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EARLY LEARNING ASSESSMENT

CHILDREN ENTERING PRIMARY EDUCATION IN CABO VERDE

ACKNOWLEDGMENTS

INTRODUCTION

Experience and research have shown that the early childhood period is essential for development throughout life. This is why the quality of preschool services is so important. In fact, the first years of a child's life are those in which the investment has more impact both in human and financial terms. Governments are encouraged to pay special attention to this period of life (0-8 years), taking into account its impact on the child from psychological, cognitive and socio-emotional perspectives. Early childhood development and particularly the promotion of early learning has a direct effect on school readiness and the quality of learning throughout formal education. Scientific research is progressively showing that many of our society's challenges have been originated during childhood, one more reason to pay special attention to children's rights.

The early learning assessment of children entering primary in Cabo Verde analyses the skills acquired by the child at the time of admission to basic education, which enables us to understand the factors influencing children's performance. This allows us to help the country to take effective and appropriate decisions to promote universal preschool coverage and improve its quality thus promoting a successful basic education.

ECD concerns physical, socio-emotional, cognitive and language development, which have a great influence on general well-being, health, learning, academic achievement, civic participation in the economic and social dimensions which have a profound impact on the country's economic burden. In addition, economists confirmed that investing in early childhood is one of the smartest investments a country can make as it offers high investment return rates. Globally, countries investing in early childhood are those whose levels of equality in health and education are the best in the world. Therefore, governments can make significant improvements by putting in place policies that take into account the body of evidences generated for ECD to bolster education, health and poverty reduction in line with the Convention of the Rights of the Child of the United Nations.

Early childhood development is present on the post-2015 agenda and through its commitment, Cabo Verde is strongly positioned in the West and Central Africa region as a leading ECD country. This commitment was clearly taken at the National Forum on Early Childhood Development and during the Ministerial Round Table, which allowed the objectives and expected results to be defined early for the development of a coherent national program for ECD.

Since Cabo Verde, as most African countries, has limited resources, it should develop an investment strategy based on a cost-effectiveness analysis in order to increase the number of preschool children that will benefit of quality services. In this context, the construction of an evidence-based approach for the definition of social policies for ECD is the key to success. The UNICEF Country Office in Cabo Verde, in collaboration with the Regional Office will continue to support national partners in translating evidence into concrete actions that will benefit young children.

With this report, stakeholders can move forward from knowledge to action with regards to early learning, a crucial step for early childhood development and for the country to provide a better future for children. Beyond the statistics, this report is a real source of hope for Cabo Verde's children since it shows how strongly preschool promotes school readiness and contributes to positive individual development. Early childhood development represents a central dimension for human development and is at the heart of successful societies.

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CONTEXT AND OBJECTIVES OF THE SURVEY

Early childhood years, particularly the period from birth to 8 years, are now recognized as a crucial period for early childhood development both in terms of physical health and motor, social-emotional, cognitive and language development of the child. Several studies have revealed that appropriate child care from their earliest age could lead to strong positive externalities for the individual (enhanced preparation for school, higher school retention rates, improved academic level, higher income as an adult, etc…) as well as for the entire society (enhanced work productivity, reduction in high risk behaviours and delinquency rates, etc…). Efforts in favour of early childhood development (ECD) therefore help to enhance the efficiency and effectiveness of education and reduce economic and social disparities (hence directly addressing the issue of equity). They are considered in this regard, as particularly promising and sound investments.

It is recommended to begin actions for ECD as early as possible because delays incurred during early childhood also tend to build up (delays in the development of certain skills result in a slow development or progression of other skills) and it becomes more difficult to recover thereafter. Otherwise more costly interventions are necessary (curative actions, remedial classes, repeats, etc…).

Aware of the many challenges and advantages of ECD, the Ministry of Education and Sports (MES) of Cabo Verde has been working since 2001 on a national ECD strategy, which should provide a blueprint for the development of the sector. Since 2007, efforts have focused on a multisectoral approach to early childhood education. However, this approach is still difficult to implement. There is lack of a clear and shared vision on the contents of the Early Childhood Development (ECD) Programme at the country level, the roles and responsibilities of the various stakeholders, possible organizational options and their related cost. This is the case for both parenting practices and preschool education. Although a significant majority of young children are enrolled in preschool education (83 percent in the 4-5 age group in 2010, and 68 percent in the 3-5 age group)[1], very few activities target younger children.

The commitment of the MES to move forward and develop an integrated ECD programme is nonetheless evident. In this respect and with the support of UNICEF, it has gradually stepped up efforts since mid-2012 to develop ECD scoping and planning tools including:

1. Survey, 2010.

a costing-model simulation for the sub-sector which will be used as a starting point for the development of a framework programme for the ECD strategy;

an assessment of the children's skills at the start of primary education to support the development of a preschool and first year primary education programme;

a study on parenting practices in terms of support for young children in order to enhance the parental education strategy[2].

A national team comprising officials from the General Directorate for Basic and Secondary Education (DGEBS) and the Department of Planning, Budgeting and Management (DGPOG) of the MES contributed to the realization of these activities.

This report presents the findings of the evaluation conducted on children's skills at the start of primary education. The evaluation was primarily warranted by the uncertainty surrounding the contents of preschool programmes, for community schools in particular, as well as the inconsistency of approaches and programmes observed in public and private preschool education. The purpose is to come up with empirically validated benchmarks for determining these contents. To this effect, a reasonable baseline can be obtained by measuring learning gaps observed in children at the start of primary education.

Targeting a broad range of skills, particularly those that children are expected to have prior to entering primary school to ensure academic success, will clearly help determine these expectations and set benchmarks. This assessment can also give valuable insight on how preschool education has effectively contributed to preparing children for primary education, and provide vital indications to realign both preschool education and first year primary education.

Following a brief description of the evaluation process and its objectives, the report will provide an overview of preschool education policies and delivery in Cabo Verde (Part I) prior to an analysis of test results (Part II). The report will be followed by an analysis of the influence of social factors and preschool education on childhood development (Parts III and IV). Recommendations to be made on the basis of this analysis should help to ensure that the preschool education system is better structured and of enhanced quality.

2. This activity is part of a regional programme on early childhood development in the West and Central Africa region supported by UNICEF/WCARO. See related concept note for details on this programme: Paper on the development of a regional programme on early childhood development in West and Central African countries.
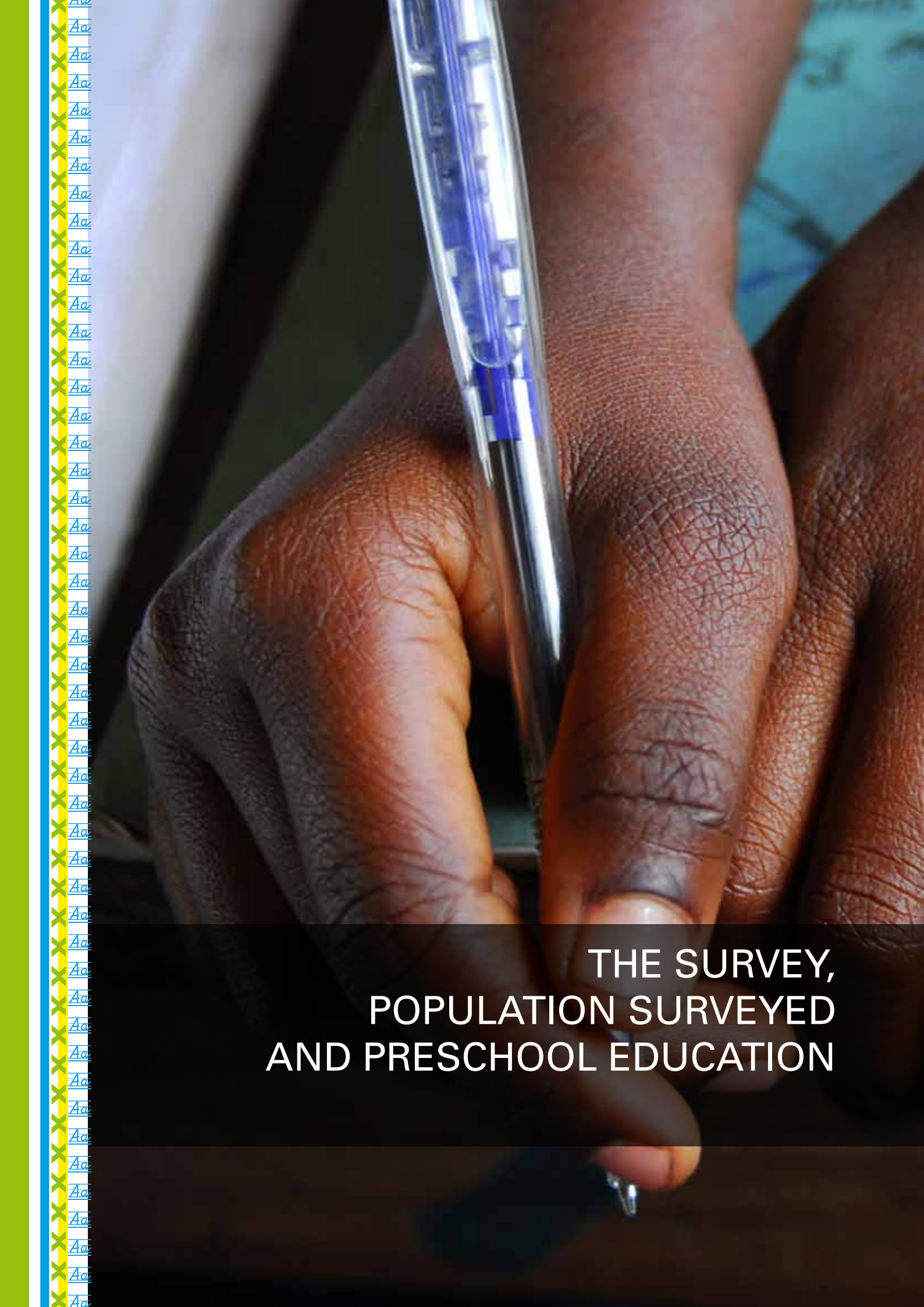
THE SURVEY,
POPULATION SURVEYED
AND PRESCHOOL EDUCATION

1

Assessment of children's skills at the start of primary education is part of efforts to support the preschool programme (curriculum component) by evaluating the "preparedness" of new entrants to first year of primary school. This assessment should indeed make it possible to identify learning gaps of children in relation to their cognitive, emotional, language and motor development, measure the extent of the issue and its causes with a view to bridging these gaps through a reorganization of preschool curricula as well as that of first year of primary education in the short term, until all children in the country have access to preschool education. It should also serve, to a certain extent, to determine the effectiveness of various preschool institutions (public, private, community) in preparing children for successful primary education and possibly come up with recommendations for improvement. The question of the optimal duration of preschool education shall also be discussed.

Specific survey tools were developed. They include:

aptitude and observation tests administered to new primary school entrants will be used to measure their skills particularly in areas relating to fine motor and coordination, communication and language, and cognitive development.

a **questionnaire** on the socio-economic and family background of the child and preschool attendance.

The tests were prepared with early childhood development specialists and child psychologists at the MES and the National Statistics Agency for sample construction. Sample construction took into consideration the variability of cases (gender, situation relating to preschool education, etc) in order to further highlight factors at play. The sample includes the various islands making up the country and is representative at the national level. Survey of primary school entrants was conducted by the MED with the support of UNICEF a few days after the start of the school year (from 24 September to 5 November 2012) to measure children's skills before they began assimilating these in primary school.

A total of 1,190 children (578 boys and 612 girls) in 92 schools[3] were surveyed (table 1 below presents some structural elements of this sample). The average age of children in this sample is 75.5 months (6 years and 3 months) and varies between 58 months (4 years and 10 months) and 93 months (7 years and 11 months). 48% of children live in urban areas and 52% in rural areas. Distribution per island is close to the distribution of the national population between these islands; albeit some were over-represented to obtain a minimum number of observations.

A relatively high proportion of children live with both parents (43%) or with one of their parents and the partner of the latter (20% and 13% respectively). 9% of children live in single-parent households, mostly female-headed. Though the structure of the household does not vary much according to the gender and place of residence of the child, there is a higher prevalance of single-parent households in rural areas (10% compared to 7.7% in urban areas).

40% of children live in households considered as poor, whereas 21 % live in middle-income households and 17 % in what could be qualified as well-off or wealthy households. It shall be noted that it was not possible to directly determine household wealth for nearly 23% of children surveyed.

3. Representing one fifth of preschool institutions in the country.

Table 1
A few characteristics of children surveyed

	Gender		Area		Aggregate
	Boy	Girl	Urban	Rural	
Average age (months)	75,7	75,4	75,7	75,3	75,5
Min-Max	59-93	58-92	59-93	58-92	58-93
Island					
Santo Antão	14,4 %	14,2 %	17,5 %	11,3 %	14,3 %
Sao Vicente	14,4 %	14,2 %	20,2 %	8,9 %	14,3 %
Sao Nicolau	5,4 %	6,4 %	7,0 %	4,8 %	5,9 %
Sal	3,6 %	3,1 %	3,5 %	3,2 %	3,4 %
Boa Vista	3,6 %	4,7 %	3,5 %	4,8 %	4,2 %
Maio	5,0 %	3,4 %	3,5 %	4,8 %	4,2 %
Santiago	38,1 %	37,6 %	32,5 %	42,7 %	37,8 %
Fogo	10,7 %	12,7 %	8,8 %	14,5 %	11,8 %
Brava	4,8 %	3,6 %	3,5 %	4,8 %	4,2 %
Total	100,0 %	100,0 %	100,0 %	100,0 %	100,0 %
Family environment					
Father and mother	43,3 %	43,6 %	42,1 %	44,7 %	43,4 %
Father and other	9,3 %	11,1 %	12,5 %	8,2 %	10,3 %
Mother and other	20,1 %	19,6 %	18,1 %	21,5 %	19,8 %
Father only	0,5 %	0,5 %	0,2 %	0,8 %	0,5 %
Mother only	9,2 %	7,7 %	7,5 %	9,2 %	8,4 %
Unknown	17,6 %	17,5 %	19,6 %	15,6 %	17,6 %
Total	100,0 %	100,0 %	100,0 %	100,0 %	100,0 %
Household wealth					
Poor	39,6 %	39,9 %	30,9 %	47,9 %	39,7 %
Average	22,3 %	19,4 %	25,8 %	16,3 %	20,8 %
Rich	14,7 %	18,8 %	23,9 %	10,3 %	16,8 %
Unknown	23,4 %	21,9 %	19,5 %	25,5 %	22,6 %
Total	100,0 %	100,0 %	100,0 %	100,0 %	100,0 %
Aggregate	48,6 %	51,4 %	47,9 %	52,1 %	100,0 %
Number of observations	578	612	570	620	1 190

Source: Survey on the assessment of 6-year old children, 2012.

1.1
PRESCHOOL EDUCATION IN CABO VERDE BASED ON SAMPLE DATA

Data gathered during this survey will facilitate assessment of the situation of preschool education in the country through retrospective questions on past preschool education of the child. The extent of preschool coverage countrywide as well as its key features (type and duration of programmes) are identified. Combined with data on the socio-economic situation of the child's family, a better understanding is thus gained regarding certain aspects of the demand for education, since information will be obtained on who among girls or boys, urban or rural residents, rich or poor, children living in what family set-up and on which island, has a greater chance of attending preschool as well as what type of school and for how long. Prior to commencing this analysis, we shall briefly present the normative framework for preschool activities in Cabo Verde and their progress.

1.1.1
PRESCHOOL EDUCATION IN CABO VERDE: NORMATIVE FRAMEWORK

There is currently no comprehensive normative framework for the preschool education sector. Pursuant to the framework law, the MES is not directly responsible for preschool education. It defines policies and ensures supervision of institutions but does not establish nor administer the latter. This is the responsibility of municipalities[4], NGOs/associations/foundations[5] and the private sector (for profit). Partnerships between the Government and these stakeholders are relatively weak and consist mainly of support for training, supervision and supply of materials, also considered insufficient. The result has been a fragmented preschool education supply, delivered by a wide range of stakeholders with perhaps varying quality. It is also worthwhIsland to note that the non-mandatory nature of preschool education makes it even more difficult to establish an organized and effective accountability mechanism.

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4. Referred to hereinafter as "public".
5. Referred to hereinafter as "community".

1.1.2
PRESCHOOL EDUCATION COVERAGE IN CABO VERDE

Preschool education is not compulsory in Cabo Verde. However, there is a relatively high rate of coverage in comparison to the region[6]. It is estimated that 86.2% of children interviewed had access[7] to preschool education. Though these results are encouraging, there are no grounds for complacency as preschool education remains inaccessible to 13.8% of children. Knowing who these children are, where they come from, and in what type of households they live is a first step towards understanding certain key aspects of the demand for preschool by these families and constraints on service delivery. The profIsland of children entering primary education without any form of prior education will be dealt with more specifically in the following section.

1.2
PROFISLAND OF CHILDREN WITH NO PRIOR PRESCHOOL EDUCATION

13.8% of children in the sample never attended preschool. There are little variations between gender as access rates for boys and girls are quite similar. However, variations exist based on the area of residence: the proportion of children who have never attended preschool is 17.7% in urban areas and 10.2% in rural areas. The family environment hardly appears to be a discriminatory factor though there is a higher proportion of children not attending preschool in families headed by a male living with his partner (15%). It is worthwhIsland to note that children from single-parent homes are more likely to attend preschool. One reason for this could be that single-parent households find it more difficult to take care of their children during working hours and these single mothers and fathers therefore consider preschool institutions as a type of daycare centre for children. Preschool education costs could be a barrier as reflected in the fact that the proportion of children from wealthy households who have not attended preschool is twice as low (7% against 15%)[8], bearing in mind that wealthy households are also on average the most educated and that it cannot be directly inferred that this is due to economic reasons.

6. In 2010, GER for preschool was, on average, 16% in Sub-Saharan Africa.
7. This relates to access to preschool education. Children who attended preschool even for a few months were considered to have had access.
8. See annex 1 for a description on the construction of the "household wealth" variable.

Chart 1
Social characteristics of children who have never attended preschool
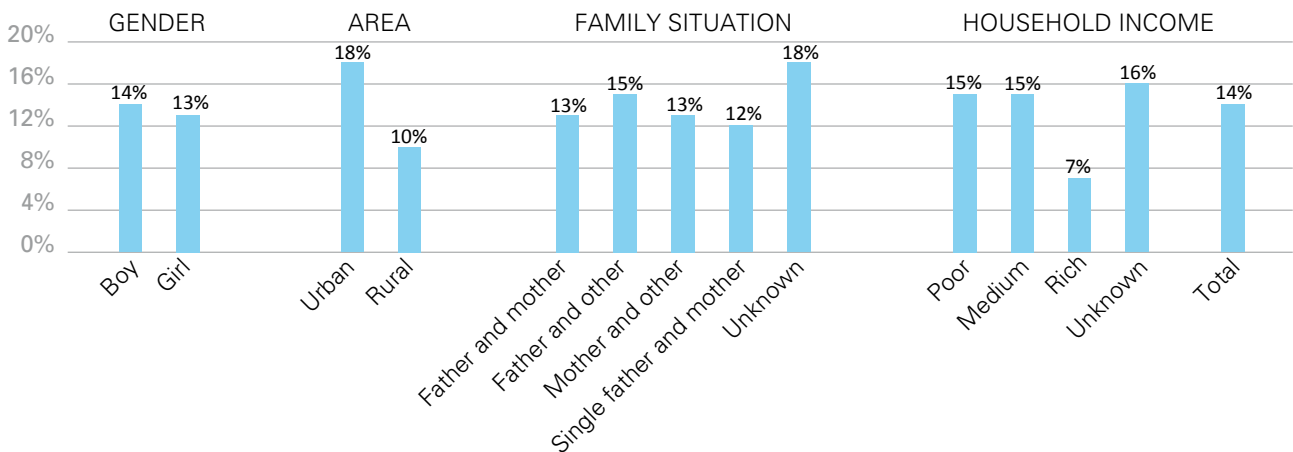
Source: Survey on the assessment of 6-year old children, 2012

Wide disparities were also noted from one island to the other: the proportion of children who did not have access to preschool education is higher than 20% on the islands of São Vicente (27.6%) and Santo Antão (20.6 %) and lower than 7% on the islands of Fogo (6.4%), São Nicolau (5.7%) and Maio (4%). All surveyed children from the island of Brava had attended preschool. The average obtained in Santiago conceals wide disparities between the North and South of the island (20.5% and 10% respectively), and between Praia (25%) and the rest of the island (11 %).

Chart 2
Prevalence of non-preschool education per island
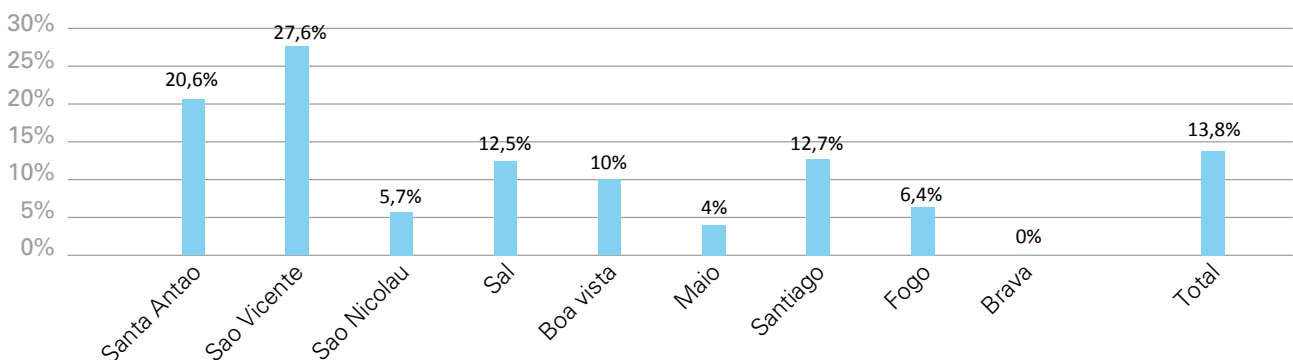
Source: Survey on the assessment of 6-year old children, 2012

A multivariate modelling approach was used for a better understanding of the underlying factors of the phenomenon of failure to attend preschool. This facilitates assessment of the net effect (all else being equal) of the different variables on the probability of never attending preschool. In doing so, social variables relating to the Area (island, geographic location), the child (gender, age) and socio-economic background (family environment, household wealth) that have significant impact on the probability of not having access to preschool programmes will be assessed and their scope and meaning determined.

In light of the binary nature of the variable (attendance or not of preschool), a logistic model is utilized. The results are indicated in table 2 below. Only significant factors are presented. The complete model is featured in table A4 in the annex.

Table 2
Significant factors underlying the probability of not having access to preschool education

	Weight	Probability	Significance
Island (reference : Santo Antão)			
Sao Vicente	0,386	1,47	ns
Sao Nicolau, Maio, Fogo, Brava	- 1,681	0,19	***
Sal, Boavista, Santiago	- 0,626	0,53	***
Area of residence (reference : rural)			
Urban	0,614	1,85	***
Family livelihood (reference : Poor/undetermined)			
Average	- 0,524	0,59	**
Rich	- 1,302	0,27	***
Constant	- 1,130	0,25	***
Pseudo R2	12,6 %		

Source: Survey on the assessment of 6-year old children, 2012.
Logistic model. *** significant at 1%; ** at 5 %; * at 10 %; ns not significant.
Only statistically significant factors are presented in this table.

It shall be noted that variables relating to the child's gender and family environment are not statistically significant. Children's gender therefore plays no part in the decision of parents not to enrol them in preschool. The family environment, whether living with both parents, a single parent alone or with other adults, or in other family settings, does not seem to have an effect on this decision either. Decisive factors underlying the probability of not attending preschool relate more clearly to the geographic location (island and area of residence) and the economic well-being of the household.

The probability of not attending preschool is hence relatively low on the islands of São Nicolau, Maio, Fogo and Brava, and to a lesser extent in Sal, Boavista and Santiago[9]. Children in Santo Antão are 5.4 times more likely not to have attended preschool than their peers living on the islands of Sao Nicolau, Maio, Fogo or Brava and twice more likely than those living in Sal, Boavista or Santiago. Children in urban areas are also at a higher risk of not attending preschool than those in rural areas, the probability ratio being 1.85.

The socio-economic level of the household is a key factor in the decision to enrol children in preschool; children from poor households are respectively 3.7 and 1.7 times more likely not to have been enrolled in a preschool programme than children from well-off or middle-income families.

These results reveal that the island where the family resides is the first discriminatory factor for not attending preschool followed by household wealth and area of residence. It is possible to model the probability of non-enrolment in a combined manner based on these three variables and calculate values as well as deviations (tree structure in Figure 1). These variables indeed combine to produce highly contrasted situations. A maximum deviation of over 45 percentage points is observed between extreme situations, i.e. i) children from wealthy households residing in rural areas in São Nicolau, Maio, Fogo or Brava (1.6% non-preschool attendance), and ii) children from poor households living in the urban areas of Sao Vicente (46.8% of non-attendance).

9. Wide disparities should however be noted between residents of Santiago North and South. The likelihood of not attending preschool being 3 times higher for children residing in the North than those in the South.

Figure 1

Computer modelling of the probability for non-enrolment in preschool based on certain characteristics relating to the child and the family

		Urban	19,3%
Sao Vicente 31,5%	Rich 14,8%	Rural	11,4%
	Poor 38,9%	Urban	46,8%
		Rural	32,2%
	Rich 10,6%	Urban	14,0%
Santo Antão 23,8%		Rural	8,1%
	Poor 30,2%	Urban	37,4%
		Rural	24,4%
	Rich 5,9%	Urban	8,0%
Iles A 14,3%		Rural	4,5%
	Poor 18,8%	Urban	24,2%
		Rural	14,7%
	Rich 2,1%	Urban	2,9%
Iles B 5,5%		Rural	1,6%
	Poor 7,5%	Urban	10,0%
		Rural	5,7%

National 13,8%
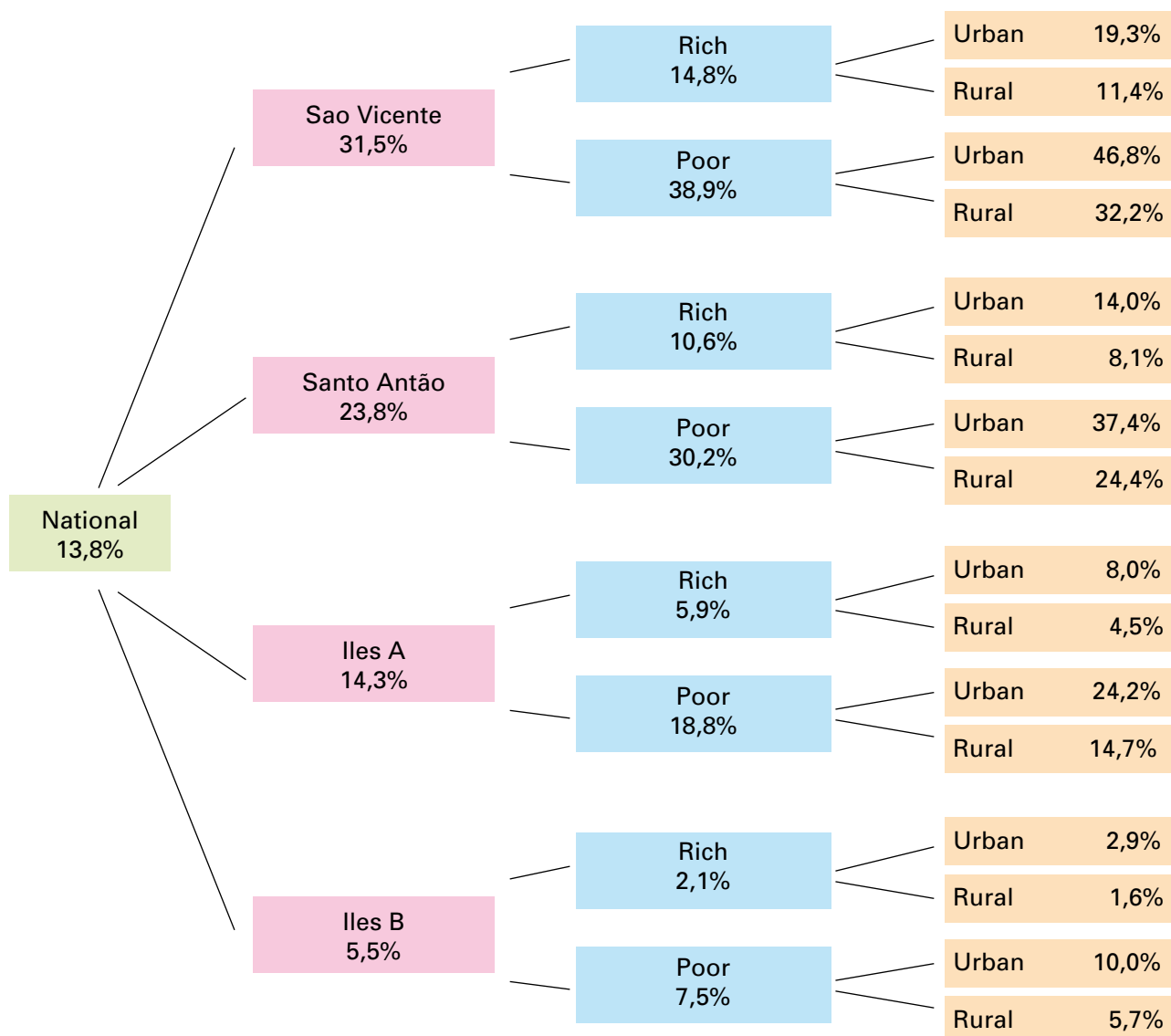
Source: Survey on the assessment of 6-year old children, 2012
Note: Islands in Group A include: Sal, Boavista and Santiago; those in Group B are Sao Nicolau, Maio, Fogo and Brava.

Though the demand for education can determine access to preschool, aspects relating to the supply side can also impact preschool attendance and influence the decision of parents to send their child, or not, to preschool. Given the lack of information on the characteristics of preschool institutions near households that did not send their children to preschool, this aspect is dealt with through information gathered from the 2011-12 preschool survey. Two types of information are considered: i) density of preschool supply on each island in relation to the number of school-age children (4-5 years) per class; and ii) distribution, on each island, of institutions per type: public, private or community. This information is integrated into the previous model replacing variables relating to the islands[10]. The analysis is presented hereafter. The number of children per class has a highly negative effect on the likelihood of not attending preschool and hence the possibility that saturation has been reached in terms of preschool education supply The higher number of community preschools is also a factor for children not to attend preschool as a result of higher school fees compared to public institutions. The probability of children not attending preschool could also be explained by the fact that private institutions, known to offer higher quality education, are deemed more attractive. However, with the high number of private institutions, there is less pressure on public preschools.

Table 3
Significant supply-related factors underlying the probability of not having access to preschool education

	Weight	Probability	Significance
Distribution of preschool education supply on the island			
Private	- 4,584	0,01	**
Community	2,191	8,94	***
Supply density (island) (1)	0,241	1,27	***
Family livelihood (reference : Other)			
Rich	- 0,983	0,37	***
Constant	- 7,424	0,001	***
Pseudo R2	9.9 %		

Source: Survey on the assessment of 6-year old children, 2012.
Logistic model. *** significant at 1 %; ** at 5 %; * at 10 %; ns not significant. Only statistically significant factors are presented in this table. (1) number of school-age children per class (4-5 years).

10. See annex 2

1.3
PRESCHOOL SERVICES: COVERAGE AND CHARACTERISTICS

Of the 86% children in the sample who had attended preschool, almost half of them (49%) had attended a public institution, whIsland 37.4% had attended a community institution[11]. With barely 8% of preschool children in private institutions, it would appear that such establishments only provide a very small fraction of such services[12].

WhIsland parents seem to more frequently opt for a private institution for their daughters rather than for boys, in the public and community sectors, girls' enrolment is nevertheless similar to that of boys. Families' place of residence is a more discriminating criterion: there is a predominance of public institutions in rural areas (75.6% of attendance for children in rural areas, compared to 24% for children in urban areas), whIsland private and community institutions are more commonly found in urban areas, with respectively 82% and 66% attendance, against 17% and 34% in rural areas.

Households headed by a woman with a partner have the lowest attendance rate for private institutions (5%), and tend to depend essentially on public institutions (53% of cases). Wealthy households however choose this option more frequently (17% of cases) than poor households where only …% of children attend preschool. Poor households generally opt for public institutions (49% of preschool children). Attendance at community institutions is generally even for all categories of households.

11. The term community institution covers establishments with varying types of financing, management, quality, and prices, and includes establishments supported by NGOs, religious communities, and foundations.
12. No information available for 6.2 % of preschool children.

Chart 3
Type of preschool attended according to certain social characteristics
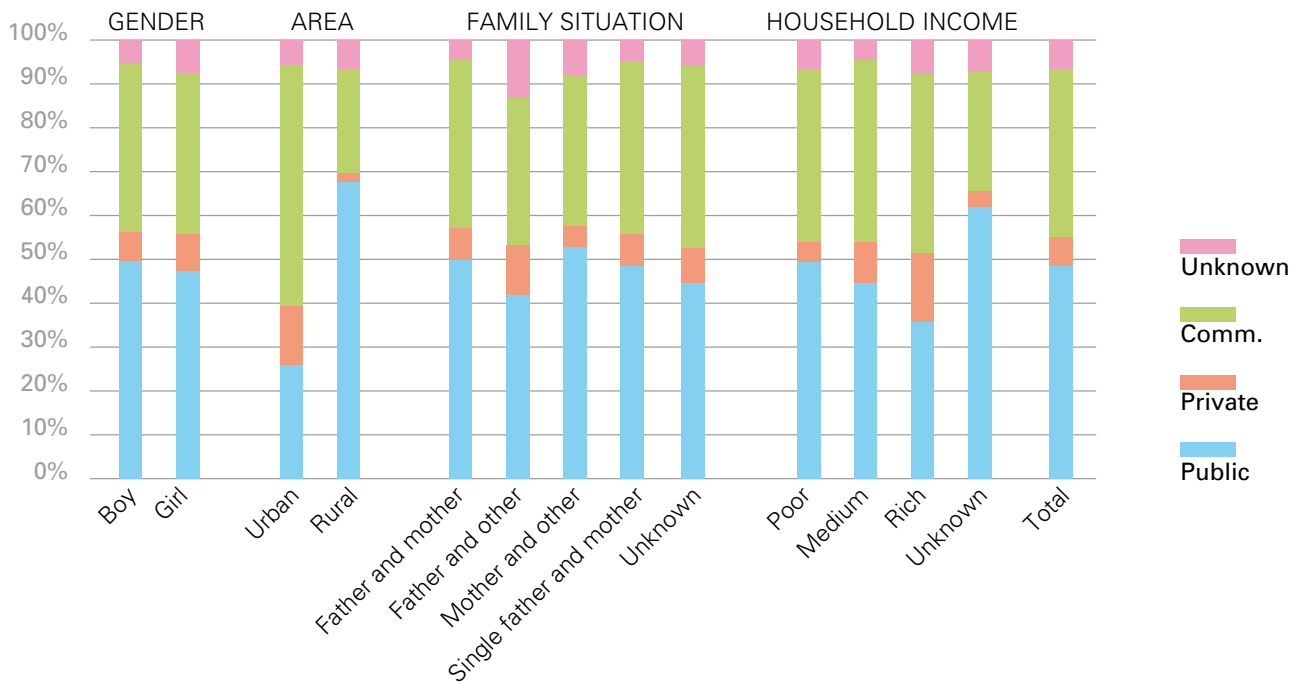
Source: Survey on the assessment of 6-year old children, 2012

The supply side of preschool education also varies greatly from one island to the other. Public institutions are in the majority on the islands of Santiago (74 %), Brava (70 %), Maio (60 %), and Boa Vista (53 %), whIsland the community model is more common on the islands of São Nicolau (91 %), Fogo (70 %), Santo Antão, and Sao Vicente (50 %). Private institutions, for their part, are relatively well established on Santo Antão (14 %) and São Vicente (13 %), but inexistent on Brava, Fogo, and Maio islands.

Chart 4
Type of preschool institution attended per island

Source: Survey on the assessment of 6-year old children, 2012
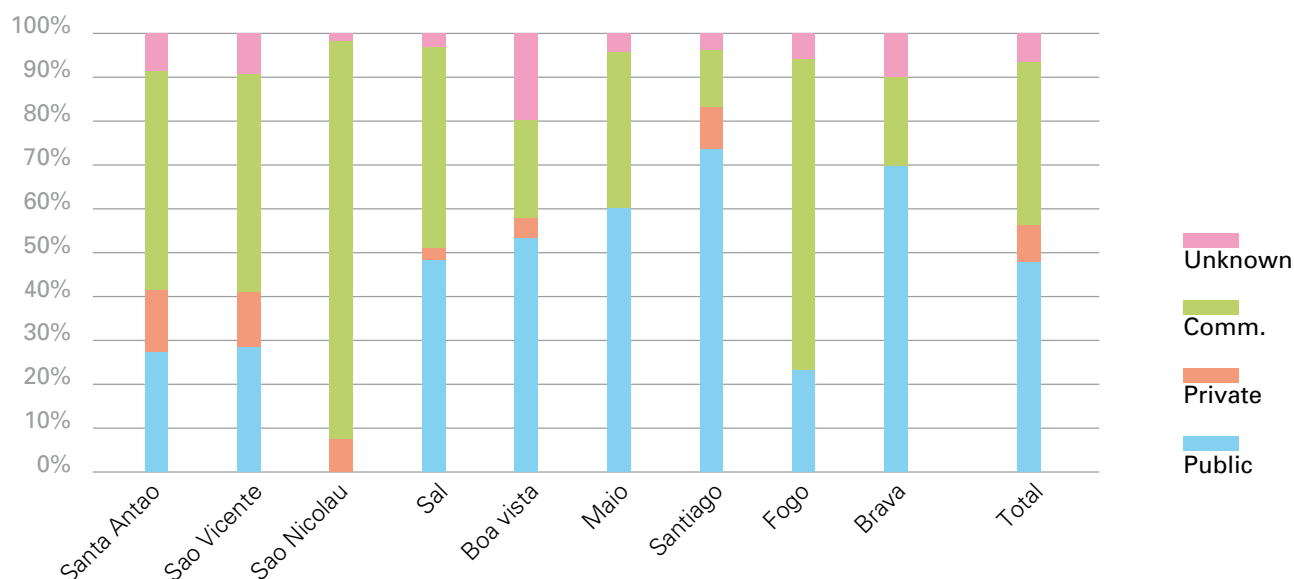
With regard to the duration of preschool attendance for children starting primary school, the majority of children who had attended preschool (63 %) had had two years of preschool, 29% had had three years or more[13], and 4.4% had had only one year.

13. This category includes day-care centres and kindergartens, which could not be distinguished from preschool.

Table 4

Duration of preschool attendance according to certain characteristics of preschool children

		Duration				
		1 year	2 years	3 et +	Unknown	Total
Gender	Boy	5,0 %	61,3 %	29,8 %	3,8 %	100 %
	Girl	3,8 %	64,2 %	28,9 %	3,2 %	100 %
Area	Urban	4,9 %	60,3 %	28,1 %	6,6 %	100 %
	Rural	3,9 %	64,8 %	30,3 %	0,9 %	100 %
Island	Santo Antão	8,9 %	83,7 %	5,9 %	1,5 %	100 %
	Sao Vicente	8,9 %	66,7 %	22,0 %	2,4 %	100 %
	Sao Nicolau	1,5 %	24,2 %	72,7 %	1,5 %	100 %
	Sal	0,0 %	48,6 %	40,0 %	11,4 %	100 %
	Boa Vista	2,2 %	53,3 %	40,0 %	4,4 %	100 %
	Maio	4,2 %	47,9 %	43,8 %	4,2 %	100 %
	Santiago	3,8 %	64,9 %	27,0 %	4,3 %	100 %
	Fogo	1,5 %	78,6 %	16,0 %	3,8 %	100 %
	Brava	2,0 %	22,0 %	76,0 %	0,0 %	100 %
Family environment	Father and mother	5,1 %	65,0 %	25,7 %	4,2 %	100 %
	Father and other	8,7 %	58,7 %	31,7 %	1,0 %	100 %
	Mother and other	2,4 %	58,0 %	37,1 %	2,4 %	100 %
	Single father or mother	3,2 %	55,9 %	38,7 %	2,2 %	100 %
	Unknown	2,9 %	68,6 %	23,3 %	5,2 %	100 %
Level of wealth	Poor	4,5 %	63,1 %	30,0 %	2,5 %	100 %
	Average	6,2 %	58,1 %	33,3 %	2,4 %	100 %
	Rich	2,1 %	60,4 %	33,7 %	3,7 %	100 %
	Unknown	4,4 %	68,4 %	20,9 %	6,2 %	100 %
Total		4,4 %	62,8 %	29,3 %	3,5 %	100 %

Source: Survey on the assessment of 6-year old children, 2012

The strongest disparities are found among islands: the percentage of children who had attended preschool for just one year was higher in Santo Antão and São Vicente (9 %), whereas the longer programmes (3 years and more) were relatively more frequent in Brava, (76 %), São Nicolau (72.7 %), Maio (43.8 %), Boavista, and Sal (40 %).

The longer programmes also tend to be chosen by single-parent households (38.7%) and mothers with a partner (37%), probably as a result of the structure of these families, where there might not be a guardian to take care of children during the work day. This duration is comparatively less frequent (25%) for standard households (with both parents) which tend to opt for two years of preschool (65% of cases).

The level of household wealth does not appear to be a highly discriminating factor although there is a stronger prevalence of one-year programmes among middle-income households (6%, against 2% for wealthy households).

Supply also varies according to the duration of teaching: the majority of children who had attended two years of preschool had been in public schools (55%), whIsland those who had attended longer programmes of three years and more were most often in community schools (48%).

Chart 5
Duration of preschool and type of establishment attended
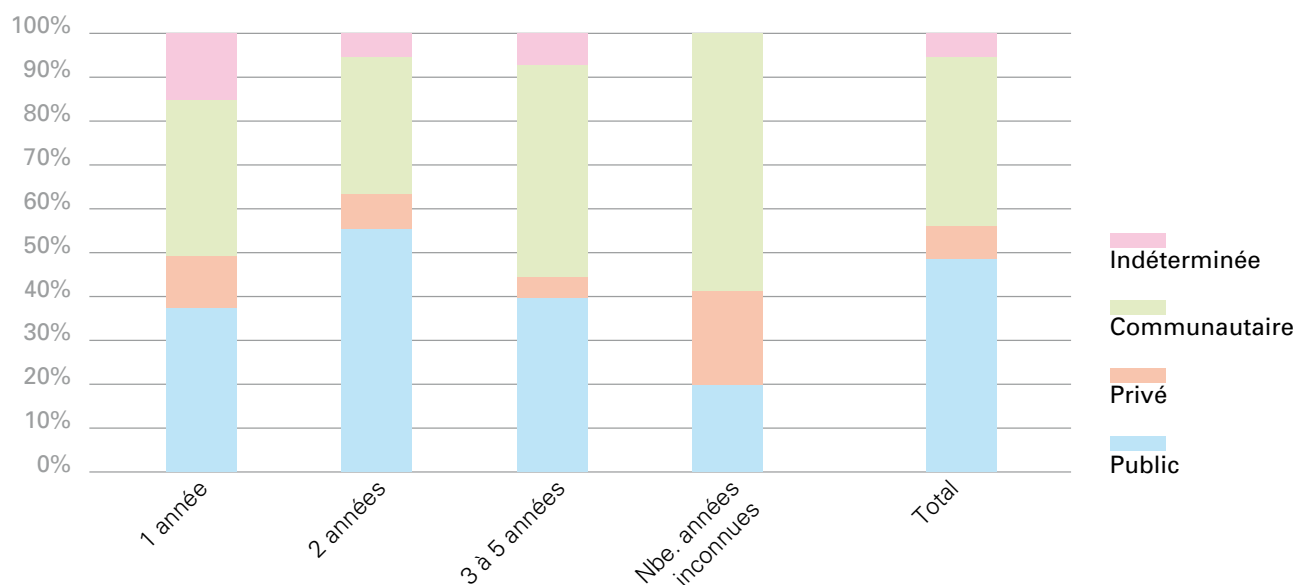
Source: Survey on the assessment of 6-year old children, 2012
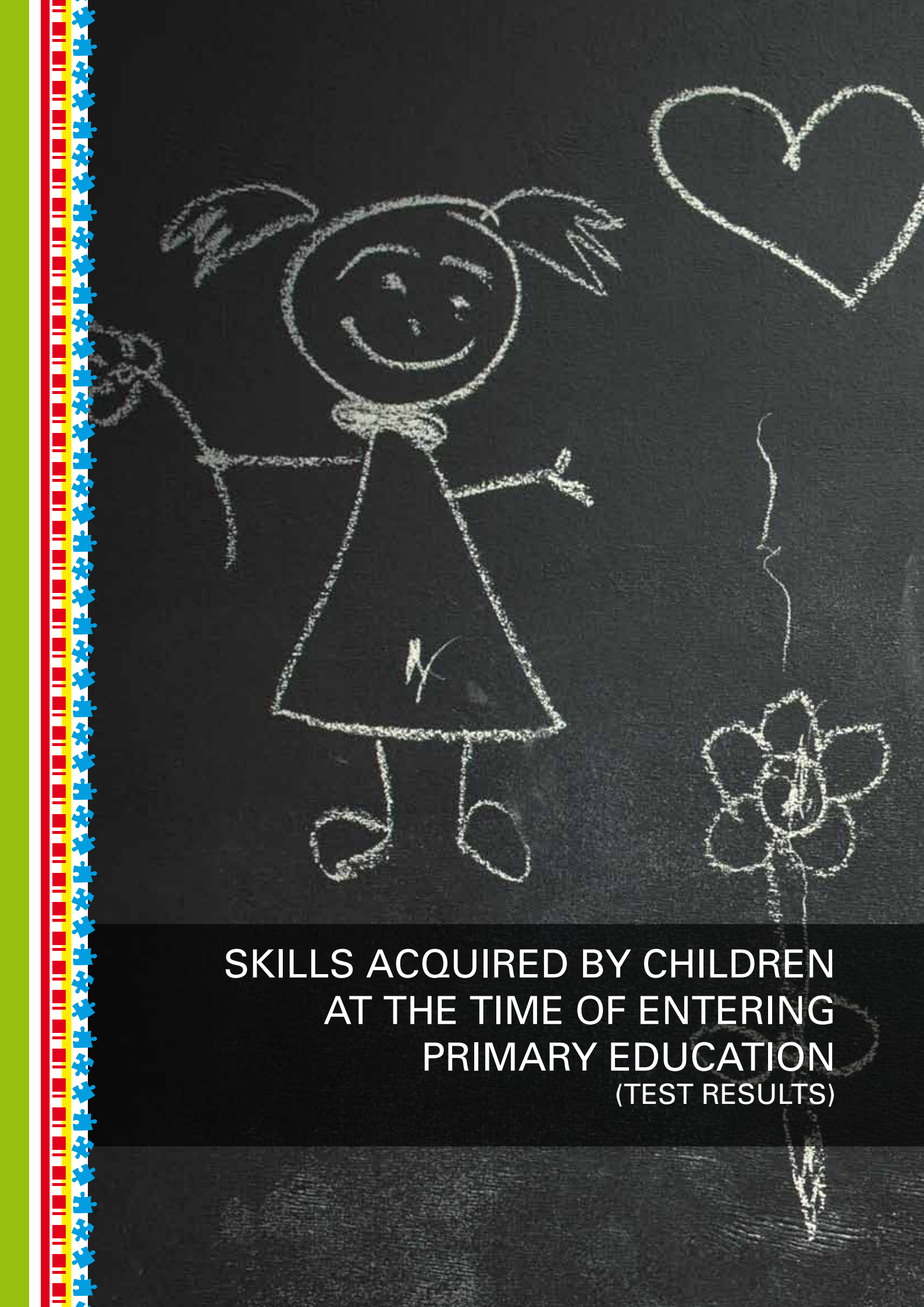
SKILLS ACQUIRED BY CHILDREN AT THE TIME OF ENTERING PRIMARY EDUCATION

(TEST RESULTS)

This section focuses on measuring and analysing the level of development of Cabo Verdean children at the time that they begin primary education.

It is generally acknowledged that parenting practices and ideas on children's development (when and how children's skills and abilities are developed) are largely determined by cultural ideals. Nevertheless, while some skills are culture-specific, other skills and abilities are universal. To what extent do the skills that children need for school fall within this latter category? As school becomes more universal, the necessary skills become more consistent across cultures. These include not only academically-related skills, such as language and symbol recognition, but also social skills such as knowing how to function in groups, wait for a turn, or inhibit an initial response. These skills are useful in school and also for adapting in life, generally. (Fernald et al., 2009).

Four main domains of skills have been selected to be used to assess child development. These are i) cognitive, ii) social/emotional, iii) motor, and iv) communication (see appendix 3 for a brief description of these skills). All of these domains contribute to individual development and to the best preparation for primary education. They are interdependent and thus in analysing ECD, all the different facets must be assessed.

In order to assess these skills, a total of 12 different dimensions have been selected, which are all known to be important in preparing for school. These are:

Cognitive skills :Espace – Time; Size – Quantities; Shapes – Colours; Coding – Transfer; Attention – Concentration – Memory, and Executive functions

Social and emotional skills: Autonomy and socialisation.

Motor skills: Drawing and rhythm.

Language skills/communication: Expression, comprehension.

2.1
DESCRIPTION OF THE TESTS USED IN THE SURVEY

For each of the selected dimensions, specific items were constructed and tested on a population comparable to the population to be surveyed (for further details on the tests and the standards used to define each of these dimensions, readers may refer to Table A2 in appendix). They were designed using the following basic principles:

The test must be fair: the measurement must be valid (measure that which can be measured) and reliable (measure the same thing over time) for children with different characteristics (gender, social environment, etc.)

The type of material used must be familiar (photos, pictures, symbols, etc.)

The type of material used must be culturally appropriate

The test must be carried out in a familiar/secure place for the child (a classroom, for example)

The response time for each question must be brief and the overall duration of the test must be compatible with the attention skills of a young child.

Three methods of testing were used: i) individual testing for each child; ii) group testing with children in groups of 5, and iii) tester directly observing the child as they did the test. The aim in using several methods was to be more efficient, and administer a maximum number of tests to each child within the shortest time possible without losing in accuracy of the measurements[14]. In all, 35 items were administered, mainly in groups (in 21 cases out of 35), and observation was used in only four cases where the tester observed directly or put questions to the school teacher about the child's behaviour.

Table 5 below gives an overview of the domains/dimensions covered by the tests and the principal method of administration.

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14. The duration for each group of children varied between 1h15 and 2 hours.

Table 5
Instruments used for assessing children on entering primary education

Domain/Skill	Dimension	Test (Child)		Observation (Tester)	
		Instrument	Items	Instrument	Items
Cognitive skills	1 – Space – Time	Group	4		
	2 - Size – Quantities	Group	3		
	3 - Shapes – Colours	Group	2		
	4 - Seriation, classification, and association	Group	2		
	5 - Coding – Transfer	Group	1		
	6 - Attention – Concentration – Memory	Group/Individual	2	Group (Tester)	1
	7 – Executive functions	Individual	2		
Social/emotional behaviour	8 - Autonomy, socialisation			Group (Teacher)	
Motor skills	9 – Drawing	Group	5		3
	10 – Rhythm	Group	1		
Communication skills	11 – Expression	Group/Individual	5		
	12 – Comprehension	Individual	4		

2.2
TEST RESULTS AND CONSTRUCTION OF OVERALL SCORES

Three different levels of analysis will be applied to the test results: i) the first, raw analysis of results will serve to identify the domains where the children may be lacking in skills and assess the scope of the deficit; ii) the second level of analysis will aim at establishing the link between test results and a certain number of characteristics of the child and their family, in order to better understand the influence of social variables in the differences in skills development taking into account age and gender, and iii) the final analysis will specifically take into account the child's preschool history in order to identify the possible link between their preschool history and their degree of skills acquisition at the time that they are starting primary education, as well as the strength of that link. The assessment of skills acquired by children may be carried out on the basis of the raw results obtained on the different tests, or may be based on composite measurements of pre-identified broad domains of skills.

2.2.1
DEGREE OF CHILDREN'S SKILLS AT THE START OF PRIMARY EDUCATION

The raw results under the different items are indicated in table 6 below[15].

Table 6
Raw results under the different test items

Domaine/ Dimension	Items	Acquired (%)				Fail (%)
		1	2	3	4	
Cognitive skills						
Space – Time	Before – After	42,7				57,3
	In front – Behind	87,1				12,9
	Above – Below	97,6				2,4
	Lateralisation: left – right	60,9				39,1

15. Table A3 in the appendix indicates the breakdown of failure per item, disaggregated by gender and place of residence.

Size – Quantities	Cardinal comparison of sets of elements of varying sizes	70,3				29,7
	Smaller and bigger (size)	86,1				13,9
	Number identification	88,5				11,5
Shapes – Colours	Identify shapes	70,5				29,5
	Knowledge of colours	80,8				19,2
Seriation – Classification	Distinctive elements in a set (size, shape)	44,1	29,4			26,5
	Recognising similarities and differences	11,2	70,8			18,1
Rythm	Rhythm/Sequence Level 1 (point out the appropriate sign: X or I)	54,3				45,7
	Rhythm/Sequence Level 2 (point out the appropriate sign : I or II or III)	35,8				64,2
	Coding/Transfer (point out the appropriate sign depending on the color of the empty box I, X or II)	41,3				58,7
Coding-Transfer	Exercise linking symbols and action	67,3	6,4			26,3
Concentration - Attention Memory	Listening to a story - observation of attention levels	3,4	6,0	12,9	76,3	1,5
	Listen and extract elements of a story	35,2	52,9			11,8
	Finding the contents of cards	44,5	49,7			5,8
Executive functions	Left to right reproduction of patterns	83,7				16,3
	Describe pictures in sequence (left to right)	56,8				43,2
Socio-emotional skills						
Autonomy, socialisation	The child is able to prepare their things for school alone, without assistance	5,5	92,6			1,9
	The child cane at alone, without assistance	1,8	96,8			1,4
	The child plays with school mates	3,0	94,6			2,4

Motor skills						
Drawing	Reproduce shapes/characters	36,2	36,6			27,2
	Represent a human form	25,2	71,3			3,5
	Reproduce a suggested object	21,4	68,8			9,8
	Draw a house completely	17,8	72,6			9,6
	Reproduce letters	13,1	17,3	11,8	41,2	16,6
Rhythm	Jump, walk, run in time to a given rhythm	32,0	65,0			3,0

Language/communication skills						
Expression	Know his/her full name	8,6	88,2			3,2
	Describe what is found around their house (logic)	84,1	0,5			15,4
	Describe what is found around their house (expression)	86,5	0,8			12,7
	Identify living beings in a drawing	29,8	18,7	18,6	29,3	3,6
	Name the days of the week (at least 3)	52,4				47,6
Comprehension	Understand simple instructions (in Creole and Portuguese)	56,3	41,9			1,8
	Understand simple instructions (in Creole and Portuguese)	55,5	40,8			3,7
	Simple sentence in Creole	21,4	73,8			4,8
	Simple sentence in Portuguese	23,2	61,6			15,2

Source: Survey on the assessment of 6-year old children, 2012

While some items are marked in binary form (1 for pass, 0 for did not pass), others have various, increasing degrees of achievement, depending on whether the test was partially/approximatively or fully executed. One example of this is with the motor/drawing skills test, which describes five levels of execution according to whether the child was able to reproduce zero, one, two, three, or four letters correctly.

Since the degree of test execution is an indicator of the degree to which the skill has been acquired, a reading of the results makes it possible to identify directly those areas where

16. La non-maîtrise de l'aptitude, qui pourrait s'apparenter à un retard pris par l'enfant dans le domaine considéré, doit s'apprécier au regard de la Average des résultats obtenus par les enfants de même âge. L'endroit où l'on place le curseur de réussite est également fortement contextualisé et doit donc s'apprécier au regard de ce qui est attendu de l'enfant dans le contexte donné.

children are lagging behind (the skill is not properly/fully acquired) and to assess the extent and gravity (skill not acquired; skill being acquired) of such delays[16].

The results show a broad range of within-individual variability in test success, from one domain to the other, but also within the same domain. We shall start by reviewing the results obtained in the different tests, by domain and by dimension.

COGNITIVE SKILLS

Space-time: While the concepts of above – below and in front – behind are well understood, lateralisation (39% failure) and before – after (57% failure) are much less clear.

Size-Quantities: All children appear to be able to identify numbers and size (88% and 86% success, respectively). However, when they are combined, only 70% of children have acquired these skills.

Shapes and colours: Although 80% if the children are able to identify colours correctly, it is more difficult for them to identify shapes, and only 70% are able to do so correctly.

Seriation-classification: it is more difficult to identify an out-of-place element in a set than it is to identify similar elements in a set of pictures. Thus, 44% and 29% of children recognised one or two out-of-place elements respectively, compared to 11% and 71% respectively for identifying one or two similar pictures in a set.

Coding-transfer: The majority of children (67%) have partially acquired the coding-transfer skill, 6% have acquired this skill fully, and 26% have not yet acquired the skill.

Concentration-attention-memory: most pupils (76%) are able to listen to a story to the end; only one-tenth of the children were distracted before the story was halfway through. Responding to a series of questions on the story, 35% of the children were able to answer one or two questions (out of 3), and 53% were able to answer all three questions. An additional test confirmed the partial acquisition of these skills. Children were asked to find the contents of cards that had been shown to them and then placed face down: 50% passed the test successfully, i.e., they found three pictures (out of 5 shown), 44% found one or two, and 12% did not find any.

Executive functions: While 84% of children are able to reproduce patterns from left to right partially or fully, only 57% are able to appropriately describe pictures in the right direction. It would appear that a large number of children have not properly acquired executive functions.

SOCIO-EMOTIONAL SKILLS

Autonomy and socialisation: Children begin primary school with good autonomy and socialisation skills; they have no major difficulties eating alone or preparing their things for school (acquired in 93% and 97% of cases respectively). 95% of children also play with their peers, with no difficulty.

MOTOR SKILLS

Drawing: A large majority of children are able to draw a human form/a house or reproduce a familiar object correctly (70% on average), while one fifth and one quarter respectively are able to do so partially. Reproducing letters and characters however remains difficult and only 17% and 37% respectively are able to reproduce them fully, and 16% and 36% partially. The failure rate is particularly high (27%) for reproducing characters.

Rhythm: The test here consists of jumping, walking, or running to a beat given by the tester (more or less continued/rapid clapping). In the majority of cases, (65%), children responded correctly to the stimulus. The failure rate was very low at 3%. For 32% of children the skill was being acquired.

LANGUAGE/COMMUNICATION SKILLS

Expression: Children have no major difficulties stating their full name. However it is more difficult for them to describe the surroundings of their home in a logical and structured manner. Generally, these skills are partially acquired for about 85% of the children while

they are not acquired for 15% (logic) and 12% (structure) of children. Children are also not familiar with the days of the week: 48% of the children were unable to cite at least three days. Children also find it difficult to distinguish between living beings and inanimate objects. Almost 30% were only able to identify one object correctly, 18% identified two to three correctly, and 29% correctly identified four.

Comprehension: 40% of children react correctly to instructions given in Portuguese and Creole (55% partially correct). Instructions are therefore not always correctly and fully understood. We also note here that when the same questions are put in Creole and in Portuguese, the percentage of correct responses is higher for the mother tongue than for Portuguese (74% and 62% respectively). About 15% of children were unable to respond to questions in Portuguese, against 5% when the language used was Creole. Such children may be expected to encounter difficulties in the future, since the language used in education, right from the start of primary level, is Portuguese.

Graph 6 below provides a visual summary of the main findings. The greatest delays are observed under cognitive skills, where the failure rate is high, with regard to the set standard of under 15% for simple items and under 20% for more complex items (see Table A7 in the appendix for the standard set for each item). Table A7 also shows sharp differences between children who have attended preschool and those who have not, who are often in the fail category. These observations call for the following measures:

A revision of the preschool curriculum to enhance cognitive content

Greater focus by teachers on children who begin primary school without any preschool attendance.

The next step, as mentioned above, would be to carry out analyses to determine to what extent certain contextual variables or certain characteristics of the child and the family could explain the variability observed in individual performance. Carrying out such an exercise on all items would however not only be cumbersome and time-consuming, but would also not be technically relevant. This is because in seeking to ensure robust results, there is obviously the constraint of possible errors in measuring specific items. This constraint is considerably diminished when a more composite score or scores are constructed by aggregating several items. We shall now look at this aspect of preparing and calibrating the evaluation data.

Chart 6
Failure rate under the different items, by skills domain

COGNITIVE SKILLS

Item	Failure Rate
Before – After	57%
In front – Behind	13%
Above - Beneath	2%
Lateralisation: left – right	39%
Compare number sets of different elements	30%
Smaller and bigger (size)	14%
Identify numbers (graphic representation)	12%
Identify shapes	30%
Knowledge of colours	19%
Distinctive elements in a set (size, shape)	27%
Recognising similarities and differences	18%
Linking symbols to action	26%
Listen to a story – observe children's attention levels	2%
Listen and extract elements of a story	12%
Find the contents of cards	6%
Reproduce patterns from left to right	16%
Describe pictures in the right sequence (from left to right)	43%

SOCIO-EMOTIONAL SKILLS

Item	Failure Rate
Child can prepare for school without assistance	2%
Child can eat alone, without assistance	1%
Child plays with mates	2%

MOTOR SKILLS

Item	Failure Rate
Reproduce shapes/characters	27%
Represent a human form	4%
Reproduce a suggested object	10%
Draw a complete house	10%
Reproduce letters	17%
Jump, walk, and run to a given beat	3%

LANGUAGE/COMMUNICATION SKILLS

Item	Failure Rate
Know his/her full name	3%
Describe the surroundings of the home (logic)	15%
Describe the surroundings of the home (expression)	13%
Identify living beings in a drawing	4%
Name the days of the week (at least 3)	48%
Understand simple instructions (Creole and Portuguese)	2%
Understand simple instructions (Creole and Portuguese)	4%
What did you eat yesterday, what are you going to do tomorrow?	5%
What did you eat yesterday, what are you going to do tomorrow?	15%

FAILURE RATE (%)

0%   10%   20%   30%   40%   50%   60%   70%

Source: Survey on the assessment of 6-year old children, 2012

2.2.2
CONSTRUCTION OF COMPOSITE MEASUREMENTS

Two methods are used to construct the composite performance indicators for a child in one or several dimensions.

What we will call here the "direct" method consists of simply summing up all the scores under different items in the same dimension/domain and using that score as the overall development performance.

The "factor" method is based on a factor analysis of the various items and uses the initial axes thus defined as latent variables that characterise this overall performance.

CONSTRUCTION OF COMPOSITE SCORES USING THE DIRECT METHOD

The idea is to group items according to certain relevant modalities. One very general way consists of calculating an overall composite score that is simply the sum of all the scores obtained under different items. We thus obtain an indicator whose numerical value falls between zero (failure at all items) and 60 (the highest level of success). The gross average of this indicator is 46.4 with a standard deviation of a 8.1, which means that about 70% of children obtain a score between 38 and 54, but also that a certain (relatively small) number of children obtain a score below 38, whereas others score above 54. We can therefore conclude that the instrument used has been relatively discriminating.

We could also consider that it would be desirable for the composite score to be a bit more specific, somewhere between the result obtained for an item and the overall score. For this purpose, we proceeded in two stages: i) the first consisted of calculating an aggregate score for each of the 11 dimensions[17], which consists of the sum of all the scores obtained under each item (SCT score); we thus obtain a summary of the performance of the child within the dimension[18]; ii) the second stage is based on the idea that among the dimensions considered, there are no doubt some that are similar (involving more or less similar basic skills) and which may be grouped together. Others on the contrary are quite distinct and correspond to more specific skills in the individual development of children.

17. For this analysis dimension 12 was merged with dimension 11.
18. We thus obtain 11 overall composite scores: SCG1 to SCG11.

It is therefore interesting to build a matrix of correlations between the various aggregate scores attached to each of the 11 thematic dimensions used in preparing the survey, and the overall score. The results are set out in Table 7 below.

Table 7
Matrix correlating SCG scores to the different thematic dimensions

	SCG1	SCG2	SCG3	SCG4	SCG5	SCG6	SCG7	SCG8	SCG9	SCG10	SCG11	SCG Total
SCG1	1,000	0,348	0,355	0,325	0,182	0,297	0,287	0,037	0,261	0,136	0,239	0,510
SCG2	0,348	1,000	0,322	0,310	0,213	0,182	0,197	0,105	0,200	0,156	0,179	0,429
SCG3	0,355	0,322	1,000	0,321	0,161	0,244	0,307	0,075	0,354	0,082	0,236	0,514
SCG4	0,325	0,310	0,321	1,000	0,225	0,335	0,236	0,063	0,328	0,155	0,210	0,551
SCG5	0,182	0,213	0,161	0,225	1,000	0,241	0,170	0,032	0,122	0,106	0,137	0,317
SCG6	0,297	0,182	0,244	0,335	0,241	1,000	0,312	0,156	0,309	0,185	0,377	0,626
SCG7	0,287	0,197	0,307	0,236	0,170	0,312	1,000	0,063	0,411	0,117	0,317	0,544
SCG8	0,037	0,105	0,075	0,063	0,032	0,156	0,063	1,000	0,162	0,122	0,190	0,305
SCG9	0,261	0,200	0,354	0,328	0,122	0,309	0,411	0,162	1,000	0,160	0,360	0,758
SCG10	0,136	0,156	0,082	0,155	0,106	0,185	0,117	0,122	0,160	1,000	0,162	0,308
SCG11	0,239	0,179	0,236	0,210	0,137	0,377	0,317	0,190	0,360	0,162	1,000	0,726
SCG Total	0,510	0,429	0,514	0,551	0,317	0,626	0,544	0,305	0,758	0,308	0,726	1,000

Source: Survey on the assessment of 6-year old children, 2012.
SCG1 is the overall composite score for dimension 1, SCG2 for dimension 2, etc.

Table 7 shows significant and positive, but weak correlations among the various dimensions, which never exceed 0.42. The only exceptions are in the correlations between thematic scores and the overall score, which are generally strong and thus validate the establishment of that correlation. Taking into account the strongest correlations (with a value of 0.3 as a threshold), it becomes possible to group correlated dimensions and thus construct new aggregate scores. Five blocks of skills are thus defined:

One block comprising dimensions 1, 2, 3, and 4

One block comprising dimensions 6, 7, 9, and 11

Dimensions 5 (coding-transfer), 8 (autonomy and socialisation), and 10 (motor skills/rhythm) each constitute a separate block that is only weakly correlated to the other dimensions.

Two new composite indicators can be constructed, bringing together dimensions 1, 2, 3, and 4 (SC1234) and dimensions 6, 7, 9, and 11 (SC67911) respectively. Within these two blocks, there are significant relations amongst the various domains/dimensions. Thus, for score SC1234, we note that certain dimensions of cognitive development are interlinked. These are the space-time dimensions, size-quantity, shape-colour, and Seriation-classification. Score SC67911 indicates that the dimensions related to concentration, attention, memory; executive function; drawing, and communication skills are interlinked. Generally speaking, they can be broken down into two main groupings, namely attention and comprehension.

CONSTRUCTION OF A FACTOR SCORE

It is also possible to construct overall composite indicators using factor analysis. This is done using the overall thematic composite scores and the total composite score. Five factors[19] by themselves explain 68% of the stated variance (see table A8 in the appendix) and each of them has a factor score that corresponds to the score obtained by individuals for each factor. In this configuration, the first factor alone explains almost 35% of the variance.

The analysis of the matrix of components (Table A9 in the appendix) shows that the first factor pillar contributes strongly to most of the other development domains, with the exception of

19. Also called the factorial pillar.

dimensions 5, 8, and 10. The second pillar for its part covers aspects relating to autonomy and socialisation (dimension 8) as well as communication (dimension 11), and has a negative relation to cognitive aspects relating to shape and quantities (dimension 2). With regard to the third pillar, it relates more to the dimensions of motor skills (rhythm) (dimension 10) and coding-transfer (dimension 5) and is negatively linked to executive functions (dimension 7).

The matrix of correlations between the total composite score and regressors/factor scores arising from the factor analysis provides additional information about the choice of composite indicators. It shows us (see Table A10 in the appendix) that the total composite score (SCT) is indeed represented by the factors of score 1 and to a lesser degree by the factors of scores 2 and 3 (negatively, for the latter). Other factors play only a marginal role and are not significant.

The first factor therefore contains the most information and can thus be used as the reference composite score for child development skills. Subsequently, in the analysis, this indicator will be referred to as the factor composite score.

We thus have a series of seven composite indicators which can serve as a basis for more in-depth analysis. These indicators cover the varied fields of child development, from overall development to more specific dimensions:

i) Total composite score (the sum of the scores on all items) – overall development of the child

ii) Factor composite score (factor score 1) – overall development of the child

iii) Composite score under dimensions 1, 2, 3 and 4 – cognitive skills

iv) Composite score under dimensions 6, 7, 9 and 11 – attention and comprehension skills

v) Composite score under dimension 5 – cognitive and coding-transfer skills

vi) Composite score under dimension 8 – socio-emotional skills/autonomy/socialisation dimension

vii) Composite score under dimension 10 – motor skills/rhythm dimension

Table 8 below sets out the basic statistics of the different composite scores constructed [average and standard deviation, as well as the minimum and maximum, on one hand and the range of variation (ratio of standard variation to average) on the other]

Table 8
Basic statistics on selected composite scores

	Min.	Max.	Average	Standard deviation	Standard deviation / Average
Total composite score	0	60	46,36	8,10	0,175
Factor composite score	- 4,28	3,0	0,00	1,00	-
Cognitive composite score	0	13	9,40	2,51	0,267
Composite score 5/coding-transfer	0	2	0,80	0,54	0,675
Composite score-attention/comprehension	0	39	28,76	6,04	0,210
Composite score 8/autonomy/socialisation	0	6	5,78	0,82	0,142
Composite score 10/motor/rhythm	0	2	1,62	0,54	0,333

Source: Survey on the assessment of 6-year old children, 2012.

We must note first of all that the different scores are expressed on different scales, making it difficult to compare them directly, in particular in seeking to identify which scores are most differentiating. We can attempt to approach this by calculating the variation coefficient (ratio of the standard variation to the average). According to this statistic, coding-transfer would appear to be the most differentiating (0.67), followed by motor skills (0.33). By contrast, autonomy and socialisation (0.14) is the dimension that least differentiates among the children in the sample.

However the fact that the different scores are expressed on different scales also makes it difficult to identify the weights of explanatory factors and model the variability of individual performances. Standards must be defined if we are to compare the coefficients of the estimated models for the various selected domains. We opted for a conventional standardisation in the test domains, with an average of 100 and a homogeneous standard deviation of 15. Composite scores 5, 8, and 10 were not included, because they were based on a very small number items. Table 9 below indicates the parameters of the standardised scores.

Table 9
Standardised basic statistics of the composite scores

	Minimum	Maximum	Average	Standard deviation
Total composite score	36	140	100	15
Factor composite score	14	125	100	15
Cognitive composite score	44	122	100	15
Composite score-attention/comprehension	29	125	100	15

Source: Survey on the assessment of 6-year old children, 2012

Graph 7 below presents an illustration of the distribution of standardised, composite, total, and factor scores. Overall, the distribution of these scores is quite close to normal (bell curve on the graphs), with a slight shift to the right, indicating a slightly higher occurrence of high scores than would have been the case if the distribution had strictly followed the norm.

Chart 7
Distribution of the standardised total and factor composite scores
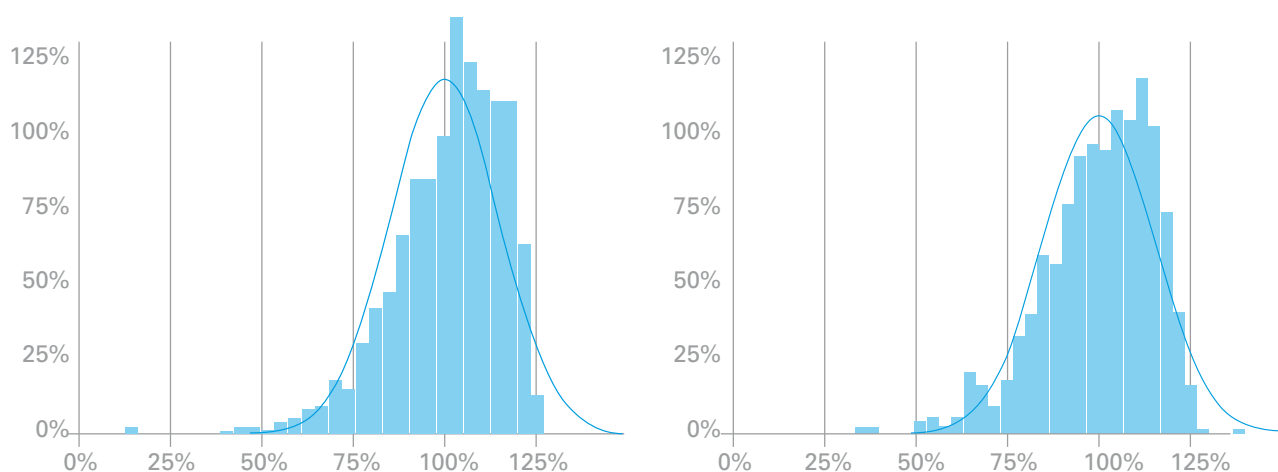
These two graphs show a within-individual variability in children's skill levels in dimensions that measure the broadly differing levels where children are prepared for primary education. It is now necessary to identify which variables are more likely to demonstrate this variability. Two groups of variables may be identified for this purpose:

i) Social, and thus exogenous, variables whose impact must be defined in order to find the means of reducing existing social gaps.

ii) Other variables that may be shaped using educational policies, and which may be used to generally improve the way in which children are prepared for primary education, thus improving the quality of the primary cycle itself. Additionally, these could also contribute to reducing the disparities among social groups within the population.

INFLUENCE OF SOCIAL
VARIABLES ON DIFFERENCES
IN CHILDREN'S SKILLS

3.1
SOME RAW DISTRIBUTION DATA

As part of an initial presentation, table 9 below shows some of raw data regarding the main aggregates concerned, broken down by social variables that can explain the identified variability.

Table 10
Gross distribution of individual skills according to certain social variables

	Overall score		Thematic composite score				
	Composite	Factor	Cognitive	Application omprehension	Coding transfer	Autonomy socialisation	Motor Rhythm
Average	100,0	100,0	100,0	100,0	0,80	5,78	1,62
Standard variation	15,0	15,0	15,0	15,0	0,54	0,82	0,54
Gender							
Boys	98,0	98,5	99,7	97,7	0,78	5,72	1,62
Girls	101,9	101,4	100,3	102,2	0,82	5,84	1,62
Area							
Urbans	101,6	101,4	101,1	101,6	0,83	5,80	1,65
Ruraux	98,5	98,7	99,0	98,6	0,78	5,77	1,60
Standard of living							
Wealthy	105,5	104,9	103,5	105,5	0,86	5,84	1,66
Medium	99,7	99,0	98,9	100,3	0,70	5,85	1,54
Poor	98,2	98,6	99,8	97,7	0,82	5,75	1,62
Family environment							
Father and mother	100,1	100,2	100,3	100,0	0,79	5,79	1,59
Father and other	100,6	99,8	99,4	101,2	0,84	5,76	1,58
Mother and other	99,5	99,1	98,9	100,0	0,74	5,75	1,60
Monoparental	98,6	98,3	98,4	99,0	0,81	5,67	1,66

	Overall score		Thematic composite score				
	Composite	Factor	Cognitive	Application omprehension	Coding transfer	Autonomy socialisation	Motor Rhythm
Sao Vicente	99,0	97,2	95,5	100,7	0,60	5,84	1,68
Sao Nicolau	105,6	103,0	96,7	108,6	0,84	5,86	1,63
Sal	99,9	97,8	94,3	102,0	0,58	5,88	1,85
Boa Vista	103,8	100,7	94,4	108,1	0,70	5,76	1,50
Maio	97,7	102,6	108,6	93,4	1,18	5,64	1,38
Santiago	98,6	100,0	101,7	97,2	0,85	5,75	1,69
Fogo	102,1	103,9	107,1	99,4	0,89	5,73	1,80
Brava	96,7	94,1	89,6	100,4	0,80	5,98	1,22
Preschool attendance							
Yes	101,9	101,9	101,3	101,8	0,83	5,81	1,64
No	88,0	88,4	91,7	88,5	0,65	5,62	1,51

Source: Survey on the assessment of 6-year old children, 2012.

Girls generally score higher than boys (except for motor skills), and the same applies to children living in urban areas as compared to their peers from rural areas. There are also considerable differences with regard to the household standard of living, with a clear advantage for children from wealthy environments (except where autonomy-socialisation are concerned). This relation is however not continuous; the performance of children from medium-income households is lower than that of children from poor households in the areas of coding-transfer, motor skills (rhythm), and, to a lesser extent, in cognitive skills. The family structure does not appear to have a clear influence.

As far as the breakdown of scores by islands is concerned, the classification tends to differ depending on whether we take an overall measure of child development or thematic measurements. In the overall measurements, children from São Nicolau, Boavista, and Fogo scored highest, well ahead of those from Sal, São Vicente, and Brava, in last place. The case of Maio is rather ambiguous: this island is in the lead where the factor score is concerned, but trails behind on the overall composite score. Children in Maio also perform relatively better than others in the cognitive and coding-transfer domains, but they do not do so well in application-comprehension and autonomy-socialisation. In the cognitive domain, the best results were obtained in Maio (109) and Fogo (107) and the poorest results were obtained in Brava (90). Children living on Boavista and São Nicolau showed the best performance in the application-comprehension domain, with scores of 108 and 109, respectively. Sao Vicente

and Sal lag behind in the coding-transfer domain (score of 0.6 and below). Where motor skills are concerned, children from Brava (score of 1.22) demonstrated the most obvious delays.

One particularly important result, which has already been mentioned above, is the effect of preschool attendance on child development. The overall scores for children who have attended preschool are 14 points higher than those of children who did not attend preschool. Similar differences are observed in application-comprehension, with a slightly smaller difference (9 points) in the cognitive domain.

3.2
MODELLING THE OBSERVED PHENOMENA

The data included in Table 9 above show that several variables are associated with the variability in each of the observed skills domains. It is generally acknowledged that the construction of child development is not the result of a single factor alone. It is influenced by exposure to numerous environmental factors that on a day-to-day basis, and gradually, over time, have a direct positive or negative effect on the child by affecting their behaviour. They may also have an indirect effect by altering the child's brain development and function (Kariger, 2009). It is also however clear that several social dimensions work together, and no doubt cumulatively to produce the distinct differences noted in children's levels of skill at the start of primary education.

The objective of this section is to arrive at a better understanding of the way in which certain (favourable or unfavourable) individual and social variables of the child have an effect on the level of development. Since these variables may be interdependent, it is better to use multivariate modelling techniques that will make it possible to determine whether a given variable does have an impact or not on a specific point, and also in what direction and to what extent. Two types of specification could thus be used: i) simple linear regression (Ordinary Least Squares), to be applied to the standardised composite scores, taken as a continuous variable, and ii) logistic regression for scores 5 and 10[20]. Indeed what will be assessed here is the fact of being successful in the test or not. Success is defined for

score 5 as reaching at least one level of partially accomplishing the task (levels 1 and 2). In the case of score 10, success is total accomplishment of the task (level 2). Autonomy/socialisation (score 8) will not be analysed because most of the children had almost totally acquired these skills.

In both models, the selected variables relate to the child's own characteristics (age, gender); their place of residence (island, area of residence); and their family environment (Family structure, household wealth). Table 11 below sets out the results of modelling the impact of children's social variables on the various standardised composite scores.

Table 11
Effect of variables on the different standardised composite scores

	Total composite score	Factor composite score	Cognitive composite score	Composite score Application/ comprehension
Gender				
Boys	- 3.338	- 2.52	- 3.348 (ns)	- 4.115
Girls	Ref	Ref	Ref	Ref
Age of child (months)	0.531	0.528	0.461	0.492
Island				
Brava, Maio	- 4.44			
Santiago	- 1.800 *		3.192	
São Nicolau	3.872			4.762
Fogo		2.518 *		
Brava		- 6.814	- 9.518	
Boavista, Sal, São Vicente		- 2.232		
Boavista			-6.29	
Fogo, Maio			9.138	
Sal, São Vicente			- 2.978	
Maio				- 10.049
Fogo, Santiago				- 4.69
Others îles	Ref	Ref	Ref	Ref

Environment				
Urban	2.799	3.16	3.796	1.731
Rural	Ref	Ref	Ref	Ref
Household wealth				
Rich	3.971	3.431	2.34	4.268
Other	Ref	Ref	Ref	Ref
Family environment				
Single parent			- 2.94	
Other			Ref	
Type of preschool				
Public	Ref	Ref	Ref	Ref
Private	2.506 (ns)	1.955 (ns)	1.034 (ns)	2.983 *
Community	- 0.77 (ns)	- 0.080 (ns)	- 2.206	1.018 (ns)
Unknown	1.014 (ns)	0.746 (ns)	0.803 (ns)	0911 (ns)
Not attended preschool	- 13.808	- 13.27	- 9.885	- 12.855
Constant	61.844	61.183	63.815	66.734
R2	15.9 %	14.5 %	16.4 %	18.7 %

Source: Survey on the assessment of 6-year old children, 2012.
Linear model (OLS). All variables are significant to 1% or 5%; variables that are only significant at the 10 % threshold are indicated by an *. (ns): not significant.

It must be noted that only significant variables were retained in the final model presented in Table 11. Wherever appropriate, several modes of variables in a category were also grouped together, namely, when several modes of a variable showed the same statistical behaviour (sign/scope/significance).

Observation of the R2 coefficients of determination show a relatively low explanatory power of the different regressions (between 14.5% and 18.7%[21]). These results must not be considered negative. In fact, in terms of leading to action, quite the contrary. They show that while there may be social variables that have a proven impact on child development, social structures provide spaces and substantial room for manoeuvre for effective action. Child

21. Mingat and Seurat (2011) obtain R2 values ranging from 21 % to 42 % on data from Madagascar.

development may vary for example between wealthy environments and poor environments, but the relatively low numerical value of the R² coefficient of determination indicates a great variability both within rich families and poor families. This variability is not related to wealth, but rather to the no doubt wide range of daily practices within the family environment[22].

The selected social variables nevertheless do shed some relevant, initial light on factors that could influence child development.

In all but the motor skills domain, **gender** appears to systematically have a rather strong impact on development: boys show a 2 to 4-point lag behind girls on the scale of individual scores with a standard deviation of 15. The advantageous impact of gender for girls appears even stronger in the attention and comprehension domain where the estimated gap is 4 points.

There is a positive link between the **age** of the child and their level of development; the level of children's skills therefore increases with age. This is a rather intuitive and unsurprising result. The impact is relatively homogeneous from one development domain to the other, but appears to be slightly stronger in total scores (total and factor) than in thematic scores. Considering that the range of variation on this variable is about 15 months (not counting atypical cases of very young or very old pupils), the result is about a 7-point gap in the selected scales for dependent variables. This value is far from anecdotal.

Island of residence appears to be a particularly differentiating factor. Since islands were grouped differently, depending on the type of score being analysed, it is not immediately possible to interpret the figures on Table 11. Table 12 below transcribes the figures for the block of islands in table 11 in a form that can be interpreted more directly

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22. Identifying the daily practices that make a difference could be an interesting avenue to explore at a later stage.

Table 12

Transcription of the differentiation among the various islands (source Table 11)

| Island | Overall score | | Thematic score | | |
	Composite	Factor	Cognitive	Attention/ Comprehension	Total
Boa Vista	0,0	- 2,2	- 6,3	0,0	- 8,5
Brava	- 4,4	- 6,8	- 9,5	0,0	- 20,8
Fogo	0,0	2,5	9,1	- 4,7	7,0
Maio	- 4,4	0,0	9,1	- 10,0	- 5,4
Sal	0,0	- 2,2	- 3,0	0,0	- 5,2
Santiago	- 1,8	0,0	3,2	- 4,7	- 3,3
Santo Antaõ	0,0	0,0	0,0	0,0	0,0
Sao Nicolau	3,9	0,0	0,0	4,8	8,6
Sao Vicente	0,0	- 2,2	- 3,0	0,0	- 5,2
Total	- 0,9	- 1,1	0,3	- 1,8	- 3,4

From the information in the table, there are big differences among the islands both in general terms and with regard to attention and comprehension and cognitive skills, where the differences are more notable. Referring to individual islands, child development (taking into account the social dimensions of individuals) appears to be most delayed in Brava. This poor performance is found systematically on the different scores as well, except in attention/comprehension. The situation of Boa Vista is not as bad as Brava's, but it is still in an unfavourable position, compared to the other islands of the country. Maio, São Vicente, and Santiago fall within the average-weak range[23]. Finally, the level of development of children who live on the islands of Fogo and São Nicolau appears to be the most favourable, in relative terms, and taking into account the social characteristics of the populations. Where the overall factor score is concerned, the average net gap between children from Brava and Fogo is 9.3 points or two-thirds of the standard deviation. This is quite a substantial gap.

Another important dimension to be taken into account is household wealth. Children

23. Supplementary analyses a systematic delay in all scores for children living in Praia, compared to the reference group of children living in Santo Antão. For children living in the rest of the island display the same behaviour as those in Santo Antão (the variable is not significant). When data is disaggregated according to north and south, however, the South appears to have poorer levels of performance (variables are not always significant), except in motor skills.

from wealthy backgrounds register statistically significant advances in their development for all the indicators[24]. The magnitude of these variances is however neither low nor considerably high (between 2 and 4 points on the scale of performance scores). Similarly, comparatively, their intensity is only slightly higher in the attention and comprehension domain (4.3 points) and lower in cognitive development (2.3 points).

On the whole, and maybe contrary to expectations, family structure appears to have only a limited influence on child development. It may however be observed that the single parent family situation appears to be unfavourable to child development, although this result is not systematic for all the different skills aggregates examined. Where cognitive development is concerned, the "handicap" is on average around 3 points for a child raised in a single parent family, compared to children in all other family structures, where there are no real differences.

The most important variable is however indisputably the fact of having attended preschool or not before beginning primary education. Children who have had one form or other of preschool education demonstrate clear, highly significant, and quantitatively strong advantages (checked against social and geographical characteristics) over those that have not had the benefit of such exposure. The overall deviation between the two groups is between 10 and 15 points and covers all aspects of child development to varying degrees, but always in major proportions. This represents between 2/3 and one unit of the standard deviation in the distribution of the variable that measures individual skills. For example, the magnitude of the impact of preschool (14.7 points over the total composite score) is markedly higher than the economic status of the family (4 points). Of course the two factors cannot be substituted, but this measurement clearly shows the considerable impact of preschool.

For further analyses, there is of course the need to define the modes of preschool education in greater detail, as they might turn out to have even stronger positive implications on individual child development. This will be described subsequently, in this report.

A similar exercise was carried for dimensions 5 and 10 (coding-transfer and rhythm), based on the logistics models, with the explanatory variables given a binary specification. The results are set out in Table 13 below.

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24. This result is commonly found in the literature on the subject. Young children who grow up in a poor environment are more likely to experience developmental delays or stunted growth, than children from wealthy backgrounds. This is because they are disproportionately exposed to a range of simultaneous risks that negatively affect their development. Such children are more likely to experience poor nutrition, a less stimulating learning environment, limited linguistic models, and overcrowded housing, sometimes with sub-standard sanitation. (See Abadzi, 2009 and Kariger, 2009). In Cabo Verde, however, the magnitude of these variances remains relatively small.

Table 13

Impact of social variables on the probability of achieving a given skills level in coding-transfer and rhythm

	Coding/Transfer Partial or total mastery		Rhythm Total mastery	
	Coefficient	Odds ratio	Coefficient	Odds ratio
Gender				
Boys	98,0	98,5	99,7	97,7
Girls	101,9	101,4	100,3	102,2
Age of child (months)	-		0,034	
Island				
Maio, Sal	-0.775	0.46		
Santiago, Soa Nicolau, Soa Vicente			1.029	2.80
Fogo, Sal			1.750	5.85
Brava			-1.224	0.29
Others Islands	Réf		Réf	
Living environment				
Urban	0.142 (ns)		0,551	1.74
Rural	Réf		Réf	
Household wealth				
Rich	0.113 (ns)		0.142 (ns)	
Other	Réf		Réf	
Type of preschool				
Public	Réf		Réf	
Private	-0.082 (ns)		-0.199 (ns)	
Community	0.006 (ns)		-0.437	0.65
Unknown	0.383 (ns)		0.020 (ns)	
Did not attend preschool	-0.809	0.45	-0.733	0.48
Constant	1,129		- 2.813	
R2	3.9 %	14,8 %	91,7	88,5

Source: Survey on the assessment of 6-year old children, 2012.
Logistic model. Variables are significant at a threshold of 1% or 5%.
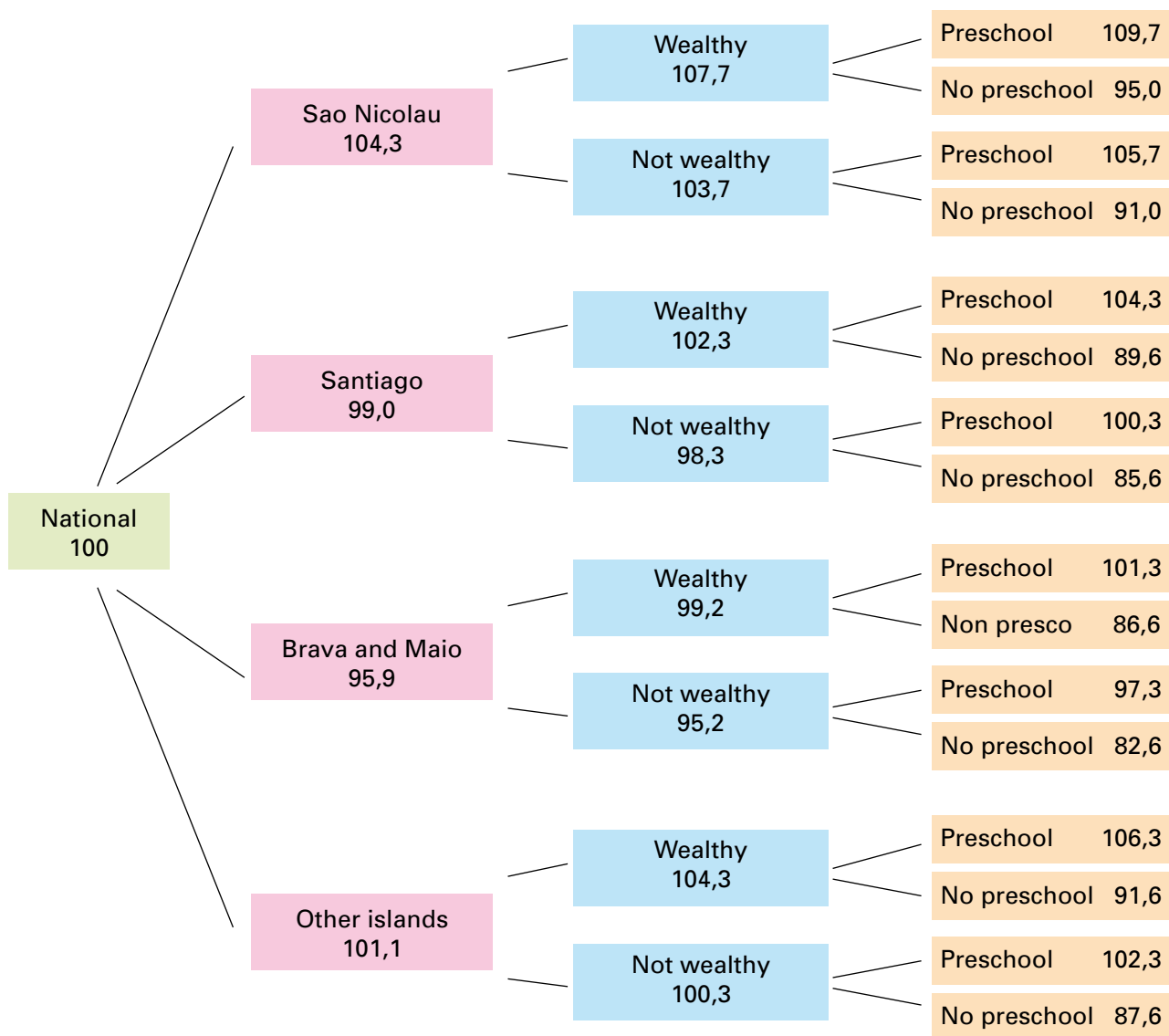Non-significant variables or modes are marked ns.

While the **gender** of the child no longer influences development in the coding-transfer and motor skills (rhythm) domains, **age** remains an important factor in aspects related to rhythm, but not to coding-transfer. In the area of rhythm, children from **urban areas** continue to show more advanced development than their peers from rural areas. Their chances of reaching the defined success level are 1.7 times higher. The impact of the **island** also varies; in coding-transfer, the probability of success for children living in Maio and Sal is lower. Their chance of failing is about 2.2 times[25] higher. In the motor skills/ rhythm domain, children from Brava are particularly at a disadvantage, contrary to children from Sal and Fogo, and to a lesser extent, those from São Vicente, Santiago, and São Nicolau who perform better. The latter are respectively 6 and 3 times more likely to have achieved a good level of motor skills than children in the control group. In this domain, **wealth** is not a strongly differentiating factor, as it does not hinder children's acquisition of skills in coding/transfer or rhythm. Finally, as seen above **absence of preschool attendance** is a major handicap that almost doubles the risk of failing to reach the target skills acquisition level. Children who have attended community preschool have lower levels of performance with regard to rhythm.

As we did before in the case of probability related to non-attendance at preschool, we shall simulate a joint overall composite score based on the three variables that have the greatest impact on scores, and assess their values, as well as the deviations (figure 2). It will thus be possible to describe the consequences of an accumulation of favourable/unfavourable factors on the development of children starting primary education. For example, children living on the islands of Maio or Brava in a non-wealthy family who do not attend preschool are particularly handicapped. Their scores are 27 points below those of the children with the greatest advantages, namely, those from wealthy families in São Nicolau who have attended preschool (overall composite scores of 83 and 110, respectively).

25. This corresponds to the inverse of the odds ratio.

Figure 2

Numerical simulation of the overall composite score according to certain social characteristics of children

	Wealthy 107,7	Preschool 109,7
		No preschool 95,0
Sao Nicolau 104,3	Not wealthy 103,7	Preschool 105,7
		No preschool 91,0
	Wealthy 102,3	Preschool 104,3
		No preschool 89,6
Santiago 99,0	Not wealthy 98,3	Preschool 100,3
		No preschool 85,6
National 100		
	Wealthy 99,2	Preschool 101,3
		Non presco 86,6
Brava and Maio 95,9	Not wealthy 95,2	Preschool 97,3
		No preschool 82,6
	Wealthy 104,3	Preschool 106,3
		No preschool 91,6
Other islands 101,1	Not wealthy 100,3	Preschool 102,3
		No preschool 87,6

Source: Survey on the assessment of 6-year old children, 2012
Simulations based on the model in Table 11.

26. We must not lose sight of the important role of genetic factors, which were neither observed nor observable in this study.

The positive effect of age on score levels observed above is illustrated in greater detail below, using a numerical simulation of the overall composite score. The score for a 6 year old child (72 months) is 98, but scores range from 92 for a child of 5 (60 months), to 105 for a 7 year old (84 months). While a child's level of development is strongly correlated to age, it is also nevertheless shaped by other factors and in particular their living conditions and environment[26]. Graph 8 below offers a visual illustration of this. It shows the impact of household wealth and preschool attendance on the overall composite scores obtained by children, according to their age. It is interesting to note that by the age of 5 years (60 months), a child from a wealthy environment who has attended preschool already obtains the average score for 6 year olds. On the other hand, children who have not attended preschool (wealthy or not) on average do not obtain this score, even when they are of an age to begin primary education, that is, 7 years.
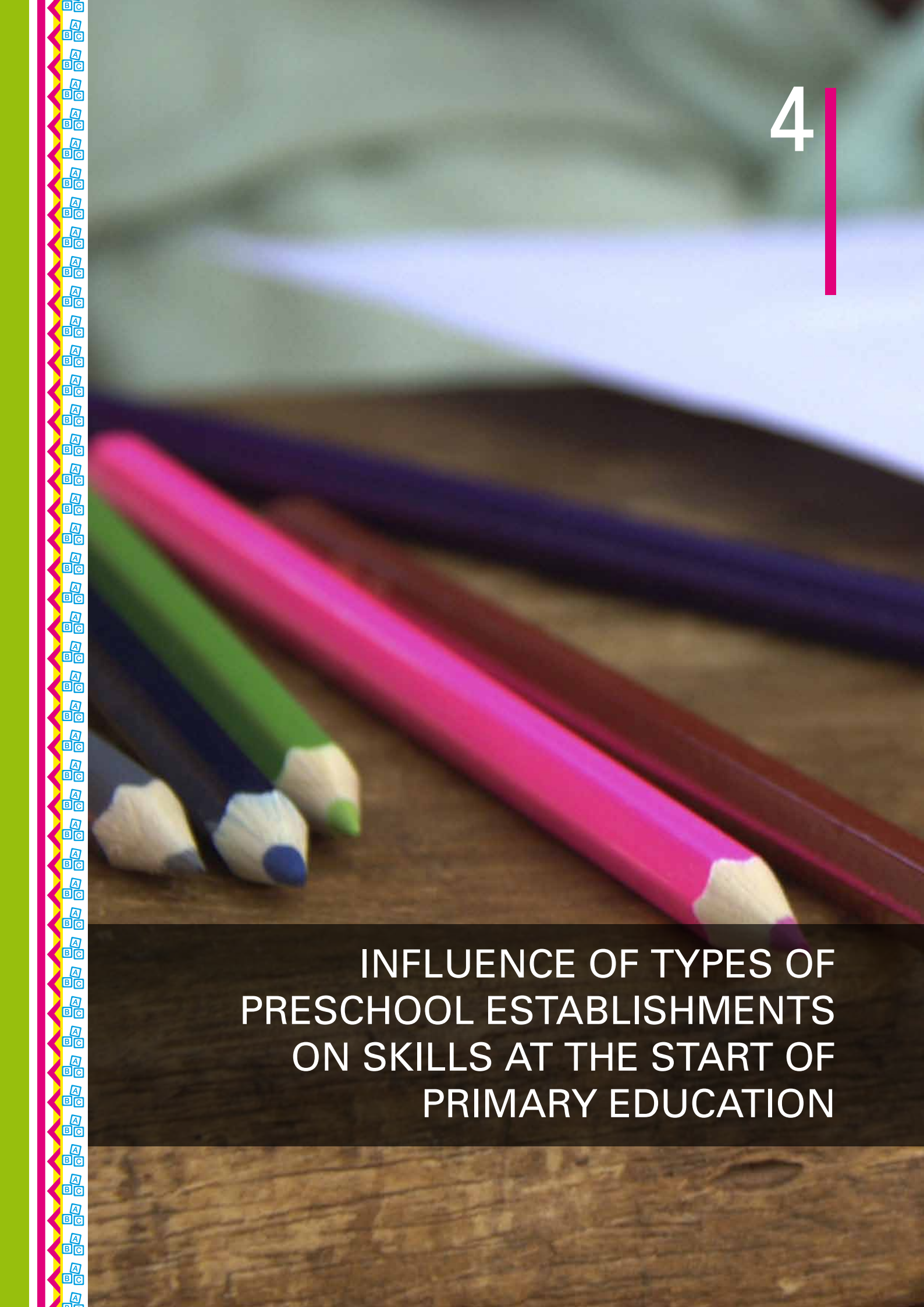
Chart 8

Numerical simulation of overall composite scores according to age, family wealth, and preschool status of the child

Source: Survey on the assessment of 6-year old children, 2012.
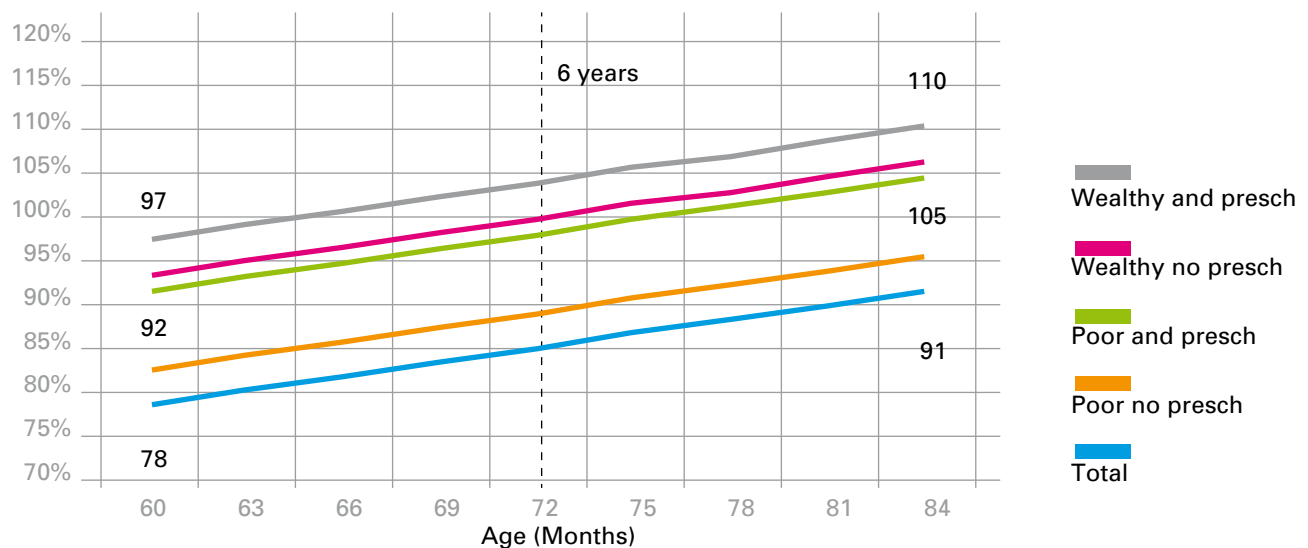Simulations based on the model in Table 11.

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26. We must not lose sight of the important role of genetic factors, which were neither observed nor observable in this study.

4

INFLUENCE OF TYPES OF PRESCHOOL ESTABLISHMENTS ON SKILLS AT THE START OF PRIMARY EDUCATION

INFLUENCE OF TYPES OF PRESCHOOL ESTABLISHMENTS ON SKILLS AT THE START OF PRIMARY EDUCATION

In the previous section, we saw that children who had not attended preschool had lower levels of development than children who have benefited from such education. In this section, we shall take a closer look at the link between preschool education and children's level of development by analysing the impact of the duration and type of establishment attended (public, private, community) on the various composite scores described above. In so doing, we shall understand better how the differences in scores noted above are linked to the characteristics of preschool institutions.

4.1
DURATION OF PRESCHOOL ATTENDANCE

In our environments, the question of the duration of preschool attendance is very important because the scarcity of human, material, and financial resources come into play. At a certain level of resources and quality, an extended preschool period would mean lower coverage. There is also the issue of the marginal efficacy of preschool education in ensuring the acquisition of the prerequisite skills. Are two years of preschool education better than one? And do three years of education significantly improve skills acquisition in child development?

To answer these questions, we shall examine the link between the duration of preschool attendance and child development levels as assessed using the different selected composite scores.

One way of tackling the issue would be to calculate the average score obtained under each indicator for the different durations of preschool attendance. The graph provides an illustration based on total composite scores (direct method). We note a growing link between the score obtained and the time spent in preschool, with three major phases:

i) Phase one, between 0 and 1 year of preschool coincides with strong growth in the average score.

ii) In phase two, between the first and second years of preschool, average scores continue to grow, but the progress is not as strong.

iii) Phase three shows a stagnation in average scores, beginning from the 3rd year of preschool.

Chart 9
Average total composite score according to duration of preschool attendance
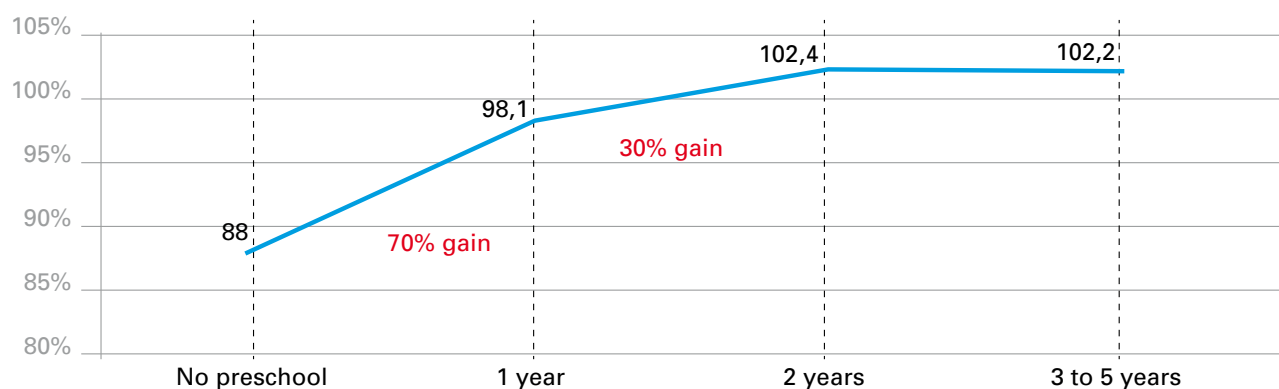
Source: Survey on the assessment of 6-year old children, 2012.

In terms of relative gains, if we take our example of total composite scores, they show that preschool provides an overall gain of 14 points (102 - 98). 70% of these gains are achieved in the first year of preschool and 30% in the second year. The third year does not contribute any gains in the area of development.

The link is also found in all the other composite scores (Table A11 in the appendix), with a phase of strong growth in scores in the first year of preschool. This phase is followed by sustained, albeit more moderate, growth in the second year and then stagnation or some slight deterioration/improvement in the 3rd year[27]. In some domains such as cognitive skills, the vast majority of gains (93%) are achieved in the first year of preschool education, whereas only a little over half of the gains (56%) in attention/comprehension are achieved in the same year. The second year contributes more than a third of overall gains.

These results thus clearly show that two years of preschool education may be considered both necessary and sufficient for optimal skills acquisition in the various dimensions of overall child development. Cabo Verde is thus justified in having opted for two years of preschool education.

27. Reminder: The 3-5 years category includes preschool facilities, but also day-care centres and kindergartens, which implies that we are not measuring the effects of preschool alone.

4.2
IS THE TYPE OF INSTITUTION A DIFFERENTIATING FACTOR?

A breakdown of the average score obtained according to the type of preschool attended makes it possible to draw up an initial ranking of institutions. At the top of the ranking we find private institutions, followed by community institutions. Public institutions come last, with the lowest average scores. The scores for children for whom the type of institution is not specified are similar to those who attended community preschool. It is therefore very likely that they attended such establishments. Table 14 below clearly illustrates the advantages of preschool education when compared with the average scores of those who have not attended preschool.

Table 14
Average composite score according to type of preschool attended

	Average overall score		Average composite thematic score	
	Composite	Factor	Cognitive	Attention/Comprehension
Public	99,7	100,3	100,9	99,2
Private	106,6	105,7	104,3	106,6
Community	102,8	102,4	100,9	103,3
Unknown	103,0	102,2	101,3	103,0
No preschool	88,0	88,4	91,7	88,5

Source: Survey on the assessment of 6-year old children, 2012
The threshold of significance for all deviations (public, private, and community) is 5%, except for the difference in cognitive scores between public and community institutions.

It is interesting to note that when the social characteristics of the populations that attend the different institutions are taken into account, there is no notable change in the ranking of types of institutions indicated in Table 14.

5
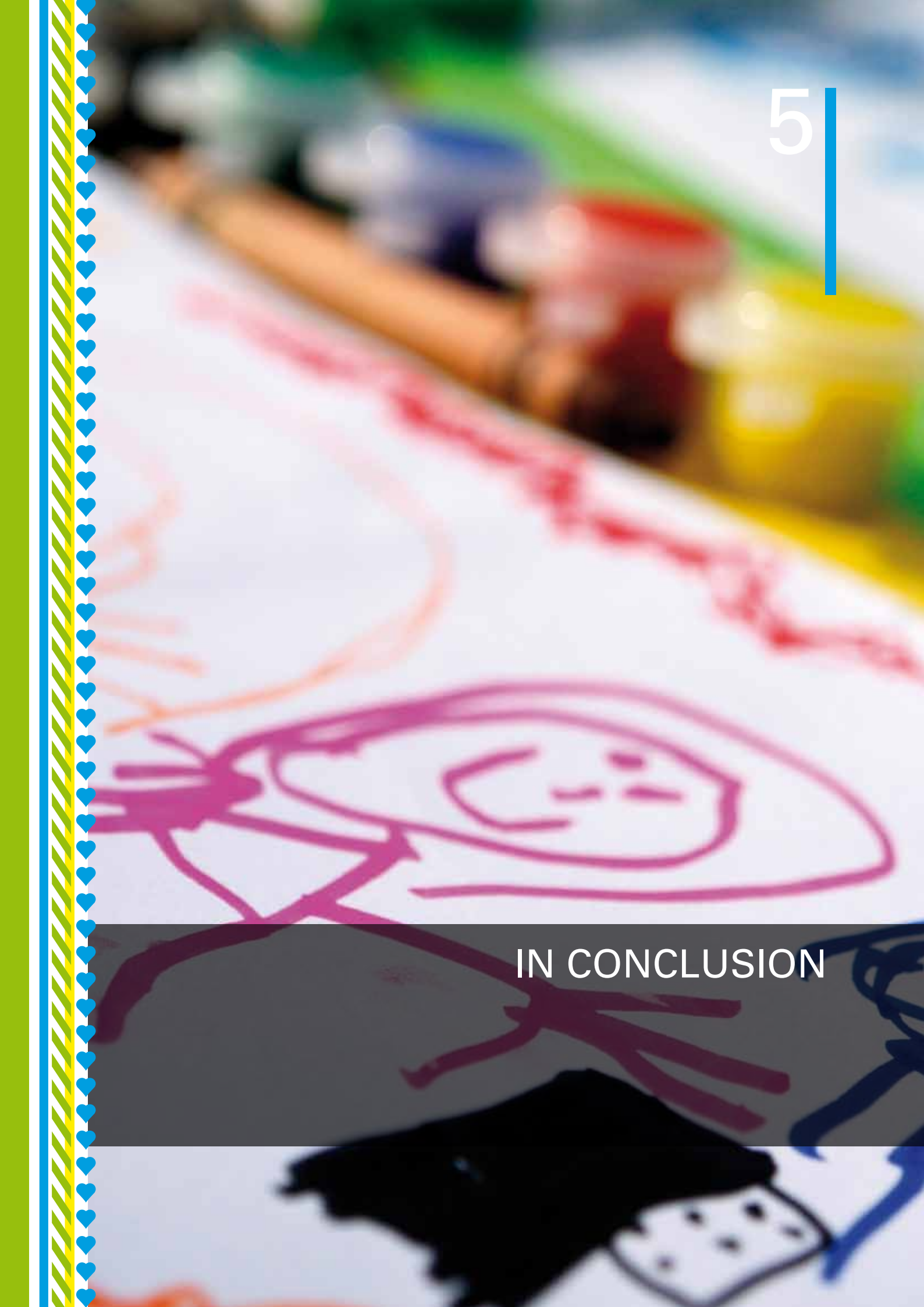
IN CONCLUSION

IN CONCLUSION

We shall first review the principal empirical findings of this survey, before moving on to consider certain avenues that could be of interest to explore in future.

5.1
INVENTORY OF PRINCIPAL FINDINGS

1. The first observation is that about 86% of children in a generation do have access to preschool education in various forms and for various durations. This figure is higher than what is usually published in the ministry's education statistics because coverage is usually calculated as the ratio of i) numbers of preschool attendees to ii) 3 age classes in the national population, implying that all children attend preschool for three years. In reality, this is not the case, and less than one third of children who attended preschool actually did so for three years or sometimes more. 62% only attended for two years. Unsurprisingly therefore, the standard method that relates school attendance to 3 age classes within the population underestimates actual coverage.

2. In spite of this high coverage, however, about 14% of each age class do not benefit from preschool education (and we could add another 4% who only attend preschool for one year). The analyses produced the following findings with regard to children who have no access to preschool education:

2.1 There are proportionally more children who do not attend preschool in certain islands than in others. For example, i) On the islands of São Nicolau, Maio, Fogo, and Brava, only 5% of children do not attend preschool, and ii) on Sal, Boa Vista, and Santiago, 14% of children do not attend preschool. (In Santiago, there is a difference between the north

5

and the south; non-attendance of preschool is three times higher in the north.) In Santo Antão and San Vicente, the percentage of children who begin primary education without any preschool attendance is 24% and 32%, respectively.

2.2 While there are no strong differences between the two sexes (in fact girls have a slight advantage), there are differences relating to household wealth. Lack of preschool attendance is almost twice as high for children from poor families as for children from wealthy families. Living environment also has an impact, but not in the direction that would be expected. Indeed, 18% of children in urban areas do not attend preschool, compared to 10% in rural areas. The total effect of several factors can give rise to considerable disparities: only 2% of wealthy children from São Nicolau (or Maio, Fogo, and Brava) do not attend preschool, while this percentage is 39% for a poor child from Sao Vicente.

3. In order to assess the possible impact of the various forms and durations of preschool education, all the children in the sample were underwent a battery of tests aimed at identifying their skills acquisition levels at the start of primary education, in four major domains and 12 specific dimensions as follows: i) cognitive skills (space, time, size, quantities, shapes, colours, coding/transfer, attention, concentration, memory, and executive functions); ii) socio-emotional skills (autonomy and socialisation); iii) motor skills (drawing, rhythm), and iv) language and communication skills (expression, comprehension). The results of these tests show a broad variability in the scores obtained by pre-primary school children in Cabo Verde, both in the tests for specific skills and in the overall composite scores.

4. This overall variability can be attributed to a number of factors, including the influence of certain social and geographic variables:

4.1 At the start of the primary cycle, boys have a slightly better level of skills than girls. There is a 3-point difference in the agreed scale for measuring these skills, with a conventional standard deviation of 15.

4.2 Urban children score about 3 points better than rural children.

4.3 Children from wealthy families also have a slightly better score (about 3 points) than those from poorer families. We are not however able to identify a greater differential impact of preschool for children from poorer families.

4.4 Children living in single-parent families tend to score lower than those with more "conventional" families with a more conventional structure. This deviation is however low, and also, it is not found in all the dimensions.

4.5 A number of differences are found according to the island of residence, but mostly, Brava stands out with average scores that are between 9 and 19 points lower than those of the other islands.

4.6 Finally, and unsurprisingly, the age of a child at the time of the assessment appears to have an influence on scores. (Ages ranged from 5 years to 7 years, with an average of 6 years and three months.) Children aged 6 ½ years obtained a 6-point higher score than 5 ½ year olds with comparable social characteristics.

5. One major finding concerning the variability of individual scores at the start of primary education relates to the considerable gains in individual development and preparedness for the primary cycle that children derive from attending preschool. The gap between two groups of children with comparable social characteristics (one with preschool experience and the other without), which relates directly to preschool attendance, is estimated at around 14 points.

6. Children who attend preschool do not all attend the same type of institution for the same length of time. It is indeed important to identify the specific effects in terms of children skills at the start of the primary cycle, since such knowledge can also help to guide future action:

6.1 Where the length of preschool attendance is concerned, we generally note a growing link between the score obtained and the time spent in preschool, with three major phases: The first phase, between 0 and 1 year of preschool coincides with strong growth in the average score. In the second phase, between the first and second years of preschool, average scores continue to grow, but the progress is not as strong. The third phase shows a stagnation in average scores, beginning from the 3rd year of preschool. Given this saturation in the third year, it seems unnecessary to continue preschool beyond the first two years.

6.2 The results are also very clear when broken down by type of institution: i) Children from private institutions obtain the highest scores at the start of the primary cycle (7 points more than those from public institutions), and this advantage is still present to a lesser degree (+ 3 points) when the comparison is drawn with between children with similar individual and social characteristics. ii) Children who have attended public preschool institutions obtain gross average scores that are slightly lower (roughly 3 points) than those of children were attended community institutions. This variance however disappears when social variables are included in the comparison. We can therefore conclude that both public and community institutions have a comparable effective impact on children's development. This impact is only slightly lower than that of private institutions.

7. The content of preschool curricula and activities appears adequate for the acquisition of basic knowledge and forms of behaviour. There are however some significant gaps in different aspects of children's cognitive development. Furthermore, in the area of language, there are major differences in knowledge of the Portuguese language at the start of the primary cycle. Since this is the main language used in teaching, one can easily imagine the difficulty faced by those who have not mastered this language when it comes to learning to read.

5.2
THE WAY FORWARD

It is obviously up to government to review the foregoing conclusions and consider their implications for educational policy. Nevertheless, the following avenues for action could be considered.

1. The first is that it is clearly important to endeavour to ensure that all children in this country attend preschool.

2. Secondly, preschool should be offered for two years since the third year does not really appear to contribute much additional value.

3. Thirdly, existing public and community institutions need to be supported and adapted, rather than introducing drastic changes.

4. Following on from the previous point, it might be useful to endeavour to consolidate the existing current system while at the same time introducing new standards in teaching conditions, teacher training, and pedagogical and supervision material. This would obviously require greater involvement of the Ministry of education and sports, whose interventions will no doubt require both technical and financial support in order to achieve the required effects.

5. With regard to preschool curricula and activities, it might be interesting to consider reviewing these to significantly enhance the construction of children's cognitive skills and also to enhance the acquisition of language skills, in particular for the Portuguese language.

6. Finally since all these changes will presumably not occur instantaneously, it might be of interest to consider how primary education might also be adapted, in particular during the first year, i) to take better account of the varying levels of children's skills, and ii) to correct the specific gaps that have been identified.
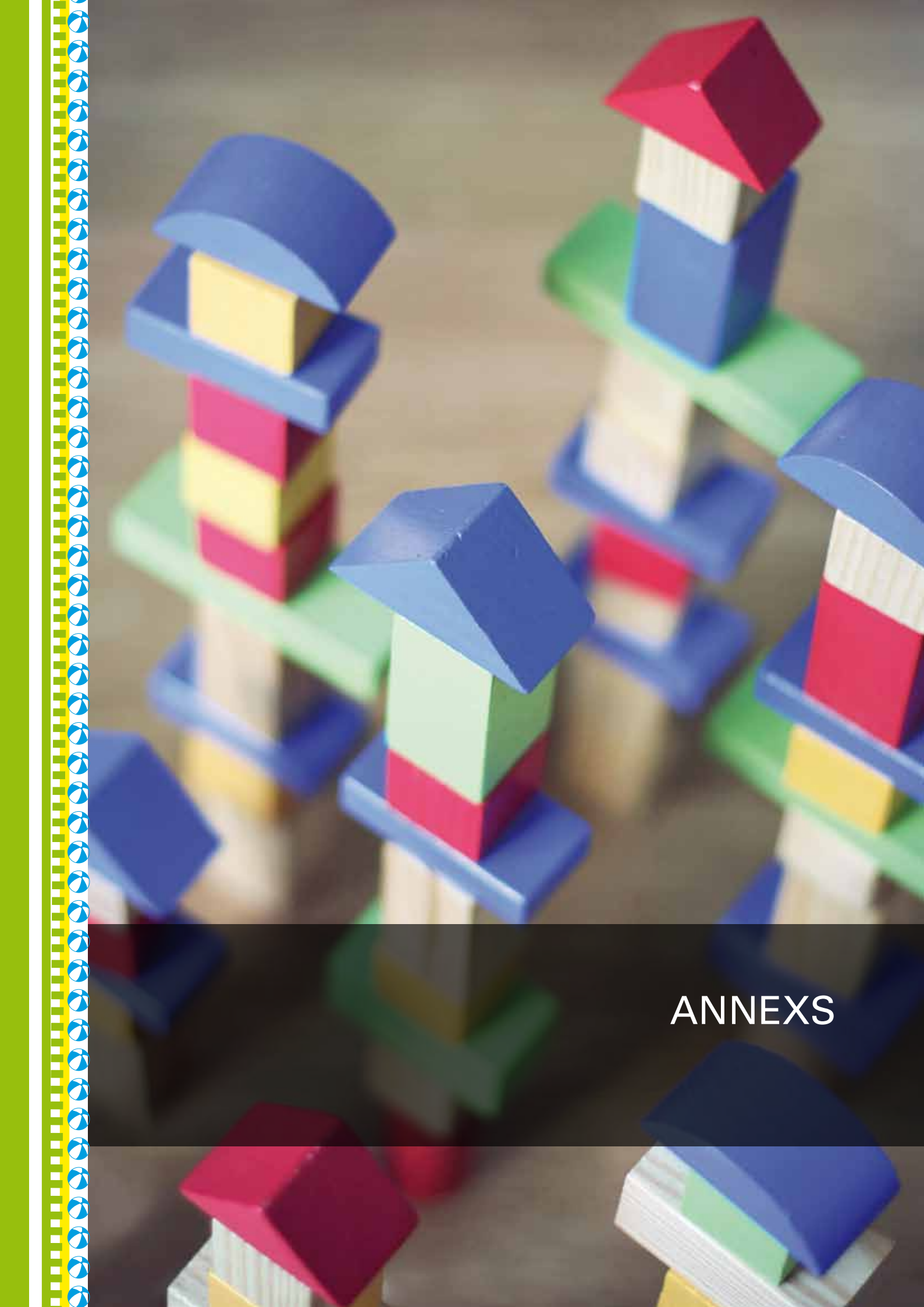
ANNEXS

CONSTRUCTION OF VARIABLES

HOUSEHOLD WEALTH

The information available to define household wealth was information about the monthly income of the father, mother, and/or the guardian. Since the quality of information was generally mediocre (information missing, or inconsistent with the general Family structure and the type of employment) we decided to work initially only on the basis of the income of the father or mother to define household wealth.

Three wealth categories were defined: low-income households (poor), middle-income households, and high-income households (rich).

Low income households (10,000 ECV per month or less): Households where the monthly income of the father (or the mother) is below or equal to 10,000 ECV, and where that of the mother (or father) is nil or undefined.

Middle-income households (between 10,000 and 40,000 ECV per month): These are households where the monthly income of the father (or the mother) is between 10,000 and 20,000 ECV and that of the mother (or the father) is below 20,000 ECV or undefined. Households where the monthly income of both the mother and father is positive but below 10,000 ECV.

High-income households: (40,000 ECV per month and above): Households where the income of the father and/or the mother is above 20,000 ECV per month.

Where the incomes of both the mother and the father were undefined or missing, information on the income of the guardian was used to classify the household as poor, middle-income or rich.

CHARACTERISTICS OF PRESCHOOL INSTITUTIONS, DERIVED FROM THE SCHOOLS CENSUS

The 2010-2011 Statistical Yearbook shows that there are 500 preschool institutions in Cabo Verde. While the majority of them (60%) are public institutions, there is nevertheless a supplementary supply of preschool institutions provided by communities (29%) and the private sector (11%). Table A1 shows a breakdown of these institutions by island

Table A1
Breakdown of preschool institutions by status and by island, 2010-2011

Islands	Number of institutions	Status of institutions			Status of institutions (%)		
		Public	Com.	Private	Public	Com.	Private
Boavista	12	2	9	1	17%	75%	8%
Brava	12	11	1		92%	8%	0%
Fogo	53	25	27	1	47%	51%	2%
Maio	12	9	3		75%	25%	0%
Sao Vicente	28	6	16	6	21%	57%	21%
Santo Antão	65	34	27	4	52%	42%	6%
Sao Nicolau	16	4	11	1	25%	69%	6%
Sal	11	3	5	3	27%	45%	27%
Santiago	291	206	44	41	71%	15%	14%
Total	500	300	143	57	60%	29%	11%

Source: 2010-2011 Statistical Yearbook

There are broad differences from one island to another. For example well the proportion of public institutions varies from 17% in Boavista to 92% in Brava. The range for private institutions is narrower; 0% in Brava or Maio, to 27% in Sal. Community institutions, which may have varying management structures and curricular, also show a wide spread, from 8% in Brava to 75% in Boavista.

The absence of geographical uniformity could have implications for the cost[28] and quality of preschool education available, which may thus affect both preschool attendance and child development. At this stage it might be helpful to describe some characteristics and compare these to the potential demand for preschool services. This will be broken down according to the theoretical preschool age population in Table A2.

Beyond the fundamental issues of availability of material resources and qualified human resources, it is interesting to try to assess whether existing services are capable of accommodating the theoretical numbers

28. Faith-based community institutions are reputed to be as expensive as private institutions.

of school-age children in the right conditions. Three indicators may be calculated: school-age population/ numbers of classrooms; school-age population/pedagogical groups, and school-age population/supervisory staff. Although these measurements may be imperfect they do give a picture of the available supply that could meet the potential demand.

Table A2
Some characteristics of local supply compared to demand

Islands	Characteristics of local supply			
	No. of schools (1)	No. of classrooms (2)	No. of pedagogical group(3)	Staff (4)
Boavista	12	24	25	35
Brava	12	30	26	27
Fogo	53	92	100	111
Maio	12	14	23	23
Sao Vicente	28	101	137	113
Santo Antão	65	78	95	88
Sao Nicolau	16	34	32	36
Sal	11	40	50	59
Santiago	291	496	629	612
Total	500	909	1 117	1 104

Islands	Population 4-5 years (5)	Service availability indicators			
		Pop/schools (5)/(1)	Pop /classes (5)/(2)	Pop /Groupe (5)/(3)	Pop /personnel (5)/(4)
Boavista	333	(5)/(1)	Pop/	13	10
Brava	276	classrooms	9	11	10
Fogo	1 879	(5)/(2)	Pop/	19	17
Maio	277	Group	20	12	12
Sao Vicente	2 737	(5)/(3)	Pop/	20	24
Santo Antão	1 749	staff	22	18	20
Sao Nicolau	465	(5)/(4)	14	15	13
Sal	1 164	106	29	23	20
Santiago	12 499	42	25	20	20
Total	21 379	42	24	19	19

Source: annuaire statistique 2010-2011

If we take the number of classrooms, for example, we find wide-ranging situations, with an indicator of 9 in Brava, but which goes up to as much as 27 in Santiago and even 29 in Sal. Looking at the ratio of school-age population to staff, the average is 19 (meaning that the total preschool population could be accommodated, with 19 children pare teaching staff). The range however varies from 10 in Brava and Boavista to 24 in São Vicente. This clearly shows that when it comes to accommodating and supervising children, the supply is much better in the first two islands than in the latter. Such a situation could have an impact on the way in which the system is perceived (quality), and therefore have an impact on attendance.

It is interesting to note that the same trends are observed in the pupil-teacher ratio for all preschool institutions, regardless of their status. Table A3 provides information on supervision per island and per status of the school, based on attendance in the 2011-2012 school year. An initial observation shows a national average of 20, with the variations between 15 in Brava and Boavista and 26 in São Vicente. A subsequent observation shows that in general terms the conditions regarding supervision appear to be better in public institutions than in private or community institutions. Indeed the pupil-teacher ratio (PTR) is only 16 in public institutions, whereas it is as high as 23 for private and community institutions. Here the differences amongst the islands are much broader for community institutions than for private institutions: 15-28 (13 points difference), against 12-23 (11 points difference).

Table A3 also includes information on the proportion of qualified teaching staff (teachers and monitors) within the supervisory staff. Just like PTR, this indicator can be used as a proxy for quality of education. An average 46% of staff are qualified staff. This figure however covers broad differences from one island to the other, with very low percentages (below 10%) in Brava[29], Santiago, and Santo Antão, and more than 50% in Boavista and Sao Vicente (59.5%).

Table A3

Pupil-Teacher ratio and proportion of qualified teachers, per island and status of institution

Islands	Pupil-Teacher ratio				Proportion of qualified teachers (1) (%)			
	Public	Com.	Private	Private	Public	Com.	Private	Private
Boavista	13	15	23	15	80,0	50,0	50,0	54,3
Brava	14	19		15	9,1	0,0		7,4
Fogo	21	16	12	17	39,5	40,3	100,0	40,5
Maio	16	17		17	7,7	40,0		21,7
Sal	21	23	10	19	28,6	48,7	28,6	42,5
Santiago	17	28	24	20	2,6	4,7	42,9	6,8
Santo Antão	14	23	15	18	0,0	3,2	100,0	5,6
Sao Nicolau	20	17	81	19	37,5	28,6	53,3	37,3
Sao Vicente	17	28	23	26	53,8	66,9	68,6	59,5
Total	16	23	23	20	44,6	43,1	61,2	46,5

Source: 2010-2011 Statistical Yearbook. (1) Qualified staff includes teachers and monitors

29. In Brava, some of the reasons put forward to explain the low percentage of qualified staff include the high turnover of teachers, and the scarcity of training opportunities, due to the remote location of the island and the lack of adequate transport services.

DEFINITION AND DESCRIPTION OF THE SKILLS EVALUATED

A young child develops through advances in four inter-related domains: cognitive, socio-emotional, motor, and language abilities.

Cognitive skills encompass analytical skills, mental problem-solving, memory and early mathematical abilities. At preschool age, the focus is on children's early knowledge of numbers, including adding and subtracting, and their familiarity with letters and print. These abilities may be as strongly affected by the quality of the environment as they are by genetics. It is even possible that these environmental influences are even more important in conditions of poverty.

Executive functions comprise fluid abilities or processes that are engaged when a person is confronted with a novel situation, problem or stimulus. These fluid abilities are distinct from crystallized cognition or knowledge of information. These functions include impulse control, ability to initiate action, ability to sustain attention, and persistence. Engagement of executive function skills enable humans to adapt to ever-changing contexts and are indispensable for success in school, work and day-to-day living. Thus, attention processes in the preschool years are associated with academic achievement.

Motor skills. These include large motor skills and fine motor skills. Large motor development refers to the acquisition of movements that promote an individual's mobility. For preschool-aged children, large motor skills include walking on a line, controlling movements in games, and jumping. Fine motor skills, such as drawing and writing letters, involve eye-hand coordination and muscle control. With these skills children gain a new way of exploring the environment and thus fine motor skills contribute to developmental achievements.

Socio-emotional skills. For preschool-age children, social and emotional development includes children's social competence (how well children get along with others, including teachers and peers), behaviour management (following directions and cooperating with requests), social perception (how well children can identify thoughts and feelings in themselves and others), and self-regulatory abilities (emotional and behavioural control, especially in stressful situations). All of these skills are critical for children's success in school. Without them, children are likely to experience peer rejection and have difficulty in school.

Communication/language skills are critical for success in school. Not only does reading build upon children's early vocabulary, children also must understand directions from teachers and be able to communicate their feelings and thoughts to others. As children move into the preschool years, indicators of language development include production and understanding of words, their abilities to tell stories, identify letters, and their comfort and familiarity with books. Like cognitive and social-emotional development, language development is dependent on stimulating home environments. Language development is heavily dependent on exposure to words and books in the home. Low-income children generally build their vocabularies more slowly and know fewer words. They have fewer direct conversations with their parents whose speech may have reduced lexical richness and sentence complexity. They also often have little exposure to books at home.

Standardised assessments of children's vocabularies and their knowledge of letters and print at the start of school predict their reading scores throughout childhood.

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30. This section is drawn from Kariger et al, 2009. .

Table A4
Probability model for lack of preschool education (complete model)

	Coefficient	Significance
Sexe de l'enfant		
Boy	0,038	ns
Girl	Réf	
Living environment		
Urban	0,596	***
Rural	Réf	
Island		
San Antão	Réf	
Sao Vicente	0,395	ns
San Nicolau	- 1,594	***
Sal	- 1,021	*
Boavista	- 0,746	ns
Maio	- 1,736	**
Santiago	- 0,640	***
Fogo	- 1,436	***
Brava	- 19,789	ns
Family environment		
Father and mother	Réf	
Père ou Mother and other	0,024	ns
Single father or mother	0,231	ns
Unknown	0,313	ns
Household wealth		
Poor	Réf	
Unknown	0,139	ns
Average	- 0,414	*
Rich	- 1,214	***
Constant	- 1,522	***
Pseudo R2	13,7 %	

Source: Survey on the assessment of 6-year old children, 2012.
Logistic model. *** Significant at 1 %** at 5 %; * at 10 %, ns not significant.

ANNEX 3

Table A5

Items for assessing children at the start of primary education

Domains/Dimension	Items	Mode of Administration [1]	Rating
Cognitive skills			
Space-time	Before – After	Group	0 - 1 - 9
	In front – Behind	Group	0 -1 - 9
	Above - Beneath	Group	0 -1 - 9
	Lateralisation: left – right	Group	0 - 1 - 9
Quantity	Compare number sets of different elements	Group	0 -1 - 9
	Smaller and bigger (size)	Group	
	Identify numbers (graphic representation)	Group	0 -1 - 9
Shape - Colour	Identify shapes	Group	0-1-2-3-4-9
	Knowledge of colours	Group	0-1-2-9
Seriation, classification, and association	Distinctive elements in a set (size, shape)	Group	0 -1 - 9
	Recognising similarities and differences	Group	0 -1 - 9
Coding - transfer	Linking symbols to action	Group	0 -1 - 9
Concentration - attention - memory	Listen to a story – observe children's attention levels	Group / Observation	0 -1 - 9
	Listen and extract elements of a story	Group	0 -1 - 9
	Find the contents of cards	Individual	0 -1 - 9
Executive functions	Reproduce patterns from left to right	Individual	0 -1 - 9
	Describe pictures in the right sequence (from left to right)	Collective	0 -1 - 9
Socio-emotional behaviour			
Autonomy	Child can prepare for school without assistance	Teacher observes	0 - 1 - 2 - 9
	Child can eat alone, without assistance	Teacher observes	0 - 1 - 2 - 9
Respect for others	Child plays with mates	Teacher observes	0 - 1 - 2 - 9

Motor skills			
Drawing	Reproduce shapes/characters	Group	0 - 1 - 2 - 9
	Represent a human form	Group	0 - 1 - 2 - 9
	Reproduce a suggested object	Group	0 - 1 - 2 - 9
	Draw a complete house	Group	0 - 1 - 2 - 9
	Reproduce letters	Group	0 - 1 - 2 - 3 - 4 - 9
Rythm	Jump, walk, and run to a given beat	Group	0 - 1 - 2 - 9

Communication skills			
Expression	Know his/her full name	Group	0 - 1 - 2 - 9
	Describe the surroundings of the home (logic)	Individual	0 - 1 - 2 - 9
	Describe the surroundings of the home (expression)	Individual	0 - 1 - 2 - 9
	Identify living beings in a drawing	Individual	0 - 1 - 2 - 3 - 4 - 9
	Name the days of the week	Individual	0 - 1 - 9
Comprehension	Understand simple instructions (Creole and Portuguese)	Individual	0 - 1 - 2 - 9
	Understand simple instructions (Creole and Portuguese)	Individual	0 - 1 - 2 - 9
	What did you eat yesterday, what are you going to do tomorrow?	Individual	0 - 1 - 2 - 9
	What did you eat yesterday, what are you going to do tomorrow? (portugais)	Individual	0 - 1 - 2 - 9

Note: (1): Where it is not specified, the mode of administration is a test administered to the child

Table A6

Percentage of children who failed different tests, according to gender and living environment

Domaine/Dimension	Gender		Place of Residence		
	Boy	Girl	Urban	Rural	Total
Cognitive skills					
Before – After	60,7	54,1	55,4	59,0	57,3
In front - Behind	13,5	12,3	10,2	15,3	12,9
Above – Beneath	2,8	2,0	2,5	2,3	2,4
Lateralisation: left – right	38,2	39,9	38,8	39,4	39,1
Compare different size sets of elements (numbers)	30,1	29,4	27,7	31,6	29,7
Smaller and bigger (size)	11,6	16,0	12,5	15,2	13,9
Identify numbers	13,1	10,0	9,5	13,4	11,5
Identify shapes	28,4	30,6	26,5	32,3	29,5
Knowledge of colours	19,4	19,1	15,8	22,4	19,2
Distinctive elements in a set (size, shape)	26,6	26,3	26,1	26,8	26,5
Recognise similarities and differences	19,2	17,0	15,8	20,2	18,1
Linking symbols to action	27,9	24,8	25,3	27,3	26,3
Listen to a story – observe children's attention levels	1,9	1,1	1,9	1,1	1,5
Listen and extract elements of a story	13,7	10,1	12,6	11,1	11,8
Find the contents of cards	5,4	6,2	5,1	6,5	5,8
Reproduce patterns from left to right	19,0	13,7	16,5	16,1	16,3
Describe pictures in the right sequence (left to right)	43,9	42,5	40,9	45,3	43,2
Socio-emotional behaviour					
Child can prepare for school along, without assistance	2,4	1,5	0,9	2,9	1,9
Child can eat alone, without assistance	1,7	1,1	0,4	2,4	1,4
Child plays with mates	3,3	1,5	1,2	3,4	2,3

Motor skills					
Reproduce shapes/characters	33,6	21,2	27,2	27,3	27,2
Represent a human form	4,7	2,5	3,7	3,4	3,4
Reproduce a suggested object	11,1	8,5	8,9	10,5	9,9
Draw a complete house	11,9	7,4	9,5	9,7	9,6
Reproduce letters	20,2	13,1	16,8	16,3	16,6
Jump, walk, and run to a given beat	3,3	2,8	4,0	2,1	3
Communication skills					
Know his/her full name	3,6	2,8	3,3	3,1	3,1
Describe the surroundings of the home (logic)	17,6	13,2	12,6	17,9	15,2
Describe the surroundings of the home (expression)	14,7	10,8	9,8	15,3	12,5
Identify living beings in a drawing	4,0	3,3	5,3	2,1	3,6
Name the days of the week (at least 3)	53,3	42,3	49,3	46,1	47,6
Understand simple instructions (Creole and Portuguese)	2,2	1,3	2,1	1,5	1,8
Understand simple instructions (Creole and Portuguese)	5,9	1,6	2,3	5,0	3,7
What did you eat yesterday, what are you doing tomorrow?(Creole)	7,3	2,5	3,7	5,8	4,8
What did you eat yesterday, what are you doing tomorrow? (Portuguese)	19,9	10,8	13,5	16,8	15,1

Source: Survey on the assessment of 6-year old children, 2012.

Table A7

Percentage of children who failed different tests, according to preschool status and parity index

Domaine/Dimension	Préscolarisé	Non Préscolarisé	Total	Indice de Parité	Balise
Cognitive skills					
Before – After	55 %	71 %	57 %	1,30	20 %
In front - Behind	11 %	23 %	13 %	2,07	15 %
Above – Beneath	2 %	5 %	2 %	2,96	15 %
Lateralisation: left – right	38 %	45 %	39 %	1,17	20 %
Compare different size sets of elements (numbers)	29 %	35 %	30 %	1,23	20 %
Smaller and bigger (size)	13 %	18 %	14 %	1,33	15 %
Identify numbers	10 %	20 %	12 %	1,99	15 %
Identify shapes	26 %	49 %	29 %	1,88	15 %
Knowledge of colours	16 %	38 %	19 %	2,32	15 %
Distinctive elements in a set (size, shape)	25 %	35 %	26 %	1,38	20 %
Recognise similarities and differences	16 %	32 %	18 %	2,05	15 %
Linking symbols to action	24 %	41 %	26 %	1,70	20 %
Listen to a story – observe children's attention levels	1 %	5 %	2 %	5,00	15 %
Listen and extract elements of a story	10 %	25 %	12 %	2,57	15 %
Find the contents of cards	5 %	9 %	6 %	1,59	15 %
Reproduce patterns from left to right	12 %	40 %	16 %	3,23	20 %
Describe pictures in the right sequence (left to right)	41 %	57 %	43 %	1,40	20 %
Socio-emotional behaviour					
Child can prepare for school along, without assistance	2 %	3 %	2 %	1,74	
Child can eat alone, without assistance	1 %	2 %	1 %	1,92	
Child plays with mates	2 %	4 %	2 %	1,71	

Motor skills					
Reproduce shapes/characters	23 %	55 %	27 %	2,44	20 %
Represent a human form	2 %	12 %	4 %	5,17	15 %
Reproduce a suggested object	8 %	20 %	10 %	2,38	20 %
Draw a complete house	8 %	20 %	10 %	2,38	15 %
Reproduce letters	13 %	37 %	17 %	2,74	20 %
Jump, walk, and run to a given beat	3 %	6 %	3 %	2,41	15 %
Communication skills					
Know his/her full name	2 %	10 %	3 %	5,06	15 %
Describe the surroundings of the home (logic)	14 %	25 %	15 %	1,81	20 %
Describe the surroundings of the home (expression)	10 %	27 %	13 %	2,57	20 %
Identify living beings in a drawing	3 %	7 %	4 %	2,15	20 %
Name the days of the week (at least 3)	44 %	71 %	48 %	1,61	20 %
Understand simple instructions (Creole and Portuguese)	1 %	5 %	2 %	3,85	15 %
Understand simple instructions (Creole and Portuguese)	3 %	9 %	4 %	3,24	15 %
What did you eat yesterday, what are you doing tomorrow?(Creole)	3 %	13 %	5 %	3,93	20 %
What did you eat yesterday, what are you doing tomorrow? (Portuguese)	14 %	24 %	15 %	1,77	20 %

Source: Survey on the assessment of 6-year old children, 2012.

Table A8
Total variance explained

	Initial eigenvalues		
	Total	% of variance	Cumulated %
1	4,230	35,247	35,247
2	1,171	9,759	45,005
3	1,013	8,438	53,444
4	0,914	7,614	61,058
5	0,860	7,164	68,222
6	0,737	6,142	74,364
7	0,722	6,013	80,377
8	0,648	5,399	85,776
9	0,619	5,160	90,936
10	0,573	4,778	95,714
11	0,514	4,286	100,000
12	0,000	0,000	100,000

Source: Survey on the assessment of 6-year old children, 2012.

Table A9
Components matrix

	Component				
	1	2	3	4	5
SCG1	0,587	- 0,366	- 0,011	0,159	- 0,090
SCG2	0,509	- 0,408	0,287	0,392	0,074
SCG3	0,591	- 0,287	- 0,213	0,307	0,031
SCG4	0,602	- 0,278	0,093	0,010	- 0,010
SCG5	0,379	- 0,313	0,378	- 0,542	0,417
SCG6	0,637	0,145	0,063	- 0,337	0,085
SCG7	0,596	0,037	- 0,359	- 0,161	- 0,114
SCG8	0,272	0,577	0,347	0,428	0,451
SCG9	0,686	0,207	- 0,299	0,056	- 0,106
SCG10	0,333	0,194	0,610	- 0,046	- 0,659
SCG11	0,632	0,390	- 0,126	- 0,136	0,036
SCG Total	0,978	0,156	- 0,053	- 0,017	0,006

Source: Survey on the assessment of 6-year old children, 2012.

Table A10

Matrix of correlations between the total composite score and factor scores

		SCT	REGR factor score	REGR factor score 2	REGR factor score 3	REGR factor score 4	REGR factor score 5
SCT	r de Pearson	1	0,956	0,169	- 0,145	- 0,008	- 0,022
	Sig. (bilatérale)		0,000	0,000	0,000	0,774	0,441
	N	1 190	1 190	1 190	1 190	1 190	1 190
REGR factor score 1	r de Pearson	0,956	1	0,000	0,000	0,000	,000
	Sig. (bilatérale)	0,000		1,000	1,000	1,000	1,000
	N	1 190	1 190	1 190	1 190	1 190	1190
REGR factor score 2	r de Pearson	0,169	0,000	1	0,000	0,000	,000
	Sig. (bilatérale)	0,000	1,000		1,000	1,000	1,000
	N	1 190	1 190	1 190	1 190	1 190	1190
REGR factor score 3	r de Pearson	- 0,145	0,000	0,000	1	0,000	0,000
	Sig. (bilatérale)	0,000	1,000	1,000		1,000	1,000
	N	1 190	1 190	1 190	1 190	1 190	1 190
REGR factor score 4	r de Pearson	- 0,008	0,000	0,000	0,000	1	0,000
	Sig. (bilatérale)	0,774	1,000	1,000	1,000		1,000
	N	1 190	1 190	1 190	1 190	1 190	1 190
REGR factor score 5	r de Pearson	- 0,022	0,000	,000	0,000	0,000	1
	Sig. (bilatérale)	0,441	1,000	1,000	1,000	1,000	
	N	1 190	1 190	1 190	1 190	1 190	1 190

Source: Survey on the assessment of 6-year old children, 2012.

Table A11

Average level of the different composite scores and gains contributed by each year of preschool

	Total composite score	Factor composite score	Composite score – cognitive skills	Composite score - attention/comprehension
Duration of preschool cycle				
No preschool	88,0	88,4	91,7	88,5
1 year	98,1	98,6	101,9	96,7
2 years	102,4	102,6	102,7	101,9
3 to 5 years	102,2	101,4	98,8	103,1
Total gain	14,3	14,2	11,0	14,6
Of which				
1st year	70 %	72 %	93 %	57 %
2nd year	30 %	28 %	7 %	36 %
3-5th year	--	--	--	8 %

Source: Survey on the assessment of 6-year old children, 2012.

Table A12

Net effect of social and preschool variables on composite scores and probability of success in tests in the various domains

	Continuous composite score				Probability of success	
	Total score	Factor Score	Cognitive skills	Attention/Comprehension	Coding-transfer	Motor skills/Rythm
Gender						
Boys	- 3,266	- 2,366	ns	- 4,144	ns	ns
Girls	Réf	Réf	Réf	Réf	Réf	Réf
Age of child (months)	0,524	0,518	0,459	0,473	0,004	0,037

Island						
Maio, Brava	- 5,396	--	--	--	--	--
Santiago	- 2,134	3,225	4,703	--	--	--
Fogo	--	--	--	--	--	--
Brava	--	- 7,151	- 8,544	--	--	- 1,304
Sao Vicente, Boavista	--	--	- 2,729	--	--	--
Maio, Fogo	--	--	9,793	--	--	--
Santiago, Fogo, Brava	--	--	--	- 4,546	--	--
Sao Vicente, Maio	--	--	--	--	- 0,795	--
Sal	--	--	--	--	- 1,105	1,757
Sao Vicente, Santiago, Fogo	--	--	--	--	--	1,089
Others Islands	Réf	Réf	Réf	Réf	Réf	Réf
Living environment						
Urban	3,586	3,654	3,793	3,102	0,308	0,522
Rural	Réf	Réf	Réf	Réf	Réf	Réf
Household wealth						
Rich	3,837	3,300	2,346	3,637	ns	ns
Average	--	--	--	--	- 0,030	- 0,397
Other	Réf	Réf	Réf	Réf	Réf	Réf
Family environment						
Single parent	--	--	- 3,223	--	--	--
Other	Réf	Réf	Réf	Réf	Réf	Réf
Duration of preschool						
0 year	Réf	Réf	Réf	Réf	Réf	Réf
1 year	9,466	9,807	9,912	7,264	0,856	0,970
2, 3-5 years	14,220	13,674	8,970	13,654	0,688	0,909
Constant	49,272	48,401	53,564	55,475	0,433	- 3,802
R2	18,2 %	16,5 %	17,0 %	18,6 %	7,2 %	15,7 %

Source: Assessment survey of 6 year old children, 2012.
Linear model (OLS) for the continuous scores and logistic model for probability of success.
All variables are significant at 5%; non-significant variables beyond 10% are indicated ns.

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