's material comfort, although the concept itself is not captured

by any specific questions in the survey. To a certain extent, it is assumed that the concept of material comfort of the family is partly captured by each of these aspects. An instrumental (common sense) assumption is made that a person who lives in a low occupation density home with electricity and indoor running water and modern toilets, and who also owns a television, car, etc. is wealthier than the person who possesses none of these attributes.

A factor analysis method is then used to integrate all these variables and establish a scale ranging from what would be the poorest household to what is considered the richest household within the sample. When this method is applied, it identifies a new variable (wealth index) that can then be used to define five wealth quintiles, from quintile 1, the 20% poorest households to quintile 5, which comprises the 20% wealthiest households (see Annexe 4).

III.2 DATA ANALYSIS PLAN

Any research work requires an analysis plan that describes the red thread to be followed in responding to the research questions, and indicates the methods and tools to be used for the purpose. It is essential to have this formal framework in place in order to identify which analyses are required and thus minimise the risk of going wrong. The analysis plan for this study is more or less in place, although certain points may vary according to the specific issues found in the country where the study is taking place. As already stated in the introduction to this guide, our principal research question is to determine what mothers actually practice and how they behave in the different circumstances of their daily interactions with their children. In order to understand the multiple facets of maternal behaviour, a specific household survey was carried out. After having reviewed the methods for constructing the survey and organising the data, we shall now describe the analysis plan that will be applied, bearing in mind that other questions may arise as the analyses are carried out.

Constructing and analysing scores by thematic area

The first step consists of describing the information gathered on maternal practices in the different areas that we have identified (health, rest and sleep, feeding, social and cognitive development, etc.). To carry out this descriptive work, which deals with a large amount of information and thus represents the greater part of the study, we shall look at the various ways in which the data concerning specific maternal practices may be presented and discussed. This first step will obviously highlight the range of variable forms of behaviour adopted by mothers in the sample with respect to their children (the questionnaire comprises 150 questions, and mothers certainly do not all behave in the same way in all these different areas, in interacting with their children).

Based on this, we shall seek to explain the diversity of maternal practices. This may be done for a given practice; for example, how can one account for the fact that a non-negligible proportion of mothers have very limited contacts with their children, or that certain children are not registered at birth? However, there is also a need to reason on a broader scale and sum up the information available on each of the specific practices. We therefore construct "macro variables" that sum up the information contained under the different items that make up each area (language, rest, feeding, etc.), while often defining a «good practice» score. We shall therefore consider how to construct summary practice indicators for each thematic area, and review the difficulties inherent in this recoding exercise.

Based on these thematic indicators, two avenues of analysis may be explored to attempt to explain the variability in maternal practices. The first relates to the individual and consists of examining the degree of homogeneity found in their behaviour. In other words, do the mothers who have the most favourable practices in one area (e.g. hygiene) also adopt the most favourable practices in other areas (e.g. language, rest, feeding, protection, etc.)? This question can be answered by analysing the correlations among family practices in each of the thematic areas. The second avenue relates to the national context and consists of determining the degree of uniformity in the behaviour of mothers. In other words, are certain practices specific to certain population groups? While comparative tables may initially make it possible to determine the distribution of mothers in the sample according to some of their characteristics (and their child, as well as their living environment), it is more important to determine the specific effects of each of these characteristics. A number of models of regression therefore need to be constructed for this purpose, in order to measure the impact of such characteristics on the behaviour of mothers.

Identifying and analysing educational conduct that goes beyond the thematic areas

Maternal practices may be related to specific areas, but they can also be assessed by analysing them in a crosscutting manner, by identifying a certain number of general educational approaches and practices. For example, a mother may use explanations in her daily interactions with her child and this behaviour may also come through in each of the thematic areas (protection, hygiene, language, cognitive development, etc.). Once these educational practices have been identified, they must then be transcribed into crosscutting summary indicators that may sometimes be difficult to compute, as we shall see.

Here again, the distribution of such indicators should show a certain variability among the mothers. In order to explain the diversity of educational approaches used by mothers, we shall use the same avenues of analyses as used for the thematic indicators. We shall analyse the degree of homogeneity in educational approaches at the individual level on one hand, and the degree of uniformity of these approaches at the national level on the other. One final, important question to be dealt with here in looking at the behaviour of mothers, relates to the interaction between their specific practices and their educational approaches. Indeed, one might wonder how a specific educational approach could influence the way mothers behave in each of the thematic areas. For example, does a very proactive mother necessarily show the most favourable practices in the area of language, social development, hygiene, etc.? Using models of regression, it is possible to begin to answer such a question.

Finally, since this survey is supposed to translate into operational measures, we shall see if it is possible to identify a certain number of reference markers to be used essentially for developing the content of prospective national parental education programmes. These markers would have to be disseminated to the parents of young children in an appropriate form whose modalities are yet to be defined by the countries in which the survey is to be carried out.

III.3 DESCRIPTION OF SPECIFIC PRACTICES

The survey covers thirteen thematic areas: “Family constraints and use of time”, “General development”, “Gender in parent-child relations”, “Emotional development», «Health and perception of danger», “Food”, “Rest and sleep”, «Hygiene”, “Prevention and care”, “Protection and supervision”, “Language”, “Cognitive development” and “Social development”³. There are a number of questions for each of these areas, aimed at understanding what we call specific forms of behaviour. In the area of hygiene for example, one might find questions such as “how often does your child wash their hands before meals»? , “How often do they use soap to do this?”, “How often does your child brush their teeth?”, “Do you take time to explain the importance of hygiene to your child?”, etc. The initial analyses will therefore consist of describing the answers provided by mothers to each of these questions. This stage, which represents a great part of the study, is essential for understanding prevalent maternal practices and to capture their diversity.

It is important to note that there is no real standard model for describing parental practices in a homogenous fashion, and which could be applied to all countries. Indeed, based on the surveys that have been carried out in the past, we observe that practices include a strong cultural dimension. Thus, while certain forms of behaviour may be observed as a majority within a given national context (and also on a more local scale, according to specific population groups), this does not mean they will still be in the majority in another context. It is therefore important to take the diversity of national situations into account and adapt the specific analyses to the answers provided by the mothers. Let us take the example of the question on the frequency of conversations between mother and child in Mauritania and Sierra Leone, to illustrate this aspect. The question is as follows: “Aside from practical communications, how often do you talk to your child?” Table 3 below indicates the answers given by mothers in these two countries.

3 The number of areas may vary from one country to another, according to the dimensions included in the questionnaire.

Table 3: Comparison of the frequency of mother/child conversations in two countries

Frequency of conversations between mother and child	Mauritania		Sierra Leone	
	Number	%	Number	%
Several times a day	930	58.1 %	2,347	86.5 %
Once a day, more or less	247	15.4 %	228	8.4 %
Once to twice a week	95	5.9 %	38	1.4 %
Rarely or never	329	20.5 %	99	3.7 %
Total	1,601	100.0 %	2,712	100.0 %

We note that the answers differ greatly, according to the national context; while a little over 26% of mothers in Mauritania state that they have very few conversations with their child (less than twice a week), this proportion is much lower in Sierra Leone (5.1 %). In the light of our knowledge about the beneficial role communicating with a child can play, in particular for developing language among others, the figures from Mauritania provide some cause for concern. They require further analyses to determine whether this overall variability might be explained by certain geographical and social variables, and also whether there are elements that could explain this practice. The analyses could also be taken further in Sierra Leone but, to the extent that the variability of answers from the mothers is rather low, the need is clearly not as pressing.

The description of practices must add value to knowledge about parental practices in a given environment; it must therefore adapt to the specificities of the national and local setting. The idea is not therefore to indicate here a standard description process that could directly be transposed to analyse the data from any and all surveys, but rather to provide examples of different ways in which the results concerning specific practices could be presented and discussed.

One common and simple way of proceeding is to indicate the distribution of answers from the mothers, while indicating at what frequency each modality was cited and the proportion that it represents in the sample. This could be done for example for the question of mothers' perception of the role of parents in child development, as shown below in Table 4, on Sao Tome and Principe.

Table 4: Perception of the role of parents in child development in STP

Perception of the role of parents in child development	Numbers	%	Cumulated %
Little influence, children develop at their own pace	290	32.3	32.3
Parents have some influence, but it is rather limited	103	11.5	43.7
Parents have a strong influence on child development	506	56.3	100.0
Total	899	100.0	

These data must subsequently be described. In the present case, we could say that the views on parental influence over their child’s development are rather divergent. While the majority of mothers (56.3%) believe that parents have a strong influence on child development, 11.5% think that parents only have limited influence and, above all, 32.3% of mothers, that is, almost one third of them consider that children develop at their own pace and thus any influence they might have is be rather limited.

The description can also be taken further by presenting a question from different angles. For example, the questionnaire included the following question in the area of health and preventing danger: “What signs indicate to you that your child is unwell?». The interviewer does not suggest any answers, but rather gives the mother time to respond indicating one or several signs. Each sign is then noted down and at the time of entering the data it is coded 0 if the mothers did not mention it and 1 if they did. As shown on the left hand side of Table 5 below, one initial possibility for describing the data consists of indicating the proportion of mothers who mentioned each sign. Thus, it appears that 86.3% of mothers recognise that their child is unwell when their forehead feels warm to the touch, 75.4% when the child appears listless and 73.7% when the child has no appetite. It is possible, however, that the same mothers mention different signs and that certain mothers are incapable of detecting that the child is unwell. One way of verifying this consists of adding up the responses provided by the mothers to arrive at a variable that indicates the number of signs cited by each mother (right hand side of the table). We then realise that about one quarter of all mothers (21.9%) do not identify any sign, or only one, that indicates that their child is unwell, whereas 39.1% of mothers mention more than five signs. This provides a more refined description of the variability of answers given by mothers.

Table 5: Example on computing the variable regarding signs of illness in STP

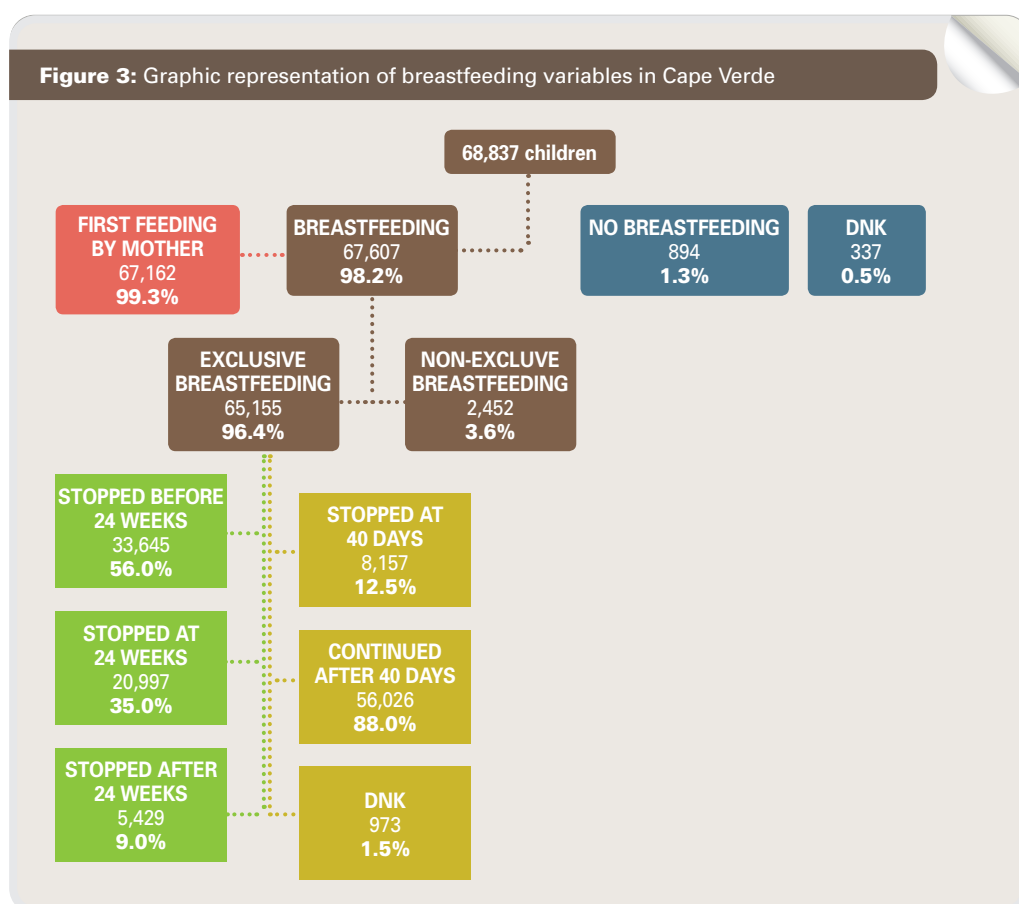
Signs of illness	%	Number of signs	%
Warm forehead	86.3	0	1.2
Vomiting	62.7	1	20.7
Teary eyes	61.8	2	9.8
Diarrhoea	64.9	3	15.9
Loss of appetite	73.7	4	11.4
Incessant crying	60.0	5	8.3
Listlessness	75.4	6	7.6
Je ne sais pas	5.6	7	25.2
		Total	100

The description of maternal practices can also be presented in graphic form. In addition to the presentational qualities of this option, it is also an astute way of displaying the responses to several interrelated questions. Let us take the example of one dimension that is explored under the area of feeding practices, namely breastfeeding a child.

Mothers have to respond to the following questions:

- “Are you breastfeeding or did you breastfeed your child?»
 - If the mother answers yes, that she is breastfeeding or did breastfeed her child:
 - “Did you give your child the first feed?”
 - “Did you breastfeed your child exclusively right from birth?”
 - If the mother answers yes, that she breastfed exclusively:
 - “Did you stop breastfeeding your child at day 40?”
 - “How old was your child when you stopped breastfeeding?»

While these interconnected questions are not easy to describe in table form, as we can see from Figure 3 above concerning Cape Verde⁴, they are much simpler and easier to read in the form of a tree graph.



Knowledge about actual practices could be incomplete if we only limit ourselves to describing a single variable. It is indeed possible that mothers do not adopt the same behaviour according to the age and sex of the child; if the family lives in an urban or rural area, and if they are among the poorest or the richest categories, etc. If the description of each of the answers from the mothers is not enough to capture this variability, it can be helpful, initially, to use comparative tables which provide the distribution of answers according to one or two variables.

⁴ We must note that the number of children is much higher than what was indicated previously. This is because a weighting coefficient was introduced for the analyses.

To this end, one of the essential dimensions that need to be integrated in the vast majority of descriptive processes is the age of the child. It is indeed likely that the behaviour of mothers may be different, depending on whether their child is 6 months old, 36 months old or 72 months old. Before verifying this assumption with models of regression, a table that compares the variable on a given practice with the age of children could provide a picture of the sample distribution. The choice is generally to present the age of children by category (e.g., under 15 months, 16-35 months, above 36 months), so that the data are more legible. To illustrate this point, let us go back to the example of the frequency of conversations between mother and child in Mauritania, for which answers were given above for the whole sample. Table 6 presents the distribution according to age group of the children.

Table 6: Frequency of mother/child conversations in Mauritania, by age of children

Frequency of mother/child conversations	< 15 months		< 16-35 months		< 36 months		Total	
	Number	%	Number	%	Number	%	Number	%
Several times a day	108	50.2 %	250	63.1 %	572	57.8 %	930	58.1 %
Once a day, more or less	30	14.0 %	33	8.3 %	184	18.6 %	247	15.4 %
Once to twice a week	6	2.8 %	16	4.0 %	73	7.4 %	95	5.9 %
Rarely or never	71	33.0 %	97	24.5 %	161	16.3 %	329	20.5 %
Total	215	100.0 %	396	100.0 %	990	100.0 %	1 601	100.0 %

The overall description of the answers given by mothers gave a general picture of the variability in their behaviour, but introducing the age of the children into the analysis documents finer details of their behaviour. We note that the frequency of conversations does indeed vary according to the age of the child. More specifically, we observe that only one mother out of two speaks to her child several times a day when the child is aged under 16 months, while one third of the mothers hardly ever speak to children in this age group. And yet we know how much speaking can play a beneficial role in communicating with a child, even when they have not yet formally acquired the capacity to speak. One could imagine that it is precisely because the child is functionally incapable of responding that mothers do not speak to children at that age. Certainly, that may explain this in the mind of the mother, but this behaviour is in fact not very different, albeit not as glaring, when the child is above 3 years and is obviously capable of expressing themselves with words. It can reasonably be inferred that verbal communication with the child is not an entrenched habit for a non-negligible proportion of mothers in the country.

Box 4: The ambiguity of the answer “Child too young for this to apply”

For certain questions mothers are allowed to state that their child is too young for the practice concerned to apply to them. Here are a few examples of such questions: «Do you take time to explain the importance of hygiene?», «Does your child go out of the house alone?», «Do you help your child to acquire autonomy in daily activities such as feeding or hygiene?», etc. From the surveys already carried out, we observe that a certain proportion of mothers tend to consider that their children are too young for some specific practices (hygiene, language, social development, etc.) to actually apply to them. There is however a certain variability in this proportion, according to the dimensions concerned and also per country. It is as though these activities were considered irrelevant because the child is too young and no doubt unable to understand. While this view might be justified for certain points (e.g. teaching a child to be independent in hygiene at 6 months), it is certainly less for others such as inculcating the rules of society to a child who is more than 18 months old. This aspect must be taken into account in describing the answers given by mothers, but also and above all as we shall see later on, in constructing thematic, crosscutting indicators.

In addition to the age of children, other geographical or social variables could also help to understand the variability in maternal practices. Still on the topic of the frequency of mother-child conversations in Mauritania, in analysing this question, we decided to look at the group of mothers who have only limited conversations with their children (41.9% of the sample) and compare this with their level of income, educational experience, their region and area of residence, and their native language, as well as with the sex of the child (Table 7 below).

Table 7: Frequency of limited mother/child conversations by population group in Mauritania

Income quintile				
poorest	2	3	4	richest
35.2 %	52.7 %	39.2 %	40.0 %	43.0 %

Gender		Language		Average 41.9%	Mother's educational experience (years)			
Boys	Girls	Hassanya	Others		0	1-5	6	> 6 et +
42.8 %	40.9 %	43.4 %	34.6 %		44.4 %	38.4 %	45.6 %	39.0 %

Zone	East	River	North	NKT
	42.9 %	39.3 %	51.0 %	36.8 %
Urban	36.7 %	42.6 %	51.3 %	36.8 %
Rural	44.3 %	38.7 %	50.5 %	-

According to the information in the table, it would appear that there is little differentiation on the basis of the gender of the child, the mother's level of education and the area of residence. (Remember that a higher figure indicates more limited mother-child relations). Mothers living in

poor households, in the River region (rather than the northern part of the country) and who belong to the Negro-African group (as against Moors) score lower figures, which demonstrates that they have more conversations with their children. These are however just trends, rather than clearly marked phenomena. The point that Mauritanian mothers tend to have little communication in general with their children is still broadly valid, albeit to varying degrees, in all the population groups considered. These analyses need to be consolidated, but looking at the issue from the standpoint of a future parental education programme, they do suggest that the importance of talking to the child would need to be underscored, particularly for those population groups where this behaviour appears to be lacking.

III.4 CONSTRUCTING AND ANALYSING THEMATIC SCORES

The questions relating to the behaviour of mothers in each of the thematic areas can be interpreted independently, but in order to develop more in-depth knowledge of parental practices, it is also interesting to construct “macro variables” that group together all the information in a given area⁵. We shall use an example to illustrate the work of constructing the analytical basis. If we are interested in family conditions and practices with regard to hygiene, for example, we initially need to put questions about the frequency of bathing, hand washing before meals and after using the toilet, brushing teeth, changing of clothes, etc. One cannot put a generic question right from the outset and obtain a reliable answer on maternal practices in the area of hygiene, which can then be compared among children. At the same time, we cannot assume that the specific fact of washing hands after using the toilet is in and of itself an indicator of family practices in this area. Under such circumstances, we must look for an overall score that sums up the information contained in the various items and related to the hygiene dimension. The basic idea is that there is possibly a latent variable that characterises general hygiene practices and that we can approach this from various angles, according to the circumstances in which it applies.

III.1.4 LA CONSTRUCTION DES SCORES THÉMATIQUES

In each of the ten thematic areas, we therefore attempt to construct a score that i) aggregates the answers to the different items and ii) classifies the mothers according to a positive hierarchy (i.e., in such a way that the highest score corresponds to the most favourable behaviour). We thus define a common, interest and “performance” index for the mother in each of the thematic areas covered by the survey.

There are two possible ways of constructing thematic indicators. One first approach consists of simply summing up the scores obtained under the different items. The second method consists of assuming (instrumental assumption) that this latent variable is characterised by the first axis of a factor analysis based on the answers to the different items under a single dimension, with the possibility of inferring a thematic summary factor score for each of the children in the sample. Note that these two procedures are generally carried out for each of the thematic areas, bearing in mind that empirical observation shows great similarity (strong statistical correlation) between indicators constructed from a simple addition and thematic indicators based on the same items, but constructed on the basis of the factor method.

⁵ Note that thematic indicators are not constructed for the following areas: “Family constraints and use of time”, “General development”, and “Gender in parent-child relations”.

We shall continue to use the example of hygiene to illustrate the different stages of the procedure applied in computing this thematic indicator. The questionnaire generally includes about fifteen questions describing maternal practices in this area. Note that a very few of those questions are not included in constructing the indicator. In the area of hygiene, this is the case for two questions: "With whom does the child bathe?" and "Where does the child bathe?" While these do provide information about the circumstances under which the child bathes, they do not of themselves have a "classifying» value. In other words, one way of proceeding is not better than the other: for the child, the fact that the father bathes them, for example, rather than the grandmother or an aunt is not more favourable. What is important is for the child to bathe. The following questions are used in constructing the indicator:

- Do you take time to explain the importance of hygiene to your child?
- How often does your child bathe?
- How often does your child wash their hands before meals?
- How often does your child wash their hands after using the toilet?
- How often do you encourage your child to wash their hands?
- When your child washes their hands, do they use soap?
- How often does your child brush their teeth or do you brush their teeth?
- How often do you encourage your child to brush their teeth?
- Are the child's nails trimmed? (Observation by the interviewer)
- Does your child change clothes to sleep?
- How often does your child change clothes?

For each question, we attempt to assign the highest scores to behaviour that is most favourable for child development, in order to obtain a variable that classifies the practices of mothers on an ascending scale. The classification of behaviour according to which is most favourable is not done arbitrarily; it is based on the results of research carried out in various disciplines such as psychology, educational sciences, cognitive sciences, etc. and the recommendations of international institutions such as the World Health Organisation, the United Nations Food and Agriculture Organisation and UNICEF. It is generally acknowledged, for example, that hand washing with soap is one of the most efficient and cost-effective means of reducing the spread of diarrhoeal diseases and pneumonia. The practice that consists of mothers encouraging the child to wash their hands, especially before meals and after using the toilet, and the fact that the child does it systematically both significantly contribute to entrenching habits with strong health advantages. They can thus be considered to be favourable behaviour, certainly more favourable than the practice of a mother who does not encourage her child to wash their hands, or the fact that the child rarely or never does so.

The initial work therefore consists of recoding the different variables. In the answer selected by the mother, we take into account the relevance of the mother's behaviour with respect to the development of her child. Let us continue to look at the example of the question on hand washing before meals, to illustrate one aspect of recoding for the purpose of constructing the thematic indicator on hygiene. The responses indicated in Table 8 below were obtained in Sierra Leone.

Table 8: Frequency of hand washing in Sierra Leone

Age group	< 15 months		16 to 35 months		> 36 months		Total	
Hand washing before meals?	Number	%	Number	%	Number	%	Number	%
Yes, always	70	11.7 %	317	38.7 %	981	75.1 %	1,368	50.2 %
Yes, not always	10	1.7 %	102	12.5 %	261	20.0 %	373	13.7 %
Rarely	3	0.5 %	20	2.4 %	18	1.4 %	41	1.5 %
Never	1	0.2 %	6	0.7 %	3	0.2 %	10	0.4 %
Not applicable	515	86.0 %	374	45.7 %	44	3.4 %	933	34.2 %
Total	599	100.0 %	819	100.0 %	1,307	100.0 %	2,725	100.0 %

One common way of proceeding is to start by reviewing the answers given by mothers according to the age of the child. One can hardly expect a child aged between 6 and 12 months to wash their hands systematically before eating. Health authorities generally recommend that parents teach their children to wash their hands at a very early age, but this practice can only really be initiated from the age of 16 months and above. Parents then accompany the child, take their hands in theirs and wet them, show them how to use the soap and finally rinse the child's hands before drying them. The construction of the hand washing «score» must therefore take account of the fact that the child may sometimes be too young for this to really apply. The choice of the age at which it is felt that the practice should be used will depend on what is recommended by health authorities.

Subsequently, maternal practices will have to be distinguished according to their degree of relevance for child development. As emphasised above, the fact that a child washes their hands systematically before each meal implies that the mother or someone else is or was (when they were younger) proactive in this area and has taught them to do so, which is a favourable practice in terms of adopting hygienic habits. The child's behaviour is therefore more favourable than that of a child who only washes their hands irregularly and clearly more favourable than the one who rarely or never washes their hands before meals.

The dark blue portions represent the most favourable behaviour, which is given the highest score. This concerns children aged above 16 months who wash their hands systematically before meals, and also children under 16 months for whom the question does not yet apply. The slightly lighter colour in the table corresponds to average practice, which is given a lower score. These are children above 16 months who wash their hands regularly, but not systematically. Finally, the lowest score is attributed to children above 16 months who rarely or never wash their hands, as well as those whose mothers consider that they are too young for the question on hand washing to apply to them. These are indicated in the lightest colour on the table. We saw how this last answer can be ambiguous, according to the age of the child (Box 4). We believe that the idea that a child is too young for hand washing is justified for children below the age of 16 months, but not for those above that age. Mothers who say that their child is too young and therefore the question does not apply to them, are probably not proactive in their behaviour, in this area. This is why they are given the lowest score.

In the end we have three groups that can be classified by assigning different scores based on the degree of relevance of their behaviour: the first group, which has the most favourable behaviour, obtains a score of 2, the second group, whose behaviour is «average», obtains a score of 1, and the last group, who need to improve their behaviour on this point, obtains a score of 0. We therefore end up with a new variable whose distribution is represented in Table 9 below.

Table 9: Recoding the frequency of hand washing in Sierra Leone

Hand washing before meals?	Numbers	%
0	465	17.1 %
1	363	13.3 %
2	1,897	69.6 %
Total	2,725	100.0 %

The same approach is used in recoding all the variables that are used to construct the thematic indicator for hygiene. Thus, a mother who demonstrates the most favourable practices in the area of hygiene for example, would obtain the best score. Concretely, this means that she i) frequently explains the importance of hygiene to her child and encourages them also frequently to ii) wash their hands and iii) brush their teeth. She states that her child iv) bathes regularly and washes their hands regularly v) before meals and vi) after using the toilet, vii) systematically using soap. The child also viii) brushes their teeth regularly, ix) has trimmed nails, x) changes clothes to sleep, and xi) changes clothes regularly. On the other hand, a mother who adopts all the opposite practices and whose child's behaviour is opposite to all the above would score zero.

The recoding is done for all the variables that are used in computing each thematic indicator. Two summary indicators are then constructed on the basis of the new variables; the first sums up all the items, while the second serves as the first axis of a factor analysis, taking all items into account. We then seek to determine the correlation between these two indicators (generally close to 1) and then select one of these indicators to be used for the rest of the analyses. Generally, the indicator selected is the one computed using the factor analysis. Finally, as can be seen in Table 10 below from Sao Tome and Principe, we arrive at the construction of ten thematic indicators.

Table 10: Distribution of thematic scores in Sao Tome and Principe

Thematic areas	Number of variables	Rating scale	
		Minimum	Maximum
Emotional development	6	1	33
Health	5	0	9
Feeding	9	1	12
Rest and sleep	3	0	3
Hygiene	10	0	15
Prevention and care	6	0	11
Protection and supervision	6	0	7
Language	6	0	9
Cognitive development	7	0	17
Social development	7	0	17
Overall	65	2	133

We can see that the thematic indicators are not constructed on the basis of an equal number of variables. They are therefore not established on the same scale. If we want to subsequently compare the different dimensions of maternal practices, we shall then proceed to standardise all the thematic indicators, setting their average at 0 and the standard deviation at 1. This can be done very simply in SPSS using the following commands; *Descriptive statistics*, *Descriptives*, then *Save standardised values in variables* (a new standardised variable will then be created).

Finally, an overall indicator is constructed on the basis of all the thematic indicators (see Table 10 above). This overall summary indicator derives from the fact that each of the thematic dimensions has both a degree of specificity for the area concerned and a degree of generality for all practices used by a family in raising its children. It is identified as the first axis of a factor analysis that is carried out on the basis of the individual scores in all the dimensions of family practices covered by the survey.

While the construction of summary indicators may appear simple on a first reading, two difficulties may arise in the actual exercise. The first, as we have already seen, is to decide how to deal with the answers of mothers who consider that their child is too young for a given question to apply to them. There is no standard model for dealing with this issue. The age at which one might reasonably suppose that a child is indeed too young for their mother to adopt this or that behaviour obviously differs according to the act in question (e.g. helping a child during meals, brushing teeth, scribbling, leaving home alone, etc.). In order to define a threshold age, a prior attempt has to be made to obtain the information that will indicate at what age a child may conventionally be introduced to one practice or the other. Based on the information gathered, the variables must be recoded so that each variable continues to make sense. For example, we decided to attribute the maximum score to mothers with children under 16 months of age, who are too young to wash their hands.

The second difficulty arises during the recoding, namely, how to deal with missing data. Sometimes, certain answers provided by the mothers are not included (because the question was not put; because the answer was not recorded, or because the answer was not recorded properly and does not correspond to any existing option, etc.). This may not be a problem when it comes to describing practices because the missing data can simply be removed from the analyses, but dealing with such data is a bit more complicated when computing a summary indicator. If a mother does not answer just one question out of the many that are used to construct the thematic score, she is not taken into account in calculating the score because she is considered as missing. And yet, it is rather unfortunate that just one missing answer should lead to eliminating her answers for all the other items. One way of proceeding, in order to avoid overlooking some observations, consists of recoding the missing data in each of the variables that are used to construct the summary indicator. The difficulty lies in knowing how to go about it (see Annexe 5).

III.4.2 ANALYSING THE THEMATIC INDICATORS

The different summary indicators can subsequently be used to assess i) their degree of similarity (for example, to what extent do mothers who have favourable practices in one area also have the same in another area), as well as ii) to what extent practices are more or less influenced by social factors in the broadest sense (or, in counterpoint to that, how strong is the “personal” component).

III.4.2.1 Similarities among family practices in thematic areas

One initial approach consists of examining the degree of homogeneity of individual parental practices across the different areas. In other words, we must assess to what extent the “performance” of maternal behaviour in one area is similar to what is observed in other areas. Calculating the correlation coefficients between each of the thematic scores will indicate the intensity of these relations. Table 11 below presents the correlations matrix from the example of Sierra Leone⁶.

Table 11: Matrix of correlations among the different thematic scores in Sierra Leone

Dimensions	Emotional	Health	Feeding	Rest	Hygiene	Care	Protection	Language	Cognitive	Social	Overall
Emotional	1										
Health	0.30	1									
Feeding	0.27	0.24	1								
Rest	0.27	0.06	-0.03 (ns)	1							
Hygiene	0.08	0.11	0.12	-0.17	1						
Care	-0.01 (ns)	0.08	-0.01 (ns)	0.17	-0.01 (ns)	1					
Protection	0.10	0.03 (ns)	0.02 (ns)	0.17	0.31	0.15	1				
Language	0.10	0.13	0.24	-0.22	0.52	-0.06	0.19	1			
Cognitive	0.11	0.09	0.13	-0.14	0.56	-0.03 (ns)	0.27	0.63	1		
Social	0.13	0.07	0.03	0.00	0.56	0.03 (ns)	0.27	0.33	0.53	1	
Overall	0.48	0.44	0.42	0.23	0.63	0.27	0.52	0.59	0.65	0.61	1

Unless indicated differently, the threshold of significance is set at 1% (ns: non-significant at the threshold of 5%).

⁶ The interpretation is based on the numerical value of the correlation coefficient (and its degree of significance). Remember that the correlation coefficient is used to test the degree of statistical association between two variables. It varies between -1 and +1; this association is considered as strong when the value of the coefficient is closer to -1 or +1, and

In the case of Sierra Leone, we can see first of all that behaviour in the areas of rest and prevention and care are strongly independent, with coefficients close to 0. This suggests that practices in these areas are markedly specific. In other words, maternal behaviour in each of these areas is not representative of the way that mothers behave in other areas. There is even a slightly negative correlation between practices related to rest on one hand and those related to language and cognitive development on the other, indicating that mothers who use favourable practices regarding rest and sleep do not have the same behaviour when it comes to language and cognitive development. The opposite is also obviously true.

On a second examination, however, we find more significantly intense associations in the practices related to hygiene, language, cognitive development and social development. This means that mothers who have favourable practices in one of these area also tend to have more favourable practices in the others. Thus, indicators related to emotional development, health, hygiene, social development and language appear to make a substantial contribution to the statistical definition of the overall summary indicator.

These results provide improved knowledge about the practices effectively implemented by parents in raising their children and are also valuable for the construction of a prospective parental education programme. The analyses do show that the practices adopted by mothers in certain areas such as rest and prevention in Sierra Leone, for example, are independent of their behaviour in other areas. This suggests that it would probably be difficult to change such practices, since parental education on these topics would not necessarily have any effect on these independent areas.

In operational terms this could mean for example that there should be more targeted modules on these topics in greater numbers, but that would also depend on the organisational arrangements of the parental education programme. In contrast, we also see that adopting more favourable behaviour in one area, such as hygiene in the case of Sierra Leone, can be associated with improved maternal practices in other areas such as language, health, and social and emotional development. The parental education programme could therefore take this result into account by including links to these different areas in the discussion modules.

III.4.2.2 The social dimension of family practices in thematic areas

A second analytical approach consists of going beyond describing patterns of behaviour to explore how far the variability of family behaviour can be explained by the variability of the social environments in which these behaviour patterns are constructed. As we have already pointed out, this aspect of the analysis is aimed at identifying to what extent family practices and behaviour arise out of i) constraints and implicit cultural and social references that are somewhat imposed on families, or ii) out of specific "choices" that may of course be made consciously or unconsciously.

The analysis is carried out using the multiple linear regression tool, which enables us to evaluate the overall influence of different social aspects, in order to explain the variability of parental practices in the different areas covered in the survey, on the basis of standardised summary indicators. We can easily (and conventionally) construct these indicators with an average of 0 and a standard deviation of 1. Note however that we could also opt for any other conventional value, bearing in mind that it is better if these parameters (average and standard deviation) are identical

described as weak when it is closer to 0. When the coefficient is positive, the variables vary in the same direction and the implicit linear relationship between these variables is ascendant. When it is negative, the variables vary in opposite directions and the relationship is descendant. Note that the existence of a strong correlation between two variables does not imply that there is a causal link between them.

for all dimensions, in order to be able to evaluate and compare the influence of a given social characteristic (or the overall social influence) on each one of these parameters, on a common scale.

Through this process, we can also identify the role of each of the social factors that could be taken into account, by separating the influence of one factor from the influence of the others, based on the principle of «all else being equal». In practical terms, this is tantamount to constructing linear regression models in which the dependent variable (which we are attempting to explain) is one of the thematic indicators, and the independent variables are the different social and environmental characteristics that we have identified (age and sex of the child, region and area of residence, income quintile, etc.). The results can then be presented in a table like the one below, showing the results for each thematic area (Table 12 below).

One first comment on the results relates to the proportion of the variance that is explained by the independent variables. This is symbolised by the value of R^2 and indicates to what extent family practices in thematic areas are influenced by the social and environmental characteristics identified in the models. Thus, the higher the value of R^2 (close to 100%), the more maternal practices are influenced by these exogenous characteristics and thus include a certain degree of constraint because these characteristics are imposed on families. It is highly probable that the proportion of the explained variance will differ greatly, from one thematic area to the other. In the case of Sierra Leone for example, the lowest R^2 value (9.4 %) relates to maternal practices in prevention and care. This shows that the variations between mothers observed under this summary indicator are not very strongly linked to these exogenous conditions, but are rather due to differing individual choices in terms of the practices that they adopt. On the other hand, the highest observed R^2 value (33.3%) is associated with a model covering practices with regard to language. It thus suggests that the social and environmental characteristics of mothers have a greater effect on their practices in this area. We do note however that 66.7% (100 - 33.3) of the variance is still not explained by the model, which implies that some variables other than those taken into account by the model could have an influence on maternal behaviour and also, and above all, that maternal practices in this area are broadly based on choice.

Table 12: Regression analysis of the thematic scores according to social variables

Variable		Modality	Thematic areas					Overall
			Emotional	Health	Sleep	Hygiene	...	
Constant								
Characteristics of the child	Age (months)							
	Age ²							
Sex	Girl							
	Boy							
Area	Rural							
	Urban							
Region	West							
	East							
	North							
	South							
Income level	Quintile 1							
	Quintile 2							
	Quintile 3							
	Quintile 4							
	Quintile 5							
Origin	Group 1							
	Group 2							
	Other							
Religion	Religion 1							
	Other							
Number of children	1							
	2							
	3 and more							
School attendance	None							
	1-3 years							
	4-6 years							
	> 7 years							
Explained variance R ² (%)								

Significance threshold: ns: non-significant; * = significant at .05; ** = at .01; *** = at .001

In the case of Sierra Leone, and this was also observed in Mauritania and Sao Tome and Principe, the R² values in the different thematic areas are generally not very high. This implies that there are still very broad variations in maternal practices in general, and also looking at this from the point of view of socially similar family environments, with the strongest variations in areas where the numerical value of R² is lowest. These results are useful for the prospective parental education programme. Indeed, the fact that the general variability is only poorly explained by the social or geographical context emphasises the substantial weight of the personal dimension of family behaviour and thus indicates that there is considerable room for improvement through parental education, if parents effectively adopt more favourable practices. This is potentially good news, in terms of the efficacy of any measures that may be taken in this direction.

Reading the table horizontally, we can then identify where the different social and environmental variables identified have an effect on maternal practices, i) in what areas, ii) to what degree and iii) which population groups are helped (or not helped). Let us take the example of the region where people live in Sao Tome and Principe, to illustrate the type of comments that can be derived on the basis of the results of the regression models. We observed that mothers adopted differentiated practices in eight dimensions out of ten, according to the region where the family resided. More specifically, families living in the South East of the country have the least favourable practices in all areas except cognitive development, where the differences are very small anyway. In contrast, families living in the North West and in Principe have the most favourable behaviour, in particular in the areas of emotional development, health, feeding and social development. These analyses would therefore suggest that although the parental education programme is a national programme that covers all regions, certain aspects could be enhanced in those areas and regions that for the moment have less favourable practices in some fields, and where parents need to be encouraged to adopt better patterns of parental behaviour. The description of the results is then generally set out for each of the social and environmental characteristics. A vertical reading of the table, which relates to each of the thematic areas, could also further supplement these comments.

III.5 COMPUTING AND ANALYSING CROSSCUTTING SCORES

Based on the maternal practices identified in each of the thematic areas, it is possible to identify forms of meta-behaviour that more directly relate to general educational approaches and conduct. These may appear in various conditions of daily family life, in each of the different thematic areas reviewed so far. For example, mothers may use explanations in teaching their children, but this meta-behaviour would apply with regard to hygiene, as well as prevention, rest, feeding, etc. The same may be said of the meta-behaviour that consists of encouraging a child to carry out a certain action or to persevere even after a setback. This can occur in a very broad range of circumstances in the life of the child, as well as in all the thematic areas. In general, we identify four educational approaches:

- The extent to which a mother is **proactive** vis-à-vis child development: when a mother is proactive, the child's sensor-motor, cognitive and socio-emotional functions are all stimulated. This is a key element that has been demonstrated to promote child development.
- The degree of **structuring** of the child's living environment: although an extreme situation could be perceived as excessive, it is generally agreed that a child needs structure to build their own references and to develop their own personality. The survey can provide signals that demonstrate the structure of the living environment (practices stated by the mother) in various situations.

- The importance of **explanation** in the mother-child relationship: children necessarily learn by developing their understanding of the world in which they live and of which they will later form a part. The day to day experience of the child obviously serves as a basis for this gradual learning process. Nevertheless adults, and above all parents, can play a vital role in offering the child the keys to understanding their physical and social environment by providing explanations about some of the things that the child experiences or encounters, explaining why they exist and how to behave in certain circumstances. These explanations, which must be provided in a way that the child can understand, are essential building blocks for the harmonious cognitive and social development of the child.
- The degree of maternal **negative behaviour** in her relations with the child: to a certain extent, in very many situations, a child by definition does not spontaneously behave as the mother would like them to. The temptation on the part of the mother is to express some form of negativity by scolding the child, by threatening them, or even by hitting them. Such negative behaviour, which obviously exists, may be rare for certain mothers and (too) frequent for others.

III.5.1 COMPUTING THE CROSSCUTTING SCORES

While specific forms of behaviour can be observed directly in the survey, meta-behaviour has to be identified through special identification and estimation procedures. The first step consists of selecting items from the different thematic areas that could contribute to describing the different educational approaches. The variables then need to be recoded in such a way that the highest score corresponds to the practice that is most in line with the educational approach that we are seeking to identify and which must be promoted. For the «positive» educational approaches (being proactive, explanation and structuring), the variables have already been recoded, in the process of constructing the thematic scores. Table 13 below provides examples of items that have been identified and recoded to define the extent to which mothers are proactive.

Table 13: Identification of items to define if a mother is proactive

Thematic areas	Items identified to define if a mother is proactive
Constraints and time	"Spends time (over 90 minutes per day) with the child" "Spends time (over 40 minutes per day) playing with the child"
Perception regarding development	"Believes she can significantly influence child development" "Is confident that the help given to the child is effective for him/her" "Effectively takes steps to help the child develop and build their personality"
Emotional development	"Speaks to her child"
Health and preventing danger	"Is not passive when the child has a fever and if the fever persists" "Is not passive when the child has diarrhoea" "Takes her child to the health centre", "Takes steps to protect her child from possible danger», «Provides a safe environment for her child»
Feeding	-
Rest and sleep	"Pays attention to signs that the child is sleepy", "Accompanies the child to bed"
Hygiene	"Encourages her child to wash their hands", "Encourages her child to brush their teeth", "Changes the child's clothes at least twice a week"
Prevention	-
Protection & supervision	-
Language	"Has conversations with the child at least daily", "Tells the child a story at least once a week", "Frequently asks the child's opinion", "Takes steps to contribute to the child's development of language"
Cognitive development	"Encourages her child to play", "Directly participates in play with the child", "Teaches her child nursery rhymes", "Teaches her child numbers and quantities", "Explains acts of daily life"
Social development	"Adopts a positive attitude when her child experiences a setback", "Reacts positively when the child misbehaves or is disobedient", "Acts positively to teach the child rules», «Helps the child to develop their autonomy"

The approach that consists of reacting negatively (scolding, threatening or hitting) to the child's behaviour needs to be recoded to assign the highest score to the most negative behaviour under all the selected items. For example, in answer to the question "What do you do when your child cries at night?", if the mother answers that she threatens or hits the child, she will be given the highest score.

Box 5: The traditional approach in raising children in Mauritania

Other educational approaches may be identified in different countries. This was the case for example in Mauritania, where it was observed that a non-negligible proportion of mothers tend to adopt patterns of behaviour that could be qualified without being judgmental as rather “traditional”, unlike what was observed in Madagascar, for instance. We therefore constructed a crosscutting indicator to describe the traditional approach in raising children. The following elements were taken into account for this purpose: “a positive perception of the practice of entrusting children into care”, “keeps to the house and has little contact with neighbours”, “believes she has little or no influence on child development”, “believes she has no real influence on protecting the health of her child», is in favour of maintaining the practice of excision for girls», «does not see the point in registering the child with the civil status office” and “spontaneously has recourse to traditional medicine in case of health problems”. This indicator varies from 0 (no traditional elements) to 7 (traditional elements on all items considered). Out of the total sample, 43% of the women interviewed can reasonably be described as “modern”, with a score below or equal to 2. In contrast, however, 31% obtain a score above 4 and can be said to adopt a rather traditional approach to raising their children, with 11% who obtain a score above 5 and thus constitute a group where the traditions of the country are clearly entrenched.

Based on the structure of the crossed correlations between the different select items, we can then estimate a factor score that represents the substance of the desired behaviour, setting aside the specificity of the situations taken into account for each item. An alternative procedure could also be to simply calculate an overall score that is the sum of all the scores attached to each preselected item in a crosscutting dimension. We can then measure the degree of correlation between the added score and the factor score, which is generally close to 1, and choose one of these indicators to be used in the rest of the analyses. Generally, the one constructed on the basis of the factor analysis is chosen. Table 14 below shows an example of summary indicators on maternal educational approaches for Sao Tome and Principe. To ensure comparability, the scores are subsequently standardised, with an average at 0 and a standard deviation of 1.

Table 14: Description of educational approaches in Sao Tome and Principe

Thematic areas	Number of variables	Scale of score	
		Minimum	Maximum
Being proactive	26	13	61
Explanation	9	0	14
Structuring	12	0	28
Negativity	9	0	11
Overall	56	13	114

The distribution of crosscutting indicators generally reveals a strong variability among mothers in their different educational approaches. In order to develop more in-depth knowledge of maternal behaviour, it is interesting to try to explain the diversity of educational approaches used. Here, we shall apply the same process of analysis as we used for the thematic indicators. This is done in two stages; first we look at the degree of homogeneity in educational approaches at the individual level, then at the degree of uniformity of these approaches at the national level.

III.5.1.1 Similarities in educational approaches

After having constructed the statistical indicators that describe the four (or more, depending on the country) educational practices, it could be of interest to first consider the possibility that they might be interrelated, and also to identify a more elaborate typology of family practices. The first step consists of constructing a matrix describing the correlations among the various educational approaches. Table 15 below shows the matrix constructed for the case of Sierra Leone.

Table 15: Matrix of correlations among different educational approaches in Sierra Leone

Crosscutting areas, educational practices	Being proactive	Structuring	Explanation	Negativity
Being proactive	1			
Structuring	0.58	1		
Explanation	0.65	0.72	1	
Negativity	0.17	0.26	0.10	1

In the case of Sierra Leone, we see first of all that while the relations within the block of family educational practices comprising being proactive, structuring and explanation are not very strong, the associations are nevertheless clearly positive and statistically significant, with simple correlation coefficients above 0.6. Indeed, women who have a certain approach in one of these three areas of practice clearly tend to have a similar approach in the other two. The second comment concerns the relationship between negativity and the other crosscutting forms of maternal behaviour. We note that while negativity has a rather weak link with explaining, with a coefficient close to 0, it does have a slightly stronger, albeit not very significant, link with being proactive (0.17) and a rather stronger link with structuring (0.26). This indicates that mothers who adopt practices that might be considered negative tend to be more or less the same ones who adopt proactive behaviour, although the coefficients, while positive, are not very strong. These mothers also have a stronger tendency to implement structuring practices. The opposite of these tendencies is also true.

Based on this information, it might be relevant to define the typology of families in the sample by crossing both the aggregated score in the three areas of positive family practices (being proactive, structuring and explaining) and the aggregate score in the less positive area (negativity). This will make it possible to draft a table such as the one below (Table 16).

Table 16: Crossing “positive” and “negative” crosscutting practices

		Degree of negative crosscutting practices			Total
		1	2	3	
Degree of positive crosscutting practices (explain, structure, proactive)	3				
	4				
	5				
	6				
	7				
	8				
	9				
Total					

With this crossing, a conventional definition of four groups within the sample is obtained. We must note that the categorisation of these groups is not set and may vary according to the numbers in the different categories, or from country to country. We thus identify:

- i) one group of mothers who show a high degree of “positive” educational practices and a low degree of “negative» practices (in pink at the lower left side of the table). This category includes mothers whose behaviour is more efficiently oriented towards the development of their children.
- ii) a second group of mothers who, unlike the previous group, show a lower degree of “positive» educational practices and a high degree of “negative» practices (cells in green in the upper right part of the table). This category includes mothers whose behaviour is less efficiently oriented towards the development of their children and who could potentially have more need for parental education activities.
- iii) a third group of mothers that could be qualified as “less involved” in the development of their children since they show a low degree of proactive practices, although their behaviour is not negative. This category is represented in blue on the upper left part of the table. Parental education should seek to galvanise this group i) by inculcating the idea that maternal activity constitutes a major factor of child development and ii) by proposing concrete means of action.
- iv) a fourth group made up of mothers who are very active in the development of their children, but to a certain extent they are both positive and negative (cells in violet on the bottom right of the table). Any prospective parental education programme should doubtless focus on the degree of activity of such mothers and direct their educational practices towards those that are effectively more positive.

III.5.1.2 The social dimension of family educational approaches

Following on from what was done for thematic behaviour, we can now try to determine to what extent crosscutting practices occur more or less frequently, according to the social and environmental circumstances of families. We therefore build multivariate linear regression models to try to assess the effects of these characteristics on the different educational approaches adopted by mothers. The table below (Table 17) then presents the results.

Table 17: Regression analysis of the crosscutting scores according to social variables

Variable		Modality	Educational approaches			
			Proactive	Structuring	Explaining	Negativity
Constant						
Characteristics of the child	Age (months)					
	Age ²					
	Sex	Girl				
		Boy				
Characteristics of the family	Area	Rural				
		Urban				
	Region	West				
		East				
		North South				
Income level	Quintile 1					
	Quintile 2					
	Quintile 3					
	Quintile 4 Quintile 5					
Origine	Group 1					
	Group 2 Other					
Religion	Religion 1					
	Other					
Characteristics of the mother	Number of children	1				
		2				
3 and more						
School attendance	None					
	1-3 years					
	4-6 years > 7 years					
Explained variance R2 (%)						

Significance threshold: ns: non-significant; * = significant at .05; ** = at .01; *** = at .001

In describing the results, we use the same approach that was used for the thematic indicators. We shall first examine the part of the variance in each of the educational approaches that can be explained by social and geographical variables. Secondly, reading the table horizontally, we shall determine where the different social and environmental variables identified have an effect on maternal educational practices, i) in which approaches, ii) to what extent and iii) which population groups are helped (or not helped). We must remember that the approach that characterises the degree of negativity of the mother in raising her child is on an ascending scale towards behaviour patterns that can be considered to be undesirable. This is not however the case with the three other crosscutting, summary indicators for which the highest values correspond to educational behaviour patterns that are more favourable for children.

III.6 LINKS BETWEEN PRACTICES IN THEMATIC AREAS AND EDUCATIONAL BEHAVIOUR

One important issue to be examined relates to the interaction between specific maternal practices and educational approaches, in the daily relations between mother and child. Indeed, one might wonder how a specific educational approach could influence the actions of mothers in each of the thematic areas. For example, does a very proactive mother necessarily show the most favourable practices in the area of language, social development, hygiene, etc.? Does a mother who displays very negative behaviour also have the least favourable practices for the development of her child in the thematic areas? In order to attempt to respond to this question, we use multivariate linear regression models to assess the influence of educational approaches (independent variables) on the thematic scores (dependent variables). The social and environmental characteristics are introduced into the models as control variables so that the reasoning is based on all else being equal or, in this case, equivalent family environments. Let us take the example of results obtained in Sierra Leone to illustrate these analyses and the description that can be derived from them (Table 18 below).

Table 18: Impact of educational practices on thematic scores in Sierra Leone

	Thematic practice areas										
	Emotional	Health	Feeding	Rest	Hygiene	Care	Protection	Language	Cognitive	Social	Overall
R ² (social characteristics-SC)	15.4 %	10.6 %	15.8 %	31.2 %	26.0 %	9.6 %	9.4 %	33.3 %	26.4 %	22.8 %	27.5 %
R ² (SC + educational conduct)	73.5 %	41.3 %	18.9 %	33.7 %	63.2 %	10.1 %	16.6 %	59.5 %	52.1 %	72.3 %	76.8 %
Degree of being proactive	-0.05 **	0.77 ***	0.11 ***	0.11 ***	0.17 ***	0.09 ***	0.12 ***	0.54 ***	0.36 ***	-0.01 (ns)	0.46 ***
Degree of structuring	-0.66 ***	-0.23 ***	-0.07 *	-0.13 ***	0.60 ***	0.06 (ns)	0.08 **	0.00 (ns)	0.10 ***	0.66 ***	0.08 ***
Degree of explaining	1.19 ***	-0.10 ***	0.13 ***	0.14 ***	-0.03 (ns)	-0.07 *	0.12 ***	0.09 ***	0.17 ***	0.18 ***	0.38 ***
Degree of negativity	-0.11 ***	-0.15 ***	-0.12 ***	-0.09 ***	0.12 ***	-0.04 (ns)	0.11 ***	0.06 ***	0.17 ***	0.08 ***	0.00 (ns)

Significance threshold: ns: non-significant; * = significant at .05; ** = at .01; *** = at .001

One initial approach consists of assessing if, and to what extent, integrating the variables that characterise family educational conduct has an effect on explaining the diversity of educational practices in each of the thematic areas. This can be done by calculating, for each thematic area and for the overall score, the gains in R² between the model that only takes social characteristics into account and the model that includes educational practices⁷. In the case of Sierra Leone, we observe that these gains are quite substantial in most areas, but also and above all, for the overall score, which is the summary measurement of all the thematic areas reviewed. The gains in the numerical value of the coefficient of determination, R², are particularly substantial in the areas of emotional development (+ 58.1 percentage points), social development (+ 49.5 points), and to a lesser degree in the areas of hygiene (+ 37.2 points), health (+ 30.7), language (+26.2) and

⁷ In Sierra Leone, we observed that the effect of certain social characteristics identified above disappeared when family educational practices were integrated in the analysis. This is due to the fact that these practices are not identical in the different social environments.

cognitive development (+ 25.7). We note that, in contrast, certain areas such as feeding, rest, care and protection are barely affected by maternal educational practices. This indicates the fact that mothers being more or less proactive, or more or less inclined to explain or structure their children's environment has little impact on their practices in these areas. Indeed, we observed elsewhere that maternal practices in these areas are independent of all the other areas.

Through the analysis we are also able to identify which dimensions of educational practices have the strongest impact on the quality of maternal practices in the various thematic areas. We could of course target each of the thematic areas to identify which parental educational practices are the most relevant, but we will limit ourselves to a "horizontal" reading of the table in order to identify the thematic areas where each of the four parental practices have an impact.

In the case of Sierra Leone, the estimations of the overall score reveal that the maternal conduct that has the greatest impact is how proactive the mother is in the different circumstances of the life of her child. (The overall score is a particularly important reference for identifying the impact of parental educational practices because the aim is first of all to ensure the general development of the child, beyond what might happen in the different specific thematic areas.) In second place in terms of impact are the explanations given to children, which enable them to make sense of what they learn and help them build their personality. Note that a structured living environment for the child only has a very weak influence on the overall score, while the degree of negativity in the mother's behaviour has no influence at all. The effects of the four educational practices identified in the case of Sierra Leone, on practices in the various thematic areas can then be examined in more specific detail.

Thus, in eight out of the ten thematic areas, the proactive character of the mother has a beneficial effect on her other practices with her children. This is particularly the case in the area of health, where the young child is not capable of regulating their behaviour themselves, as well as for cognitive development and language, where mothers could very easily fail to intervene, believing implicitly that these will automatically occur. The same applies to a lesser degree to practices concerning hygiene and protection. In other areas, the fact that the mother is proactive has very limited, and even no influence at all on her practices.

A structured living environment, for its part, has an overall positive impact in 4 out of the 10 thematic areas. The impact is very strong for practices linked to the child's social development and hygiene. This is beneficial because we also know that the lessons learned in these areas by the child are crucial to their overall development. A highly structured environment however seems to have a negative impact on the child's emotional development, as well as in health and rest. We also note that the fact that the child lives in a structured setting has little impact on feeding and no impact at all in areas such as care and language.

In 7 thematic areas out of 10, it is clearly shown that a mother's propensity to explain things to her child has a beneficial effect. The impact is particularly strong for emotional development, followed by social and cognitive development, rest and feeding. While it is clear that it is not really relevant to provide explanations to children in the area of health because things here depend mostly on the actions of the mother and very little on the role of the child, the fact that explanations from the mother have no impact on the child's hygiene practices is a problem. Finally the mother's negative behaviour (scolding, punishment, threats, hitting) has a significant

impact in 9 areas out of 10, but to highly varying degrees. We note that negative maternal behaviour has a positive influence on practices in the area of cognitive development, hygiene and protection, but a detrimental effect on maternal behaviour in the area of health, feeding and emotional development. In the other areas where there is a significant impact, the scope of this impact can be very limited in a specific case, and there could be differences from one country to the other.

These results are very important for generating knowledge about parental behaviour in the country and even more important for any measures that may be taken to set up a parental education programme. They highlight the possible impacts of educational practices on the way in which families perform in the various thematic areas reviewed. In the studies carried out in Mauritania, Sierra Leone and Sao Tome and Principe, we observed that these impacts were significant. This provides empirical confirmation of the positive role of i) explaining things to children, ii) of proactive maternal behaviour and iii) a structured living environment for children. It shows that iv) negative behaviour should not be encouraged and the intensity of the impact (sometimes positive, but also often negative) is also moderate.

IV. TOWARDS DEFINING REFERENCE MARKERS FOR THE PARENTAL EDUCATION PROGRAMME



After having analysed specific practices and more crosscutting educational approaches, we can identify a number of reference markers that can be used to set up the content of the future parental education programme. These markers are chosen on the basis of the forms of behaviour that could be improved, especially when they concern a non-negligible proportion of mothers. We saw in Mauritania for example that only 42% of mothers had conversations with their children. Knowing how much communicating with the child stimulates their development, in particular where language is concerned, it is clear that the behaviour that consists of not speaking much to the child must be corrected. The prospective parental education programme must therefore include a module that teaches about the importance of verbal contacts between mother and child, even when the child is too young to speak and only babbles. The situation in Sierra Leone is nowhere near as acute, since only 5% of mothers have limited conversations with their children. This therefore does not need to be a marker in the content of the parental education programme. Similarly, we observe that in Sao Tome and Principe, a little under one quarter of all mothers do not identify any sign, or only one, that indicates that their child is unwell. As part of the parental education programme, therefore, discussions on child health could include a session describing the different symptoms that indicate that a child is unwell, and how to react to them.

Generally speaking, the analyses will probably show that social and geographical characteristics influence maternal practices to varying degrees and probably in differing areas. For example, this was the case with respect to the specific aspect of mother-child communication in Mauritania where we saw that Moorish mothers from rich households in the Northern part of the country had fewer conversations with their children. Or more generally in Sao Tome and Principe, where it was observed that mothers living elsewhere than on the island of Principe generally demonstrated less favourable forms of behaviour. This suggests that while the parental education programme is a national programme covering the population as a whole, certain aspects could probably be enhanced for certain population groups in specific areas where it has been observed that one practice or the other is less favourable, and where there is a need to strongly encourage people to develop improved forms of parental practices. These aspects could possibly be defined in the reference markers.

The markers, which serve as an empirical basis for the parental education programme content, could be set up in the form of thematic discussions focusing on specific practices within the different thematic areas, as well as discussions on crosscutting themes related to educational approaches and how they can be applied in day-to-day mother-child interactions.

In the case of Sierra Leone, for example, it was felt that the following objectives and situations could be included in the modules focusing on discussion of crosscutting themes:

► **Encourage mothers to spend more time with the child and in particular to play with them and speak to them in order to teach them things, even when the child is very young.**

► **Explain to mothers that they play a crucial in their child's development.**

- In the area of health, hygiene, language, cognitive development and social development

► **Explain to mothers that they must be positive in intervening with their child, and explain how to do this**

- To encourage the child to try activities beyond their current abilities

- To help the child's psychomotor growth

- To help in toilet training the child

- To speak to the child, even before the child learns to speak

- To teach the child new words and develop their language

- To congratulate and encourage the child

- To teach the child new things

- To tell the child stories

► **Encourage mothers to build a structured environment for the child**

- Have meals at set and relatively regular times

- Make the child have a nap at regular hours and in their own bed, especially when the child is very young

- Let the child observe a specific bedtime and a certain number of hours of sleep

- Watch over the child in their activities, subtly but constantly

- Make rules and set some prohibitions

- React when the child breaks the set rules and explain why they must not behave in that manner

- Help the child develop their autonomy within a structured framework, by supporting them

Under the thematic discussions, the modules could focus on the following:

- ▶ **Discussions on health**
 - Whom to consult? Under what circumstances?
 - How to react in case of diarrhoea. How to prepare oral rehydration salts

- ▶ **Discussions on breastfeeding**

- ▶ **Discussions on feeding and the importance of a varied diet for the child**

- ▶ **Discussions on the dangers a child may be exposed to and how to prevent them**

- ▶ **Discussions on the child's need for rest and sleep**

- ▶ **Discussions on rules of hygiene and their regularity**

- ▶ **Discussions on the use of deworming medication and vitamin A**

- ▶ **Discussions on malaria and the importance of insecticide treated nets.**

These reference markers cannot be disseminated as they stand to parents of young children. The work of the national team consists of breaking them down into a form that can appropriately be used in drafting the content of a national parental education programme. The organisational arrangements governing the programme also need to be defined.

ANNEXES

ANNEXE 1

BASIC QUESTIONNAIRE ON PARENTAL PRACTICES

HOUSEHOLD QUESTIONNAIRE

- 1. Region**
- 2. District**
- 3. Area of residence:**
 - . Urban
 - . Rural
- 4. Marital system:**
 - . Monogamous
 - . Polygamous
- 5. If the marital system is polygamous, number of wives: .**
- 6. If the marital system is polygamous, number of wives living in the household:**
- 7. What is the principal water source in the residence?**
 - . Indoor running water
 - . Outdoor running water
 - . Running water in another house
 - . Public tap
 - . Protected well
 - . Unprotected well
 - . River, sea
 - . Water vendors, tanks
 - . Other
- 8. How many rooms are there in the residence? (Do not count the bathroom and the kitchen)**
- 9. What is the status of residential occupation?**
 - . Rented from a public entity
 - . Rented from a private entity
 - . Owner
 - . Borrowed, transferred
- 10. What material is the floor of the residence made of?**
 - . Clay
 - . Wooden boards
 - . Tiles
 - . Cement
 - . Other
- 11. What material is the outer wall cover of the residence made of?**
 - . Stone
 - . Bricks
 - . Cement blocks
 - . Stabilised earth
 - . Earth
 - . Other
- 12. What type of toilet system is installed in the residence?**
 - . Indoor, exclusive use, with flushing system
 - . Indoor, exclusive use, without flushing system
 - . Outdoor, exclusive use, with flushing system
 - . Communal, with flushing system
 - . Improved latrines
 - . A hole in the compound
 - . No toilets (bush)
 - . Other
- 13. What type of fuel do you use to cook?**
 - . Electricity
 - . Gas
 - . Kerosene
 - . Wood
 - . Charcoal
 - . None
 - . Other

14. Do you own any of the following assets? [Yes / No]

- a. Electricity
- b. Radio
- c. TV
- d. Mobile telephone
- e. Fixed line telephone
- f. Computer
- g. Refrigerator
- h. Cooker
- i. Bicycle
- j. Motor bike
- k. Automobile
- l. Farming land
- m. Cart

15. What is the distance (in kilometres) to the nearest public service institution?

- a. Primary school
- b. Market
- c. Medical facility

16. Do you have difficulty finding food?

- . Never
- . Rarely ever
- . Sometimes
- . Frequently
- . Never or almost never

17. How much money do you have for emergencies?

- . 0 to 10 000 FCFA
- . 10 000 to 50 000 FCFA
- . 50 000 to 100 000 FCFA
- . 100 000 to 200 000 FCFA
- . 200 000 FCFA or more

QUESTIONNAIRE FOR THE PERSON IN CHARGE OF THE CHILD

CHARACTERISTICS OF THE PERSON IN CHARGE OF THE CHILD

18. Age (in years): ...

19. Number of children: ...

20. Number of children living with you: ...

21. Marital situation

- . Unmarried
- . Married
- . Separated or divorced
- . Widow

22. Does the father of your child live in the home? [Yes / No]

23. If the father does not live in the home, how often does he see the child?

- . Every day
- . Several times a week
- . Once a week
- . Several times a month
- . Once a month
- . Rarely, only on special occasions
- . Never

24. Literacy (based on a reading card):

- . Does not know how to read
- . Reads, but with difficulty
- . Reads easily

25. What is your level of education?

- . No schooling
- . 1-3 years primary education
- . 4-6 years primary education
- . Secondary and beyond

26. What is your native language?

- . Language 1
- . Language 2
- . Language 3
- . Language ...

27. What is your religion?

- . Religion 1
- . Religion 2
- . Religion 3
- . Religion ...

FAMILY CONSTRAINTS AND USE OF TIME

28. Who mainly takes care of the child?

- . I do
- . Father
- . Grandparent
- . Brother or sister
- . Uncle or aunt
- . A nanny
- . Nobody
- . Other

29. If the answer is a brother or sister, how old are they?

30. Who else also takes care of the child?

- . I do
- . Father
- . Grandparent
- . Brother or sister
- . Uncle or aunt
- . A nanny
- . Nobody
- . Other

31. If the answer is a brother or sister, how old are they?

32. On a typical day (normal, working day), how many hours do you spend outside the home?

33. On a typical day (normal, working day), how many hours do you actually spend at home?

34. On a typical day (normal, working day), how many minutes do you spend on the following activities with your child?

- a. Care/Hygiene
- b. Feeding
- c. Play
- d. Interactions

PERCEPTIONS ON OVERALL CHILD DEVELOPMENT

35. Do you think parents have an influence on the development of their child?

- . No, children grow and develop at their own pace
- . Parents do have some influence, but it is rather limited
- . Parents have a strong influence on the development of their child.

36. At what age (in days) is a child capable of seeing?

37. Do you think one can help them?

- . Yes
- . Yes, but I don't know how
- . No

38. If yes, how?

- . By showing things that the child can follow with their eyes
- . Other
- . I don't know

39. At what age (in months) is a child capable of hearing?

40. Do you think one can help them?

- . Yes
- . Yes, but I don't know how
- . No

41. If yes, how?

- . By speaking to them regularly
- . By shaking or giving them objects that make a noise (or music)
- . Other
- . I don't know

42. At what age (in months) is a child capable of sitting?

43. Do you think one can help them?

- . Yes
- . Yes, but I don't know how
- . No

44. If yes, how?

- . By propping them up on an object or by leaning their back on their mother's stomach
- . Other
- . I don't know

45. At what age (in months) is a child capable of standing?

46. Do you think one can help them?

- . Yes
- . Yes, but I don't know how
- . No

47. If yes, how?

- . By holding their hand
- . By letting them lean on an object or a piece of furniture (chair, stroller)
- . Other
- . I don't know

48. At what age (in months) is a child capable of being toilet trained?

49. Do you think one can help them?

- . Yes
- . Yes, but I don't know how
- . No

50. If yes, how?

- . By changing their nappy systematically when they have soiled it
- . By letting them sit on the potty regularly
- . By asking them from time to time
- . Other
- . I don't know

51. At what age (in months) is a child capable of picking up an object?

52. Do you think one can help them?

- . Yes
- . Yes, but I don't know how
- . No

53. If yes, how?

- . By handing them objects systematically
- . By placing several objects around them
- . Other
- . I don't know

54. At what age (in months) do you think a child's development is delayed, if they cannot walk?

55. At what age (in months) do you think a child's development is delayed if they cannot talk?

56. How can a child learn new words?

- a. They learn by themselves, from daily life
- b. Parents point to objects and name them
- c. Parents often ask the child to name an object
- d. By reading books to them and letting them listen to stories or fairy tales
- e. Other

57. What do you do if you are concerned about your child's development?

- a. I get information from a friend, neighbour, etc.
- b. I consult a doctor or some medical personnel
- c. I use traditional medicine
- d. I manage by myself
- e. Other
- f. I do not do anything in particular.

58. Which of the child's daily activities is the father effectively involved in? [Spontaneous yes: mother answers immediately / Yes, after explanation: mother hesitates and the interviewer needs to reformulate or explain the question / No] [For each possibility, circle the appropriate answer]

- a. Feeding
- b. Dressing
- c. Learning daily tasks
- d. Learning in preparation for school (counting, learning colours, words, etc.)
- e. Play
- f. Relationship communication and language
- g. Discovering the outside world
- h. Discipline
- i. Care, child health
- j. Hygiene
- k. Protection/safety
- l. None
- m. Household budget

59. Which of the child's daily activities would you like the father to be more involved in? [Spontaneous yes: mother answers immediately / Yes, after explanation: mother hesitates and the interviewer needs to reformulate or explain the question / No] [For each possibility, circle the appropriate answer]

- a. Feeding
- b. Dressing
- c. Learning daily tasks
- d. Learning in preparation for school (counting, learning colours, words, etc.)
- e. Play
- f. Relationship communication and language
- g. Discovering the outside world
- h. Discipline
- i. Care, child health
- j. Hygiene
- k. Protection/safety
- l. None

60. Do you think boys and girls should be raised in the same way in the following areas? [Yes / No / DK] [For each possibility, circle the appropriate answer]

- a. Feeding
- b. Dressing
- c. Learning daily tasks
- d. Learning in preparation for school (counting, learning colours, words, etc.)
- e. Play
- f. Relationship communication and language
- g. Discovering the outside world
- h. Discipline
- i. Care, child health
- j. Hygiene
- k. Protection/safety
- l. Household chores
- m. Productive chores

EMOTIONAL DEVELOPMENT

61. Do you demonstrate your affection to your child? [Yes / No]

62. If yes, how?

- a. With words
- b. With gestures (hugs, kisses, caresses, etc.)
- c. With acts (giving them things, etc.)
- d. I do not demonstrate my affection in any specific way
- e. I don't know

63. At what age (in months) do you think it is useful to speak to a child?

64. What do you do when your child cries during the day?

- a. I generally do nothing
- b. I take them in my arms
- c. I breastfeed them
- d. I give them some other food
- e. I give them a little alcohol
- f. I speak to them
- g. I hit them
- h. I scold them
- i. I ask someone else to take care of the child
- j. I put the child on my back
- k. Other

65. What do you do when your child cries at night?

- a. I generally do nothing
- b. I take them in my arms
- c. I breastfeed them
- d. I give them some other food
- e. I give them a little alcohol
- f. I speak to them
- g. I hit them
- h. I scold them
- i. I ask someone else to take care of the child
- j. I put the child on my back
- k. Other

66. What do you do when your child is upset? (Separating from parents, weaning, etc.)

- a. It is better to do nothing because that is how they learn
- b. You have to explain, without making it complicated
- c. You have to take time to explain that it is legitimate to get upset, and reassure them
- d. I breastfeed them/give them tea
- e. I give them things that engage their interest
- f. I scold or threaten them
- g. Other

67. In what situation(s) do you congratulate your child?

- a. I never congratulate them
- b. When they do things that I like
- c. When they manage to do something (achievement, performance)
- d. When they behave well

68. In what situation(s) do you encourage your child?

- a. I never encourage them
- b. When they fail
- c. When they manage to do something (achievement, performance)
- d. When they behave well
- e. When I want them to be more capable in the future

HEALTH AND PERCEIVING DANGER

69. How do you detect that your child may be unwell?

- a. Warm forehead, warm body, temperature
- b. Vomiting
- c. Teary, bright eyes
- d. Diarrhoea
- e. Constipation
- f. Loss of appetite
- g. Incessant crying
- h. Listlessness
- i. Does not want to sleep
- j. Pale complexion
- k. I do not really know how to detect that the child is not well
- l. Other

70. What do you do when your child has a fever?

- a. I make sure they rest
- b. I give them a bath
- c. I give the child food
- d. I give the child a drink
- e. I cover the child's body with a damp cloth
- f. I cover the child to make them perspire
- g. I take the child to a health facility
- h. I give the child some medication that we have at home
- i. I use plants or traditional medicine
- j. I inform the father of the child
- k. I do nothing

71. What do you do if the fever persists?

- a. I ask a friend
- b. I use traditional medicine
- c. I go to the health centre
- d. I inform the father of the child
- e. I don't know

72. Do you take any particular preventive measures when the child is unwell (fever, contagious)?

- . Yes, I try to avoid contacts between the child and other people
- . No, I do not do anything in particular.

73. What do you do when your child has diarrhoea?

- a. I give the child oral rehydration salts.
- b. I give the child food
- c. I avoid giving the child a drink
- d. I give the child some medication that we have at home
- e. I consult a health worker
- f. I do nothing
- g. I use traditional medicine
- h. Other

74. You spoke about oral rehydration salts; do you have any?

- . Yes
- . No

75. You spoke about oral rehydration salts; do you know how to prepare them?

- . Yes
- . No

76. Do you pay particular attention to hygiene in your home?

- . Yes, systematically
- . Frequently
- . Rarely ever
- . Not at all

77. Do you try to guarantee a safe environment for your child? (For example, putting away matches, candles, sharp objects, toxic products, medication, etc. in a safe place, covering electrical outlets, etc.)?

- . Yes, systematically
- . Frequently
- . Rarely ever
- . Not at all

78. If the child is under 36 months, what dangers (3 maximum) could they be exposed to?

- a. Danger 1:
- b. Danger 2:
- c. Danger 3:
 - . No particular danger
 - . Burns
 - . Drowning
 - . Falls
 - . Bites from animals, insects or cobras
 - . The child could get lost
 - . Intoxication
 - . Injury
 - . Road accidents
 - . Accidents while playing
 - . Acts of violence
 - . Sexual abuse
 - . Kidnapping, trafficking

79. If the child is aged between 36 and 72 months, what dangers (3 maximum) could they be exposed to?

- a. Danger 1:
- b. Danger 2:
- c. Danger 3:
 - . No particular danger
 - . Burns
 - . Drowning
 - . Falls
 - . Bites from animals, insects or cobras
 - . The child could get lost
 - . Intoxication
 - . Injury
 - . Road accidents
 - . Accidents while playing
 - . Acts of violence
 - . Sexual abuse
 - . Kidnapping, trafficking

80. If the child is under 36 months, what measures (2 maximum) do you take to protect them from danger?

- a. Measure 1:
- b. Measure 2:
 - . I do not take any particular measures
 - . I take precautionary measures (I accompany the child when they go out, etc.)
 - . I explain the risks to the child and tell them how to behave
 - . I supervise the child regularly
 - . I set prohibitions
 - . I punish the child when they behave inappropriately
 - . I hit the child when they behave inappropriately

81. If the child is aged between 36 and 72 months, what measures (2 maximum) do you take to protect them from danger?

- a. Measure 1:
- b. Measure 2:
 - . I do not take any particular measures
 - . I take precautionary measures (I accompany the child when they go out, etc.)
 - . I explain the risks to the child and tell them how to behave
 - . I supervise the child regularly
 - . I set prohibitions
 - . I punish the child when they behave inappropriately
 - . I hit the child when they behave inappropriately

CHARACTERISTICS OF THE CHILD

82. Date of birth:

83. Sexe :

84. Relationship to the person in charge

- . Biological child
- . Adopted child
- . Child entrusted in care
- . Child under guardianship

85. Ranking among siblings (number):

86. Preschool attendance

- . Yes
- . No

87. If yes, what type of preschool do they attend?

- . Community
- . Private
- . Public, Koranic
- . Madrasa

88. If yes, at what age did they start? (in years)

FEEDING

89. Do you or did you breastfeed your child?

- . Yes
- . No

90. Who gave your child the first feed?

- . I did
- . Someone else did

91. Do you or did you breastfeed your child exclusively?

- . Yes
- . No

92. If yes, up to what age (in months) did your child breastfeed exclusively?

93. Did you continue to breastfeed when you were not well?

- . Yes, I breastfed as usual
- . More or less. I continued to breastfeed but I also gave my child a supplement
- . No, I stopped breastfeeding and fed my child something else

94. Does your child still breastfeed?

- . Yes
- . No

95. If yes, how many times a day do they breastfeed?

- . Number:
- . On request
- . I don't know

96. What is your opinion of bottle-feeding?

- . Very favourable
- . Favourable
- . Moderately favourable
- . Not very favourable
- . Not favourable at all
- . No opinion
- . I don't know

97. How many times did your child have a clearly identified meal yesterday?

98. How regular are meal times?

- . Set hours
- . Relatively set hours
- . Variable hours

99. How does the child eat?

- . By themselves
- . With the help of an adult
- . With the help of another child

100. Does your child drink treated water?

- . Yes
- . No

101. Which of the four main foods from the list below did your child eat at breakfast yesterday?

- a. Food 1:
- b. Food 2:
- c. Food 3:
- d. Food 4:
 - . Rice
 - . Cereals
 - . Bread
 - . Dairy products
 - . Roots and tubers (yam, cassava, sweet potato, etc.)
 - . Meat
 - . Fish
 - . Eggs
 - . Legumes (string beans, lentils)
 - . Vegetables
 - . Fruits
 - . Beverage (other than water)
 - . Other foods

102. Which of the four main foods from the list below did your child eat at lunch yesterday?

- a. Food 1:
- b. Food 2:
- c. Food 3:
- d. Food 4:
 - . Rice
 - . Cereals
 - . Bread
 - . Dairy products
 - . Roots and tubers (yam, cassava, sweet potato, etc.)
 - . Meat
 - . Fish
 - . Eggs
 - . Legumes (string beans, lentils)
 - . Vegetables
 - . Fruits
 - . Beverage (other than water)
 - . Other foods

103. Which of the four main foods from the list below did your child eat at supper yesterday?

- a. Food 1:
- b. Food 2:
- c. Food 3:
- d. Food 4:
 - . Rice
 - . Cereals
 - . Bread
 - . Dairy products
 - . Roots and tubers (yam, cassava, sweet potato, etc.)
 - . Meat
 - . Fish
 - . Eggs
 - . Legumes (string beans, lentils)
 - . Vegetables
 - . Fruits
 - . Beverage (other than water)
 - . Other foods

104. Do you think that your child has enough to eat (quantity)?

- . Yes, in general
- . More or less
- . Sometimes not
- . Generally, no

105. What is your opinion of the quality of the food that you give to your child?

- . Very favourable
- . Favourable
- . Moderately favourable
- . Not very favourable
- . Not favourable at all
- . I don't know

106. Do you pay particular attention to the way your child's food is preserved?

- . Yes, I pay keen attention
- . I try to pay attention
- . No, I do not do anything in particular.
- . I don't know

REST AND SLEEP

107. In general, at what time do you send your child to bed?

- . Time:
- . There is no specific time, the child goes to bed when they are tired
- . I don't know

108. Do you need to remind your child to go to bed?

- . No, they decide by themselves
- . No, I don't really attach much importance to that
- . Yes, I need to remind them
- . I don't know
- . The child is too young for this to apply

109. If yes, how often do you have to remind them?

- . Every evening
- . Frequently
- . From time to time
- . Rarely or never

110. In general, at what time do you wake your child up?

- . Time:
- . There is no specific time, the child goes to bed when they are tired
- . I don't know

111. Does your child have a nap during the day?

- . Yes
- . No

112. If yes, under what circumstances?

- . In their bed
- . At home, wherever they fall asleep
- . Outside the home, wherever I am

113. Do you need to remind your child to take a nap?

- . No, they decide by themselves
- . No, I don't really attach much importance to that
- . Yes, I need to remind them
- . I don't know
- . The child is too young for this to apply

114. If yes, how often do you have to remind them?

- . Every evening
- . Frequently
- . From time to time
- . Rarely or never

115. How do you recognise that your child is sleepy?

- . I don't pay any particular attention
- . Crying
- . Tantrums
- . Agitated
- . Droopy, burning eyes
- . Yawns

116. Do you accompany your child to bed?

- . No, they fall asleep by themselves
- . Not specifically, I just take them to their bed
- . Yes, I talk to them and rock them a little
- . Yes, I talk to them and rock them for a long while
- . Yes, I tell the child stories

117. What position does your child sleep in?

- . On the back
- . On the stomach
- . On the side
- . Alternates
- . I don't know

118. Who does the child sleep with?

- . Alone
- . With me and/or their father
- . With other children (no adults)
- . With other adults
- . With other adults and children

119. Where does the child sleep?

- . On the floor
- . On a mat
- . On a mattress on the floor
- . On a bed without a mattress
- . On a bed with a mattress
- . In a cot
- . In a traditional cot
- . Other

HYGIENE

120. Do you take time to explain the importance of hygiene to your child?

- . Regularly
- . Sometimes
- . Rarely ever
- . Never
- . The child is too young for this to apply

121. Do you allow your child to take care of their own hygiene?

- . No, adults take care of them
- . No, their brothers or sisters take care of them
- . Yes, but I help
- . Yes, I trust them

122. How often does your child bathe?

- . At least once a day
- . Several times a week
- . Once a week
- . Less than once a week
- . On rare occasions
- . Rarely or never

123. With whom does the child bathe?

- . Alone
- . With me
- . With their father
- . With another adult
- . With their brothers or sisters
- . With other children

124. Where does the child bathe?

- . At home
- . In the river/sea
- . At the tap
- . Other

125. Does your child wash their hands before meals?

- . Yes, always
- . Yes, but not always
- . Rarely ever
- . Never
- . The child is too young for this to apply

126. Does your child wash their hands after meals?

- . Yes, always
- . Yes, but not always
- . Rarely ever
- . Never
- . The child is too young for this to apply

127. Does your child wash their hands after using the toilet?

- . Yes, always
- . Yes, but not always
- . Rarely ever
- . Never
- . The child is too young for this to apply

128. When the child washes their hands, do they use soap?

- . Yes, always
- . Yes, but not always
- . Rarely ever
- . Never
- . The child is too young for this to apply

129. If they rarely or never use soap, what else do they use?

- . They use just water
- . They use whatever is available (sand, ash, etc.)
- . The child is too young for this to apply

130. How often does your child brush their teeth?

- . Generally after each meal
- . Generally yes, but not always
- . More or less once a day, in the morning
- . More or less once a day, in the evening
- . From time to time during the week
- . Rarely or never
- . The child is too young for this to apply

131. If yes, with what?

- . A toothbrush and toothpaste
- . A toothpick or chewing stick
- . Charcoal and salt
- . The child is too young for this to apply

**132. Are the child's nails trimmed?
(observation, if not, question)**

- . Yes
- . No

133. Does the child keep their clothes on to sleep?

- . Yes
- . No

134. How often does your child change clothes?

- . Once a day (or more)
- . Every other day
- . Twice a week
- . Less than twice a week
- . Rarely or never

PREVENTION AND CARE

135. Does your child have an immunisation card?

- . Yes, the interviewer saw the card
- . Yes, but the interviewer did not see the card, it is lost
- . Yes, but the interviewer did not see the card because I don't want to show it
- . No

136. If the child has an immunisation card that the interviewer can get hold of, they must note if the child has received the following vaccines or not: [Yes, before 12 months / Yes, but after 12 months / No]

- a. BCG
- b. DTP1
- c. DTP2
- d. DTP3
- e. Polio1
- f. Polio2
- g. Polio3
- h. Measles
- i. Hepatitis B1
- j. Pneumonia

137. In the last six months, has your child been given any deworming plant or medication?

- . Yes
- . No

138. In the last six months, has your child received vitamin A?

- . Yes
- . No

139. How often do you take your child to the health centre?

- . Every month
- . Every three months
- . Twice a year
- . Once a year
- . Never
- . When they are sick
- . I don't know

140. Do you monitor the weight of your child?

- . Yes
- . No

141. How often has your child been weighed in the past 12 months?

- . Roughly every month
- . Every three months
- . Twice a year
- . Once a year
- . Never

142. Does your child sleep under a treated bed net?

- . Yes, always
- . Yes, but not always
- . Occasionally
- . Never

PROTECTION AND SUPERVISION

143. Is your child registered with the civil status office?

- . Yes
- . No

144. If no, why not?

- . Because I don't see any purpose in registering the child
- . Because I did not know that the child had to be registered
- . Because I did not know where to register the child
- . Because it was too far to travel
- . Because it was too expensive
- . Because I was late
- . Because I did not have the required documents (identity)
- . Because no one could go there (divorce, work, etc.)
- . I don't know

145. Who is usually in charge of supervising the child?

- . I am
- . Their father
- . A co-wife
- . A grandparent
- . Another adult
- . A child aged under 7 years
- . A child aged between 7 and 12 years
- . A child aged over 12 years
- . Nobody

146. Does your child leave your residence without being accompanied by an adult?

- . Yes, very frequently
- . Yes, frequently?
- . Rarely ever
- . Never
- . The child is too young for this to apply

147. Does your child leave your residence alone?

- . Yes, very frequently
- . Yes, frequently?
- . Rarely ever
- . Never
- . The child is too young for this to apply

148. Do you leave your child at home without an adult?

- . Yes, very frequently
- . Yes, frequently?
- . Rarely ever
- . Never

149. Do you leave your child totally alone at home?

- . Yes, very frequently
- . Yes, from time to time
- . Rarely ever
- . Never
- . The child is too young for this to apply

150. Do you take time to explain the importance of protecting oneself from danger to your child?

- . Yes, very frequently
- . Yes, from time to time
- . Rarely ever
- . Never
- . The child is too young for this to apply

LANGUAGE

151. Who speaks most often with your child?

- a. Person 1
- b. Person 2
- . I do
- . Their father
- . A grandparent
- . Another family member
- . The nanny, housemaid
- . A neighbour
- . Other

152. Aside from day-to-day communications, how often do you talk to your child?

- . Several times a day
- . Once a day, more or less
- . Two or three times a week
- . Rarely ever

153. When do you have conversations with your child?

- a. Moment 1
- b. Moment 2
- . When bathing
- . During meals
- . At bedtime
- . During rest or siesta time
- . During Djumbai
- . Other

154. How often do you answer questions from your child?

- . Frequently
- . From time to time
- . Rarely ever
- . The child is too young for this to apply

155. How often do you ask for the opinion of your child concerning daily matters (choice of their clothes, meals, toys, etc.)?

- . Frequently
- . From time to time
- . Rarely ever
- . Never
- . The child is too young for this to apply

156. Do you use specific vocabulary in speaking to your child?

- . I use their own words
- . I use simple words
- . I speak as I would to an adult

157. How often do you read stories to your child?

- . Almost every day
- . Several times a week
- . Once a week, more or less
- . Rarely ever
- . Never

158. How do you teach your child new words?

- a. I tell them stories
- b. I talk to them
- c. We play games where they imitate me
- d. I sing songs to them
- e. I entrust them with simple tasks, like going to ask the neighbour for something, etc.
- f. I correct them when they make mistakes in speaking
- g. I do not do anything in particular.

159. What kind of reading material do you have at home?

- a. Books
- b. Newspapers
- c. Calendar
- d. Drawings/photographs
- e. A board, a slate
- f. A tablet from the Koranic school
- g. New technologies (computer, tablet, etc.)
- h. Other

COGNITIVE DEVELOPMENT

160. What games does your child mainly play?

- a. Exploration games
- b. Physical, individual games, without competitive rules
- c. Imitation games
- d. Games with themes that require collaboration
- e. Group games with rules

161. Who is your child's main play companion?

- a. Person 1
- b. Person 2
- . I am
- . Their father
- . A grandparent
- . A brother or sister
- . Another child in the family
- . The nanny, housemaid
- . Other

162. How often do you encourage your child to play?

- . Frequently
- . Sometimes
- . Rarely ever
- . Never

163. When your child is playing, how often do you participate in their games?

- . Almost every day
- . Several times a week
- . Once a week, more or less
- . Rarely ever
- . Never

164. How often do you offer to play with your child?

- . Almost every day
- . Several times a week
- . Once a week, more or less
- . Rarely ever
- . Never

165. Who spends the most time teaching your child things?

- c. Person 1
- d. Person 2
- . I do
- . Their father
- . A grandparent
- . An aunt or an uncle
- . A brother or sister
- . The nanny, housemaid
- . A neighbour
- . A preschool tutor
- . Other

166. How often do you teach your child songs, nursery rhymes?

- . Frequently
- . From time to time
- . Rarely ever
- . Never

167. How often does your child scribble, draw, and participate in activities that involve drawing?

- . Frequently
- . From time to time
- . Rarely ever
- . Never
- . The child is too young for this to apply

168. How often do you teach your child numbers and quantities?

- . I don't do anything in particular, they learn from daily life
- . I entrust them with tasks (shopping)
- . The child is too young for this to apply

169. How often do you explain daily occurrences to your child?

- . Frequently
- . From time to time
- . Rarely ever
- . Never
- . The child is too young for this to apply

170. What do you do when your child is not successful in a given activity?

- . I do it for them
- . I force them to do the activity again
- . I correct them
- . I hit them
- . I help by giving them advice
- . I encourage them
- . I do nothing
- . The child is too young for this to apply

171. How often do you watch television?

- . No TV
- . More than 3 hours a day
- . Between 1 and 3 hours a day
- . More or less every day, but less than one hour
- . Several times a week
- . Rarely, never
- . The child is too young for this to apply

SOCIAL DEVELOPMENT

172. Do you think it is important to teach your child the rules for living in society?

- . They assimilate the rules gradually, without any particular intervention
- . It is useful to teach a child rules
- . This is an essential dimension of my child's education

173. Who is involved in teaching your child the rules?

- a. Person 1
- b. Person 2
- . I am
- . Their father
- . A grandparent
- . An aunt or an uncle
- . A brother or sister
- . The nanny, housemaid
- . A neighbour
- . A preschool tutor
- . Nobody

174. How do you inculcate the rules of society in your child?

- . I don't do anything in particular
- . I spend time explaining the importance and the value of rules
- . The rules are imposed on the child, who must obey them
- . I punish them if they do not follow the rules
- . The child learns by imitating what they see me do
- . The child is too young for this to apply

175. Who intervenes when the child breaks a rule?

- a. Person 1
- b. Person 2
- . I do
- . Their father
- . A grandparent
- . An aunt or an uncle
- . A brother or sister
- . The nanny, housemaid
- . A neighbour
- . A preschool tutor
- . Nobody

176. How do you prohibit your child from doing something?

- . There are no prohibitions
- . By scaring them
- . With threats (invective, consequences of their acts)
- . I hit them
- . I explain why such behaviour is prohibited

177. What do you do when your child is disobedient?

- a. Behaviour 1: ...
- b. Behaviour 2: ...
- . Nothing in particular, they gradually learn not to disobey
- . I encourage them to be obedient
- . I promise them a reward
- . I make them apologise
- . I punish them
- . I threaten (invective)

- . I threaten to sanction them
- . I give them work to do
- . I prohibit them from playing
- . I make them miss a meal
- . I hit them
- . The child is too young for this to apply

178. What do you do when your child adopts negative behaviour (e.g. hitting a playmate)?

- c. Behaviour 1: ...
- d. Behaviour 2: ...
- . Nothing in particular, they gradually learn not to disobey
- . I encourage them to behave better
- . I promise them a reward
- . I make them apologise
- . I punish them
- . I threaten (invective)
- . I threaten to sanction them
- . I give them work to do
- . I prohibit them from playing
- . I make them miss a meal
- . I hit them
- . The child is too young for this to apply

179. What do you do when your child behaves well?

- . Nothing in particular, it is only normal
- . I praise them, commend them, encourage them
- . I reward them
- . The child is too young for this to apply

180. Do you help your child to develop their autonomy in the following activities? [For each area, note 1 if the mother says she shows them how to do it; 2 if she says no, the child learns all alone; 3 if she thinks the child is too young for it to apply]

- a. Feeding
- b. Dressing
- c. Day-to-day tasks
- d. Hygiene

181. In general, does your child play with other children?

- . No, they generally play alone
- . Yes, they mostly play with their brothers and sisters
- . Yes, they mostly play with other children who are not their brothers and sisters
- . The child is too young for this to apply

182. What activities does your child participate in? [For each area, note 1 if the child participates; 2 if they do not participate]

- a. House work
- b. Preparing meals
- c. Fetching water
- d. Gathering wood
- e. Petty shopping
- f. Working on the farm, trading
- g. Minding children, younger brothers and sisters

183. If the child participates, how often do they participate?

- . Several times a day
- . Once a day, more or less
- . Several times a week
- . Rarely ever



ANNEXE 2

INTERVIEWER'S GUIDE TO THE BASIC QUESTIONNAIRE

The study focuses on parental practices regarding their children. Only mothers or persons (aunts, adoptive mothers, etc.) in charge of children aged below 72 months will be interviewed.

STRUCTURE OF THE QUESTIONNAIRE

There are three sections in the questionnaire:

1. A section concerning households and their characteristics
2. A section on the characteristics of mothers and their general perceptions in five areas: "Family constraints and use of time", «General development», "Gender in child-parent relations", "Emotional development", "Health and perceptions of danger"
3. A section on the characteristics of children and maternal practices regarding each of their children in the sample, in eight areas: "Feeding", "Rest and sleep", «Hygiene», "Prevention and care", "Protection and supervision", "Language", "Cognitive development" and "Social development".

The interviewer must fill out **one questionnaire per mother** for the first two sections of the questionnaire. For the third section (specific maternal practices), the interviewer must fill out **one questionnaire per child** selected in the household (one or two). The number of children is quite logically higher than the number of mothers.

GENERAL INSTRUCTIONS FOR ADMINISTERING THE SURVEY

Choice of mothers to be interviewed

Only mothers or persons (aunts, adoptive mothers, etc.) in charge of children will be interviewed. They must imperatively have at least one child under the age of 72 months. Indeed, there may be various possibilities, depending on the number of children under 72 months that mothers are responsible for, in the household:

- . If they do not have a child in this age group, the interviewer must go to the home of the next selected household.
- . If a mother has only one child aged under 72 months, this child will be selected for the sample.
- . If a mother has two children aged under 72 months, only one child will be selected.
- . If a mother has several children aged under 72 months, only two children will be selected. The choice of the children will depend on their age: One must be under 36 months and the other, above 36 months.

Interview method

All the questions must be put in the same way: first put the question and allow the mother to respond, without suggesting any options; then tick "Yes" if the mother has mentioned an option and "No" if she did not mention it.

Language

The interview must be carried out in the mother's native language and the interviewer may reformulate a question, if necessary.

SPECIFIC INSTRUCTIONS FOR ADMINISTERING THE SURVEY

The majority of questions do not require any specific instructions. This section provides further details only for those questions where some doubts might arise.

Questions 1, 2, 3:

refer to the instructions provided by the national institute of statistics.

Question 4:

if the answer is "polygamous", continue with questions 5 and 6; if not, move on to question 7.

Questions 5 and 6:

only put these to mothers in a polygamous household.

Questions 7 to 13:

refer to the instructions provided by the national institute of statistics.

Questions 14a to 14m:

put the question for each asset (electricity, radio, television, etc.) and tick "Yes" or "No".

Questions 15a to 15c:

the distance must be expressed in kilometres.

Question 17:

the emergency situation may be a medical problem, the need to replace some equipment (repair a car or motorbike), an unforeseen purchase, etc.

Question 19:

the mother must state how many children she has, including those who do not live with her.

Question 20:

the mother must state the number of children living with her, including those who are not her biological children.

Question 22:

if the answer is "the father does not live in the household", continue with question 23; if not, move on to question 24.

Question 23:

this is a general question; if the mother does not know what to answer, ask her, for example last month or last year.

Question 24:

you have a reading card in the mother's native language; ask her to read it, then tick the situation that appears most appropriate; either the mother does not know how to read at all, or she can read with some difficulty, or else she know how to read.

Question 25:

the mother must indicate what level of schooling she reached.

Question 28:

if the answer is "brother or sister", continue with question 29; if not, move on to question 30.

Question 30:

if the answer is "brother or sister", continue with question 31; if not, move on to question 32.

Questions 32 and 33:

the time must be expressed in minutes and for a 24 hour day. When the answers for the two questions are added, the total must be equal to 24 hours. If the mother does not know what to answer, ask her, for example, on her last work day.

Questions 34a to 34d:

the time must be expressed in minutes. If the mother does not know what to answer, ask her, for example, on her last work day.

Question 36:

the mother must give an answer in number of days, if she mentions months, express her answer in days.

Question 37:

if the answer is "Yes", continue with question 38; if not, move on to question 39.

Question 39:

the mother must give an answer in number of months, if she mentions years, express her answer in months.

Question 40:

if the answer is "Yes", continue with question 41; if not, move on to question 42.

Question 42:

the mother must give an answer in number of months, if she mentions years, express her answer in months.

Question 43:

if the answer is "Yes", continue with question 44; if not, move on to question 45.

Question 45:

the mother must give an answer in number of months, if she mentions years, express her answer in months.

Question 46:

if the answer is "Yes", continue with question 47; if not, move on to question 48.

Question 48:

the mother must give an answer in number of months, if she mentions years, express her answer in months.

Question 49:

if the answer is "Yes", continue with question 50; if not, move on to question 51.

Question 51:

the mother must give an answer in number of months, if she mentions years, express her answer in months.

Question 52:

if the answer is "Yes", continue with question 53; if not, move on to question 54.

Questions 53 and 54:

the mother must give an answer in number of months, if she mentions years, express her answer in months.

Questions 56a to 56e:

put the question and allow the mother to answer without suggesting any option, then tick options a to e, indicating "Yes" if the mother mentioned the option and "No" if she did not.

Questions 57a to 57f:

put the question and allow the mother to answer without suggesting any option, then tick options a to f, indicating "Yes" if the mother mentioned the option and "No" if she did not.

Questions 58a to 58m:

The interviewer puts the question for each of the fourteen activity areas: For example, "is the father of the child effectively involved in activities related to feeding his child?", followed by "is the father of the child effectively involved in activities related to dressing his child?", etc. The mother must give an answer for each area. The interviewer then ticks one of the following answers: "Spontaneous yes" if the mother responds immediately, without any hesitation that the father is involved, «Yes, after some thought», if the mother hesitates to say that the father is involved, and «No» when the mother considers that the father is not involved. The following are the activity areas:

- . Feeding: father prepares meals for the child, is present at the meal, helps them in eating, cleans them up when they stain their clothes, etc.
- . Dressing: father prepares the child's clothes, helps them dress, teaches them to dress by themselves, etc.
- . Learning daily tasks: father teaches the child to walk, to go to the toilet, brush their teeth, put toys away, tie their shoelaces, etc.
- . Learning in preparation for school: father teaches the child things that will be useful at school such as counting, knowing colours, words, how to hold a pen, drawing, etc.
- . Play: father plays with the child, teaches them the rules of certain games, etc.
- . Relationship communication and language: father speaks to the child, teaches them words, corrects them when they use the wrong word, tells them stories, etc.

- . Discovering the outside world: father takes the child out, explains things about daily life, etc.
- . Discipline: father teaches the child rules and ensures that the child obeys them, etc.
- . Care, health: father takes child to the health centre, has them immunised, takes care of them when they are ill, etc.
- . Hygiene: father bathes the child, makes them wash their hands, makes them clean their teeth, etc.
- . Protection/safety: father supervises the child, teaches them to protect themselves from danger.
- . Household budget: father contributes to the family budget.

Questions 59a to 59l:

The interviewer puts the question for each of the thirteen activity areas: For example, “would you like the father of the child to be effectively involved in activities related to feeding his child?”, followed by “would you like the father of the child to be effectively involved in activities related to dressing his child?”, etc. The mother must give an answer for each area. The interviewer then ticks one of the following answers: “Spontaneous yes” if the mother responds immediately, without any hesitation that she would like the father to be more involved, «Yes, after some thought», if the mother hesitates to say that she would like the father to be more involved, and «No» when the mother considers that the father is sufficiently involved. The following are the activity areas:

- . Feeding: the mother would like the father to prepare meals for the child, be present at meals, help them in eating, clean them up, etc.
- . Dressing: the mother would like the father to prepare the child’s clothes, help them dress, teach them to dress by themselves, etc.
- . Learning daily tasks: the mother would like the father to teach the child to walk, to go to the toilet, brush their teeth, put toys away, tie their shoelaces, etc.
- . Learning in preparation for school: the mother would like the father to teach the child things that will be useful at school such as counting, knowing colours, words, how to hold a pen, drawing, etc.
- . Play: the mother would like the father to play with the child, teach them the rules of certain games, etc.
- . Relationship communication and language: the mother would like the father to speak to the child, teach them words, correct them when they use the wrong word, tell them stories, etc.
- . Discovering the outside world: the mother would like the father to take the child out, explain things about daily life, etc.
- . Discipline: the mother would like the father to teach the child rules and ensure that the child obeys them, etc.
- . Care, health: the mother would like the father to take the child to the health centre, have them immunised, take care of them when they are ill, etc.
- . Hygiene: the mother would like the father to bathe the child, make them wash their hands, make them brush their teeth, etc.
- . Protection/safety: the mother would like the father to supervise the child, teach them to protect themselves from danger.
- . None: the mother thinks the father is sufficiently involved.

Questions 60a to 60m:

put the question for each of the thirteen activity areas: For example, “do you think boys and girls should be raised in the same way concerning feeding?”, followed by “do you think boys and girls should be raised in the same way concerning dressing?”, etc. The mother must give an answer for each area. The interviewer then ticks «Yes» if she believes that boys and girls must be raised differently. The activity areas are as follows:

- . Feeding: on the quantity of food, the type of food for children, how to behave during meals, etc.
- . Dressing: on the colour of clothing, frequency of changing clothes, the degree of independence granted to the child in dressing, etc.
- . Learning daily tasks: learning to walk, to use the toilet, brushing teeth, putting toys away, tying shoelaces, etc.
- . Learning in preparation for school: learning things that will be useful at school such as counting, knowing colours, words, how to hold a pen, drawing, etc.
- . Play: type and frequency of games, etc.
- . Relationship communication and language: frequency of conversations, frequency of storytelling to the child, frequency and manner of teaching them new words, etc.
- . Discovering the outside world: on going outside the home, explanations about daily life, etc.
- . Discipline: on learning rules, obeying the rules, etc.
- . Care, health: frequency with which the child is taken to the health centre, taken care of when they are ill, etc.
- . Hygiene: how parents take care of the child’s hygiene, bathing, hand washing, brushing teeth, how much autonomy the child is given to take care of their own hygiene, etc.
- . Protection/safety: how parents supervise the child, allow them some degree of autonomy, teach them to protect themselves from danger.
- . Household: on the daily tasks that children have to carry out (minding brothers and sisters, petty shopping, etc.)
- . Productive work: how children can assist their parents on the farm, in trading, etc.

Question 61:

If the mother answers no, do not put questions 62a, b, c and e, tick “No” to these questions and tick «Yes» under question 62d.

Questions 62a to 62e:

put the question and allow the mother to answer without suggesting any option, then tick options a to e, indicating “Yes” if the mother mentioned the option and “No” if she did not.

Question 63:

the mother must give an answer in number of months, if she mentions years, express her answer in months.

Questions 64a to 64k:

put the question and allow the mother to answer without suggesting any option, then tick options a to k, indicating “Yes” if the mother mentioned the option and “No” if she did not.

Questions 65a to 65k:

put the question and allow the mother to answer without suggesting any option, then tick options a to k, indicating “Yes” if the mother mentioned the option and “No” if she did not.

Questions 66a to 66g:

put the question and allow the mother to answer without suggesting any option, then tick options a to g, indicating "Yes" if the mother mentioned the option and "No" if she did not.

Questions 67a to 67d:

put the question and allow the mother to answer without suggesting any option, then tick options a to d, indicating "Yes" if the mother mentioned the option and "No" if she did not.

Questions 68a to 68e:

put the question and allow the mother to answer without suggesting any option, then tick options a to e, indicating "Yes" if the mother mentioned the option and "No" if she did not.

Questions 69a to 69l:

put the question and allow the mother to answer without suggesting any option, then tick options a to l, indicating "Yes" if the mother mentioned the option and "No" if she did not.

Questions 70a to 70l:

put the question and allow the mother to answer without suggesting any option, then tick options a to l, indicating "Yes" if the mother mentioned the option and "No" if she did not.

Questions 71a to 71e:

put the question and allow the mother to answer without suggesting any option, then tick options a to e, indicating "Yes" if the mother mentioned the option and "No" if she did not.

Questions 73a to 73h:

put the question and allow the mother to answer without suggesting any option, then tick options a to h, indicating "Yes" if the mother mentioned the option and "No" if she did not.

Questions 78a to 78c:

put the question only to mothers with a child aged under 36 months in the sample; if the child is older, move on to question 81. Put the question and allow the mother to answer without suggesting any option, indicating that she can give three answers, then tick the mother's three answers, noting "Yes" if the mother mentioned the option and "No" if she did not.

Questions 79a to 79c:

put the question only to mothers with a child aged under 36 months in the sample; if the child is younger, move on to question 82. Put the question and allow the mother to answer without suggesting any option, indicating that she can give three answers, then tick the mother's three answers, noting "Yes" if the mother mentioned the option and "No" if she did not.

Questions 80a to 80b:

put the question only to mothers with a child aged under 36 months in the sample; if the child is older, move on to question 83. Put the question and allow the mother to answer without suggesting any option, indicating that she can give two answers, then tick the mother's two answers, noting "Yes" if the mother mentioned the option and "No" if she did not.

Questions 81a to 81b;

put the question only to mothers with a child aged above 36 months in the sample; if the child is younger, move on to question 84. Put the question and allow the mother to answer without suggesting any option, indicating that she can give two answers, then tick the mother's two answers, noting "Yes" if the mother mentioned the option and "No" if she did not.

Starting from question 82,

the questionnaire concerns specific maternal practices regarding each of their children under 72 months in the sample: If the mother has two children or more, she must answer a maximum of two questionnaires.

Question 89:

if the answer is "No", move on to question 96.

Question 91:

if the answer is "No", move on to question 93.

Question 94:

if the answer is "No", move on to question 96.

Questions 101a to 101d:

put the question and allow the mother to answer without suggesting any option, indicating that she can give four answers, then tick the answers that appear most appropriate to her answers, noting "Yes" if the mother mentioned the option and "No" if she did not.

Questions 102a to 102d:

put the question and allow the mother to answer without suggesting any option, indicating that she can give four answers, then tick the answers that appear most appropriate to her answers, noting "Yes" if the mother mentioned the option and "No" if she did not.

Questions 103a to 103d:

put the question and allow the mother to answer without suggesting any option, indicating that she can give four answers, then tick the answers that appear most appropriate to her answers, noting "Yes" if the mother mentioned the option and "No" if she did not.

Question 107:

put the question and allow the mother to answer without suggesting any option, then tick the answers that appear most appropriate to her answers: either the time she states, there is no set time, or she does not know.

Question 110:

put the question and allow the mother to answer without suggesting any option, then tick the answers that appear most appropriate to her answers: either the time she states, there is no set time, or she does not know.

Question 111:

if the answer is "No", move on to question 115.

Question 132:

if the child is absent, put the question to the mother.

Question 135:

if the child does not have an immunisation card, if the mother does not have it or does not want to show it, move on to question 137.

Question 136:

copy down which vaccines the child has received, from the immunisation card and make the following distinctions in the responses: "Yes, before the child was twelve months old", «Yes, but after the child was twelve months old", and "No".

Question 143:

if the answer is "Yes", move on to question 145.

Questions 151a to 151d:

put the question and allow the mother to answer without suggesting any option, indicating that she must give two answers, first the person who speaks most often to the child, then the second person who speaks most often to the child. Subsequently, note down the answers given.

Questions 153a to 153b:

put the question and allow the mother to answer without suggesting any option, indicating that she must give two answers; first, at what moment she speaks most often to the child, then the second moment when she speaks most often to the child. Subsequently, note down the answers given.

Questions 158a to 158g:

put the question and allow the mother to answer without suggesting any option, then tick options a to g, indicating "Yes" if the mother mentioned the option and "No" if she did not.

Questions 159a to 159h:

put the question and allow the mother to answer without suggesting any option, then tick options a to h, indicating "Yes" if the mother mentioned the option and "No" if she did not.

Questions 160a to 160e:

put the question and allow the mother to answer without suggesting any option, then tick options a to e, indicating "Yes" if the mother mentioned the option and "No" if she did not. The types of games are as follows:

- . Exploration: hide and seek
- . Physical, individual games, without competitive rules
- . Imitation
- . Role playing: being a teacher, trader, policeman, etc.
- . Group games with rules: football

Questions 161a to 161b:

put the question and allow the mother to answer without suggesting any option, but tell her that she must give two answers; first the person who plays most often with the child, then the second person who plays most often with the child. Subsequently, note down the answers given.

Questions 165a to 165b:

put the question and allow the mother to answer without suggesting any option, but tell her that she must give two answers; first the person who teaches the child the most, then the second person who teaches the child the most. Subsequently, note down the answers given.

Questions 173a to 173b:

put the question and allow the mother to answer without suggesting any option, but tell her that she must give two answers; first the person who intervenes the most, then the second person who intervenes most. Subsequently, note down the answers given.

Questions 175a to 175b:

put the question and allow the mother to answer without suggesting any option, but tell her that she must give two answers; first the person who intervenes the most, then the second person who intervenes most. Subsequently, note down the answers given.

Questions 177a to 177b:

put the question and allow the mother to answer without suggesting any option, but tell her that she must give two answers; her first reaction, followed by her second reaction. Subsequently, note down the answers given.

Questions 178a to 178b:

put the question and allow the mother to answer without suggesting any option, but tell her that she must give two answers; her first reaction, followed by her second reaction. Subsequently, note down the answers given.

Questions 180a to 180d:

put the question and allow the mother to answer without suggesting any option, then tick options a to d, indicating "Yes" if the mother mentioned this option and "No" if she did not.

Questions 182a to 182h:

put the question and allow the mother to answer without suggesting any option, then tick options a to h, indicating "Yes" if the mother mentioned the option and "No" if she did not.

ANNEXE 3

CONSTRUCTING VARIABLES RELATED TO INDIVIDUAL CHARACTERISTICS

PRINCIPLES OF REGRESSION ANALYSIS

While the construction of a table crossing a variable such as practices relating to hygiene, for example, according to one or several criteria (age of the child, region and area of residence, level of family wealth, etc.) makes it possible to describe the distribution of a sample, the analysis of any phenomenon may be incomplete if it is only limited to that. There are two reasons for this. First of all, it is very rare for a single variable to suffice to explain a phenomenon. The existing relations between a variable and several criteria that could explain the former therefore need to be examined. Secondly, we generally try to determine what influence variables may have on each other by isolating their net effects (net of the effect of other variables), which makes it possible to avoid possible structural effects. This reasoning, which is described as "all else being equal", makes it possible to break down the effect of each variable and determine the effect produced by variable X on variable Y when all other variables are held constant.

This is generally done using one form or other of regression analysis, a conventional tool for investigating the relationship between a variable that we are attempting to explain (e.g. practices in the area of hygiene) and several others that could explain the first (age and gender of the child, mother's level of education, etc.).

* When the phenomenon being studied is continuous (e.g. the time mothers spend with their child or the summary indicator of maternal practices in hygiene), the most appropriate method is linear regression (extension of the variance analysis method).

However, in any study of individual behaviour, the practices being studied are often discrete and qualitative. For example, if we want to analyse the probability of mothers registering their child with the civil status department, or playing with the child, the variable to be explained is binary; the child is registered or not registered. It then becomes necessary to use a particular type of econometric analysis known as logistic regression to isolate the specific effects of each of the different factors.

In both types of regression, what we are attempting to do is to match the dependent variable (that we are seeking to explain) to a series of factors that we assume to have some influence upon it. The results show the estimated value of the coefficients of each of the explanatory variables included in the model, with their corresponding t statistics, which indicate their degree of significance. That is, the degree of confidence that we have that the factor does indeed have an impact on the variable to be explained.

They also supply the proportion of the variance explained by the model (R^2 in the linear specification). According to the type of regression used, the general procedures, nature of statistical estimations and the interpretation of coefficients will differ. The explanatory variables for their part could be i) continuous variables such as the age of children and ii) categorical or

qualitative variables such as gender, ethnic group, geographical location, etc. These variables, which in this case designate different social and environmental characteristics of mothers, need to be recoded prior to carrying out the analyses.

RECODING INDEPENDENT VARIABLES

Continuous variables can generally be used in the regression in their rough form, as found in the questionnaire. In linear regression, their coefficients can be interpreted directly as the variation in the dependent variable that is implied by a one unit variation in each of the corresponding explanatory variables. For example, we can then estimate by how many minutes the time a mother spends with her child will vary, according to the age of the latter in months; one, six or twelve months and more. In logistic regression the continuous variables may be introduced as is, but their associated coefficients cannot be interpreted directly and need to be estimated specifically.

Within the framework of this survey however, continuous explained variables are quite rare, one notable exception being the age of the child. This characteristic needs to be taken into account because of the probability that the behaviour of mothers may differ for a child who is 6 months old, 36 months old or 72 months old, and this assumption needs to be tested. Information on the date of birth of children is generally available in the survey and this variable has to be recoded to produce a new continuous variable indicating the age of children in months. This is done using the following formula: $[(\text{year of the survey} - \text{year of birth}) \times 12] + (\text{month of the survey} - \text{month of birth})$. This variable can subsequently be recoded to create different age categories. This could for example result in a variable with the following three modalities: 6 to 15 months, 16 to 35 months and above 36 months. In this case, it is no longer continuous, it is categorical.

Categorical variables require specific preparation as their regression coefficients have to be interpreted in a particular manner. The most common practice consists of creating a set of "dummy" variables for each one of them, to represent each of their possible modalities except one, which is described as the omitted modality. For dichotomous categorical variables (with two modalities) such as area of residence (urban or rural), the mother's ability to read (can read or cannot read) or the gender of the child (boy or girl), the recoding consists of creating a dummy variable, which will be assigned either a value of 0 or a value of 1. For example, the variable urban is created from the variable area of residence and this variable urban will be set at 0 for households living in rural areas and 1 for households living in urban areas (the choice of urban is arbitrary: the variable rural could just as well have been created symmetrically). The coefficient associated with this modality in the model thus measures the impact that the fact of living in urban areas rather than rural areas has on the dependent variable.

For polytomous categorical variables, which include several modalities, such as the region, mother's educational experience, religion, ethnic group, native language, etc. the recoding exercise is more time consuming. Very often, certain modalities have to be grouped together to begin with, then a numerical variable has to be recreated with values ranging from 1 to n (if n modalities are selected). Finally, n dummy variables corresponding to each of these modalities have to be created. In the regression model, one of these modalities will be omitted and thus serve as a reference. The coefficients of the other modalities will therefore be interpreted as (positive or negative) deviations in relation to this modality.

We shall use the question of ethnic groups in Sierra Leone to illustrate this exercise. The distribution of the sample in answer to the question “What is your tribe?” appears in the left hand column of Table 1 below. We observe on one hand that there are many possible answers (13 in all) and on the other that the frequency of all these modalities is highly variable. It ranges from 24 individuals (children) for the Krio tribe to 886 individuals for the Temnee. It does not appear very useful to maintain the variable in this state in the regression models, even if we have built the corresponding dummy variables. Two arguments could therefore be put forward: the first is that it is better to avoid having an overly small number of categories because this could undermine their statistical significance and the second is that there may be positive arguments in favour of grouping some of the initial categories. The important thing is that the form of the polytomous variable, grouping different categories, makes sense. It would generally not make much sense for example, to group together an ethnic group with numerous members living in the southern part of the country with another group with only a few individuals, living in the north.

Table 1: Grouping of modalities under the variable of ethnic groups in Sierra Leone

Tribes	Numbers	%	Ethnic groups (1)	Numbers	%
Mende	833	30.5 %	Mende	833	30.5 %
Temne	886	32.5 %	Temne	886	32.5 %
Limba	184	6.7 %	Kono. Kissi. Mandingo	297	10.9 %
Kono	137	5.0 %	Kuranko. Soussou. Limba	422	15.5 %
Mandingo	104	3.8 %	Sherbro. Loko. Krio. Fula	210	7.7 %
Loko	51	1.9 %	Other	81	3.0 %
Sherbro	32	1.2 %	TOTAL	2,729	100.0 %
Krio	24	0.9 %	Ethnic groups (2)	Numbers	%
Kuranko	67	2.5 %	Mende	833	30.5 %
Kissi	56	2.1 %	Temne	886	32.5 %
Fula	103	3.8 %	Other	1,010	37.0 %
Soussou	171	6.3 %	TOTAL	2,729	100.0 %
Other	81	3.0 %			
TOTAL	2,729	100.0 %			

In order to determine which ethnic groups could be grouped together, things can be approached from two complementary points of view:

- i) the first precedes the analysis and consists of gathering some amount of information about the ethnic structure of the country. What percentage of the population do the different groups represent, what is their distribution over the national territory, and more importantly, what are the historical, cultural and social links among them? Indeed, several ethnic groups that are officially separate groups might turn out to be quite close in these areas, thus making it appropriate to group them together.
- ii) the second is also based on work that is done beforehand, but in the area of statistics. We want to test the impact of the modalities related to ethnic groups on the various dimensions of parental practice. With this approach we can identify i) which tribes are similar in terms of family behaviour and so can be grouped together and ii) which groups or specific tribes are

quite distinct. This leads to the definition of a relevant polytomous variable whose modalities have clearly distinct influences on the family practices under review. We note that such ethnic groupings could be relevant for issues of hygiene or nutrition, but that for issues related to cognitive development or how proactive the mother is with regard to the development of her children, other groupings would be more relevant.

It can generally be useful to carry out these two procedures, although the second obviously has stronger empirical relevance because it is not general, but is rather attached to our specific object of study, namely parental practices. It also allows for differentiated groupings, according to which parental practices related to young children we are observing. This information is obviously valuable for the analysis, but even more valuable in terms of subsequent measures to be taken to construct a “national” parental education programme that could include these aspects of interethnic variability, if they turn out to be a significant dimension of these practices.

For example, the prior work done on similarities among ethnic groups first led to grouping the answers indicated in the upper right column of Table 1 above, entitled «Ethnic groups». It has been shown that the different modalities could be grouped together further because the analyses showed no differential impact on these practices. We therefore decided to recreate a variable including only three modalities: the first two “Mende” and “Temne” represent the two main ethnic groups in the country, while the third, «Other», groups all the other tribes together (lower right column entitled «Ethnic groups 2» in Table 1. Finally, based on these modalities, two distinct, dichotomously coded variables are created, with the last variable representing the omitted modality. For example, the variables “Mende» and “Other” are introduced into the model and the coefficients attached to each of them are interpreted in relation to the omitted variable “Temnee”. It thus measures to what extent (in what direction and to what degree) family behaviour of the Mendes or other tribes in one or the other dimension is on average different from that of the Temnes.

In the case of a multivariate regression, the coefficients are interpreted as representing **the marginal impact of the variable with which they are associated on the dependent variable**, «all else being equal». What is the meaning of this phrase and why is it important? If we believe for example that the area of residence and the ethnic origin of the family can each differentiate a variable that we are attempting to explain, we can start by adopting a univariate approach. The simplest method in that case is to construct a table that distributes the elements of the sample between urban and rural (or between tribes 1, 2 and 3, etc.). While this method is simple, it is not very effective because it does not directly indicate if the observed difference is significant or not, nor does it show the explanatory strength of this single variable. A regression that uses the single variable urban (as opposed to rural) provides this valuable information.

This approach is however inadequate under the (probable) hypothesis that the spatial distribution of certain tribes between urban and rural areas might be different, with one tribe more highly represented in rural areas for example. Under such circumstances, the univariate impact (e.g. urban/rural) comprises the fact that i) different tribes have different spatial distributions and that they might also have differing forms of social behaviour. It is therefore preferable to include two variables (area of residence and tribes) in the same regression specification. This is called multivariate. In this case, the coefficient of the dummy variable “urban” represents the net impact of the area of residence based on the somewhat artificial reasoning that the distribution of tribes between urban and rural areas is the same. We thus obtain a good measurement of what relates specifically to the area of residence. Similarly, we measure the specific differentiations among tribes, while erasing the incidence of distribution in areas of residence, on these differentiations.

Of course, the gross univariate measurement must not be ignored, but the net multivariate measurement obviously provides valuable additional information.

This is even truer in the case of a broader specification in which there would be a greater number of variables than just the area of residence and ethnic group. The estimated impact of the urban variable would then be interpreted as the impact of the area of the residence, "all else being equal" (actually, while checking the influence of other factors, but limited to those that are taken into account in the model). The multiple regression analysis therefore makes it possible to isolate the specific influence that each of the individual factors considered exerts on the analysed output variable.

ANNEXE 4

COMPUTING THE HOUSEHOLD LIVING CONDITIONS VARIABLE WITH SPSS

Household living conditions are defined on the basis of about twenty questions covering household assets, as well as the conditions of their residence. A factor analysis is used to sum up all this information into a single variable. When you have a large number of variables that measure the same dimension as is the case here, this method allows you to group these variables that appear to contribute to measuring «the same thing» and to compute a summary score for each individual or situation. The same applies in other examples such as school environment, motivation of school children, teachers, etc.

In practical terms, using SPSS, there are several steps involved in computing the variable relating to household conditions. For the factor analysis to be able to account for the position of individuals according to an ascending scale of living conditions, the variables to be included in the analysis need to be recoded. These variables do not have the same scale of measurement and therefore the recoding they require is different. Household assets are dichotomous, nominal, qualitative variables. They must be recoded as 0 for those who “do not own this asset” and 1 for those who “own this asset”. (Generally they are assigned 1 and 2 values by the NIS). Household residential conditions are ordinal, qualitative variables whose modalities need to be recoded, while ranking them on an ascending scale. In other words, the better the residential conditions of individuals, the higher their score in the different variables. To illustrate how this type of variable is recoded, we shall take the example of the question on the principal source of clean water used by members of the household. The possible answers are: «Running water in the home», «Running water in the compound», «Running water in another house», «Tap», «Well», «Spring, river, water body», «Vendors (tanks)” or “Other”. Clearly, a person who lives in a house with indoor running water obviously enjoys better living conditions than the others: this person will therefore be assigned the highest score. In contrast, the living conditions of a person who has to collect water from a river are more difficult than the others and this person thus obtains the lowest score. The other individuals find themselves in different intermediary situations that will have to be recoded while ranking them.

Once the variables have been recoded, we can proceed to carry out the factor analysis under SPSS, using first the Data reduction, then the *Factor analysis* commands. We must then select the variables to be used in computing the overall variable on household living conditions. With the *Factors* and then *Save in variables* options, we can then create one or several factor scores.

We shall then select the first score computed by SPSS. This score must be standardised with an average of 0 and a standard deviation of 1, using the following commands: *Analyse, Descriptive statistics, Descriptives*, then tick the option *Save standardised values in variables*. The final step consists of creating the quintiles. Under SPSS, this is done using *Transform, then Visual grouping*. We then select the standardised factor score and ask SPSS to *Create divisions* with the option *Equal centiles based on analysed observations*, and also opting for 4 in the *Number of divisions*. SPSS then creates a new variable and classifies individuals in a variable ranging from quintile 1, which includes households considered to be the 20% poorest, to quintile 5, the 20% richest households.

ANNEXE 5

PROCESSING MISSING DATA IN COMPUTING SCORES

One of the difficulties that occurs during recoding relates to knowing how to deal with missing data. Sometimes, certain answers provided by the mothers are not included. This may be because the question was not put; because the answer was not recorded, or because the answer was not recorded properly and does not correspond to any existing option, etc. This may not be a problem when it comes to describing practices because the missing data can simply be removed from the analyses, but dealing with such data is a bit more complicated when computing a summary indicator. If a mother does not answer just one question out of the many that are used to compute the thematic score, she is not taken into account in calculating the score because she is considered as missing. And yet, it is rather unfortunate that just one missing answer should lead to eliminating her answers for all the other items. One way of proceeding, to avoid setting aside some observations, consists of recoding the missing data in each of the variables that are used to compute the summary indicator. The difficulty lies in knowing how to go about this.

Let us take an example from Sao Tome and Principe with the questions about signs of affection that mothers show their children, to illustrate how missing data may be recoded. Mothers may state that they do not show their children affection with any specific gestures, or they may cite several signs of affection (words, gestures and acts). The gross distribution of answers to these questions, which is shown in the lower left part of Table 1 below shows that some of the information was not included during the survey (missing data). In the part of the report that covers the description of specific practices, the answers given by mothers are set out according to the proportion of mothers who cited the different answers as they were initially identified in the questionnaire. This is seen on the left hand side of Table 1 and was calculated on the basis of the total number of mothers in the sample, less the missing data. For example, the proportion of mothers who show their affection to their children through gestures is equal to 92.2% [815/(927 - 43)]. We will subsequently see, however, that the answer relating to an absence of proof of affection needs to be processed more specifically to arrive at a recoding.

Table 1: Distribution of signs of affection to children in Sao Tome and Principe

Signs of affection	Yes	No	Missing	Total	Signs of affection	%
Gestures	815	69	43	927	By gestures	92.2
Words	547	207	173	927	By words	72.5
Acts	559	229	139	927	By acts	70.9
No signs	2,729	100.0 %	291	927	No specific signs	2.4

Missing data are not an issue when we are describing the way in which mothers demonstrate their affection to their children, because they can simply be set aside. They do however need to be recoded if they are to be included in computing the indicator on emotional development. Recoding these data is often done in two steps: the first consists of attempting to “recover” the information as far as possible, by calculating the sum of certain variables and/or crossing different variables. If there are still data missing after this initial stage, these need to be recoded by assigning them, in some cases, a score that corresponds to the average of all the answers for the item, for example.

In order to be able to take this variable into account in the indicator, what we are interested in here is not so much the specific ways in which mothers show their affection to the child (that is indicated in the section describing practices), but rather the quantity of signs of affection that they use. We shall therefore attempt to create a “score” of signs of affection. Since mothers may use several signs of affection, it is possible that certain mothers may have cited one or two signs of affection and have a missing answer on the last one. To verify this, we may cross the number of mothers who demonstrate their affection using words, for example, with those who use gestures to show affection (Table 2 below).

Table 2: Crossing two signs of affection

		With words			
		0 (no)	1 (yes)	9 (missing)	Total
With gestures	0 (no)	30	32	7	69
	1 (yes)	177	500	138	815
	9 (missing)	0	15	28	43
	Total	207	547	173	927

The cells in pink correspond to mothers for whom we have answers. Thus, 30 mothers do not show their affection through gestures or words. They are therefore given a temporary score of 0 on only these two variables. Next, 209 mothers show their affection either through gestures (177) or words (32). They are therefore given a temporary score of 1. Finally, 500 mothers show their affection through gestures and words (32) and are assigned a temporary score of 2. The cells in blue correspond to mothers for whom we have answers for only one of the two variables. We know, therefore, that 7 mothers do not show their affection to the child through gestures, but we do not know what answer they gave with regard to words. These mothers are therefore assigned a temporary score of 0. In contrast, 138 mothers show their affection through gestures and thus obtain 1 point, but we do not know what answer they gave with regard to words. They are therefore assigned a temporary score of 1. The same reasoning is applied to the other two blue cells. Nevertheless, we still do not have information concerning 28 mothers (green cells) and they are therefore considered as missing.

After having observed the breakdown of the distribution among the different variables, we must now calculate the sum of signs of affection. This is tantamount to creating a new signaff variable, which would be equal to the following sum: [words + gestures + acts (these values have been dichotomised beforehand, with values of 0: does not show affection in this manner and 1: shows affection in this manner, with 9: missing data)]. The left hand side of Table 3 below shows the distribution of this new variable.

Table 3: Distribution of the gross and recoded sum of signs of affection

Signs of affection	Number	Signs of affection	Number
0	9	0	19
1	152	1	266
2	152	2	223
3	403	3	403
10	12	Missing	16
11	71	Total	927
18	10		
19	102		
27	16		
Total	927	Average	2,11

We thus observe that the sum of signs of affection ranges between 0 and 27. The values between 0 and 3 correspond to the answers given by mothers. But those above 3 are the result of adding missing values, which were coded as 9, to a sign of affection or to other missing values. In other words, the values of the newly created variable are as follows:

- 10:** 1 missing value + 1 sign (9 + 1) => this value can be recoded as 1
- 11:** 1 missing value + 2 signs (9 + 1 + 1) => recode as 2
- 18:** 2 missing values + 0 signs (9 + 9) => recode as 0
- 19:** 2 missing values + 1 sign (9 + 9 + 1) => recode as 1
- 27:** 3 missing values => recode as missing data

Based on this variable, we can then create a new variable where the values from 10 to 19 are recoded according to the number of signs of affection (right hand side of the table below). This way, we minimise the number of missing data by replacing a good portion of them with information contained in other variables.

Nevertheless, 16 mothers are still considered as missing data. To resolve this, we decide to assign them a score that is the average of the actual answers under this item. Of course this is calculated without including missing data and represents 2.11. Using an average obviously has the disadvantage of underestimating the dispersion of results in proportion to the quantity of missing data in the variable, but it nevertheless makes it possible to replace missing data with a non-atypical value. In some cases, however, the missing value may actually indicate a negative answer, in which case it is rather the value 0 that is used to replace it.

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